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**Current research
in the Geological Sciences
in Canada
May 1980-April 1981**

Compiled by
THOMAS E. BOLTON

**Projets de recherche
en cours d'exécution au
Canada-Sciences géologiques
mai 1980-avril 1981**

Préparé par
THOMAS E. BOLTON

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LE CONSEIL CANADIEN DES SCIENCES DE LA TERRE**

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IN CANADA, MAY 1980-APRIL 1981**

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AU CANADA - SCIENCES GÉOLOGIQUES.
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INTRODUCTION

The present publication recording research in progress in Canada from May 1980 to April 1981 is the result of a survey conducted between February, 1981 and April, 1981.

The research projects listed in this compilation are being undertaken mainly within federal and provincial departments, and universities. Data on industrial research is limited to one oil company. A relatively complete overview of scientific research activities within Canada in the geological and allied sciences, however, is provided for the survey period.

Using the data supplied for this compilation by the respondents, some indication as to the lines of research receiving the greatest and least attention can be formulated. At least 380 research projects have not been previously reported. The greatest increase during the 1980-81 period was in the fields of Mineral/Energy Geoscience (50), Petrology (34), Hydrogeology (30), and Sedimentology (30). Research projects undertaken as graduate thesis in the universities are so specified wherever possible.

Additional details on research in the earth and related sciences underway in Canada during 1980 can be obtained through the annual reports prepared by individual university departments, research councils, and museums. Comprehensive reports on geophysical research and development, including volcanology and oceanography related research, are contained within the Canadian Geophysical Bulletin published by the Earth Physics Branch of the Department of Energy, Mines and Resources. Summaries of progress and short research reports related to hydrology/water-related environmental research and glaciology are provided annually by the Water Resources Branch of the Department of Environment Canada and the Associate Committee on Hydrology, National Research Council. Quaternary research in Québec is reviewed annually in the "Bulletin d'information de l'Association québécoise pour l'étude de Quaternaire".

Again this year a listing is included of the 1980 awards provided for geological research within the Research Agreements programs of the Departments of Energy, Mines and Resources, and Environment Canada. The Natural Sciences and Engineering Research Council Canada also provided a computer print-out of the operating grants actually awarded in 1980. The 1980 Ontario Research Grants and Polar Continental Shelf Project field support to non-governmental activities are also listed.

Use of the compilation

The projects are grouped under main headings that cover the majority of disciplines within the geological and allied sciences. These groupings are unchanged from last years compilation (Geological Survey of Canada, Paper 80-5, 1980).

A complete list of organizations contributing to the present survey is included. Acknowledgment is made in particular to those who assembled and forwarded the data on research projects underway in the organizations under their direction. As a convenience, an alphabetically arranged index lists each investigator and the reference number(s) of his project(s).

INTRODUCTION

La présente publication, qui fait état de la recherche réalisée au Canada de mai 1980 à avril 1981, est le fruit d'une enquête effectuée entre février 1981 et avril 1981.

Les projets de recherche énumérés sont exécutés surtout par des ministères fédéraux et provinciaux, et par des universités. Les données sur la recherche industrielle se limitent à une des compagnies pétrolières. Un aperçu assez complet de l'activité de recherche scientifique au Canada pour la période visée dans le domaine de la géologie et des sciences connexes est cependant fourni.

À partir des renseignements donnés par les participants à l'enquête, il est possible de voir quels genres de recherche retiennent le plus et le moins l'attention. Au moins 380 projets nous ont été signalés pour la première fois. Les domaines où la recherche s'est le plus accrue durant l'année 1980-1981 sont les sciences de la Terre-Énergie/Minéraux (50), la pétrologie (34), la hydrogéologie (30), et la sédimentologie (30). Les projets de recherche de 2^e cycle, dans les universités, sont également précisés, dans la mesure du possible.

On peut se procurer de plus amples détails sur la recherche réalisée en 1980 au Canada dans le domaine des sciences de la Terre et des sciences connexes en consultant les rapports annuels mis au point par les différents départements l'universités, conseils de recherche et musées. Le volume du Canadian Geophysical Bulletin, publié par la Direction de la physique du Globe du ministère de l'Énergie, des Mines et des Ressources, comprend des rapports complets sur les travaux de recherche et les dernières réalisations en géophysique, y compris la recherche connexe en volcanologie et en océanographie. Des résumés des progrès réalisés et de brefs rapports ayant trait à la glaciologie et à la recherche environnementale liée à l'hydrologie sont publiés annuellement par la Direction des ressources en eau d'Environnement Canada et par le Comité associé de l'hydrologie, du Conseil national de recherches du Canada. La recherche sur le Quaternaire au Québec est signalée annuellement dans le "Bulletin d'information de l'Association québécoise pour l'étude du Quaternaire".

Nous incluons à nouveau cette année une liste des prix décernés en 1980 pour la recherche géologique dans le cadre des programmes d'accords de recherches des ministères de l'Énergie, des Mines et des Ressources, et de l'Environnement. Le Conseil de recherches en sciences naturelles et en génie du Canada a également fourni un imprimé d'ordinateur détaillant les subventions aux travaux réellement accordées en 1980. On a signalé également dans ce rapport les subventions de recherche de la Commission Géologique de l'Ontario (Ontario Research Grants) et l'aide de l'Étude du plateau continental polaire en faveur d'activités non gouvernementales pour 1980.

Présentation

Les projets sont groupés sous des titres généraux s'appliquant à la majorité des disciplines que comprennent la géologie et les sciences connexes. Ces catégories sont les mêmes que l'année dernière (Étude 80-5, Commission géologique du Canada, 1980).

Une liste complète des organismes qui ont contribué à l'enquête a été dressée. Nous tenons à remercier particulièrement les personnes qui ont recueilli et envoyé les données concernant les projets de recherche en cours dans les organismes dont elles sont responsables. Pour vous faciliter la consultation, un répertoire alphabétique donne les noms de tous les enquêteurs et le(s) numéro(s) de référence de son(ses) projets(s).

ALBERTA/ALBERTA

1. GODFREY, J.D., Alberta Research Council (Geol. Surv.):
Alexander-Wylie Lakes map area, Alberta, 1971-80.
See:
Geology of the Alexander-Wylie Lakes district, Alberta; Alberta Research Council, Geol. Surv. Earth Sci. Rep., 1980.
2. GODFREY, J.D., Alberta Research Council (Geol. Surv.):
Fort Chipewyan district map area, Alberta, 1970-80.
See:
Geology of the Fort Chipewyan district, Alberta; Alberta Research Council, Geol. Surv. Earth Sci. Rep. 77-3, 1980.
3. GODFREY, J.D., Alberta Research Council (Geol. Surv.):
Geology of Ryan-Fletcher Lakes district, Alberta, 1972-80.
Map compilation complete, publication drafting in progress; in press.
4. GODFREY, J.D., Alberta Research Council, (Geol. Surv.):
Geology of Bocquene-Turtle Lakes district, Alberta, 1973-80.
Map compilation completed, report in preparation.
5. GODFREY, J.D., LANGENBERG, C.W., Alberta Research Council (Geol. Surv.):
Geology of South Fitzgerald, Myers, Daly Lakes district, Alberta, 1973-80.
Map compilation completed.
6. GODFREY, J.D., LANGENBERG, C.W., Alberta Research Council (Geol. Surv.):
Geology of North Fitzgerald-Tulip-Mercer Lakes district, Alberta, 1974-80.
Map compilation and supporting laboratory studies completed.
7. MORAN, S.R., FENTON, M.M., Alberta Research Council (Geol. Surv.):
Geology of the Calgary urban area and Environs., Alberta, 1974-80.
Field mapping has been completed. Open file maps of surface geology at 1:50k (some of area at 1:25K) to be available spring 1981. Test drilling completed with textural and mineralogical analyses of samples underway. Stratigraphic synthesis is still in rudimentary stages. However at least two subdivision of each the uppermost and the lowermost tills previously recognized in the area appear present.
8. OLLERENSHAW, N.C., Geol. Surv. Can.:
Geology of the southern Alberta Foothills, Highwood River to Athabasca River, 1970-.

BRITISH COLUMBIA/COLOMBIE-BRITANNIQUE

9. ISACHSEN, C.E., ARMSTRONG, R.L., Univ. British Columbia (Geological Sciences);
Geology and geochronology of the Westcoast Metamorphic Complex, Vancouver Island, British Columbia, 1981-82; M.Sc. thesis (Isachsen).
The Westcoast Metamorphic Complex of Vancouver Island is a heterogeneous metamorphic assemblage of amphibolite facies rocks including hornblende-plagioclase gneiss, amphibolite, agmatite and quartz diorite.
This project will attempt to map the distribution of these various rocks on Meares Island followed by petrographic, isotopic, and geochemical analyses and interpretation.
10. McMECHAN, M., Geol. Surv. Can.:
Structure and stratigraphy of Mount Selwyn (93 0-13-E4) and Point Creek (93 0-14) map-areas, British Columbia, 1980-.
11. McMILLAN, W.J., British Columbia Ministry Energy, Mines, Petrol. Res. (Geol. Div.):
Nicola Group near Merritt, British Columbia, 1977-81.
See:
British Columbia Ministry Energy, Mines, Petrol. Res., Prel. map 45, 1981.
By studying the mineral deposits, the geochemistry of the host rocks and the volcanic stratigraphy, to determine the setting and origin of the deposits.
12. MULLER, J.E., Geol. Surv. Can.:
Geology of Victoria and Cape Flattery map-areas, Vancouver Island, British Columbia, 1973-.
See:
The Paleozoic Sicker Group of Vancouver Island, British Columbia; Geol. Surv. Can., Paper 79-30, 1980.
13. PANTELEYEV, A., DIAKOW, L., British Columbia Ministry Energy, Mines, Petrol. Res. (Geol. Div.):
Geology and mineral deposits of Cassiar map-area, British Columbia, 1978-81.
See:
British Columbia Ministry Energy, Mines, Petrol. Res., Papers 1980-1, 1981-1.
Cassiar map-area (600 km²) has/will be mapped scale 1:25 000; particular attention has been paid to stratigraphic position of mineralization.
Detailed geological/lithochemical study is being concluded on the Late Cretaceous granitic bodies that host Mo mineralization, and also the Au-quartz veins of the Cassiar gold camp are being studied.
14. PANTELEYEV, A., SCHROETER, T.G., British Columbia Ministry Energy, Mines, Petrol. Res. (Geol. Div.):
Toodoggone map-area, British Columbia, 1981-83.
A 1:50 000 mapping project intended to define lithology, stratigraphy and structure of the Toodoggone volcanics - investigation of ore controls for newly discovered epithermal-type Au-Ag deposits.
15. TAYLOR, G.C., Geol. Surv. Can.:
Operation Liard, British Columbia, 1963-.
16. TAYLOR, G.C., Geol. Surv. Can.:
Operation Smoky, British Columbia-Alberta, 1968.
17. TIPPER, H.W., Geol. Surv. Can.:
Taseko Lakes map-area, British Columbia, 1961-.
18. TIPPER, H.W., Geol. Surv. Can.:
Smithers map-area, British Columbia, 1967-77.
19. VAN DER HEYDEN, P., ARMSTRONG, R.L., WOODSWORTH, G.J., Univ. British Columbia, (Geological Sciences):
Geology of the eastern Coast Plutonic Complex near Kemano, British Columbia, 1979-81; M.Sc. thesis (van der Hayden).
Aim: Mapping a cross-section through the eastern boundary of the Coast Plutonic Complex into the Intermontane Belt with as major aim the determination of structural and stratigraphic relations between these two major belts; dating the event(s) that juxtaposed high grade metamorphic rocks of the Coast Plutonic Complex against essentially unmetamorphosed volcanics and sediments of the Intermontane Belt.
Preliminary conclusions: High grade metamorphic rocks of the Coast Plutonic Complex were thrust over Intermontane Belt rocks along a shallow southwesterly dipping zone of cataclastic deformation, probably in Upper Cretaceous time, from a southwesterly direction.
20. WOODSWORTH, G.J., Geol. Surv. Can.:
Eastern margin of the Coast Plutonic Complex, British Columbia, 1980-.

MANITOBA/MANITOBA

21. BAILES, A.H., SYME, E.C., Manitoba Dept. Energy and Mines (Mineral Res. Div.):
White Lake-Mikanagan Lake project, Manitoba, 1979-82.
To provide a sound geological base for future exploration for volcanogenic massive sulphide deposits in the White Lake-Mikanagan Lake area. To achieve this, 1:20 000 scale mapping and detailed examination of volcanological features and processes have been undertaken.
22. BALDWIN, D.A., Manitoba Dept. Energy and Mines (Mineral Res. Div.):
Volcanic stratigraphy in the Rusty Lake greenstone belt, Manitoba, 1978-81.
Most of the area has been mapped in detail and a preliminary map prepared. Laboratory analyses are progressing on schedule.
23. HERD, R.K., Geol. Surv. Can.:
Geology of the Island Lake map-area (53E), Manitoba and Ontario, 1974-.
24. HUBREGTSE, J.J.M.W., WEBER, W., Manitoba Dept. Energy and Mines (Mineral Res. Div.):
Pikwitonei granulites and North Western Superior Province, 1977-81.
See:
The Archean granulite domain and its position at the margin of the northwestern Superior Province; Manitoba Mineral Res. Div., Geol. Paper GP 80-3, 1980.
25. WEBER, W., HUBREGTSE, J.J.M.W., Manitoba Dept. Energy and Mines (Mineral Res. Div.):
Pikwitonei granulite domain and North Western Superior Province, 1976-82.
See:
The Pikwitonei granulite domain: Edge of the Superior Province craton; EOS, vol. 61, no. 17, p. 386-87, 1980.

NEW BRUNSWICK/
NOUVEAU-BRUNSWICK

26. FYFFE, L.R., ST. PETER, C.J., CROUSE, G.W., IRRINKI, R.R., VENUGOPAL, D.V., New Brunswick Dept. Natural Resources (Mineral Res.):
Bedrock mapping - west central New Brunswick, 1976-82.
See:
The Acadian plutonic rocks of New Brunswick; Maritime Sediments and Atlantic Geology, vol. 17, no 1, p. 23-36, 1981.
Forty-five 1:15 840 geological maps have been completed as of March 31, 1981. These maps have been compiled on 1:50 000 base maps that will be used to produce a 1:250 000 coloured geological map of 21J. Fourteen map reports have been published on the area by New Brunswick Mineral Resources.
Extension of the project for one year to March 31, 1982 will permit mapping of the Aroostook-Matapedia Anticlinorium at 1:50 000 and will give almost complete coverage of 21J.
27. McCUTCHEON, S.R., MOORE, R.G., CALDWELL, J.A., RUITENBERG, A.A. Acadia Univ. (Geology):
Stratigraphy and paleogeography of the Middle Viséan Windsor Group in southern New Brunswick, 1980-81; M.Sc. thesis (McCutcheon).
The "basal" Windsor carbonate in southern New Brunswick comprises three units, two of which are considered lithological correlatives of formations defined in Nova Scotia. These are the Gays River, Macumber and 'Parleeville' (new name) formations. The first formation is found proximal to Precambrian rocks of the Caledonia Highlands and Kingston Uplift. This formation interfingers with, and quite commonly oversteps, Macumber rocks in the down-dip direction. Parleeville rocks, typified by intercalated siliciclastics, are found proximal to, and mainly north of, the Paleozoic outcrop belt.

Evaporites, belonging to the Upperton, Cassidy Lake and Clover Hill formations stratigraphically overlie Macumber rocks but not the other two formations. These rocks are found in synclines that appear to reflect the deeper parts of paleogeographic depressions.

Miospore, macrofaunal and stratigraphic evidence indicates that all of the above rocks belong to the A-Subzone of Bell (1929). The only B-Subzone rocks in southern New Brunswick occur in the Shepody Bay area.

28. SKINNER, R., Geol. Surv. Can.:
Plaster Rock (east half) map-area, New Brunswick, 1970-.

29. SKINNER, R., Geol. Surv. Can.:
Juniper (east half) map-area, New Brunswick, 1971-.

NEWFOUNDLAND/LABRADOR/ TERRE-NEUVE/LABRADOR

30. COLMAN-SADD, S.P., Newfoundland Dept. Mines and Energy:
Geological mapping, Bay d'Espoir, Newfoundland, 1974-82.

31. HERD, R.K., Geol. Surv. Can.:
Geology of Red Indian Lake, west half, Newfoundland, 1977-82.

32. HIBBARD, J., Newfoundland Dept. Mines and Energy:
Geology of the Baie Verte Peninsula, Newfoundland, 1977-81.

The Baie Verte Project is in the final write-up stage; a 1:100 000 scale geological map of the peninsula is completed and is in the proof-run stage. The memoir is more than one-half complete and covers descriptions of continental and oceanic affinity rocks that have been juxtaposed along the Baie Verte Line; a small portion of the orogen-wide Baie Verte - Brompton Line. Completion of the memoir will mark the end of the project.

33. HYDE, R.S., Newfoundland Dept. Mines and Energy:
Geologic mapping of the Deer Lake Basin, western Newfoundland, 1977-82.

See:

Geology of Carboniferous strata in portions of the Deer Lake Basin; Newfoundland Dept. Mines and Energy, Mineral Develop. Div. Rep. 79-6, 1980.

Geology of Carboniferous strata in the Deer Lake (12H/3) and Rainy Lake (12A/14) map-area, Newfoundland; Newfoundland Dept. Mines and Energy, Mineral Develop. Div. Rep. 81-1, p. 17-31, 1981.

Systematic mapping completed during summer of 1980. The time spent until completion will be largely devoted to production of memoir and final 1:100 000 scale map.

34. RYAN, A.B., Newfoundland Dept. Mines and Energy:

Geological mapping of the eastern extension of the Aillik Group, Kaipokok Bay, Labrador, Newfoundland, 1981-82.

The new project will complete regional geological mapping of the supracrustal rocks of the Labrador Central Mineral Belt. It encompasses the northeast extension of the Apeblian Aillik Group on the west shore of Kaipokok Bay. Numerous base metal showings are found in the belt, and one uranium occurrence has been documented. These will be investigated to compare them with the better known Kitts Pond-Posthill area on the southeast shore of the bay.

The map area also comprises the eastern boundary of the Island Harbour granite: this Proterozoic granitic intrusion occupies most of the area between Kaipokok and Kanairktok Bays. It has been mapped in part by Ingo Ermanovics, Geol. Surv. Can., who has outlined several problems in the area.

35. SMYTH, W.R., Newfoundland Dept. Mines and Energy:

Geology of southwest White Bay, Newfoundland, 1980-82.

Newfoundland Dept. Mines and Energy, Mineral Develop. Div., Rep. 81-1, p. 70-79, 1981.

Regional mapping of Lower Paleozoic strata in southwestern White Bay begun in 1980, will be completed in 1981. Expect to determine the nature and extent of Taconic and Acadian deformation in the area; to determine if the Coney Head Complex is really a Taconic allochthon or a late Ordovician in situ pluton; to grid sample the Gull Lake Granite and carry out rock geochemical analyses; to examine the gold showings in the Sops Arm Group and to assess the potential of the acid volcanic rocks for precious metals; and to determine the structural history of the Taylors Pond Fault, a major strike-slip fault in the Newfoundland Appalachians.

36. STOUGE, S., Newfoundland Dept. Mines and Energy:
Regional study of the Daniel's Harbour area, Newfoundland, 1980-82.

See:

Lower and Middle Ordovician conodonts from central Newfoundland and their correlatives in western Newfoundland; Newfoundland Dept. Mines and Energy, Rep. 80-1, 1980.

Cambrian-Middle Ordovician stratigraphy of Salmon River region, southwest Hare Bay, Great Northern Peninsula; Newfoundland Dept. Mines and Energy, Rep. 81-1, p. 1-16, 1981.

Mapping has completed part of Salmon River (12P/1) and St. Julien's (2M/4) 1:50 000 NTS areas. Open File map available for Salmon River. Conodont biostratigraphy of St. George Group/Table Head Formation (Lower-Middle Ordovician) is completed for the northwestern part of the Great Northern Peninsula, western Newfoundland. Taxonomical descriptions of Table Head Formation completed. Samples at present being analyzed and data processed for northeastern part of Great Northern Peninsula and Port aux Port Peninsula. Report available on correlation of western and central Newfoundland and in press on biostratigraphy of St. George Group.

NORTHWEST TERRITORIES/TERRITOIRES DU NORD-OUEST

37. COOK, D.G., Geol. Surv. Can.:
Operation Norman, District of Mackenzie, 1967-.

38. EADE, K.E., Geol. Surv. Can.:
Geology of the Tulemalu Lake map-area, District of Keewatin, 1975-.

39. HENDERSON, J.B., Geol. Surv. Can.:
Yellowknife and Hearne Lake map-areas, District of Mackenzie, 1970-.

See:

A uranium-lead age of zircons from volcanics and sediments of the Back River volcanic complex, eastern Slave Province, District of Mackenzie; Geol. Surv. Can., Paper 80-1C, p. 239-242, 1980.

40. HENDERSON, J.B., Geol. Surv. Can.:
Keskarrh Bay map-area, District of Mackenzie, 1976-.

41. HEYWOOD, W.W., Geol. Surv. Can.:
Geology of Amer Lake map-area, District of Keewatin, 1976-.

42. HODGSON, D.A., Geol. Surv. Can.:
Surficial geology, geomorphology and terrain inventory of the Ringnes and adjacent islands, 1976-.

43. HOFFMAN, P.F., Geol. Surv. Can.:
East arm of Great Slave Lake, District of Mackenzie, 1976-.

44. KERR, J.W., Geol. Surv. Can.:
Boothia Peninsula and Somerset Island (Operation Boothia), District of Franklin, 1974-.

See:

Cambrian to Upper Silurian stratigraphy, Somerset Island and northeastern Boothia Peninsula, District of Keewatin, N.W.T.; Geol. Surv. Can., Bull. 315, 1980.

45. KERR, J.W., Geol. Surv. Can.:
Southwestern Ellesmere - western Devon Islands (Operation Grinnell), District of Franklin, 1967-.

46. TAYLOR, F.C., Geol. Surv. Can.:
Geology of Whitehills Lake, District of Keewatin, 1980-.

To determine whether or not supracrustal strata in the Whitehills Lake district belong to two or three rock units, their sequence, age and structure; to ascertain the relationship between stratigraphy and uranium mineralization; to delineate komatiite zones in volcanic rocks.

47. THOMAS, R.D., Geol. Surv. Can.:
Surficial geology, terrain inventory, north-central Keewatin, 1976-.

NOVA SCOTIA/NOUVELLE-ÉCOUSSE

48. KEEPIE, J.D., CHATTERJEE, A.K., Nova Scotia Dept. Mines Energy:
Wedgeport project, Nova Scotia, 1980-.

Mapping of an area around Yarmouth to determine the geological history, tectonics and metallogenesis.

ONTARIO/ONTARIO

49. BRIGHT, E.G., Ontario Geol. Surv.:
Regional structure and stratigraphy of the Burleigh Falls area, Peterborough County, Ontario, 1980-82.

See:

Regional structure and stratigraphy of the Burleigh Falls area, Ontario; Ontario Geol. Surv., Misc. Paper 96, p. 67-69, 1980.

50. FULTON, R.J., Geol. Surv. Can.:
Surficial geology, Cobden area (Québec part), 1980-.

51. FURSKY, E.C., TROWELL, N.F., Ontario Geol. Surv.:
Batchawana synoptic study, Ontario, 1981-83.

Stratigraphic, tectonic study of the Batchawana volcanic belt; examination of the volcanic stratigraphic sequence; and tectonic study of volcanic belt deformation and surrounding granitic intrusions.

52. JOHNS, G.W., WOOD, J., Ontario Geol. Surv.:
Geology of the Hill Lake area, District of Timiskaming, Ontario, 1980-81.

The Hill Lake area, comprising the Townships of Tudhope, Bryce, Robillard, Dack, Beauchamp and the southern third of Truax, District of Timiskaming was mapped in 1980 at a scale of 1:15 840. The metavolcanic rocks in the map-area have been subdivided into the Wabewawa Group, Catharine Group and Skead Group of the Abitibi Greenstone Belt. These metavolcanics have been intruded by a feldspar porphyry plug and the trondhjemitic-quartz monzonitic Round Lake Batholith. Metamorphic grade next to the batholith is amphibolite facies and decreases to prehnite-pumpellyite facies about 3.2 km from the contact. Proterozoic sediments of the Gowganda Formation and Lorrain Formation unconformably overlie the Archean rocks in portions of the map-area. Nipissing Diabase sills intrude both the Archean and Proterozoic rocks. Native silver, bornite, chalcocite and specular hematite are found in carbonate veins associated with the Nipissing Diabase. Gold is found in pyritiferous quartz veins and sulphide shear zones in the metavolcanics. The gold mineralization may be associated with circulating fluids around the highly altered feldspar porphyry plug in Bryce Township. The youngest geologic feature in the map area is the north-west trending faults associated with the Lake Timiskaming Rift Valley.

53. MUIR, T.L., WOOD, J., Ontario Geol. Surv.:
Morgan Lake - Nelson Lake area, District of Sudbury, Ontario, 1980-81.

See:

Ontario Geol. Surv., Misc. Paper 96, 1980.

54. SAGE, R.P., TROWELL, N.F., Ontario Geol. Surv.:
Geology of the Wawa area, Ontario, 1979-82.

55. SIRAGUSA, G.M., TROWELL, N.F., Ontario Geol. Surv.:
Cunningham-Garnet-Benton-Mallard Twps., Ontario, 1977-81.

Geological mapping of the Cunningham-Mallard Twps. area, Esteur-Osway-Huffman Twps. area (1979), and the Yeo-Chester Twps. area (1980), was carried out as part of a continuing synoptic project aimed at investigating: a) the main stratigraphic and structural features of the southernmost lobe of the Abitibi Belt, and b) the chemical composition of the meta-volcanics (main and trace elements).

Further field work for this project will be carried out in the 1981 and 1982 summers, and minor field work of local nature in 1983. The results of work in synoptic form will be probably ready for publication in late 1984 or early 1985.

56. TROWELL, N.F., VENSEN, L.S., Ontario Geol. Surv.:
Stratigraphic mapping of the Timiskaming Group, Abitibi Subprovince, Kirkland Lake area, Ontario, 1979-82.

QUÉBEC

57. DUBOIS, J.M.M., Univ. Sherbrooke (Géographie):
Carte de la géomorphologie et des dépôts meubles de la pointe Noire, Haute Côte Nord du Saint-Laurent, 1980.

Voix:

Géomorphologie de la région de la Pointe Noire au sud de la route 138, Haute Côte Nord du Saint-Laurent; Soc. Géogr. Appliquée de Sherbrooke, 1980.

Établissement de la carte des dépôts meubles et de la géomorphologie au 1:20 000 et détermination des zones sensibles. Rapport complété.

58. HÉBERT, R.H., IMREH, L.T., BLANCHET, R., HEKINIAN, R.,
Université de Bretagne Occidentale, Québec
Ministère Énergie et Ressources:

Le complexe de filons-couches d'Amos, Québec, 1980-81; thèse de doctorat (Hébert).

Le but principal est l'étude pétrologique détaillée des filons-couches ultramafiques d'Amos dans leur cadre géologique local et régional. Cette étude fournira ensuite les éléments nécessaires et indispensables aux travaux géologiques prévisionnels comparatifs.

59. IMREH, L.I., HÉBERT, R.H., WILSON, C., LAURIN, J., Québec Ministère Énergie et Ressources:
Géologie prévisionnelle et lithostratigraphie de l'Abitibi-est méridional, Québec, 1972-82.

Voix:

Variations morphologiques des coulées métavolcaniques komatiitiques du sillon archéen de La Motte-Vassan, Abitibi-est Québec; Precambrien Research, vol. 12, p. 3-30, 1980.

Les travaux en cours s'inscrivent dans la continuation régionalisée du projet amorcé en 1972. Dès 1978 l'accent fut mis sur le volcanisme mafique à felsique. Deux complexes régionaux de type volcanisme central ont été mis en évidence: celui de Val-d'Or et celui d'Harricana (secteur Amos-sud). Les paramètres évolutifs et paléogéographiques définis du volcanisme paraissent le facteur de contrôle principal de la répartition des minéralisations Cu-Zn, Au associées. Les travaux 81-82 visent à régionaliser et à affiner les données obtenues.

60. LETARTE, M.L., BELLEMARRE, Y.B., NADEAU, A.N., WARREN, B.W., Québec Ministère Énergie et Ressources:
Cartographie détaillée dans la région de St-Félix de Dalquier, Québec, 1980-81.

Vérification par géophysiques des zones anoma-
liques identifiées par l'analyse des sols.

61. VEILLETTTE, J.J., Geol. Surv. Can.:
Géologie du Quaternaire, région de l'Outaouais
supérieur, Québec, 1977-.

SASKATCHEWAN/SASKATCHEWAN

62. DAVISON, W.L., Geol. Surv. Can.:
Milliken Lake - Goldfields mining area,
Saskatchewan, 1975-.

YUKON TERRITORY/TERRITOIRE DU YUKON

63. BLUSSON, S.L., Geol. Surv. Can.:
Operation Stewart, Yukon - District of
Mackenzie, 1968-.

64. CAMPBELL, R.B., Geol. Surv. Can.:
Operation Mount St. Elias, Yukon - British
Columbia, 1973-.

65. KLASSEN, R.W., Geol. Surv. Can.:
Surficial geology and terrain evaluation,
southern Yukon, 1977-.

66. NORRIS, D.K., Geol. Surv. Can.:
Operation Porcupine, Yukon - District of
Mackenzie, 1961-.

67. THOMPSON, R.I., Geol. Surv. Can.:
Stratigraphy and structure of Dawson, Larsen
Creek and Nash Creek map areas, Ogilvie
Mountain project, Yukon Territory, 1980-.

AREAL MAPPING, LESS DETAILED THAN 1:50 000/CARTOGRAPHIE, À PLUS PETITE ÉCHELLE QU'AU 1:50 000

BRITISH COLUMBIA/COLOMBIE-BRITANNIQUE

68. GABRIELSE, H., Geol. Surv. Can.:
Operation Finlay, British Columbia, 1970-.

See:

Stratigraphy and structure of Road River and associated strata in Ware (west half) map area, northern Rocky Mountains, British Columbia; Geol. Surv. Can., Paper 81-1A, p. 201-207, 1981.

69. GABRIELSE, H., Geol. Surv. Can.:
Operation Dease, British Columbia, 1977-.

70. MONGER, J.W.H., Geol. Surv. Can.:
Geology of the Ashcroft and Hope map-areas,
British Columbia, 1980-.

See:

Geology of parts of western Ashcroft map-area, southwestern British Columbia; Geol. Surv. Can., Paper 81-1A, p. 185-189, 1981.

71. REESOR, J.E., Geol. Surv. Can.:
Geology of Nelson map-area (E/2), British
Columbia, 1979-.

72. RODDICK, J.A., Geol. Surv. Can.:
Coast mountain project, British Columbia,
1963-.

73. WHEELER, J.O., Geol. Surv. Can.:
Lardeau map-area, British Columbia, 1979-.

74. WOODSWORTH, G.J., Geol. Surv. Can.:
Kemano project, British Columbia, 1977-.

MANITOBA/MANITOBA

75. DAVISON, W.L., Geol. Surv. Can.:
Geology of Southern Indian Lake, Manitoba,
1968-.

76. LENTON, P.G., CORKERY, M.T., Manitoba Dept.
Energy and Mines (Mineral Res. Div.):
Lower Churchill River project, Manitoba,
1979-82.

See:

Geological mapping at a scale of 1:100 000 was

completed in 1980 for NTS 64A, 64B (east half), 64H and 54E (west half). The project has now entered a phase of analysis and report writing. A preliminary subdivision of the project area into six major litho-structural belts was established. The subdivision comprises east-west trending alternating belts of supracrustal rocks and plutonic rocks. A geochemical study of the plutonic belts is currently underway. Minor revision in the position of the Churchill-Superior boundary resulted from the 1980 field program.

NEW BRUNSWICK/NOUVEAU-BRUNSWICK

77. PAJARI, G.E., CURRIE, K.L., PICKERILL, R.P., NANCE, D.E., Univ. New Brunswick (Geology), Geol. Surv. Can.:

The geology of the Saint John area, New Brunswick, 1979-82.

See:

Some aspects of the pre-Carboniferous geology of Saint John, New Brunswick; Geol. Surv. Can., Paper 81-1A, p. 23-30, 1981.

Much of the area is underlain by a major antiform with a diapiric core of Brookville Gneiss of probable Apehian age. About 850 Ma ago this core penetrated the unconformably overlying Green Head Group, a platform carbonate assemblage. The Brookville Gneiss had already undergone one episode of partial melting prior to this event, and diapirism probably was triggered by another episode of intensive partial melting, generating major plutons emplaced essentially contemporaneously with diapirism. Both the Brookville Gneiss and the Greenhead Group were relatively cold and brittle during emplacement of the Coldbrook Group of acid volcanics about 750 Ma ago, but the gneiss underwent another period of partial melting in Ordovician time which created or strengthened the D₁ flow fabric in the Green Head Group.

The Green Head, Coldbrook and (Paleozoic) Saint John groups underwent flexural slip deformation (D₂, D₃) and low grade regional metamorphism subsequent to this event, but evidence of these events is sparse in the core, possible due to reworking during the Devonian Acadian orogeny.

NEWFOUNDLAND/LABRADOR/ TERRE-NEUVE/LABRADOR

78. ERMANOVICS, I., Geol. Surv. Can.:
Archean rocks of the Nain Province in Hopedale (13 N), Snegamook Lake (13 K), and Makkovik (13 O) maps-areas, Labrador, 1978-.

See:

Geology of the Hopedale block of Nain Province, Labrador: Report 2, Nain - Makkovik boundary zone; Geol. Surv. Can., Paper 80-1B, p. 11-15, 1980.

Geology of Hopedale block and adjacent areas, Labrador: Report 3; Geol. Surv. Can., Paper 81-1A, p. 69-76, 1981.

79. GOWER, C.F., Newfoundland Dept. Mines and Energy:

1:100 000 reconnaissance mapping in the Grenville Province and adjacent terrane in eastern Labrador, 1979-83.

See:

The Grenville Front in eastern and central Labrador; Can. J. Earth Sci., vol. 17, p. 784-788, 1980.

The geology of the Benedict Mountains, Labrador; Newfoundland; Dept. Mines and Energy, Rep. 81-3, 1981.

The objectives of the project are 1) to prepare geological maps at 1:100 000 scale of the Grenville Province from the Benedict Mountains to Cartwright, 2) to assess the economic potential of the region, and 3) to produce a comprehensive geological report.

The work is directed towards gaining greater understanding of Grenvillian and pre-Grenvillian geological histories, particularly the nature and extent of Apehian or Archean gneisses which have now been documented in the area. Some effort is directed toward understanding of presumed Apehian supracrustal rocks and probable Paleohelikian granitoid intrusions.

80. HILL, J.D., Newfoundland Dept. Mines and Energy:
Regional mapping in the Flowers River – Notakwanon River area, Labrador, 1977-81.
- See:**
Geology of the Notakwanon River area, Labrador; Newfoundland Dept. Mines and Energy, Mineral Develop. Div., Rep. 81-1, p. 158-168, 1981.
81. NUNN, G.A.G., Newfoundland Dept. Mines and Energy:
Regional geology of the Michikamau Lake map-area, central Labrador, 1980-81.
- See:**
Newfoundland Dept. Mines and Energy, Mineral Develop. Div., Rep. 81-1, p. 138-149, 1981.
- The map area lies to the east of Michikamau Lake and spans the boundary between the Churchill and Grenville Provinces. The oldest rocks are the gneisses of the Churchill Province, located in the north, and consisting of a supracrustal association intruded pre- and syn-tectonically, by a suite of granitoid plutonic rocks, during the Hudsonian orogeny. In the west they are intruded by the Elsonian Michikamau anorthosite intrusion and in the east are unconformably overlain by the Seal Lake Group while to the south they are intruded by another granitoid plutonic suite.
- This suite dominates the southern part of the area, was probably unconformably overlain by Neohelikian red beds, and has been traditionally regarded as Elsonian in age. It consists mostly of K-feldspar megacrystic "quartz monzonite" rocks and a generally crosscutting association of finer grained granites, microgranites and aplites. These and the red beds were deformed during the Grenville orogeny producing two fabrics separated by a thrusting. Grenvillian effects on the gneisses are unknown.
82. THOMAS, A., FRYER, B.J., CALON, T., HIBBS, C., JACKSON, V., FINN, G., Newfoundland Dept. Mines and Energy:
Regional study of central Grenville Province, Red Wine Lake – Letitia Lake – Elson Lake – Disappointment Lake areas, central Labrador, 1978-81.
- See:**
Geology of the Red Wine Mountains and surrounding area, central Labrador; Newfoundland Dept. Mines and Energy, Mineral Develop. Div., Rep. 81-1, p. 111-120, 1981.
- Work in the area is part of an ongoing regional 1:100 000 mapping program designed to study the lithology, structure, metamorphism and mineralization of rocks in a corridor along the Churchill-Grenville Structural Province boundary in Central Labrador. All geological mapping has been completed within the confines of the original proposed budget with the results that N.T.S. sheets 13E/10, 11, 15, 13F/12, 13, 13K/4, 13L/1 and parts of 13L/2, 8 as well as 13E/9, 16 have been covered. Most of the results of a regional geochronological program are preliminary and roughly half the dates have been obtained. The main aim at the present time is to collect all pertinent data, arrange, organize and interpret the results and report them in memoir form.
83. WARDLE, R.J., Newfoundland Dept. Mines and Energy:
Regional geological investigation of the south-central Labrador Trough and adjacent areas of the Churchill and Grenville Provinces, 1975-82.
- Work during 1980 (and continuing into 1981) moved out of the Labrador Trough, the locus of most of the previous work on the project, and into the adjacent areas of Grenville Province rocks in the Churchill Falls area, western Labrador. Work here has concentrated on delineating major geological units in an area previously mapped only at reconnaissance scale. Work to date has revealed a major suite of Apehian and Helikian Granitoids occupying an area previously thought to be underlain by Grenville Province gneisses.
- Work in 1981 will concentrate on tracing this plutonic suite north into the Churchill Province where it is believed to come into contact with a major batholith chain extending along the axis of the Churchill Province.
- NORTHWEST TERRITORIES/TERRITOIRES DU NORD-QUEST**
84. BOSTOCK, H.H., Geol. Surv. Can.:
Geology of Fort Smith, District of Mackenzie, 1980-.
85. CAMPBELL, F.H.A., Geol. Surv. Can.:
Geology of the Bathurst Inlet area, District of Mackenzie, 1974-.
- See:**
Stratigraphy and tectono-depositional relationships of the Proterozoic rocks of the Hadley Bay area, northern Victoria Island, District of Franklin; Geol. Surv. Can., Paper 81-1A, p. 15-22, 1981.
86. CIESIELSKI, A., Geol. Surv. Can.:
Gneissic basement to the Fury and Hecla Formation and the Autridge Formation on Baffin Island, District of Franklin, 1979-.
87. EADE, K.E., Geol. Surv. Can.:
Kamilukuk Lake map-area, District of Keewatin, 1979-.
- See:**
Geology of the Kamilukuk Lake map area, District of Keewatin, a part of the Churchill structural province; Geol. Surv. Can., Paper 80-1B, p. 39-45, 1980.
- Geology of the west half of the Kamilukuk Lake map area, District of Keewatin: a part of the Churchill structural province; Geol. Surv. Can., Paper 81-1A, p. 231-240, 1981.
88. FRASER, J.A., Geol. Surv. Can.:
Geology of Woodburn Lake map area, District of Keewatin, 1980-.
89. FRISCH, T., Geol. Surv. Can.:
Precambrian geology of southeast Ellesmere, Devon and Coburg Islands, District of Franklin, 1976-.
- See:**
Further reconnaissance mapping of the Precambrian shield on Devon Island, District of Franklin; Geol. Surv. Can., Paper 81-1A, p. 31, 32, 1981.
90. FRITH, R.A., Geol. Surv. Can.:
Geology of Indian Lake map-area, District of Mackenzie, 1972-.
91. FRITH, R.A., Geol. Surv. Can.:
Geology of Nose Lake and Beechey Lake, District of Mackenzie, 1975-.
92. FRITH, R.A., Geol. Surv. Can.:
Geology of Beechey-Duggan Lakes area, District of Mackenzie, 1980-.
- See:**
Preliminary account of the geology of the Beechey Lake-Duggan Lake map areas, District of Mackenzie; Geol. Surv. Can., Paper 81-1A, p. 333-339, 1981.
93. GORDEY, S.P., Geol. Surv. Can.:
Geology of Nahanni map-area, Yukon and Northwest Territories, 1979-.
- See:**
Stratigraphic framework of southeastern Selwyn Basin, Nahanni map area, Yukon Territory and District of Mackenzie; Geol. Surv. Can., Paper 81-1A, p. 395-398, 1981.
94. HENDERSON, J.B., Geol. Surv. Can.:
Healey Lake map-area, District of Mackenzie, 1978-.
- See:**
The Healey Lake map area and the enigmatic Thelon Front, District of Mackenzie; Geol. Surv. Can., Paper 81-1A, p. 175-180, 1981.
95. HEYWOOD, W.W., Geol. Surv. Can.:
Operation northern Melville Peninsula, District of Franklin, 1970-.
96. HEYWOOD, W.W., Geol. Surv. Can.:
Geology of the Baker Lake map area, District of Keewatin, 1980-.
- See:**
Geology of the Baker Lake region, District of Keewatin; Geol. Surv. Can., Paper 81-1A, p. 259-264, 1981.
97. HOFFMAN, P.F., Geol. Surv. Can.:
Sloan River map-area (86k), District of Mackenzie, 1973-.
98. JACKSON, G.D., Geol. Surv. Can.:
Operation Bylot, District of Franklin, 1967-.
99. JACKSON, G.D., Geol. Surv. Can.:
Operation Penny Highlands, District of Franklin, 1969-.
100. LeCHEMINANT, A.N., Geol. Surv. Can.:
MacQuoid Lake (W#) and Thirty Mile Lake (E#) map-areas, District of Keewatin, 1975-.
101. LeCHEMINANT, A.N., Geol. Surv. Can.:
Geology of Thirty Mile Lake 65 P(W#) and Tebesjunk lake 65 Q(W#) map-areas, District of Keewatin, 1978-.
102. McGLYNN, J.C., Geol. Surv. Can.:
Calder River map-area (86F), District of Mackenzie, 1973-.
103. MORGAN, W.C., Geol. Surv. Can.:
Geology of the Foxe Fold belt (west half), Baffin Island, District of Franklin, 1974-.
104. PUGH, D.C., Geol. Surv. Can.:
Subsurface geology of Great Bear River map-area, District of Mackenzie, 1980-.
- ONTARIO/ONTARIO**
105. CARD, K.D., Geol. Surv. Can.:
Regional geological synthesis, Central Superior Province, Ontario and Québec, 1977-.
- See:**
Progress report on regional geological synthesis, central Superior Province; Geol. Surv. Can., Paper 81-1A, p. 77-93, 1981.
106. FRAREY, M.J., Geol. Surv. Can.:
Geology of the Lake Panache and Collins Inlet map-areas, Ontario, 1964-.
- QUÉBEC**
107. CHARBONNEAU, J.-M., FRANCONI, A., DUBÉ, C., HÉBERT, Y., SHARMA, K., LAMOTHE, D., Québec Ministère Énergie Ressources:
Synthèse géologique de Chapais-Desmaraisville, Québec, 1980-84.
- Poursuivre la synthèse géologique du secteur mentionné ci-haut. Utiliser à cette fin la stratigraphie établie l'été dernier.
108. CIESIELSKI, A., Geol. Surv. Can.:
Metamorphism and structure in northeast Superior Province, Québec, 1980-.
109. DUBOIS, J.M.M., Univ. Sherbrooke (Géographie):
Carte des mers postglaciaires du Canada: section de la Côte Nord du Saint-Laurent et d'Anticosti, Québec, 1980-82.
- Voir:**
Paléogéographie holocène de la Moyenne Côte Nord du Saint-Laurent; Le Quaternaire du Québec IV, Québec; résumés et programmes, p. 14, 1980.
- Etablissement d'une carte au 1:250 000 de la zone de la mer de Goldthwait: dépôts meubles, géomorphologie, paléogéographie, littoral actuel, chronologie. Compilation pratiquement terminée sur la Moyenne Côte Nord et amorcée sur la Haute et Basse Côte Nord.
110. DUBOIS, J.M.M., Univ. Sherbrooke (Géographie):
Carte du Quaternaire du Québec, 1981-84.
- Établir une carte du Quaternaire du Québec au 1:1 000 000 semblable à la carte européenne.
111. FRANCONI, A., DUBÉ, C., CHARBONNEAU, J.-M., Québec Ministère Énergie et Ressources:
Synthèse géologique Chapais-Desmaraisville, Québec, 1980-83.
112. GAGNON, Y., CIMON, J., DUGAS, J., Québec Ministère Énergie et Ressources:
Étude lithogéochimique de la Partie Orientale du Complexe Rhyolitique de la Mine Hunter Abitibi-Ouest, Québec, 1980-81.
- Définition lithologique, pétrographique et chimique des roches rhyolitiques au voisinage d'un gîte. Objectif mettre à l'épreuve de nouvelles approches de prospection.

113. GUIMOND, J.L.G., ROBERT, C.R., NADEAU, A.N., WARREN, B.W., Québec Ministère Énergie et Ressources: Cartographie détaillée et exploration géophysique sur la propriété de Palmarolle, Québec, 1980-81.

Tenter une corrélation et/ou une explication d'anomalies géochimiques régionales en sols et en eaux souterraines, par une cartographie détaillée (roches en place) et un échantillonnage de sol serré. Superficie: 55 km² éch. sols: 915. Quelques levés géophysiques, gravimétriques EMH VLF MAG et PP ont été effectués sur une cible géophysique.

114. LANGLAIS, L.L., NADEAU, A.N., Québec Ministère Énergie et Ressources: Géochimie et géophysique, région Amos, Abitibi, Québec, 1979-81.

Recherche de métaux de base sur deux cibles d'exploration. Ces cibles furent identifiées à partir de données géochimiques (sols, eaux, tillé de base) et de résultats géophysiques. Le but de ces travaux sur ces cibles est d'encourager l'exploration minière à partir de nouveaux types de données nous donnant ainsi la possibilité d'envisager et d'établir une nouvelle démarche dans les méthodes d'exploration.

115. RACICOT, D., DUGAS, J., Québec Ministère Énergie et Ressources:

Synthèse du Pluton de Chibougamau, Québec, 1979-83; thèse de doctorat (Racicot).

Identifier les différentes phases lithologiques de pluton de Chibougamau. Faire une reconstitution chronologique des événements, établir les liens génétiques possibles entre certaines phases magmatiques et certains types de minéralisation de cuivre, molybdène, or.

116. SANSCHAGRIN, Y., Québec Ministère Énergie et Ressources:

Potentiel en Cobalt de la région de Fabre et évaluation d'indices de Cobalt dans la région de Chibougamau, Québec, 1980-81.

Cartographie du lambeau de protérozoïque dans la région de Fabre. Localisation des indices connus de Cobalt dans leur contexte géologique. Évaluation du potentiel de certains indices connus dans la région de Chibougamau.

SASKATCHEWAN/SASKATCHEWAN

117. GILBOY, C.F., Saskatchewan Geol. Surv.: Sub-Athabasca basement geology, 1980-.

See:

Saskatchewan Geol. Surv., Summ. Investig., p. 17, 1980. Aimed at compiling the geology of the basement rocks underlying the Athabasca Group sediments. Multi-media evidence will be used most importantly drill core examination, location of E/M conductors, and aeromagnetic patterns to extrapolate the known geology from the basin towards its centre. Greater understanding of the sub-Athabasca regional geology should allow increased accuracy in predicting potential uranium-mineralized zones.

118. GILBOY, C.F., MACDONALD, R., Saskatchewan Geol. Surv.:

Reconnaissance bedrock geology, Chambeuil Lake East area (Part of NTS 74P), Saskatchewan, 1980-.

See:

Saskatchewan Geol. Surv., Summ. Investig., p. 14-16, 1980.

This 400 km² area, situated 60 km northeast of Stony Rapids, straddles the Grease River and Black Lake Shear zones. Rock types differ sharply across the Grease River Shear Zone. Mafic rocks of possible volcanic and intrusive origin and metasediments are dominant to the northwest, whereas quartz-feldspathic gneisses, perhaps volcanogenic, predominate to the southeast. A short segment of the Black Lake Shear enters the area in its extreme southeastern corner. Rocks are mostly of presumed Archean age, with most recognizable tectonic structures superimposed upon them

during the Hudsonian Orogeny. The economic potential of the area is low. Numerous occurrences of disseminated iron sulphide are present in amphibolitic rocks, and a small iron formation occurrence was found in the south.

119. GILBOY, C.F., RAMAEKERS, P., Saskatchewan Geol. Surv.:

Compilation bedrock geology, Cree Lake area (NTS 74G), Saskatchewan, 1980-81.

See:

Compilation bedrock geology: Cree Lake (NTS 74G) and Stony Rapids (NTS 74P) areas; Saskatchewan Geol. Surv., Summ. Investig., p. 13, 1980.

The geology of the 13 700 km² Cree Lake area has been compiled from maps and reports of the Saskatchewan Geological Survey. Five geologically distinctive sub-areas are conveniently recognizable: i) the Wollaston domain in the southeast, largely made up of regionally homogeneous, possibly Archean granitic gneiss, with metasediments of probable Apehian age also present; ii) the Mudjatik domain in the south-centre, dominantly underlain by regionally inhomogeneous felsic gneisses of unknown parentage, but also by long narrow bands of supracrustal rock and, especially towards its western edge, by deformed and metamorphosed granitoid plutons; iii) the Virgin River domain immediately west of the Mudjatik domain; like the Mudjatik domain, it is largely composed of felsic gneisses; these are generally coarser grained, more massive rocks than their eastern counterparts, having apparently been more intensely recrystallized and perhaps, in places, remobilized; middle to low amphibolite facies supracrustal rocks become increasingly abundant towards the domain's western edge; iv) the Western Craton in the southwest, mainly comprising granulite facies felsic gneisses; and v) a 65-95 km wide band of Athabasca Group sediments occupying the northern half of the area. Except for the ill-defined transitional contact between the Wollaston and Mudjatik domains, adjoining crystalline basement sub-areas are separated by shear zones. Throughout the area, felsic gneisses are probably mostly Archean in age, whereas supracrustals are probably largely Apehian; most recognizable tectonic and metamorphic features were probably superimposed during the Hudsonian Orogeny. The regional geological setting favours the presence of economically viable uranium deposits, particularly below the Athabasca Group in the eastern part of the area. A major iron ore deposit is located east of the Nyberg Lakes; preliminary feasibility studies show it is to be marginally economic. Supracrustal rocks of the western Virgin River domain have attracted considerable attention from exploration companies, but no notable mineral deposits have been discovered.

120. MACDONALD, R., BROUGHTON, P.,

Saskatchewan Geol. Surv.: Geological map of Saskatchewan, Provisional Edition, 1980.

See:

Geological Map of Saskatchewan, Provisional Edition 1980; 1:1 million scale in two sheets, Saskatchewan Dep. Mineral Res. (issued separately or with Summ. Investig., 1980, Saskatchewan Geol. Surv.).

This edition supersedes the previous (1973) edition Geological Map of Saskatchewan. Substantial changes are presented, particularly for the Precambrian Shield area which is lithologically divided on the basis of domains and time units. This edition has been prepared experimentally by photomechanical colour separation from a hand-coloured original and is issued in two sheets.

121. MACQUARRIE, R.R., Saskatchewan Geol. Surv.:

Reconnaissance bedrock geology: Wollaston Lake northeast area (Part of NTS 64L), Saskatchewan, 1980.

See:

Saskatchewan Geol. Surv., Summ. Investig., p. 4-7, 1980.

The Precambrian bedrock in the area may be divided into two strikingly different geological terrains: The Wollaston domain and the Peter

Lake domain. The Wollaston domain consists of an Apehian metasedimentary sequence folded along nearly horizontal northeast-trending axes, with felsic plutonic "basement" inliers. The Peter Lake domain consists almost entirely of plutonic rocks, with remnants and xenoliths of supracrustal rocks, most of which appear to be of volcanic origin.

There is some potential for volcanogenic massive sulphide mineralization in volcanic rocks of the Peter Lake domain and also for mineralization in the plutonic rocks of this domain. Although no new occurrences of economic minerals were found in the Wollaston domain, uranium and base metal potential appears to be good.

122. RAY, G.E., Saskatchewan Geol. Surv.: Compilation bedrock geology, Foster Lake area (NTS 74A), Saskatchewan, 1980.

See:

Saskatchewan Geol. Surv., Summ. Investig., p. 8, 9, 1980.

Rock exposure is good throughout the area except for the northwest where extensive drift deposits are present. The Wollaston domain, to the northwest, includes an Archean basement exposed as granitic inliers within an unconformably overlying cover sequence. The Rottenstone domain, which underlies the central portion of the area, is represented in the southeast by a migmatitic complex comprising supracrustal gneisses intimately associated with elongate bodies of tonalite-trondhjemite, and in the northwest by granitic plutonic rocks of the Wathaman Batholith. The Peter Lake domain, restricted to a small area in the north-central part of the map sheet, comprises hornblende gneisses and amphibolites which predate and are intruded by the Wathaman Batholith. The La Ronge domain, occupying the southeastern part of the area includes gneisses of both metavolcanic and metasedimentary origin with lesser amounts of volcanoclastics and metaconglomerates. During the Hudsonian orogeny, most of the area suffered amphibolite facies metamorphism under low pressure, Abukuma-type conditions. The only orebodies discovered and worked in this area to date are in the Rottenstone and La Ronge domains.

123. RAY, G.E., RAMAEKERS, P., Saskatchewan Geol. Surv.:

Compilation bedrock geology: Geikie River area (NTS 74H), Saskatchewan, 1980.

See:

Saskatchewan Geol. Surv., Summ. Investig., p. 10-12, 1980.

Rock exposure is poor in this area, particularly in the northwest which is largely underlain by essentially flat-lying sediments of the Athabasca Group. The Wollaston domain, which underlies much of the northwestern part of the area, includes an Archean basement exposed as granitic inliers within an unconformably overlying cover sequence. The Rottenstone and Peter Lake domains underlie the extreme southeastern corner of the area and are separated from the Wollaston domain by the Needle Falls Shear zone. The Rottenstone domain consists entirely of granitic plutonic rocks of the Wathaman Batholith. The central, less deformed part of the Peter Lake domain contains massive to weakly foliated plutonic rocks which, toward the margins of the domain, grade into highly foliated gneisses. Most rocks in the area have suffered amphibolite facies metamorphism under low pressure, Abukuma-type conditions, presumably during the Hudsonian Orogeny. The area contains two important "unconformity-type" uranium deposits, Key Lake and West Bear Lake, and several occurrences of non-economic uranium mineralization.

124. SCOTT, B.P., Saskatchewan Geol. Surv.: Reconnaissance bedrock geology: Cochrane River area (Part of NTS 64L), Saskatchewan, 1980-81.
- See:**
Reconnaissance bedrock geology: Cochrane River area (Wollaston Lake northeast) (Part of NTS 64L); Saskatchewan Geol. Surv., Summ. Investig., p. 2, 3, 1980.
- Felsic gneiss, quartz diorite gneiss and hornblende gneiss are presumably overlain by supracrustal rocks of the Wollaston Group: pelite, meta-arkose, quartzite and diopsidic rock. The dominant set of folds trends northwest-southwest, with plunges at shallow angles to the northeast and southwest. High grade metamorphism is indicated by the occurrence of sillimanite and hypersthene.
125. SCOTT, B.P., RAMAEKERS, P., Saskatchewan Geol. Surv.: Compilation bedrock geology, Lloyd Lake area (NTS 74F), Saskatchewan, 1981.
- The north half of the area is underlain by sandstone of the Athabasca Group. Undifferentiated strata of Cretaceous age are believed to underlie much of the western half of the area. In the southeast quadrant, the Clearwater anorthosite pluton occurs between felsic granulite, mixed metasediments and megacrystic granite on the west, and foliated granite gneiss and mafelsic gneiss on the east. The felsic granulite is approximately 2.9 b.y. old and is intruded by anorthosite, which in turn is intruded by granite gneiss.
126. SCOTT, B.P., RAMAEKERS, P., Saskatchewan Geol. Surv.: Compilation bedrock geology, Wollaston Lake area (NTS 64L), Saskatchewan, 1981.
- The area is divided into three domains, from northwest to southeast: Mudjatik, Wollaston and Peter Lake. Younger Precambrian sandstone of the Athabasca Group occurs along the western boundary.
- Northwest of a line drawn diagonally from southwest to northeast, remobilized Mudjatik-type granitoid rock, with local relict granulite facies grade, predominates. To the southeast, presumed Alpehian supracrustal rocks of the Wollaston Group occur with elongate granitoid "inliers". The Peter Lake Complex of granodioritic to gabbroic plutonic rocks occurs in the southeast corner of the area.
127. ANDERSON, J.C., BIGRAS, S., Environment Canada (National Hydrology Res. Instit., Surface Water Div.): Hydrologic studies, Mackenzie Delta region, Northwest Territories, 1975-.
- 1) Aufeis, Northwest Territories. From studies conducted in 1979, a report was prepared on the structure and growth mechanisms of an annually recurring icing on lower Hans Creek, Northwest Territories, near 68°52'N, 133°33'W, in the Parsons Lake region. Monitoring of aufeis accumulation thickness in culverts along the Dempster Highway, south of Inuvik, continued in 1980, and a progress report was prepared on this as part of a regional hydrologic study.
- 2) Hydrologic studies, Mackenzie Delta Region, Northwest Territories. Activities: Field studies continued in the eastern Mackenzie Delta region in 1980, on behalf of the Northern Roads Environmental Working Group, DIAND. At three basins in the taiga zone south of Inuvik, and seven basins in the tundra zone between Inuvik and Tuktoyaktuk, data were collected on one or more of the following variables: Culvert ice accumulation thickness; Late winter snowpack water equivalent; Field season precipitation; Air temperature; and Discharge.
- Progress: Data analysis is not yet complete; but it is apparent that the 1980 spring flood was a major one in the region, comparable with that of 1977 on account of high snowpack water equivalents.
128. ANDERSON, J.C., TERROUX, A.C.D., BIGRAS, S., Environment Canada (National Hydrology Res. Instit., Surface Water Div.): Lake regimes, Mackenzie Delta, Northwest Territories, 1980-.
- This was the first year of a study designed to investigate the water level regimes of a variety of lakes in the Mackenzie Delta, in order to provide baseline information for the assessment of the potential impact of increased flow regulation on the Mackenzie River and Delta. A major objective is to compare water level fluctuations in "open" lakes (those with a direct low water connection to a delta channel) with that in "closed" lakes (those connected to a channel only at flood stage, if ever).
- In August 1980, with the assistance of C.P. Lewis, Inuvik Scientific Resource Centre, one set of open and closed lakes was selected for a pilot study in the middle Delta zone, near Reindeer Station. The advantage of this site was that bench marks, imbedded in permafrost, were already in place, from a former study conducted by Lewis. At the open lake, the closed lake, and the channel into the open lake, series of overlapping staff gauges were installed to cover water level variations of up to four or five metres. All staffs were tied into the benchmark system. Also at each site, stands were erected for time-lapse camera systems that will be used to photograph the staff gauges and thus obtain water level records. The time lapse camera systems are currently being prepared by J.A. Banner of N.H.R.I., and are scheduled for installation at the lake sites in April, 1981. Should this initial phase of the study succeed, similar sites are planned for the upper and outer Delta, where level heights are higher and lower, respectively, than those in the middle Delta.
129. CHAU, Y.K., WONG, P.T.S., Environment Canada (National Water Res. Instit., Environmental Contaminants Div.): Heavy metal methylation processes in the aquatic environment, 1980-83.
- See:**
Chemical alkylation of lead (II) salts to tetraalkyllead (IV) in aqueous solution; *Nature*, vol. 287, p. 716-717, 1980.
- Biotransformation and toxicity of lead in aquatic environment; in *Lead in the Marine Environment*, Branica and Konrad (eds.), Pergamon Press, p. 225-231, 1980.
- Work in progress on biological and chemical methylation of inorganic Sn and organotin compounds in the environment and toxicity of the methylated products.
130. EGGINTON, P.A., Geol. Surv. Can.: Periglacial processes and slope movement, central District of Keewatin, 1977-.
- See:**
A portable wind generator for field use; *Geol. Surv. Can., Paper 80-1C*, p. 143-145, 1980.
- The impact of disturbance on mudboil activity, north Henik Lake, District of Keewatin; *Geol. Surv. Can., Paper 81-1A*, p. 299-303, 1981.
- Stability problems associated with sand and gravel pads, central District of Keewatin; *ibid*, p. 385-388, 1981.
131. FORTESCUE, J.A.C., THOMSON, I., DICKMAN, M., TERASMAE, J., Ontario Geol. Surv.: Multidisciplinary followup of regional pH patterns in lakes north of Lake Superior, Ontario, 1980-82.
- It has been evident for several years that the problem of acid precipitation environmental effects in the area north of Lake Superior is largely governed by the geological conditions of the Canadian Shield. It is also evident that although regional geochemical mapping has a role to play in the study of acid precipitation effects, a simple pH map of the region does not provide a true picture of the problem although it may be a starting point for more intensive - followup level - studies.
- Geochemical, limnological, palynological and geological investigations were made concurrently within a 20 km x 100 km sampling strip located west of Wawa, Ontario, within which 20 lakes were studied. The lakes were selected on the basis of the regional geochemical survey pH map of the area and a series of conceptual models drawn to focus effort within a followup study.
132. GREY, B.J., SHERSTONE, D.A.S., ANDERSON, J.C., FOGARASI, S., Environment Canada (National Hydrology Res. Instit., Surface Water Div.): Liard River basin spring flood study, 1978-81.
- To study the river ice break-up and suspended sediment aspects of the Liard River Basin spring flood by:
- 1) studying the timing, magnitude and characteristics of river ice break-up on the Liard, Fort Nelson and Mackenzie Rivers; 2) studying suspended sediment loadings and sediment fluctuations of the Fort Nelson and Muskwa Rivers.
- To evaluate the importance of the Fort Nelson sediment load to that of the Liard River by sampling sediment concentrations downriver from Fort Nelson to Fort Simpson; and 3) analysing meteorological and climatological conditions of most relevance to river ice break-up and suspended sediment transport.
133. JACKSON, L.E., Jr., Geol. Surv. Can.: Environmental assessment of coal resources development, Canadian Cordillera, 1977-.
134. JACKSON, L.E., Jr., Geol. Surv. Can.: Debris flow hazard assessment methodology, alpine and northern upland areas, 1978-.
- See:**
New evidence on the origin of the September 6, 1978 Jokulhlaup from Cathedral Glacier, British Columbia; *Geol. Surv. Can., Paper 80-1B*, p. 292-294, 1980.
135. KAMENKA, L.A., RUTTER, N.W., Univ. Alberta (Geology): Rates of weathering of spoil piles from open pit mines in the Rocky Mountains of Alberta from field observation and a laboratory experimental system, 1978-81; M.Sc. thesis (Kamenka).
136. MUDROCH, A., ZEMAN, A.J., KALAS, L.L., Environment Canada (National Water Res. Instit.): Calcium carbonate in postglacial Lake Erie sediment, 1979-80.
- See:**
On the occurrence of calcium carbonate in postglacial Lake Erie sediment (Abstract); 23rd Conf. Great Lakes Res., May, 1980.
- Multidisciplinary examination of a 17 m-long, continuous core taken from the central Lake Erie basin revealed occurrence of two distinct carbonate-rich zones within the lower portion of the postglacial sedimentary column.
137. RUKAVINA, N.A., Environment Canada (National Water Res. Instit., Hydraulics Div.): Nearshore sediment data reports/atlas, 1978-84.
- See:**
Summary data for Lake Huron nearshore sediment samples; NWRI Hydraulics Res. Div. Tech. Note 80-11, 1980.
- Lake Erie nearshore sediment data, route of proposed underwater hydro cable, vicinity of Nanticoke, Ontario; NWRI Hydraulics Res. Div. Tech. Note, 1981.
- Data on Lake Erie Nearshore Bottom Fauna, Mohawk Point to Port Burwell, collected during 1971-1973 nearshore sediment surveys; NWRI Hydraulics Res. Div. Tech. Note 80-25, 1980.
- Nearshore morphology and geology, Oshawa, Lake Ontario and Douglas Point, Lake Huron; NWRI Hydraulics Res. Div. Tech. Note 80-30, 1980.
138. RUKAVINA, N.A., Environment Canada (National Water Res. Instit., Hydraulics Div.): Sediment survey of Georgian Bay harbours, 1980-82.
- Pilot study of the feasibility of using Canadian Hydrographic Service sounding data and samples collected during harbour revisory surveys to produce maps of harbour geology and bathymetry.

139. TAYLOR, R.B., Geol. Surv. Can.: Coastal reconnaissance of the Sverdrup Basin, Northwest Territories, 1978-.
140. TAYLOR, R.B., Geol. Surv. Can.: Coastal reconnaissance of Bylot and north-eastern Baffin Islands, Northwest Territories, 1979-.
141. WALLICK, E.I., MORAN, S.R., Alberta Research Council (Groundwater Dept.):
Weathering properties of overburden materials from the Forestbury-Halkiuk surface mining area, Alberta, part of the greater plain Hydrology and Reclamation Project, 1980-82.
A study of overburden materials (clayshale, sandstone, glacial till) in a coal mine area in east-central Alberta indicates that salts (principally Na_2SO_4) are present in fresh materials and salts can also form as a consequence of chemical weathering resulting from exposure of the sediments to oxygen and

wetting and drying. The rates at which salt forms in the various materials are being investigated by means of an experiment in which aqueous suspensions of sediment are in controlled atmospheres of argon, air, and oxygen to simulate anoxic, reducing conditions to moderate and strongly oxidizing conditions, respectively. The pH and conductivity and major ion concentrations are determined from the samples of suspension over a period of two weeks to determine kinetic factors and salt yield.

This year's study calls for the analysis of soil temperature and gas composition as a function of time to check out kinetic factors under field conditions.

142. ZEMAN, A.J., Environment Canada (National Water Res. Instit.):
Geotechnical studies of eroding bluffs, 1975-.
- See:
Five-year investigation of erosional processes at a study site near Port Burwell Ontario, Abstract; 24th Conf. Great Lakes Res., April 1981.

GEOCHEMISTRY/GÉOCHIMIE

ANALYTICAL METHODS AND ANALYSIS/
MÉTHODES ANALYTIQUES ET ANALYSES

143. ABBEY, S., Geol. Surv. Can.:
Analysis of international reference samples, 1969-.
144. ABBEY, S., Geol. Surv. Can.:
Development of methods for the analysis of geological materials, 1969-.
145. BESWICK, A.E., NICHOL, I., OTOTE, A., Laurentian Univ. (Geology):
Alteration patterns in volcanic host rocks of massive sulphide deposits in the Superior province, 1979-82, M.Sc. thesis (Otole).

See:

Alteration in mineralized and unmineralized Archean greenstones; Ontario Geol. Surv., MP93, p. 39-47, 1980.

Two computer programmes have been developed which estimate major oxide gains and losses in altered volcanic rocks, using procedures described by Beswick and Soucie (1978). Both programmes are based on comparisons of oxide molecular proportion ratio plots for unaltered, post-Mesozoic volcanics with similar plots for greenstone data.

Using these programmes alteration parameters have been determined for the Kakagi Lake (859 samples) and the Uchi-Confederated Lake (1341 samples) areas. Comparison of results for these two areas indicate that CaO additions and Na_2O depletions are more intense in the Uchi-Confederated Lake area (mineralized) than at Kakagi Lake (unmineralized).

Furthermore, within the Uchi-Confederated area (500 sq. kms.) the intensity of CaO additions and Na_2O depletions increases as the area of examination is focussed more narrowly on the South Bay Mine at Confederated Lake (3 sq. km.) suggesting that alteration intensities are related to massive sulphide mineralization.

146. HOLMES, G.S., Univ. British Columbia, (Geological Sciences):
Development of thin-film x-ray fluorescence analysis as a practical technique for the study of natural particulate matter, 1981-83.

See:

The limitations of accurate "thin-film" x-ray fluorescence analysis of natural particulate matter; Chemical Geol., 1981.

Designed to further the development of thin-film x-ray fluorescence analytical techniques, particularly as they apply to the study of natural particulate matter. Analytical artefacts associated with estuarine and coastal particulates are of particular interest.

Four areas of effort are proposed: a) The modification of existing theoretical studies and descriptive formulae to optimize data manipulation techniques, b) The definition of error due to sample collection and storage procedures,

c) The construction of prototype specialized materials for practical sample handling, and d) The preparation of suites of reference materials whose efficacy is demonstrated through intercalibration with other institutions and through replicate analyses by other techniques.

147. HORSKY, S., FLETCHER, W.K., Univ. British Columbia (Geological Sciences):
Rare earth element determination by graphite furnace atomic absorption, 1980-81.

The determination of five rare earth elements (Eu, Sm, La, Lu, and Yb) by graphite furnace atomic absorption has been investigated after their separation from other constituents of geological samples on AG 50W-X8 resin. Sample decomposition, rare earth element (REE) separation and instrumental conditions are outlined. For Eu, Sm and Yb enhancement of their sensitivities by two to three orders of magnitude, compared to conventional flame atomic absorption, allows their determination at typical crustal abundances. Results obtained for standard rock samples are in good agreement with certified values.

148. LUM, K.R., Environment Canada (National Water Res. Instit., Environmental Contaminants Div.):
Chemical form and availability of trace metal ions in nearshore regions of the Great Lakes, 1979-84.

To determine 1) the seasonal and spatial distribution of trace elements, their possible modes of incorporation into suspended particulates and sediments and their important transport solid phases in relatively contaminated and uncontaminated areas of the Great Lakes; 2) the effect of anthropogenic trace element inputs on their "speciation" patterns; and 3) the potential chemical availability of trace elements and its relationship to bioconcentration patterns.

149. STEGER, H.F., SUTARNO, R., BOWMAN, W.S., E.M.R. (CANMET):
Canadian Certified Reference Materials Project (CCRMP), 1970-.

See:

Certified Reference Materials; CANMET Rep. 80-6E, 1980.

SU-1a: A certified nickel-copper-cobalt reference ore; CANMET Rep. 80-9E, 1980.

DL-1a: A certified uranium-thorium reference ore; CANMET Rept. 80-10E, 1980.

A review of the Canadian Certified Reference Materials Project; Can. J. Spectroscopy, vol. 25, no. 1, p. 5A, 1980.

Methodological information from the certification of CCRMP ores and concentrates; Talantus vol. 27, p. 327, 1980.

Canadian Certified Reference Materials Project; Amer. Laboratory, February, p. 167, 1981.

Spatial and temporal patterns of gully growth along the central north shore of Lake Erie between Rondeau and Long Point have been investigated by time-lapse comparison of survey maps and aerial photographs. Locations of presently active gullies have been determined. Results of 1975-1979 topographic surveys at an NWRI study site near Port Burwell have been presented in an unpublished report. In addition, 1913-1976 recession rates of high bluffs east of Port Burwell have been estimated from survey maps and aerial photographs. Both 1913-1976 and 1975-1979 rates significantly exceed previous historical estimates by Wood and Gelinas.

Long-term monitoring of pore pressures, ground water fluctuation, and sub-surface displacements at the study site continued throughout the year. Slope stability analyses using laboratory geotechnical data and measured slope profiles, are underway.

In this period, certification programs have been initiated for DH-1a, a uranium-thorium ore, MP-1a, a base-metal ore and PD-1, a particulate dust from a zinc-copper smelter, in a cooperative effort with Environment Canada. The certification program for OKA-1, a niobium ore, was completed and this material will be made available for sale in April 1981.

150. VANDER VOET, A., RIDDLE, C., HWANG, J., WONG, P., Ontario Geol. Surv.:
Simultaneous determination of rare-earth elements in rock samples by inductively-coupled argon-plasma optical-emission spectroscopy, 1981.

EXPLORATION, ORGANIC/
APPLIQUÉE, ORGANIQUE

151. JONASSON, I.R., Geol. Surv. Can.:
Environmental geochemistry, 1974-.
152. POWELL, T.G., Geol. Surv. Can.:
Hydrocarbon geochemistry of Arctic Archipelago and Canadian East Coast offshore, 1976-.
153. SNOWDON, L.R., Geol. Surv. Can.:
Development of extraction, identification and correlation systems for organic compounds from sedimentary rocks and crude oils, 1979-.
154. SNOWDON, L.R., Geol. Surv. Can.:
Hydrocarbon geochemistry of northern Interior Plains and Beaufort Sea, 1976-.

EXPLORATION, NON-ORGANIC/
APPLIQUÉE, NON-ORGANIQUE

155. BEAUMIER, M., Québec Ministère Énergie et Ressources:
Géochimie de la région de Brouillon, Québec, 1981-82.
Inventorier la géochimie de la région afin de mettre à jour des dispersions géochimiques rattachées à la présence de minéralisations.
156. BOYLE, D.R., Geol. Surv. Can.:
Regional geochemistry, Newfoundland and Labrador, 1976-.
- See:
An assessment of the uranium potential of the Raft Batholith area, British Columbia; Geol. Surv. Can., Paper 80-1B, p. 17-28, 1980.
157. BRISTOL, C.C., Brandon Univ. (Geology):
Geochemistry and petrology of the Centennial Orebody, Flin Flon, Manitoba, 1978-81.
Sulphur and carbonate analyses remain before completion.
158. CAMERON, E.M., Geol. Surv. Can.:
National geochemical reconnaissance, 1975-.
- See:
Rb-Sr age of the Lineament Lake granodiorite, District of Mackenzie; Geol. Surv. Can., Paper 80-1C, p. 223-226, 1980.

159. CHURCH, B.N., BARAKSO, J.J., British Columbia Ministry Energy, Mines, Petrol. Res. (Geol. Div.):
Lithogeochemistry of the Buck Creek area, British Columbia.
See:
Computer processing of geochemical data showing the primary dispersion of elements near the Equity Mine (Sam Goosly), British Columbia; British Columbia Ministry Energy, Mines, Petrol. Res., Geol. Div. Paper 1981-1, p. 25-31, 1981.
Primary dispersion of gold, silver and related elements at Equity Silver Mine near Houston, British Columbia; Abstract, Symp. Exploration Geochemists - Cordilleran Sec. Geol. Assoc. Can., Vancouver, p. 21, 1981.
To focus on the primary dispersion of the elements near volcanic centres as a guide in the search for new mineralized localities and to reveal the paragenesis of known ore bodies.
160. COKER, W.B., Geol. Surv. Can.:
Regional geochemistry, southern Canadian Shield, 1976-.
161. CROCKET, J.H., McMaster Univ. (Geology):
Geochemical pathway studies of heavy metals in lake sediments from the Sudbury-Temagami area, Ontario, 1976-81.
See:
Geochemical pathway studies of arsenic, selenium and palladium in fresh-water systems by neutron activation analysis; Water Res. Support Prog. Rep., Environment Canada, 1981.
The concentrations of some heavy metals in lake sediments from the Sudbury-Temagami area were determined by radiochemical neutron activation, atomic absorption and x-ray fluorescence. Data for dredge samples from 23 lakes indicate that concentration gradients for Pd, As and Se tend to center about the Sudbury industrial complex and increase toward it. Metal concentration profiles over the top 20 cm of sediment cores from 5 lakes show pronounced increases in Pd, Ir, Au, As, Se, Cu, Ni and Pb in the top 5 cm. These data suggest that one of the principal pathways for heavy metal loading of lake sediments in the area is atmospheric fallout of particulate material.
162. DARLING, R., École Polytechnique:
Further studies - the trace element geochemistry - of the altered wallrocks around the Louvem Copper deposit, Val d'Or, Québec, 1980-82.
163. DUNN, C.E., Saskatchewan Geol. Surv.:
Lake-sediment geochemistry, 1975-81.
See:
Lake sediment and water geochemistry of the Carswell structure, northwestern Saskatchewan; Saskatchewan Dep. Mineral Res., Rep. 224, 1980.
Compilation of atlas of lake sediment geochemistry (marginal to the Athabasca Sandstone).
164. DUNN, C.E., Saskatchewan Geol. Surv.:
Uranium biogeochemistry, 1979-82.
See:
The biogeochemical expression of deeply buried uranium mineralization in Saskatchewan, Canada; J. Geochem. Explor., vol. 15, 1981.
Determine relationship between mineralization and metal concentrations in various plants.
165. FLETCHER, W.K., GODWIN, C.I., HEBERLEIN, D., Univ. British Columbia (Geological Sciences):
Bedrock geochemistry Berg deposit, British Columbia, 1980-82; M.Sc. thesis (Heberlein).
Lithogeochemical study of trace element distribution at the Berg Deposit.
166. FLETCHER, W.K., SINCLAIR, A.J., MATYSEK, P., Univ. British Columbia (Geological Sciences):
Statistical evaluation of the value of categorical field observations in regional geochemical programmes, 1980-82; M.Sc. thesis (Matysek).
- As far as we are aware this is the first systematic attempt to evaluate the significance of field observations in relation to background variations in metal contents of drainage sediments. We conclude:
1) Despite their subjective character field observations can be related to significant variations in metal content of drainage sediments associated with a single rock unit. 2) Two-way contingency tables are a useful means for rapidly identifying those paired categorical variables for which enough samples exist for statistical analysis. For practical use however, a computerized system of generating such tables is essential. 3) Subsets from large 2-way contingency tables for regional stream sediments samples can be tested rigorously for dependence or independence using chi square test. An example from NTS 82F map area indicated preferential occurrence of certain rock types in certain physiographic environments as indicated by stream velocity. 4) Duncan's Multiple Range Test, used in conjunction with probability plots, enables the significance of field observations to be related to variations in background metal content of sediments in a systematic fashion. This provides a basis for studying the interactions of environmental factors and determining which are most relevant to geochemical exploration programs.
167. FOSCOLOS, A.E., Geol. Surv. Can.:
Clay and clay minerals investigation, 1968-.
168. FYON, J.A., SCHWARCZ, H.P., CROCKET, J.H., McMaster Univ. (Geology):
Carbon and oxygen isotope geochemistry of replacement carbonates from the Timmins area; implications for gold metallogeny, 1980-83; Ph.D. thesis (Fyon).
See:
Carbon and oxygen isotope geochemistry of replacement carbonates from the Timmins-Porcupine gold camp; Ontario Geol. Surv., Misc. Paper 93, 1980.
In the Timmins area, a field investigation of the characteristics of certain gold deposit types, their host rock environment and the associated rock alteration is being carried out to establish the timing of mineralization and alteration events. This field investigation is integrated with stable isotopic studies (oxygen, carbon, hydrogen) of the host rock and ore material to evaluate the degree to which the stable isotope systematics have been disrupted by post-mineralization tectonic and regional metamorphic events and to better describe the origin of the ore-forming fluids. Epithermal, instrumental neutron activation analyses of the ores and associated host rocks for antimony, arsenic, gold and tungsten are being carried out to establish lithogeochemical exploration criteria to supplement the field and isotopic screens.
169. GRUNSKY, E.C., TROWELL, N.F., Ontario Geol. Surv.:
Abitibi alteration study, northern Ontario, 1979-82.
See:
Ontario Geol. Surv., Misc. Paper 96, 1980.
Major and trace element chemistry of volcanic rocks in the Ben Nevis Township area of Ontario are being examined in order to evaluate the distribution of elements around base metal deposits. Alteration of the volcanic rocks occurs as carbonatization and silicification around hydrothermal vents. Visual features of alteration include carbonatization and silicification accompanied by non-visual features. The non-visible features include a pronounced zinc and lithium anomaly and a redistribution of silica, aluminium, calcium, sodium, potassium, and titanium. Other elements are currently being studied. Petrographic examination of the area also indicates mineralogical changes in altered areas. The chemically and petrographically altered areas are spatially related to base metal sulphide occurrences in the Ben Nevis area.
170. HALE, W.E., PAJARI, G.E., BURKE, K.S., HASSAN, H.H., Univ. New Brunswick (Geology):
Uranium and thorium in rocks of southwestern New Brunswick, 1979-82; Ph.D. thesis (Hasson).
- Approximately 500 outcrops in an area of roughly 5000 km², in and near the St. George granite, have been tested radiometrically (Scintrex GAS-6 spectrometer) for uranium and thorium. The results of over 700 determinations suggest a general increase in the average contents of uranium and thorium from Precambrian to Carboniferous in the rocks of southwestern N.B. There also appears to be a time-related increase in uranium and thorium relative to global abundances for these elements in specific rock types. Rhyolites common to the Precambrian, Devonian and Carboniferous in this area exhibit a substantial increase in uranium and thorium in that same order. Within the Devonian granitic rocks a variation in uranium and thorium contents probably corresponds with the differentiation history of these rocks.
171. HATTORI, K., Univ. Alberta (Geology and Geophysics):
Stable isotope study on marine hydrothermal activity at Kuroko massive sulfide ore deposits, Japan, 1978-81.
See:
Anhydrite bodies of marine hydrothermal origin at Kuroko; Proc. Third Internat. Water - Rock Interaction meeting, p. 89-90, 1980.
Marine hydrothermal alteration at a Kuyoko ore deposit, Kosaka, Japan; Contrib. Mineral. Petrol., vol. 74, p. 285-292, 1980.
A comparison of Kuroko and Canadian Archean massive sulfide deposits (Abstracts); Geol. Assoc. Can./Mineral. Assoc. Can., Annual Meeting, vol. 6, p. A-57, 1981.
Isotopic compositions of quartz and sericite from sulfide bodies in Kuroko massive sulfide ores indicate that the mineralization occurred at temperatures of 250 to 300°C from ore-forming fluids of wD . -10 ‰ and w180 + 1 ‰. Anhydrite bodies near the sulfide bodies were formed at similar temperatures from $\delta^{18}\text{O}$ values of sericite and chlorite. The high temperatures of the formation suggest that anhydrite was precipitated from sea water during the marine hydrothermal activity which resulted in the sulfide mineralization.
The variation of δD values in the country rocks suggest, that small amount of magmatic water contributed in the hydrothermal systems and that incomplete dispersive mixing occurred between the two kinds of fluids.
172. HATTORI, K., CAMPBELL, F.A., KROUSE, H.R., Univ. Calgary (Geology and Geophysics, Physics):
Stable isotope study on the uraniferous conglomerate at the Elliot Lake, Ontario, 1981.
See:
Stable isotope study on uraniferous conglomerate in Elliot Lake; Abstracts, Geol. Assoc. Can./Mineral. Assoc. Can., Annual Meeting, vol. 6y, A-28, 1981.
Sulfur isotope ratios of pyrite are determined in the mineralized zone and in the adjacent rocks in the Elliot Lake - Blind River district, Ontario. Although the localities are widely distributed, pyrite within the ore zone has very similar isotopic compositions, close to 0‰ CDT. The uniform $\delta^{34}\text{S}$ values of pyrite of different grain size indicate that pyrite did not experience oxidation - reduction from the provenance to the depositional site and in a metamorphic environment.
SEM observation revealed that uraniferous hydrocarbon is a simple mixture of uranite and texture-less organic material. Carbon isotope ratios of the organic material closely associated with uraninite range from -10 to -20 ‰ PDB. The values may suggest that oil like material is enriched in ¹³C during coagulation due to irradiation from uranium.
173. HATTORI, K., MUEHLENBACKS, K., Univ. Alberta (Geology and Geophysics):
Oxygen isotopic study on Icelandic Deep Drilling Core (International Research Drilling Project Core), 1978-81.
See:
Oxygen isotope study on hydrothermally altered basalt in Iceland; Abstracts with Program, Geol. Soc. Am., Annual Meeting, vol. 12, no. 7, p. 443, 1980.

- Oxygen isotope ratios of hydrothermally altered rocks to depths of 3 km are determined from 3 localities in Iceland: Tertiary International Research Drilling Project Core, drill cuttings from Reykjavik and from active Krafla volcano. The whole rocks from Krafla has the lowest $\delta^{18}\text{O}$ content having ever been reported, $\sim -11\text{‰}$. Isotope ratios ($\delta^{18}\text{O}_{\text{H}_2\text{O}}$ and $\delta^{34}\text{S}$) of the secondary minerals, epidote, quartz, calcite and anhydrite, suggest that the basalts are altered by meteoric water at temperatures between 300 to 400°C. The variation of $\delta^{18}\text{O}$ values of the whole rocks in three areas is attributed to the difference in water/rock ratios of the hydrothermal systems. The convective hydrothermal activity in Krafla, which may be caused by silicic magma beneath the central volcano depleted $\delta^{18}\text{O}$ content in the rocks.
- The primary magmatic isotope ratios are determined from $\delta^{18}\text{O}$ of pyroxene. Icelandic magma had exceptionally low $\delta^{18}\text{O}$ content in Tertiary time as well as in Holocene age. The low $\delta^{18}\text{O}$ magma is produced by exchange or assimilation of low $\delta^{18}\text{O}$ altered country rocks.
174. JONASSON, I.R., Geol. Surv. Can.: Trace elements in sulphides, 1974-.
- See:
Nahanni integrated multidisciplinary pilot project geochemical studies Part 1: Geochemistry and mineralogy of shales, cherts, carbonates and volcanic rocks from the Road River Formation, Misty Creek Embayment, Northwest Territories and Part 2: Some thoughts on the source, transportation and concentration of elements in shales of the Misty Creek Embayment, Northwest Territories; Geol. Surv. Can., Paper 80-1B, p. 149-171, 1980.
175. KISH, L., CREVIER, M., Québec Ministère Énergie Ressources:
Les granitoïdes adjacentes au bassin d'Otish, Québec, 1979-81.
- Voir:
Lithogéochimie et radioactivité dans la région des Monts Otish; Québec Min. Énergie et Ressources, DPV-712, p. 25-26, 1980.
Le rapport sur le sujet est en rédaction.
176. KUSMIRSKI, R.T., CROCKET, J.H., McMaster Univ. (Geology):
Metallogeny of gold deposits in the Dickenson Mine, Red Lake, Ontario, 1978-81; M.Sc. thesis (Kusmirski).
- See:
Petrogenesis of the gold deposits in Dickenson Mine, Red Lake, Northwestern Ontario; Geol. Surv. Can., Paper 80-1B, p. 135-144, 1980.
- The Dickenson Mine, a gold producer in the Uchi volcanic-plutonic subprovince of the Canadian shield, lies along the eastern flank of a volcanic complex consisting mainly of basaltic komatiites and magnesium tholeiites with some ultramafic and felsic flows, chemical and clastic sediments and proximal volcanoclastites. Studies of the 17, 22, 24, 25 and 30 levels in the "East South C" and "East South C Footwall" ore zones show that the gold-bearing horizons lie within stratigraphically conformable fragmental rocks probably derived from a source dominated by basaltic komatiites and felsic volcanics with minor cherts and iron-rich tholeiites.
- At least two different types of mineralization are recognized. The mineralized zone on the 25 Level is an auriferous sediment made up of both chemical (exhalative) and clastic components. Au, As, S, Fe, Mn, Cu, Zn probably represent exhalative components. The mineralized zone on 30 Level is a felsic volcanoclastic rock in which most of the Au, As, S, Fe and Zn was probably deposited synchronously with felsic volcanism or erosion of a felsic source. Both ore zones are pre-tectonic and post-dated by at least two periods of lower amphibolite grade metamorphism. Both are regarded as mainly syngenetic ores.
177. LALONDE, J.P., PELLETIER, M., Québec Ministère Énergie et Ressources:
Géochimie des eaux souterraines des Régions des Bosses Terres et Appalaches du Québec, 1979-.
- Le projet ci-mentionné qui est un projet d'inventaire du territoire pour les possibilités minières a déjà fait l'objet de deux campagnes de terrain et 1979 et 1980. A date, environ 7000 échantillon ont été prélevés et 15 000 km² de territoire ont été inventoriés.
178. LAMBERT, R. St. J., CHAMBERLAIN, V.E., Univ. Alberta (Geology):
Geology of the Malton gneiss, British Columbia, 1978-81; Ph.D. thesis (Chamberlain).
- The Malton Gneiss is an orthogneiss complex, originally formed c. 3 Ga ago and subsequently intruded by Late Proterozoic alkaline granite sills. No Phanerozoic recrystallization has occurred. The supposed Malton Gneiss east of the trench appears to be metasedimentary gneiss of Proterozoic age.
179. LAMBERT, R. St. J., CUNNINGHAM, M.C., Univ. Alberta (Geology):
Geochemical and petrological studies in the southern Slave Province, 1978-82; M.Sc. thesis (Cunningham).
- Studies have been concentrated on the geochemistry and Rb/Sr age of the dacitic and tholeiitic rocks of the Yellowknife greenstone belt and on the gneissic complex near the Barnston River, north shore, East Arm, Great Slave Lake.
180. LAMBERT, R. St. J., BRAME, S., COX, J., GHOSH, D.G., Univ. Alberta (Geology):
Paleocontinental margin studies in southeast British Columbia, 1977-84; M.Sc. thesis (Brame, Cox), Ph.D. thesis (Ghosh).
- The Pb-Zn mineralization in and around the Nelson batholith is related isotopically to the batholith and the whole complex shows no sign of a continental crustal component. The Jurassic oceanic complex is thrust against the Paleozoic continental margin south of the Nelson batholith; elsewhere the contact is observed by plutons. Northwest of the Nelson batholith, the Slokan Group is primarily of oceanic derivation in its lower part but contains more siliceous components in the upper sections.
181. LEVIGNE, M., CROCKET, J.H., McMaster Univ. (Geology):
Gold metallogeny at Dickenson Mine, Red Lake, Ontario, 1979-82; M.Sc. thesis (Levigne).
- In order to determine the origin of the auriferous sulfide horizons at the Dickenson Mine, Red Lake, mapping and sampling was undertaken in the vicinity of the East South C ore zone on the 30th level. Nine weeks were spent in the field including 6 weeks underground.
- The main ore zone, several minor auriferous sulfide horizons, alteration zones and sulfide facies banded iron formation were sampled in detail and 1400 feet of crosscuts were mapped on the 30th level. The ore zone was also sampled and mapped on the 24th level and sampled on the 21st. A sulfide facies banded iron formation and the F zone were sampled on the 15th level. Drill core from the 30th level were logged and sampled.
- A hydraulic separatory system was developed to separate sulfides from crushed samples. Sulfur isotope determinations are in progress on the pyrite and pyrrhotite separates. Whole rock analyses for major, minor and trace elements are being carried out by x-ray fluorescence and Au, As, W and Sb by instrumental neutron activation. In addition a carbon isotope study will probably be undertaken to further investigate the source of carbon in some of the auriferous zones.
182. LEVINSON, A.A., KNOX, A.W., SILLS, T.K., Univ. Calgary (Geology and Geophysics):
Exploration and Environmental Geochemistry, 1974-; M.Sc. theses (Knox, Sils).
- Progress continues to be made in applying the concepts of disequilibrium in the exploration for uranium.
183. MAURICE, Y.T., Geol. Surv. Can.:
Regional geochemistry, northern Canadian Shield, 1976-.
184. OSHIN, I.O., CROCKET, J.H., McMaster Univ. (Geology):
The abundances and geochemistry of some noble metals in the Thetford Mines ophiolites, Québec, 1977-81; Ph.D. thesis (Oshin).
- Ophiolites from the Thetford Mines area, Québec are represented by peridotite tectonite (harzburgite), mafic and ultramafic cumulus rocks and pillowed to massive basalts. Noble metal (Au, Ir, Pt and Pd) studies using neutron activation were undertaken to assess abundance levels, distribution patterns and economic potential of these elements. The tectonized
- peridotites, a major component to the Thetford ophiolite suite, carry 1 to 10 ppb noble metal. Individual noble metals are very uniform in the peridotites and their proportions are similar to unfractionated (meteoritic) material. In the cumulus rocks, on the other hand, the platinum metals are strongly fractionated. Ir concentrates in early cumulus dunites, probably due to concentration in chromite whereas Pt and Pd tend to increase in concentration in the later pyroxenite cumulates. The highest Pt and Pd contents, 50 to 100 ppb, are found in pyroxenites of relatively high sulphur content. The latest cumulus gabbros are low in platinum metals, perhaps due to scavenging of magma by sulphides during the pyroxenite stage. Gold is relatively unfractionated in the cumulus rocks. The best exploration targets appear to be cumulus rocks with high sulphur content.
185. PLOEGER, F., CROCKET, J.H., McMaster Univ. (Geology):
Gold deposits of the Main Break, Kirkland Lake, Ontario: relationship to syenitic intrusive rocks, 1980-82; M.Sc. thesis (Ploeger).
- See:
Kirkland Lake gold study, District of Timiskaming; Ontario Geol. Surv., Misc. Paper 96, 1980.
- The study area is in east-central Teck township, northeastern Ontario. The main objective of the study is to compare the major and trace element geochemistry (REE, Au, As, Sb, Te, W) of the syenitic rocks hosting the gold deposits in Kirkland Lake with non-productive syenitic rocks within the same general area.
- The rocks in the Kirkland Lake area are Timiskaming in age and consist of wackes, conglomerates, trachytic flows and pyroclastics and syenitic intrusives. Work is being concentrated on the three dominant intrusive rock types - augite, massive and porphyritic syenite. In the immediate vicinity of Kirkland Lake, the intrusive suite and to a lesser extent, the volcano-sedimentary suite, hosted the seven major gold producers. The orebodies are situated along a major fault structure, the Kirkland Lake "main break", or along subparallel fractures and splays originating from the "break".
- The entire Timiskaming sequence in Kirkland Lake, including the orebodies, resulted from successive movements along a major zone of weakness, probably a rift fault. Initially, rifting occurred on the flanks of the Blake River/Kinojevis volcanic pile. This was followed by sedimentation, trachytic volcanism, and syenitic intrusive activity in the rift valley. Repeated movement along one of the major rift faults formed fractures in the syenitic intrusive rocks along which ore-bearing hydrothermal fluids migrated.
186. PRASAD, M., CROCKET, J.H., McMaster Univ. (Geology):
Origin of siliceous interflow sedimentary rocks from Munro Township, Ontario, 1979-82; Ph.D. thesis (Prasad).
- Thin bands of cherty interflow sediments occur within the volcanic sequences in Munro Township, Ontario. These interflow sediments were analyzed for Au, Pt, Pd, Ir, rare earth elements (REE) and a number of incompatible trace elements including Y, Zn, Hf, Nb, Rb, Th and Ta. Major and trace element data shows a clear genetic relationship between these interflow sediments and komatiitic volcanic flows. Our trace element data show a considerable enrichment in REE and incompatible element content of these sediments relative to komatiitic rocks. The REE data have flat to slightly enriched light rare earth element (LREE) patterns with negative Eu-anomalies similar to low MgO-basaltic komatiite at Munro Township. Therefore, these interflow sediments are thought to represent a siliceous volatile-rich fraction separated during the upward migration and extrusion of the associated kimatiitic melt and exhaled on to the sea floor. Such siliceous or gaseous fractions are expected to be considerably enriched in incompatible elements and REE.
187. ROBERT, F., DARLING, R., GÉLINAS, L., École Polytechnique (Génie Minéral):
The geochemistry of altered wallrocks surrounding the Manitou-Barvue volcanogenic ore deposits, Val d'Or, Québec, 1978-81.

188. ROY, C., DARLING, R., LUDDEN, J., École Polytechnique (Génie Minéral): Geochemistry of host rocks at Kiena Gold Mines, Val d'Or, Québec, 1980-82; M.Sc.A. thesis (Roy).
 189. SOPUCK, V., Saskatchewan Research Council (Geology Div.): Lithogeochemical studies of unconformity-type uranium deposits in Saskatchewan, 1978-81.
Lithogeochemical studies of Athabasca Group and basement rocks were undertaken to develop criteria for the recognition of alteration and trace metal haloes surrounding uranium mineralization.
 190. STEVENATO, R.J., VOS, M.A., Ontario Geol. Surv.:
Distribution of lithium, rubidium and cesium in lake muds north of Lake Superior; a possible tool for geochemical prospecting, 1979-81.
See:
Geochemical distribution of lithium, rubidium and cesium in Lake Muds; Ontario Geol. Surv., Maps NTS:42D, part of 42E, 52A, part of 52H, 1981.
Distribution of lithium, rubidium, cesium in lake muds were determined from samples of the joint Federal Provincial Uranium Reconnaissance study in order to assess potential for use of these distributions as a tool in geochemical prospecting for rare element pegmatites. Analyses for tantalum and tin were completed for part of the area.
 191. THOMSON, I., Ontario Geol. Surv.:
Gamma ray mapping of alteration zones associated with gold-bearing horizons: orientation studies at the Kerr Addison Mine, Ontario, 1980-82.
See:
Ontario Geol. Surv., MP96, p. 145-149, 1980.
 192. THOMSON, I., WADGE, D.R., Ontario Geol. Surv.:
Reconnaissance basal till surveys and related geochemical research in Kirkland Lake area, District of Timiskaming, Ontario, 1977-83.
See:
Ontario Geol. Surv., MP96, 1980.
 193. WARREN, H.V., TOWERS, G.H.N., Univ. British Columbia (Geological Sciences, Botany):
Biogeochemistry of gold, silver and mercury, arsenic and antimony, 1978-.
To find vegetation particularly useful in the search for buried ore deposits. We have already found trees or lesser plants which concentrate copper and molybdenum (Alders, fireweed), arsenic (Douglas Fir) and gold (Phacelia).
- ### THEORETICAL/PURE
194. AL-AASM, I., VEIZER, J., Univ. Ottawa, (Geology):
Geochemistry of aragonite-calcite transformation: an example of rudists, 1980-83; Ph.D. thesis (Al-Aasm).
 195. MAJID, A.H., VEIZER, J., Univ. Ottawa (Geology):
Stratigraphy, diagenesis and geochemistry of the carbonate host-rocks in the Kirkuk oil-field, Iraq, 1977-81; Ph.D. thesis (Majid).
 196. VEIZER, J., Univ. Ottawa (Geology):
Chemical diagenesis of carbonate rocks, fossils and components, 1981-84.
See:
Chemical diagenesis of a multicomponent carbonate system - I: trace elements; J. Sediment. Petrol., vol. 50, p.1219-1236, 1980.
 197. WADLEIGH, M., VEIZER, J., BROOKS, C., Univ. Ottawa (Geology):
Marine geochemical cycle of strontium, 1978-81; M.Sc. thesis (Wadleigh).
- ### GENERAL/GÉNÉRALITÉS
198. ANDERSON, G.M., Univ. Toronto (Geology):
Mineral solubilities and aqueous mass transport, 1979-85.
Solubilities of silicates and carbonate minerals at high pressures and temperatures and of sulfides at lower pressures and temperatures are used to deduce the stoichiometry and thermodynamic properties of aqueous solutes for use in models of aqueous mass transport and ore formation.
 199. BALLANTYNE, S.B., Geol. Surv. Can.:
Regional geochemistry - southern Cordillera, 1979-.
 200. BARAGAR, W.R.A., Geol. Surv. Can.:
Stratigraphy and geochemistry of the volcanic rocks of the Circum-Ungava Belt, District of Keewatin, 1978-.
 201. BARNES, M.A., BARNES, W.C., Univ. British Columbia (Geological Sciences):
Oxic and anoxic diagenesis of terpenes, hydrocarbons and other lipids from the sediments of a meromictic fjord lake in southwestern British Columbia, 1979-83.
 202. BOYLE, R.W., Geol. Surv. Can.:
Geochemistry of metallogenesis and primary halos, 1973-.
 203. BRAND, U., VEIZER, J., Univ. Ottawa (Geology):
Geochemical facies indicators in carbonates, 1976-.
See:
Chemical diagenesis of a multicomponent carbonate system - I: trace elements; J. Sedimentary Petrol., vol. 50, no. 4, p. 1219-1236, 1980-.
 204. CAMERON, E.M., Geol. Surv. Can.:
Geochemical provinces, Newfoundland-Quebec-Ontario, 1980-.
To outline possible causes for major, regional variations of selected elements in the crust within Canada; to relate these variations to the distribution of mineral deposits and to concepts of the geological history of Canada; and to ascertain any facts which might assist mineral exploration.
 205. CHASE, R.L., GRILL, E.V., COOK, R., PRICE, M.G., HANSEN, K., BELAND, G., MALOTT, M.L., Univ. British Columbia, (Oceanography, Geological Sciences):
Sediments of Juan De Fuca and Explorer Ridges: search for hydrothermal input, 1977-82; M.Sc. theses (Cook, Price, Hansen, Beland, Malott).
See:
A hydrothermal deposit from Explorer Ridge in the northeast Pacific Ocean; Earth and Planetary Sci. Lett., vol. 52, p. 142-150, 1981.
Price's thesis is complete and will be defended shortly. First drafts of theses of Malott and Cook are virtually complete. Flooding of area of crest of Juan De Fuca Ridge by turbidites during late Pleistocene has masked any obvious clues to widespread hydrothermal inputs. Holocene sediments may however contain subtle indications of latter.
 206. DYCK, W., Geol. Surv. Can.:
Material balance of uranium series in a natural environment, 1978-.
 207. EDGAR, A.D., Univ. Western Ontario (Geology):
Deep-mantle-core source of potassium for inhomogeneous upper mantle, 1980-81.
 208. ELLWOOD, D.J., Geol. Surv. Can.:
Geochemical information system, 1975-.
 209. FLETCHER, W.K., EVANS, F., Univ. British Columbia (Geological Sciences):
Regional variations of trace element geochemistry on the Prairies, 1975-83; M.Sc. thesis (Evans).
See:
Nutrient concentrations in grasses and legume forages of northwestern Manitoba; Can. J. Animal Sci., vol. 60, p. 991-1002, 1980.
Increasing emphasis on local variability of trace elements in soil weathering catenas developed on different parent materials.
 210. FLETCHER, W.K., LEWIS, A.G., HOLMES, G.S., Univ. British Columbia (Geology, Oceanography):
Trace metal speciation and biological effects Fraser River Estuary, 1979-81.
 211. GOODFELLOW, W.D., Geol. Surv. Can.:
Regional geochemistry, Yukon Territory, 1977-.
 212. GOODFELLOW, W.D., Geol. Surv. Can.:
Geochemistry of mineral occurrences and their host rocks in the Northern Cordillera, 1979-.
See:
Nahanni integrated multidisciplinary pilot project geochemical studies Part 1: Geochemistry and mineralogy of shales, cherts, carbonates and volcanic rocks from the Road River Formation, Misty Creek Embayment, Northwest Territories and Part 2: Some thoughts on the source, transportation and concentration of elements in shales of the Misty Creek Embayment, Northwest Territories; Geol. Surv. Can., Paper 80-1B, p. 149-171, 1980.
 213. HUTCHEON, I.E., OLDERSHAW, A.E., Univ. Calgary (Geology and Geophysics):
Sediment diagenesis and water-rock interaction.
See:
Diagenesis of Cretaceous sandstones of the Kootenay Formation; Geochimica et Cosmochimica Acta, vol. 44, p. 1425-1435, 1980.
 214. NESBITT, H.W., Univ. Western Ontario (Geology):
Lanthanides in continental waters, 1981-83.
 215. THORPE, R.I., Geol. Surv. Can.:
Lead isotopic studies on genesis of ore deposits, 1978-.
 216. TURNER, J.V., FRITZ, P., KARROW, P.F., Univ. Waterloo (Earth Sciences):
Carbon isotopes in marl lakes and their effect on radiocarbon dating, 1979-81.
See:
Radiocarbon dating of marl lake sedimentary sequences; Geol. Assoc. Can./Mineral. Assoc. Can., Program with abstracts, vol. 5, p. 85, 1980.
Sampling and analytical work completed and manuscript in preparation. Several marl lakes across southern Ontario were studied for water and sediment isotopic composition and a core has been studied isotopically and palynologically from Little Lake, near Cambridge, Ontario.
 217. VEIZER, J., Univ. of Ottawa (Geology):
Evolution of the early terrestrial atmosphere-hydrosphere system and its consequences for metallogenesis, 1981-84.
See:
Correlation of $^{13}\text{C}/^{12}\text{C}$ and $^{34}\text{S}/^{32}\text{S}$ secular variations; Geochim. et Cosmochim. Acta, vol. 44, 579-587, 1980.

218. ARMSTRONG, R.L., BROWN, R.L., SIMONY, P., READ, P.B., PARRISH, R.R., RYAN, B.D., Univ. British Columbia (Geological Sciences), Carleton Univ. (Geology), Univ. Calgary (Geology and Geophysics): Omineca belt geochronometry, British Columbia, 1975-.
- See:**
Reconnaissance Rb-Sr geochronology and tectonic evolution of the Priest River crystalline complex of northern Idaho and northeastern Washington; Geol. Soc. Am., Abstracts with Programs, vol. 13, p. 103, 1981.
Frenchman Cap core and mantling gneisses, Kootenay Arc pelitic sediments, Trail-Castlegar gneisses, Nelson and Kusanax batholiths, Vallhalla and Kettle dome orthogneisses, Quesnel gneiss, Eagle Bay Formation, Oliver Granite, and Clachnacuir salient granites are current topics of Rb-Sr and U-Pb dating studies augmented by K-Ar dating in areas not previously studied.
219. ARMSTRONG, R.L., MISCH, P., BROWN, E.H., Univ. British Columbia (Geological Sciences), Univ. Washington, Univ. West Washington): Dating of blueschist metamorphic episodes in the North Cascades, Washington, U.S.A., 1975-81.
- See:**
Geochronometry of the Shuksan metamorphic suite, North Cascades, Washington; Geol. Soc. Am., Abstracts with programs, vol. 12, p. 94, 1980.
The bimodal distribution of ages of blueschist metamorphism in the North Cascades has been firmly established. Several papers reporting that work are in preparation. Sr isotopic study of the Darrington Phyllite, showing its similarity with Franciscan rocks, is now also complete.
220. ARMSTRONG, R.L., RYAN, B.D., PARRISH, R.R., WOODSWORTH, G., Univ. British Columbia (Geological Sciences), Geol. Surv. Can.: Coast Plutonic belt geochronometry, 1975-.
- The age and isotopic composition of Coast Plutonic Complex rocks are being investigated in several traverses across the linear belt. Current work is concentrated in the Vancouver to Hope, Bella Coola to Bella Bella and Alice Arm areas. U-Pb zircon dates have been determined for the Squamish (98.0 Ma), Furry (99.0 Ma), Spuzzum (110.5 Ma) and Ecstall (181.5 Ma) plutons.
221. ARMSTRONG, R.L., SOUTHER, J.G., BEVIER, M.L., MUEHLENBACHS, K., Univ. British Columbia (Geological Sciences), Geol. Surv. Can., Univ. Alberta (Geology): Cordilleran Cenozoic volcanic rocks - K-Ar dating and Sr isotope studies, British Columbia-Yukon, 1975-82.
- See:**
Geology of the Coquihalla volcanic complex, southwestern British Columbia; Can. J. Earth Sci., vol. 17, p. 983-995, 1980.
Differentiation of calc-alkaline magmas: evidence from the Coquihalla Volcanic Complex, British Columbia; J. Volc. Geotherm. Res., vol. 9, p. 151-179, 1981.
Paleogene tectonic evolution of the Pacific Northwest; J. Geol. vol. 88, p. 619-638, 1980.
K-Ar dating of Tertiary and Quaternary, volcanic rocks continues with efforts now concentrated on Miocene plateau basalt and Quaternary centers in the Garibaldi belt between Garibaldi Lake and Meager Mountain. Oxygen isotope analyses have been completed on a subset of the large suite previously analysed for Sr.
222. BAADSGAARD, H., Univ. Alberta (Geology): Rb/Sr and K-Ca isotope systematics of the Devonian potash beds in Saskatchewan, 1978-.
- The Rb-Sr measurements on three of the four main potash horizons have been almost completed. Carnallite, sylvite, and halite, together with a "total-salt" sample are measured for Rb and Sr isotopes. Results to date indicate a great deal of recrystallization at widely varying times. The diffusion or migration volume of Rb and Sr in the samples seems to be larger than liter-size. New sampling will have to be carried out, with the migration of constituents taken into account.
223. BAADSGAARD, H., BRIDGWATER, D.B., NUTMAN, A., MCGREGOR, V.M., WAGNER, P., Univ. Alberta (Geology): The geochronology and geochemistry of the Early Archean crustal rocks of the North Atlantic craton in West Greenland, 1970-; M.Sc. thesis (Wagner).
- See:**
The U-Th-Pb systematics of zircons from the Type Nôk gneisses, West Greenland; Geochim. et Cosmochim. Acta, vol. 45, no. 7, 1981.
U-Pb isotope systematics on minerals from the gneiss complex at Isua, West Greenland; Rapport Grøn. Geol. Unders., 1981.
A large number of gneiss samples (from the well-preserved Isua gneiss complex) have been received and prepared for analysis this spring. Relatively detailed pre-3600 Ma field relations have been discovered within the Isua gneiss complex. We are in the process of seeing if the pervasive 3600 Ma metamorphism has spared these rocks enough to get reliable geochronology.
We have recently reported a 2660 Ma event by geochronology. This event has been recognized and even mapped by the field geologists. Its main expression is in the form of remobilized sheets of granitoid material.
Wagner is more than half-finished with a Rb-Sr and Pb-Pb study of the Ameralik and other major dykes cutting the Isua gneiss complex. Much to our surprise, we have found a clearly Proterozoic dyke where we did not expect it. More work will be done on this and similar dykes. The senior researcher will be going into the field in West Greenland this summer (1981) for further collecting.
224. BAADSGAARD, H., LERBEKMO, J.F., Univ. Alberta (Geology): Calibration of the time of Cretaceous-Tertiary boundary by geochronometry and paleomagnetic reversals, 1978-83.
- See:**
A Rb-Sr age for the Cretaceous-Tertiary boundary (Z coal), Hell Creek, Montana; Can. J. Earth Sci. vol. 17, p. 671-673, 1980.
Extended work on zircon dating of the same Z-coal bentonite has been completed. There are a number of problems associated with dating such young (~64 Ma) zircon by U/Pb and these will be reported in a short paper. The U-Pb date of ~64 Ma checks very well with the 63.8 Ma Rb-Sr date. Further sampling (for magnetic reversal studies) will be carried out this summer.
A multiple-sample study of the variations in dating caused by sampling procedures is almost completed. Preliminary results show that a special case is needed in sampling pyroclastic beds for dating.
225. BELL, K., BLENKINSOP, J., Saskatchewan Geol. Surv.: Saskatchewan Shield geochronology project, 1976-.
- See:**
Saskatchewan Geol. Surv., Summ. Investig., p. 18, 1980.
Previous geochronological determinations by the authors on Precambrian rocks from northern Saskatchewan have confirmed or indicated: 1) the existence of Archean inliers within the Wollaston domain; 2) a probable late Archean age for the Eynard Lake complex in the Western Craton; 3) two major plutonic events, at about 1880 and 1745 Ma, during the Hudsonian orogeny; and 4) a younger event at about 1500 Ma, apparently involving both metamorphism and intrusion. Work during the past year, using the Rb/Sr whole rock method is as follows: 1) the Macoun Lake granodiorite, with an initial ratio of 0.7019 ± 0.0001 , has been dated at 1745 ± 50 Ma; and 2) the Wolverine Point Formation (Athabasca Group) has yielded a 4-point isochron with a preliminary age of 1513 ± 24 Ma and an initial ratio of 0.7086 ± 0.0006 . The third year of the project will include further studies of some of the suites examined last year and measurements on several new suites, including granitoids from the Carswell basement and granulites from the Western Granulite domain.
226. BELL, K., BLENKINSOP, J., COLE, T.J.S., MENAGH, D.P., Carleton Univ. (Geology, Physics): Saskatchewan Shield geochronology project, 1978-.
- Results to date have indicated the presence of Archean inliers within the Wollaston domain and the presumed northern extension of the Western Granulite domain, and the existence of at least two periods of granitoid magmatism, at 1890 and 1759 Ma, during the Hudsonian Orogeny. Future work will be concentrated on establishing the timing of events within the Hudsonian.
227. CORMIE, A.B., NELSON, D.E., HUNTLEY, D.J., Simon Fraser Univ. (Archaeology, Physics): X-ray fluorescence analysis as a rapid method of identifying tephra discovered in archaeological sites, 1979-81; M.A. thesis (Cormie).
- Ashes from three Holocene eruptions (Mazama, 6 600 y.B.P.; Mt. St. Helens Yn, 3 400 y.B.P.; and Bridge River, 2 350 y.B.P.), are distributed throughout southern British Columbia, Canada. These tephras are commonly found in local archaeological sites and once identified can provide archaeologists with excellent time-stratigraphic markers. We have concentrated on developing rapid methods by which samples from these tephra layers can be routinely identified.
To date, one of the most widely applied methods for tephra identification is microprobe analysis of the major element concentrations in the glass or mineral grains. Neutron activation and X-ray fluorescence analyses of glass separates have also been used. These studies have shown that the major and trace element concentrations in glass or selected mineral separates are usually sufficiently homogeneous for ashes from a single eruption, yet sufficiently different for ashes from different eruptions so that tephras may be chemically finger-printed.
228. CORMIER, R.F., Saint Francis Xavier Univ. (Geology): Rb/Sr ages of granitic rocks of the northern Appalachians, 1970-.
- The following granitoid bodies of the northern Appalachians of Maritime Canada are being dated using Rb/Sr whole-rock and/or mineral data: 1) the South Mountain batholith of Nova Scotia plus satellites; 2) the St. George batholith of southern New Brunswick; and 3) the 'Avalonian' plutons of Cape Breton Island and the northern mainland of Nova Scotia.
229. DUNCAN, I.J., GREENWOOD, H.J., ROSS, J.V., ARMSTRONG, R.L., Univ. British Columbia (Geological Sciences): The evolution of the Thor-Odin gneiss dome and related geochronological studies, 1974-81, Ph.D., thesis (Duncan).
- The pre-doming evolution of the Thor-Odin gneiss dome was characterized by the formation of large scale nappe structures and the imbrication of Archean basement rocks and the younger cover sequence. The first period of deformation consisted of large-scale infolding of cover sequence into basement rocks. During the second period, wedges of basement rocks were pushed into the cores of northerly-directed nappes. The third period involved refolding and imbrication coaxial with phase 2. The domes are the result of interference of phases 4 and 5 with 1, 2, and 3, and occurred in Tertiary time. Lead isotope systematics indicate the presence of a pre-Cambrian basement in the Shuswap Terrain, consistent with new $^{87}\text{Rb}/^{86}\text{Sr}$ data.
230. FRAREY, M.J., Geol. Surv. Can.: Correlation and geochronological studies in the Canadian Shield, 1975-.
231. GABITES, J.E., ARMSTRONG, R.L., Univ. British Columbia (Geological Sciences): Geology and geochronology of an area near Hope, British Columbia, 1981-; M.Sc. thesis (Gabites).

- To map an area near Hope, British Columbia, which contains Paleozoic to Mesozoic metamorphic and plutonic rocks, and to use geochronology techniques to assist in solving structural complexities.
232. HUNTLEY, D.J., BERGER, G.W., Simon Fraser Univ. (Physics):
Thermoluminescence dating of ocean sediments, 1976-.
Further work in underway with the objective of establishing the validity of the method. To this end two sets of samples, one a set of core tops, the other a set from the oxygen isotope stage 5/6 boundary of several cores, are being studied.
233. HUNTLEY, D.J., BERGER, G.W., WINTLE, A.G., Simon Fraser Univ. (Physics):
Thermoluminescence dating of terrestrial sediments, 1979-.
To develop techniques for dating the deposition of sediments found in archaeological and geological deposits. So far we have developed techniques which yield zero age for modern deposits in archaeological sites and for silt from the Fraser River. Research is underway comparing TL dates obtained by these methods with ages obtained by conventional methods.
234. HUNTLEY, D.J., WINTLE, A.G., Simon Fraser Univ. (Physics):
α-counting as a method of determining Th-230 and Pa-231 contents of ocean sediments, 1980-.
See:
The use of alpha scintillation counting for measuring Th-230 and Pa-231 contents of ocean sediments; Can. J. Earth Sci., vol. 18, no. 3, p. 419-432, 1981.
235. LAMBERT, R.St.J., CHAMBERLAIN, V.E., Univ. Alberta (Geology):
Phanerozoic time scale, 1980-83.
The absolute age of the Ordovician and Cambrian is poorly known. Bentonites, lavas and hypabyssal intrusives in the Anglo-Welsh Paleozoic have provided a few minerals and rocks suitable for geochronological work. Provisional results indicate a minimum age for the Llanvirn of 450 Ma and the Caradoc of 445 Ma.
236. LAMBERT, R.St.J., HOLLAND, J.G., Univ. Alberta (Geology):
Geochronology and geochemistry of the Lewisian.
The Lewisian gneisses of the Torridon district contain a component dated by Rb-Sr at 3400 Ma, whereas the main units of the complex are at least 2700 Ma old. These gneisses are closely similar in petrology and composition to the grey gneisses of the Laxford district.
237. LAMBERT, R.St.J., HOLLAND, J.G., WINCHESTER, J.A., Univ. Alberta (Geology):
Chemistratigraphy and geochronology of Moinian, Grampian and Dalradian complexes, 1970-90.
Geochemical studies of psammites and pelites in the Scottish Highlands show that each pelitic formation so far studied has unique geochemistry and that psammites can in some instances be fingerprinted. Correlation by geochemical characteristics has proved possible up to 100 km or more along strike. The information has been used to clarify the interrelationship of the Moinian, Grampian and Dalradian, and to emphasise the distinctiveness of the Morar and Glenfinnan Divisions of the W. Moinian. The Grampian metamorphism peaked at close to 485 Ma, while the Leven Schists were deposited 655 Ma ago.
238. MILLER, R.A., BAADSGAARD, H., MORTON, R.D., Univ. Alberta (Geology):
The geochronology and U-Pb isotope systematics of the pitchblende deposits in the Bear Province, northwestern Canadian Shield, 1980-82; Ph.D. thesis (Miller).
239. PARRISH, R.R., ARMSTRONG, R.L., Univ. British Columbia (Geological Sciences):
Cenozoic tectonics of the British Columbia Coast Mountains: inferences from fission track dating of zircon and apatite, 1978-81; Ph.D. thesis (Parrish).
See:
Uplift rates of Mt. Logan, YT, and BC's central Coast Mountains using fission track dating methods; EOS, vol. 62, no. 6, 1981.
Fission track estimates of paleoheat flow, Coast Mountains of British Columbia, Canada; EOS, vol. 61, no. 46, p. 1131, 1980.
Conclusion of fission track dating and thermal modeling will culminate Spring 1981 with the writing of the thesis, to be completed Sept. 1981.
240. WORDEN, J., CUMMING, G.L., BAADSGAARD, H., Univ. Alberta (Geology):
The geochronology-isotope geology of the pitchblende mineralization of the Midwest Lake deposit, Saskatchewan, 1978-81.
The analysis of pitchblende, country or host rock, sericite, chlorite, biotite, galena, nickel arsenides by Rb-Sr, U-Pb and Pb-Pb is completed. A paper is being prepared for verbal presentation of the results at a conference in Regina this fall. The company (Exxon) have given permission for the publication of a major report on the geochronological work by early next year.
This work has been part of a long-term project on isotope investigation of the uranium mineral deposits in Saskatchewan (coworker: J. Hoeve, Saskatoon). A paper on the latest geochronological results from four other deposits is in preparation.

GEOLOGICAL COMPUTER APPLICATIONS/

APPLICATIONS DE L'INFORMATIQUE À LA GÉOLOGIQUE

241. HAMILTON, W.N., KOPF-JOHNSON, A., Alberta Research Council (Geol. Surv.):
Information geology, 1974-.

See:

GEODIAL user's manual; ARC Internal Rep. (draft, for distribution on request), 1980.

To identify and index Alberta geoscience data for input to a computerized online bibliographic data base for Alberta (GEODIAL) and for inclusion in a national index file (GEOSCAN), and to use these tools (GEODIAL/GEOSCAN) and others to provide timely responses to requests from Government planning and regulating agencies, the mineral industry, institutions and the public for up-to-date resource information.

GEODIAL now includes all published and unpublished geoscience reports of Alberta Research Council (to end of 1980), the complete works of Canadian Society of Petroleum Geologists (to end of 1978), and published and unpublished reports of the Geological Survey of Canada that pertain to Alberta (to end of 1980). Theses and journal literature are the current target of indexing, to be completed in 1982/83.

GEOMATHEMATICS/MATHEMATIQUE DE LA TERRE

242. AGTERBERG, F.P., Geol. Surv. Can.:
Probability models for estimating mineral potential, 1969-.
243. AGTERBERG, F.P., Geol. Surv. Can.:
Probability models for estimating mineral potential for geoprocessing, 1976-.
244. FABBRI, A.G., Geol. Surv. Can.:
Quantification of geological variables and geo-mathematical estimation of mineral potential, 1972-.
245. SINCLAIR, A.J., GIROUX, G.H., Univ. British Columbia (Geological Sciences):
Geostatistical evaluation of silver deposits, British Columbia-Yukon, 1980-82; M.A.Sc. thesis (Giroux).
Our work has concentrated on development of a practical grade estimation procedure at the production level for the Sam Goosly deposit of Equity Silver Mines Ltd. The deposit is characterized by a tremendously high level of variability in Ag grades, 3 orders of magnitude for 5m blasthole samples separated by 5 to 10 m in extreme cases. Several procedures to meet this problem are being tested.

246. WATERS, P.M., WILLIAMS, G.D., Univ. Alberta (Geology):
Detailed variograms of the coal seam thickness from the Ravenscrag Formation, Estevan, Saskatchewan, 1978-81; M.Sc. thesis (Waters).
Coal seam thicknesses, surveyed just after the seam was mined, have been collected at short spacing. These, along with drill hole thicknesses, will be used to examine the variogram models, in particular whether they show a nugget effect near the origin. Preliminary results suggest there is no nugget effect, and that a straight line may be the best model. No anisotropy has been seen yet.

GEOMORPHOLOGY/GÉOMORPHOLOGIE

247. DUBOIS, J.M.M. Univ. Sherbrooke (Géographie):
Bibliographie sur les caractéristiques physiques des Cantons de l'Est, Québec, 1971-.
Cinq rapports totalisant plus de 4,000 références ont été publiés à date pour couvrir tout le domaine physique des Cantons de l'Est. Les références sont regroupées par thèmes. L'acquisition de données est continue. Un sixième rapport est prévu en 1981.
248. DUBOIS, J.M.M., DIONNE, J.C., Univ. Sherbrooke (Géographie):
Télédétection et cartographie des fronts glaciaires sur la Côte Nord du Saint-Laurent entre le lac Saint-Jean et le Labrador, 1978-82.
Voir:
A position of the Laurentide ice sheet in eastern Quebec and southern Labrador during Late Wisconsin deglaciation; Northeastern Section Geol. Soc. Am., 15th Ann. Mtg., Philadelphia, Proc., p. 435-436, 1980.
Le complexe morainique frontal d'Aguanus-Kénamiou, Basse Côte Nord du Saint-Laurent; Le Quaternaire du Québec IV, Québec, résumés et programme, p. 13, 1980.

ELECTRICAL/MÉTHODES ÉLECTRIQUES

249. DUCKWORTH, K., BAYS, A., Univ. Calgary (Geology and Geophysics):
Electromagnetic scale modelling of Turner Responses on conductive environments, 1979-; M.Sc. thesis (Bays).
Analogue modelling of conductive geological environments using an electrolytic tank. Initial phase of modelling relates to the Turam prospecting system. Model is microprocessed controlled and is almost complete.
250. DUCKWORTH, K., KAY, A., Univ. Calgary (Geology and Geophysics):
Investigation of the IP effects in lead-zinc areas located in permafrost zones, 1979-81; M.Sc. thesis (Kay).
251. DYCK, A.V., Geol. Surv. Can.:
Borehole geophysics (electrical and magnetic techniques), 1974-.
252. GROSS, H., LANGHAM, E.J., Environment Canada (National Hydrology Res. Instit., Surface Water Div.):
Time domain reflectometry, 1977-80.
Various models of dielectric mixtures are discussed and compared with laboratory work. These are all from published literature. A simple model is developed for illustrating the usefulness of a TDR system for ground frost investigation and its application in laboratory testing and in the field. Different probes designed are discussed, with quantitative elaboration of the more useful designs.
253. QUÉBEC MINISTÈRE ÉNERGIE ET RESSOURCES:
Leve input, region du Lac au Goeland, 1980-.
254. SCHNEIDER, A.T., ARNOLD, R., Saskatchewan Research Council (Geology Div):
Geophysical delineation of brine contaminated groundwater, Saskatchewan, 1980-81.
A program was undertaken to determine the extent of subsurface brine migration adjacent to a potash mine waste disposal basin using DC resistivity and electromagnetic methods.
- See:**
Saskatchewan Geol. Surv., Summ. Investig., p. 22, 1980.
During the summer of 1980 an exploratory follow up was made into the area covered by the gradiometric survey. Due to fiscal stringency the achievement was minimal. The project is expected to take a low profile during 1981-82 for the same fiscal reasons.
261. SCHWARZ, E.J., LAVERDURE, L., École Polytechnique (Génie Minéral):
Magnetic properties of sulphide ore deposits and their significance in magnetic prospecting, 1980-82; thèse de maîtrise (Laverdure).
Détermination de la numérologie magnétique - Zoning; détermination de la susceptibilité magnétique et l'anisotropie - Fabric; détermination de l'aimantation rémanente - paléomagnétisme; et construction des modèles et évaluation des effets magnétiques et gravimétriques prévus à la surface.
262. SINHA, A.K., Geol. Surv. Can.:
Applied Em problems, 1973-.
- See:**
Overburden characteristics on the Alfred Hawkesbury area, Ontario obtained by D.C. electrical soundings; Geol. Surv. Can., Paper 80-1C, p. 1-12, 1980.
263. SOLIMAN, A.A., BURKE, K.B.S., Univ. New Brunswick (Geology):
Interpretation of Mini-Sosie seismic reflection data for Carboniferous rocks in New Brunswick, 1980-82; M.Sc. thesis (Soliman).
Mini-Sosie seismic reflection record sections obtained along a reconnaissance line between Moncton and Newcastle in New Brunswick are being interpreted. The aim of the project is to provide a better understanding of the Carboniferous geology and the underlying basement rocks.
264. STOLZ, H., Saskatchewan Geol. Surv.:
Airborne radiometric compilations.
- See:**
Saskatchewan Geol. Surv., Summ. Investig., p. 86, 1980.
274. HALL, D.H., KHAN, S., Univ. Manitoba (Earth Sciences):
Rock magnetism and magnetic anomalies, English River subprovince, 1980-82; M.Sc. thesis (Khan).
275. HALL, D.H., MILLAR, T., NOBLE, I., Univ. Manitoba (Earth Sciences):
Deep crustal magnetism, 1978-83; M.Sc. thesis (Noble).
- See:**
Magnetic signatures of subprovinces in the Canadian Shield and MAGST data; Geol. Assoc. Can./Mineral. Assoc. Can., Abstracts, vol. 6, p. A-24, 1981.
276. HALL, D.H., VOHRA, R.D., Univ. Manitoba (Earth Sciences):
Deep e.m. sounding using power lines, 1980-82; Ph.D. thesis (Vohra).
- See:**
Deep electromagnetic soundings in Manitoba; Geol. Assoc. Can./Mineral. Assoc. Can., Abstracts, vol. 6, p. A-58, 1981.
277. McGLYNN, J.C., Geol. Surv. Can.:
Paleomagnetic study of Proterozoic red beds of the western Canadian Shield, 1968-.
278. OLSON, D.G., Geol. Surv. Can.:
High resolution aeromagnetics (experimental surveys), 1968-.
279. SAWATZKY, P., Geol. Surv. Can.:
High resolution aeromagnetics (instrumentation development), 1977-.
280. SCHWARZ, E.J., Geol. Surv. Can.:
Paleomagnetism of the Circum-Ungava belt, 1973-.
- See:**
Preliminary paleomagnetic results for Sakami Formation redbeds near La Grande 4, Québec; Geol. Surv. Can., Paper 80-1C, p. 139, 140, 1980.
281. SCHWARZ, E.J., Geol. Surv. Can.:
Vertical movements of the Precambrian shield, Ontario - Québec, 1980-.

EXPLORATION/PROSPECTION

255. CHANDRA, J.J., BURKE, K.B.S., HALE, E.W., New Brunswick Dept. Nat. Res. (Geol. Surv. Br.), Univ. New Brunswick (Geology):
Ground investigation of airborne gamma-ray radiometric anomalies in New Brunswick by truck-mounted and hand-held gamma-ray sensors, 1978-81; M.Sc. thesis (Chandra).
See:
Uranium favorability interpreted from U.R.P. data, ground radiometry and gravity (New Brunswick); Abstract, Atlantic Geoscience Soc. Symp., 1981.
256. CHARBONNEAU, B.W., Geol. Surv. Can.:
Evaluation of uranium reconnaissance data, 1976-.
- See:**
The Fort Smith radioactive belt, Northwest Territories; Geol. Surv. Can., Paper 80-1C, p. 45-57, 1980.
257. DUCKWORTH, K., PANENKA, J.R., Univ. Calgary (Geology and Geophysics):
Development of a high resolution airborne gamma spectrometer, 1975-81; Ph.D. thesis (Panenka).
Development of an airborne gamma spectrometer using real time data processing to allow high resolution multichannel detection. System is flying and in commercial use.
258. FOLINSBEE, R.A., Geol. Surv. Can.:
East Coast off shore surveys, 1973-.
259. GRASTY, R.L., Geol. Surv. Can.:
Gamma-ray spectrometry (technique development), 1972-.
260. MACDONALD, R., Saskatchewan Geol. Surv.:
Evaluation of gradiometric technique, Jan Lake area, Saskatchewan, 1979-.
- GEOMAGNETISM-PALEOMAGNETISM/
GÉOMAGNÉTISME-PALÉOMAGNÉTISME**
265. BOWER, M.E., Geol. Surv. Can.:
Ocean aeromagnetics, 1965-.
266. CHANDRA, J.J., WALLACE, J.W., New Brunswick Dept. Nat. Res. (Geol. Surv. Br.):
Magnetic filtering Project - Dalhousie-Bathurst, New Brunswick, 1980-81.
See:
Residual Magnetism; 1st derivative magnetism; New Brunswick Dept. Nat. Res., 120 map sheets at 1:20 000 scale.
267. CHRISTIE, K.W., Geol. Surv. Can.:
Paleomagnetism and rock magnetism instrumentation and technological development, 1970-.
268. CHRISTIE, K.W., Geol. Surv. Can.:
Paleomagnetism of the Hopeland diabase dykes, Newfoundland, 1972-.
269. CURRIE, R.G., Geol. Surv. Can.:
Geological and geophysical studies in the Beaufort Sea, 1971-.
270. CURRIE, R.G., Geol. Surv. Can.:
Marine magnetic surveys, Pacific margin, 1980-.
271. FAHRIG, W.F., Geol. Surv. Can.:
Paleomagnetism of the dykes of west Greenland, 1972-.
272. FAHRIG, W.F., Geol. Surv. Can.:
Paleomagnetism of Proterozoic to Devonian strata across Boothia Arch, 1974-.
273. GODFREY, J.D., SPRENKE, K., LANGENBERG, C.W., Alberta Research Council (Geol. Surv.):
Geophysical aspects of the Shield in Alberta, 1960-80.
- GEOTHERMAL/GÉOTHERMIQUE**
282. JARVIS, G.T., Univ. Toronto (Geology):
The tectonic role of the lithosphere, 1980-82.
- See:**
Sedimentary basin formation with finite extension rates; Earth and Planetary Sci. Lett., vol. 48, p. 42-52, 1980.
Oceanic bathymetry profiles flattened by radiogenic heating in a convecting mantle; Nature, vol. 285, p. 649-651, 1980.
The conversion of heat into mechanical work by mantle convection; Geophysical Res., vol. 85, p. 6093-6096, 1980.
To investigate the tectonic role of the lithosphere on two distinct but complimentary scales. On the large scale the lithosphere forms a relatively rigid upper boundary layer to mantle convection. I intend to test the hypothesis that convection extends throughout the whole mantle by generating and analysing a catalogue of numerical solutions of 2-dimensional convection in the (previously inaccessible) parameter range appropriate to the whole mantle. One key issue which I shall investigate is the effect of the rigidity of the lithosphere on (a) the dynamics of the overall circulation and (b) surface features such as heat flow, gravity, bathymetry and plate-velocity.
On a smaller scale, uplift and subsidence of continental crust is regulated by the viscoelastic and thermal responses of the lithosphere to loading or extension. Using a viscoelastic formulation I propose to compute, initially, the stresses generated throughout the lithosphere as a consequence of glacial unloading. These stresses can then be related to seismicity along the fossil edge of the Laurentide ice sheet. Subsequently, I shall incorporate the viscoelastic response of the lithosphere (to sediment loading) into the time-dependent stretching model of thermally induced basin subsidence which I have previously developed.

283. LAMBERT, R.St.J., Univ. Alberta (Geology): Thermal and isotopic history of the earth.
The isotopic and thermal consequences of a mantle with convection in two layers separated by a thermal boundary layer at 700 km depth are under study. A leaky lower mantle which is not involved in the construction of the Archean continental crust fits all known geochemical and petrological data. Geophysical opinion is divided on the arguments for and against such an internal boundary layer in the mantle; recent experimental data can be used to support whole mantle or layered mantle convection. Lead isotopes point to long-lived, isolated, reservoirs in the mantle which are difficult to reconcile with whole-mantle convection.
284. MATHEWS, W.H., Univ. British Columbia (Geological Sciences): Tertiary geothermal history of southern British Columbia, 1972-83.
285. PALMER, J.H.L., SVEC, O.J., National Research Council of Canada (DBR): Ground heat storage, 1978-.
- See:**
A heat exchanger for in-ground heat storage; Chem. Eng. Commun., vol. 3, p. 323-336, 1980.
- GRAVITY/GRAVITÉ**
286. CHANDRA, J.J., WALLACE, J.W., New Brunswick Dept. Nat. Res. (Geol. Surv. Br.): Study of gravity response to salt-potash structures, 1979-80.
- See:**
Residual gravity maps of New Brunswick - 1:500 000; New Brunswick Dept. Nat. Res., maps 80-41, 80-42, 80-43, 1980.
2nd derivative gravity map of New Brunswick - 1:500 000; New Brunswick Dept. Nat. Res., map 80-41.
287. GUPTA, V.K., Ontario Geol. Surv.: Gravity survey - North Bay-Sudbury-Gogama-Cobalt, Ontario, 1977-83.
Investigate and interpret the gravity field over this area which includes the Cobalt embayment and the Grenville Front. Field work is completed. Maps released for east half (O.G.S. Maps P. 2296 and P. 2297), map compilation for west half and interpretation for entire area is underway.
288. MILLER, H.G., PITTMAN, D., Memorial Univ. (Physics): Geophysical studies of the Avalon Zone, Newfoundland, 1980-83; B.Sc. thesis (Pittman).
During the 1980 field season, 200 gravity stations, with a mean station spacing of 2.5 km were established. The aeromagnetic maps for the area were digitized and reduced. Interpretation of the area from Holywood to Cape St. Francis to Bay Bulls is being interpreted as a B.Sc. thesis by Pittman.
The plans for 1981 call for an extension of the data acquisition to the peninsula between Conception and Trinity Bays and the beginning of short spread refraction surveys on land. Further plans for underwater gravity surveys and refraction surveys at sea are contingent upon obtaining ship time in 1982.
289. QUÉBEC MINISTÈRE ÉNERGIE ET RESSOURCES: Gravimétrie régionale de l'Abitibi, 1980-.
- SEISMOLOGY AND PHYSICS OF INTERIOR/ SISMOLOGIE ET PHYSIQUE DE L'INTÉRIEUR DE LA TERRE**
290. BROWN, R.J., AMING, A.J., Univ. Calgary (Geology and Geophysics): Frequency-wavenumber filtering of multichannel seismic reflection data, 1980-81; M.Sc. thesis (Aming).
291. HAWORTH, R.T., Geol. Surv. Can.: A geophysical investigation of the submarine extension of geological zonation of Newfoundland, 1979-.
292. HUNTER, J.A., Geol. Surv. Can.: Permafrost seismic, 1973-.
293. KEEN, C.E., Geol. Surv. Can.: Seismic studies of continental margins and ocean basins of the North Atlantic, 1980-.
- To study the variations in crustal structure across passive continental margins; to study the deep structure of the lithosphere using data resulting from the Lesser Antilles Deep Lithosphere Experiment (LADLE); and to relate seismic structure to other geological and geophysical data and to models of continental margin evolution.
294. KREBES, E.S., Univ. Calgary (Geology and Geophysics): The propagation of seismic waves in layered anelastic media, 1980-81.
- See:**
Synthetic seismograms for SH waves in a layered anelastic medium by asymptotic ray theory; Bull. Seism. Soc. Am., vol. 70, p. 2005-2020, 1980.
Ray-synthetic seismograms for SH waves in anelastic media; *ibid.*, p. 29-46, 1980.
Theoretical and computational studies of the propagation of seismic waves in a layered anelastic medium are being carried out. The linear theory of viscoelasticity is being used to model the anelasticity. In the recent past, reflection/transmission (r/t) coefficients for SH waves at a boundary separating two anelastic media have been calculated. They indicate that significant differences between elastic and anelastic r/t coefficients can appear for the case of large incidence angles combined with large attenuation angles (angle between the directions of propagation and maximum attenuation). Using these SH anelastic r/t coefficients, ray-synthetic seismograms in layered anelastic media have been computed for both teleseismic waves and spherically divergent waves from a surface source, in collaboration with F. Hron of the University of Alberta. As well as showing the usual effects of amplitude attenuation and waveform spreading and smoothing, they also show surprising cases of polarity reversals for certain arrivals, due to the nature of the anelastic r/t coefficients. Perhaps these effects can be found in real data.
The above-mentioned studies are presently being extended to the case of P-SV waves, beginning with computations of the anelastic P-SV r/t coefficients. In the future, the physical characteristics of the generally inhomogeneous plane waves which propagate in anelastic media will be examined in more detail. The work so far has made use of a non-dispersive approximation. Since dispersion has been shown to be an important effect, future work will involve the modification of the above studies to include dispersion. The long-range aim is to increase the accuracy of seismic modelling procedures.
295. MOON, W., Univ. Manitoba (Earth Sciences): Whole earth geodynamics and seismological research project, 1979-83.
1) As a part of CO-CRUST, the data sets from CO-CRUST 1977 and 1979 refraction surveys are being interpreted in detail to clarify the detailed geological structure of the Precambrian boundary zone between Churchill-Superior provinces.
2) SEASAT Altimeter data over Hudson Bay is being studied to relate the tidal dissipations of marine and solid Earth tides.
3) Dynamic parameters of Earth since Precambrian time are being studied to extrapolate the modern day plate tectonics into remote past.
296. OVERTON, A., Geol. Surv. Can.: Seismic-Precambrian Shield, 1970-.
297. SURYAM, J.V., PATERSON, D.F., CHRISTOPHER, J.E., Saskatchewan Geol. Surv.: Seismic investigations in the Athabasca Basin, Saskatchewan, 1976-.
- See:**
Seismic investigations on the perimeter of the Athabasca Basin in northern Saskatchewan, Key Lake area; Saskatchewan Mineral Res., Rep. no. 216A, 1980.
Seismic investigation on the perimeter of the Athabasca Basin, Wollaston Lake - Black Lake areas; *ibid.*, Rep. no. 216-B, 1980.
Seismic investigations on the perimeter of the Athabasca Basin, Mirror River-Forrest Lake areas; *ibid.*, Rep. no. 216-C, 1980.
298. TIFFIN, D.L., Geol. Surv. Can.: Geological and geophysical studies of the Pacific continental margin, 1971-.
- OTHER/AUTRE**
299. KEEN, C.E., Geol. Surv. Can.: Rift processes and the development of passive continental margins, 1980-.
- To investigate consequences (i.e. subsidence history, stratigraphy, crustal thicknesses, heat flow, and gravity anomalies) of various processes perhaps responsible for initial rifting. These processes include extension, intrusion, erosion and phase changes in the lower crust.
300. KILLEEN, P.G., Geol. Surv. Can.: Borehole geophysics (nuclear techniques), 1974-.
- See:**
A comparison of bismuth germanate, cesium iodide, and sodium iodide scintillation detectors for gamma ray spectral logging in small diameter boreholes; Geol. Surv. Conf. Paper 80-1B, p. 173-177, 1980.
Regional radiogenic heat production mapping by airborne gamma ray spectrometry; *ibid.*, p. 227-232, 1980.
301. MIRKOVICH, V.V., SOLES, J.A., BELL, K.E., E.M.R. (CANMET): Underground nuclear waste repository - thermal rock properties, 1979-85.
- See:**
Thermal conductivity of Pinawa Drill Core Rocks; CANMET, ERP/MSL 80-132 (IR), 1980.
Thermal diffusivity and linear thermal expansion of Pinawa drill core rocks; CANMET, ERP/MSL 80-141 (IR), 1980.
Underground nuclear waste repository studies: Petrography and petrofabric of a section of the Pinawa, Manitoba WN-1 drill core; CANMET ERP/MSL 80-131 (IR), 1980.
There was continuing progress on studies of thermophysical properties of rocks and their relation to rock composition, mineralogy and petrofabric. Rocks studies in this period are from a site in southern Manitoba. Results are being used to appraise thermal stability under conditions that might be encountered in a nuclear waste repository.
302. ZIETZ, I., HAWORTH, R.T., WILLIAMS, H., DANIELS, D.L., Memorial Univ. (Geology), Geol. Surv. Can.: Geophysical maps of the Appalachian Orogen, 1:1 000 000 scale, 1979-81.
- See:**
Magnetic anomaly map of the Appalachian Orogen; Memorial Univ., map no. 2, 1980.
Bouguer gravity anomaly map of the Appalachian Orogen; Memorial Univ., map no. 3, 1981.
Compilation of a time of deformation map of the Appalachian Orogen is near completion. Plans for a metallogenic map of the Appalachian Orogen are being formulated.

ENGINEERING GEOLOGY/GÉOLOGIE DE L'INGÉNIEUR

303. CHAGNON, J.Y., COCKBURN, D., Univ. Laval (Géologie):
Cartographie géotechnique de la région de la ville de Québec, 1978-81; thèse de maîtrise (Cockburn).
Le travail de compilation est terminé, la préparation de cartes est presque complétée et la rédaction de la thèse est en cours.
304. CHAGNON, J.Y., DORÉ, G., Univ. Laval (Géologie):
Microzonation sismique de la région de Québec, 1981-83; thèse de maîtrise (Doré).
Le projet a pour but de préparer une carte de microzonation sismique de la région de la ville de Québec. Il en est à son début (compilation de données sur les effets des tremblements de terre historiques - revue des méthodes de microzonation développées ailleurs - revue des effets des tremblements sur divers types de sol et de structures). Ce projet utilisera les résultats de la cartographie géotechnique réalisée dans le cadre d'un autre projet.
305. EGGINTON, P.A., Geol. Surv. Can.:
Hydraulic, morphologic and morphometric studies of selected rivers along Mackenzie Highway, 1975-.
- See:
Terrain disturbance resulting from vehicle movement, Lone Gull Lake, central Keewatin; Geol. Surv. Can., Paper 80-1B, p. 69-74, 1980.
306. FRANSHAM, P., GREENHOUSE, J.P., JACKSON, J., Univ. Waterloo (Earth Sciences):
Geophysical tool development for the identification of ground ice, 1980-82; B.Sc. thesis (Jackson).
The future depends very much on the results of the preliminary stage, which we are only now evaluating. The objective is to determine the ice content of a vertical section beneath a pipeline or highway access from geophysical logs-density logs. This might be accomplished on the basis of careful calibration against core measurements in the area under investigation, and at a considerable saving over an entirely core-analysis based survey.
307. GADD, N.R., Geol. Surv. Can.:
Geological variability of marine deposits, Ottawa-St. Lawrence Lowland, 1974-.
308. GRICE, R.H., BROWN, R., HESSE, R., McGill Univ. (Geological Sciences):
Weathering processes of mudrocks, 1980-83; Ph.D., thesis (Kim).
With the increase of larger engineering projects in poorer geological environments, improved understanding of geological materials is desirable. The shale or mudrock group of rocks is one of the more problematic in that the group embraces a wide range of properties that influence engineering activities more or less seriously. Significant environments include areas of oil and sand extraction and coal mining as well as of foundations and underground opening projects and natural and cut slopes. The objective of this study is to quantify and test fundamental theories of weathering thereby 1) justifying or qualifying the validity of existing test and classification procedures and 2) providing a base for the development of new procedures. It is proposed to weather samples progressively and observe changes continuously gravimetrically thereby measuring the water vapour adsorption properties of different mudrock facies. A modified BET apparatus, with a Cahn RG electrobalance has been constructed. The isotherms should not only provide values of effective surface area, but changes in maximum amounts adsorbed should indicate the progress of continuing weathering. Strain and suction pressure measurements will also be made.
309. HEGINBOTTOM, J.A., Geol. Surv. Can.:
Slope processes and cryogenic movements, Arctic Islands, 1977-.
310. RUSSELL, D.J., TELFORD, P.G., Ontario Geol. Surv.:
Subsurface investigation of the Sylvania Sandstone, Windsor, Ontario, 1980-81.
A study was made of the extent of the Sylvania Sandstone beneath Essex County, Ontario. The Devonian sequence of the Windsor area was sampled in three boreholes. Sylvania sandstone cores from these boreholes have been subjected to petrographic analysis and engineering testing. Based on this and a study of production of salt by solution mining, a model for the formation of a surface craters over brine caverns at Windsor has been proposed.
311. TANGUAY, M.G., PRUD'HOMME, M., École Polytechnique (Génie minéral):
Caractérisation des agrégats de carrières près de Montréal, Québec, 1979-81; thèse de maîtrise (Prud'homme).
Développement d'une méthode de caractérisation des agrégats de carrières productrices dans la région de Montréal en fonction des paramètres géologiques et des propriétés physiques et chimiques.
312. UFFEN, R.J., Queens's Univ. (Geological Sciences):
Radioactive waste management, 1975-.
313. VANDINE, D.F., GEORGE, H., Queen's Univ. (Geological Sciences):
Engineering geology of glaciolacustrine deposits of southeastern British Columbia, 1981-82; Ph.D. thesis (George).
1) To delineate the distribution of glaciolacustrine deposits, and slope failures involving such deposits, within southeastern British Columbia;
2) to establish, in significant detail, the geological setting and geotechnical properties of the glaciolacustrine deposits;
3) to analyze the nature and origin of recent slope failures in these deposits and to identify the factors that control the stability; and
4) to present this information in a form that will be convenient for use as a basis for safe and economic planning and site specific engineering within the study area.
- PERMAFROST/PERGÉLISOL**
314. BAKER, T.H.W., National Research Council of Canada (DRB):
Strength and deformation of frozen and thawing soil, 1971-85.
See:
Confined and unconfined compression tests on frozen sands; 4th Can. Permafrost Conf., March 1981.
Modifications have recently been completed on the triaxial cell. Preliminary hydrostatic testing at room temperature and 0.5 MPa has shown no leakage. During the next year triaxial testing will be completed at confining pressures of 0.1 and 0.2 MPa. Time-domain reflectometry (TDR) will be used to provide quality control on test specimens of frozen sand.
Compliant platens were manufactured and sent to FENCO in Calgary and Exxon in Houston for their ice testing programs. Interest in the use of compliant platens is continuing for strength testing in the field as well as use with closed-loop testing machines in the laboratory.
Time-domain reflectometry (TDR) has been used to locate the frozen/unfrozen interfaces in experiments involving the freezing of distilled water and saturated sand. The correlation between the TDR measurements and other standard techniques was excellent. The precision of locating the freezing boundary was within 0.7 cm in water and within 0.5 cm in saturated sand. This precision is thought to exist in transmission lines up to 1 m in length. Some freezing tests will be made using Rideau clay.
315. CHATWYN, S.C., RUTTER, N.W., Univ. Alberta (Geology):
Terrain characteristics and ground ice dynamics in a thermokarst peatland, Fort Simpson, Northwest Territories, 1976-81; M.Sc. thesis (Chatwin).
316. GOODRICH, L.E., JOHNSTON, G.H., PENNER, E., National Research Council of Canada (DRB):
Ground thermal regime, 1970-.
- See:
Three time level methods for the numerical solution of soil freezing problems; Cold Regions Sci. Tech., vol. 3, p. 237-242, 1980.
Field work has been completed for a study of thermal effects of road embankment on permafrost, Mackenzie Highway, Mile 419.5. Field measurements of soil thermal conductivity are being maintained at Ottawa, Thompson Manitoba, and Mile 419.5, Mackenzie Highway.
317. JOHNSTON, G.H., National Research Council of Canada (DRB):
Field observations of performance of foundations of buildings, bridges, roads, airfields, utilities, etc., 1950-.
- See:
Permafrost-Engineering design and construction; G.H. Johnston, Ed., John Wiley and Sons Canada Limited, Toronto.
318. JOHNSTON, G.H., GOODRICH, L.E., National Research Council of Canada (DRB):
Insulated embankments on permafrost, 1972-81.
Observations at test sections on Mackenzie Highway south of Wrigley, Northwest Territories terminated in February 1981; report in preparation.
319. PARAMESWARAN, V.R., National Research Council of Canada (DRB):
Physico-mechanical processes in frozen soils, 1975-.
- See:
Adfreeze strength and creep of frozen soils measured by model pile tests; Proc. Second Internat. Symp. on Ground Freezing, June 1980 (Preprints, p. 157-164).
Displacement of piles under dynamic loads in frozen soils; Proc. 4th Can. Permafrost Conf. March, 1981.
Compressive strength of frozen sand and soils at various temperatures (-2°C to -30°C), strain rates 10^{-7} to 10^{-2} s $^{-1}$ and confining pressures (0 to 75 MPa) was determined. At high temperatures and confining pressures, the compressive strength decreased considerably due to increasing amount of unfrozen water present in the material. Adfreeze strength of piles in frozen soils and sand was determined at various temperatures under static and dynamic loading conditions. It was found that a small superimposed alternating load could considerably enhance the rate of displacement of piles in frozen soils, thereby reducing the effective life of the structure prior to the attainment of an allowable settlement. These measurements are continuing.
- ROCK MECHANICS/MÉCANIQUE DES ROCHES**
320. CRUDEN, D.M., Univ. Alberta (Geology):
Stability of natural slopes in rock, 1971-.
- See:
The anatomy of landslides; Can. Geotechnical J., vol. 17, p. 295-300, 1980.
A rock labyrinth in the Front Ranges of the Rockies, Alberta; Can. J. Earth Sci., vol. 17, p. 1300-1309, 1980.
321. CRUDEN, D.M., Univ. Alberta (Geology):
Reconnaissance of karst in the Salt River area, northeast Alberta, 1979-82.
322. DYKE, L.D., Geol. Surv. Can.:
Geotechnical study of rock heave, central Arctic Canada, 1977-.
- See:
Bedrock heave in the central Canadian Arctic; Geol. Surv. Can., Paper 81-1A, p. 157-167, 1981.

323. EISBACHER, G.H., Geol. Surv. Can.: Study of large landslides in the Western Cordillera, 1976-.
- See:**
Debris torrents across the Alaska Highway near Muncho Lake, northern British Columbia; Geol. Surv. Can., Paper 80-1C, p. 29-36, 1980.
324. EVANS, S., CRUDEN, D.M., Univ. Alberta (Geology): Landslides in the Kamloops Group in south-central British Columbia, 1977-81; Ph.D. thesis (Evans).
325. HEDLEY, D.G.F., HERGET, G., YU, Y.S., GELLER, L., EMR (CANMET): Underground mining.
- See:**
Review of mining technology in Canada; Conf. on Application of Rock Mechanics to Cut and Fill Mining, Lulea, Sweden, June 1980.
Regional stress in the Canadian Shield; Proc. 13th Canadian Rock Mechanics Symp., Toronto, May 1980.
To evaluate new bulk mining methods at depth as replacement for present cut-and-fill mining systems; to monitor ground conditions associated with pillar recovery in Elliot Lake uranium mines; to evaluate three proposed sequences of extraction with delayed backfill in relation to ground control at a deep Cu-Ni mine; and develop deep mine design criteria relating mining sequence to load conditions.
326. LAJTAI, E.Z., SVAB, M., Univ. New Brunswick (Geology): Creep and crackgrowth in Lac du Bonnet granite, Manitoba, 1980-83; M.Sc. thesis (Svab).
Crack growth in and creep of Lac du Bonnet granite under simulated conditions of a nuclear waste repository is evaluated. In the first phase of research granite is subjected to uniaxial compression at room temperature and humidity. Crack growth is detected by noting both the course of volumetric strain as a function of stress and time and the degradation of tensile strength in granite as a function of the same two parameters. In later phases the same procedures are repeated under changed environmental factors: presence of groundwater (simulated granite groundwater and brine) and temperature to 95°C.
327. LAROCQUE, G.E., GYENGÉ, M., ANNOR, A., EMR (CANMET): Underground nuclear waste repository, 1975-85.
- See:**
Nuclear waste vault sealing; Proc. 13th Canadian Rock Mechanics Symp., Toronto, May 1980.
Further progress made on characterizing research area formations in terms of mechanical properties. Review of grouting practices in relation to nuclear waste disposal completed.
328. PALMER, J.H.L., National Research Council of Canada (DRB):
Field performance of tunnels under conditions of high in situ stress, 1976-.
329. TSUI, P.C.W., CRUDEN, D.M., Univ. Alberta (Geology): Karst topography, Wood Buffalo Park, Alberta-Northwest Territories, 1981-82; M.Sc. thesis (Tsui).
- SOIL MECHANICS/MÉCANIQUE DES SOLS**
330. BOZOZUK, M., EDEN, W.J., LAW, K.T., National Research Council of Canada (DRB): Geotechnical properties - Eastern marine clay, 1951-.
- See:**
Comparison of undrained shear strength results obtained by different test methods in soft clay; Can. Geotechnical J., vol. 17, no. 3, p. 369-381, 1980.
Influence of cutting shoe size in self-boring pressuremeter tests in sensitive clays; Geotechnical J., vol. 17, no. 2, p. 165-173, 1980.
331. DUSSEAU, M.B., SCAFE, D.W., Alberta Research Council (Geol. Surv.), Univ. Alberta (Mineral Engineering): A geotechnical and clay mineralogical investigation of the roof and floor rocks of Alberta Prairie coals, 1979-81.
332. HUGHES, O.L., Geol. Surv. Can.: Surficial geology and land classification, Mackenzie Valley Transportation Corridor, 1971-.
333. PENNER, E., National Research Council of Canada (DRB): Frost action in soils, 1953-.
- See:**
Location of segregated ice in frost susceptible soil; Proc. Second Internat. Symp. on Ground Freezing, June 1980.
- SNOW AND ICE/NEIGE ET GLACE**
334. FREDERKING, R.M.W., SINHA, N.K., National Research Council of Canada (DRB): Ice mechanics, 1960-.
- See:**
Application of creep model of ice to predict response during strength tests; SESA Fourth Internat. Cong. on Experimental Mechanics, Boston, Mass., 23-30 May, 1980.
Heat exchange at surface of built-up ice platform during construction; Cold Regions Sci. Tech., vol. 3, p. 323-333, 1980.
Ice action on Nanisivik Wharf, Strathcona Sound, N.W.T., winter 1978-79; Can. J. Civil Eng., vol. 7, no. 3, p. 558-563, 1980.
335. SCHAEFER, P.A., McCLUNG, D.M., National Research Council of Canada (DRB): Avalanche engineering, 1966-.
- See:**
Seismic and impact pressure monitoring of flowing avalanches; J. Glaciology, vol. 26, no. 94, 1981.
Frequency of major avalanche winters; *ibid.*, 1981.
To determine the characteristics of snow avalanches in motion, the amount of snow moved by avalanches, the feasibility of measures for avalanche protection and to develop techniques of evaluating avalanche hazard. To determine characteristics of snow and terrain parameters necessary for estimating of creep pressures on structures in deep snow covers.
- GLACIOLOGY/GLACIOLOGIE**
336. ARNOLD, K.C., Environment Canada (National Hydrology Res. Inst., Snow and Ice Div.): Photogrammetric applications to glacier research and water supply from glacierized basins, 1979-83.
To determine if estimation of ice ablation by photogrammetry can be extended to temperate glaciers. Aerial surveys, of the Athabasca Glacier, were made at the beginning and end of the melt season to test the feasibility of using aerial photogrammetry to measure ice loss within a single ablation season. A flight with a heat sensing scanner was made over an ice-cored lateral moraine, once in shadow and once in full sunlight.
337. GLYNN, J., Environment Canada (National Hydrology Res. Inst., Snow and Ice Div.): Gamma ray surveys of southern Ontario, 1979-82.
- See:**
A calibration procedure for airborne gamma ray snow surveys; Proc. 48th Annual Meeting, Western Snow Conference, p. 120-127, 1980.
To determine errors and the cost effectiveness of airborne gamma ray surveys to assess snow water equivalent for use in river flow forecasting models. A survey was carried out in March 1980 but due to low snow conditions and erratic soil moisture results the analyses have not been pursued. In the coming year and analysis of the Souris River basin data will be made and a comparison with the American (NOAA) gamma ray technique will be carried out. A third survey of the Trent-Severn system may be performed in 1982. An operational manual is being prepared.
338. HOLDSWORTH, G., Environment Canada (National Hydrology Res. Inst., Snow and Ice Div.): Ice core-climate change project, 1979-84.
To provide "proxy" paleo-climate data (temperature, precipitation) as well as the variation of atmospheric chemical species through time. A 500-1000 year record (time series) is expected from Mount Logan (Yukon), Mt. Wrangell (Alaska) and Penny Ice Cap (Baffin Island). Lesser records are expected from northern British Columbia icefields and the Columbia Icefield (Alberta).
A newly constructed "Rufli-Rand" electro-mechanical ice core drill was used at an elevation of 5340 m on Mt. Logan to retrieve 211 m of core. Three holes were drilled: 46, 62 and 103 m in depth. Core from the latter should yield climatic "proxy" data for about the last 500 years. A new borehole notch reamer was used to notch the deep borehole at 5 m intervals (total ice thickness at the site was measured by radar as 120±5m). Notches were sensed using a looper with a notch sensing device. A resurvey planned for 1981 will enable the time-depth relationship to be determined assuming steady-state conditions.
339. JOHARI, G.P., Environment Canada (National Hydrology Res. Inst., Snow and Ice Div.): Dielectric properties of contaminated ice, 1980-85.
- See:**
On the excess entropy of disordered solids; Philosophical Mag. B, vol. 41, no. 1, p. 41-47, 1980.
The dipolar correlation factor and permittivity of ice IV and V; Philosophical Mag. B, vol. 42, no. 2, p. 241-255, 1980.
To obtain data on dielectric constant, power attenuation and the conductivity of ice. A report on the Raman spectrum of the main frequencies of intermolecular vibrations was presented at the Chemical Institute of Canada 1980 Conference. Theoretical calculations of the dielectric properties of ice and ice clathrates has been done. An analysis of the heat capacity of ice and other disordered solids has been reported.
340. JONES, S.J., CHEW, H.A.M., Environment Canada (National Hydrology Res. Inst., Snow and Ice Div.): Mechanical properties of ice and permafrost, 1980-85.
- See:**
Mechanical properties of polycrystalline ice: and assessment of current knowledge and priorities for research; Cold Regions Sci. Tech., vol. 3, no. 4, p. 263-275, 1980.
The effect of grain size on the strength of randomly oriented polycrystalline ice is being investigated. Preliminary results indicate very little effect. The effect of hydrostatic pressure of the strength of ice and also on the creep-rate of ice is also being studied.

341. KOERNER, R.M., FISHER, P.A., ALT, B., PARNANDI, M., Polar Continental Shelf Project (EMR):
Paleoclimate of Arctic Islands.
Instantaneous glacierization, the rate of albedo change, and feedback effects at the beginning of an ice age; *Quaternary Res.*, vol. 13, no. 2, p. 153-159, 1980.
The problem of lichen-free zones in Arctic Canada; *Arctic and Alpine Res.*, vol. 12, no. 1, p. 87-94, 1980.
Ice sheets and ice shelves; in *Dynamics of snow and Ice Masses*, S.C., Colbeck (Ed.), Academic Press, New York, p. 1-78, 1980.
Paleoclimate of Arctic Islands from study of surface-to-bedrock ice cores, measurement of mass balance of 4 ice caps, relating glacier parameters to synoptic meteorology.
1) Discovery of increasing using acid levels in last 25 years of snow accumulation in N. Ellesmere.
2) Use of down borehole video equipment.
3) Analysis of ice borehole deformation near bed.
4) Laboratory analysis of 337 m N. Ellesmere core gives evidence for similarity in ice cap size between late Wisconsin and present.
5) Mass balance on 2 ice caps remeasured.
6) Analysis of relationship between ice cap mass balance and warm and cold summers completed.
342. MOKIEVSKY-ZUBOK, O., Environment Canada (Natural Hydrology Res. Instit., Snow and Ice Div.):
Water Management of glacierized basins, British Columbia, 1975-.
Glaciological studies are conducted within several glacier basins to determine mass balance of the glaciers, analyze glacioclimatological data, assess impact of glacier runoff on downstream hydrological models for operational and forecast purposes.
343. OMMANNEY, C.S.L., STROME, M.M., CLARKSON, J.W., Environment Canada (National Hydrology Res. Instit., Snow and Ice Div.):
Snow and ice information and data systems, 1968-.
Sees:
Recent work-Canada; Ice, News Bull. Internat. Glaciological Soc., no. 61, 3rd Issue, p. 410, 1980.
Work started on an inventory of the glaciers in the Stikine and Iskut river basins in British Columbia and continues in Glacier National Park. A inventory of the Canadian glaciers contributing to the fresh water inflow to the North Water polynya, at the head of Baffin Bay, was completed by Pavel Kraus in a cooperative project with the Geographisches Institut. of ETH, Zurich.
344. PERLA, R.L., Environment Canada (National Hydrology Res. Instit., Snow and Ice Div.):
Hydrology of the mountain snowpack, 1979-84.
Sees:
Snow-slab at Whistler Mountain, British Columbia, Canada; Proc. Symp. on Snow in Motion, J. Glaciology, vol. 26, no. 94, p. 85-91, 1980.
345. YOUNG, G.J., POWER, J.M., Environment Canada (National Hydrology Res. Instit., Surface Water Div.):
Peyto glacier hydrology, 1965-.
The monitoring of glaciology and meteorology at Peyto Glacier continued. This year the program was contracted out to P.G. Johnson, Ottawa University. Two student assistants have now been trained in techniques and they will be undertaking Master degree projects as well as the basic monitoring program in 1981.
No new projects were initiated on Peyto Glacier this year, but a concentrated effort was made to have previous studies written up. These include a summary, a paper on mass balance 1966-78, a paper on shortwave radiation, two papers on the effect of debris cover on ice, and papers on water chemistry which are in preparation. A Master's thesis on katabatic winds was completed and a Master's thesis on snow density and a Ph.D. thesis on glacier/climate relationships are currently underway.
- ### HYDROGEOLOGY/HYDROGÉOLOGIE
346. BORNEUF, D.M., Alberta Research Council, (Groundwater Dep.):
Hydrogeology of the Pine Lake basin, Alberta, 1977-84.
347. BOTTOMLEY, D., Environment Canada (National Hydrology Res. Instit., Groundwater Div.):
Hydrogeochemical assessment of crystalline terrain, 1978-.
Develop sampling methodology that will enable the hydrogeochemical characterization of groundwater in Precambrian crystalline rocks. Utilize geochemical and isotopic data to determine the age, origin and hydrogeochemical evolution of groundwater.
348. BOTTOMLEY, D., Environment Canada (National Hydrology Res. Instit., Groundwater Div.):
Ce-36 content of selected Canadian groundwaters, 1979-81.
Successfully extract the chloride content from groundwater samples of various chemistries, purify the chloride from interfering ^{35}S and assay the ^{36}Cl content of the samples using a linear accelerator.
Collect, prepare and analyse groundwater samples for their ^{36}Cl content and determine whether ^{36}Cl will be a useful age dating isotope to include in repository investigations in the Shield.
349. CORBET, T., CEROICI, W., GABERT, G., Alberta Research Council (Groundwater Dep.):
Hydrogeology of the Pigeon Lake area, Alberta, 1978-81.
To complete an intermediate scale (1:100 000) hydrogeologic study using existing data supplemented with relatively small expenditures for additional data. Statistical methods are used to analyze a large quantity of "poor quality" data. Steady-state two-dimensional cross-sectional computer models of potential distribution will be generated.
350. DAVISON, C.C., Environment Canada (Natural Hydrology Res. Instit., Groundwater Div.):
Hydraulic testing and radionuclide transport-fractured rock, 1981-.
Investigate the physical and chemical hydrogeologic controls on radionuclide transport in fractured rock. In particular attention will be focussed on the development and assessment of various field methods which can be used to investigate these controls in situ to depths of 1000 m below ground surface.
351. DICKENS, J.F., Environment Canada (National Hydrology Res. Instit., Groundwater Div.):
Dispersion of solutes in groundwater flow systems, 1980-82.
Develop techniques for measuring diffusive flux component of contaminants (solute) in saturated porous media under both laboratory and field conditions.
352. ELLIOTT, H., Environment Canada (National Hydrology Res. Instit., Groundwater Div.):
Geophysical survey - Strait of Canso, Nova Scotia, 1974-81.
Application of geophysical techniques to the study of the hydrostratigraphy of the Strait of Canso area.
353. GARVEN, G., FREEZE, R.A., Univ. British Columbia (Geological Sciences):
The role of groundwater flow in the genesis of stratabound ore deposits: a quantitative analysis, 1979-82; Ph.D. thesis (Garven).
To investigate groundwater flow as a mechanism for ore genesis in sedimentary basins. Our approach will be quantitative via the application of numerical modelling techniques which will be used to solve the mathematical equations governing the ore genesis-fluid flow system. Theoretical experiments will be performed through the computer programs so as to determine various hydraulic or geochemical constraints on the process. Eventually work will proceed to the actual simulation of a known ore deposit such as Pine Point.
354. GRAHAM, B.W., JACKSON, R.E., Environment Canada (National Hydrology Res. Instit., Groundwater Div.):
Hydrogeochemistry, toxic contaminants - South Gloucester special waste disposal site, 1981-82.
Determine hydrogeochemical controls on toxic contaminant migration in the Gloucester sand and gravel aquifer.
Consider application of this information in the siting and design of chemical landfills.
355. GROVE, G., Environment Canada (National Hydrology Res. Instit., Groundwater Div.):
Hydrogeology of bedrock aquifers, 1978-82.
Investigate chemistry and movement of formation waters in selected formations along the international boundary in the Western Canada Sedimentary Basin.
Assess the economic potential of the ground water contained in these formations and determine the effects on Canadian resources of deep aquifer pumpage in the U.S.
356. GROVE, G., Environment Canada (National Hydrology Res. Instit., Groundwater Div.):
Milk River Channel losses, Alberta, 1981-84.
357. HALSTEAD, E.C., Environment Canada (National Hydrology Res. Instit., Groundwater Div.):
Hydrogeology, Fraser Valley, British Columbia, 1970-81.
Preparation of fence diagrams together with text to portray hydrogeology of a complex section of Quaternary deposits filling Fraser Valley.
358. HERR, R.L., Environment Canada (National Hydrology Res. Instit., Groundwater Div.):
Hydrogeology of the National Capital Region, 1975-81.
Prepare an up to date compilation of information on groundwater occurrences, availability and quality in the National Capital Region.
Examine effects of urbanization and other aspects of changing land use on ground water systems and to consider the recharge-discharge mechanism in sensitive clay areas.

359. HERR, R.L., Environment Canada (National Hydrology Res. Instit., Groundwater Div.): Hydrogeological observations of a deep geothermal borehole, 1979-81.
360. HUGHES, G.M., GOODWIN, M., McCLENAGHAN, W.A., Ontario Ministry Environment (Water Resources Br.): Groundwater quality investigations; special site assessments; legislation for water-well management, 1965-.
- See:
Water wells and groundwater supplies in Ontario; Ontario Ministry Environment, Water Resources Br., 1980.
Assessment of proposed operating and abandoned waste disposal sites is carried out on a continuing basis. Legislation is written and enforced in the area of water-well drilling and construction. Guidelines and legislation are prepared and assessed that deal with contaminant hydrogeology. Problems associated with groundwater contamination from various sources are addressed and advice provided on the abatement of these problems.
361. JAMIESON, G.R., FREEZE, R.A., Univ. British Columbia (Geological Sciences): Preliminary study of groundwater flow in the Meager Mountain volcanic complex, British Columbia, 1980-81; M.Sc. thesis (Jamieson).
Numerical simulations of regional groundwater flow in the Meager Mountain volcanic complex produce a possible range of groundwater flow and water table configurations for the geothermally active area.
362. JOHNSTON, L.M., Environment Canada (National Hydrology Res. Instit., Groundwater Div.): Trace elements in groundwater, 1979-81.
Assess temporal variations in groundwater of different chemistries. Continue development of standard methods of sampling, preserving and analysing groundwater samples for trace elements and related parameters.
363. JOHNSTON, L.M., Environment Canada (National Hydrology Res. Instit., Groundwater Div.): Arsenic contamination of groundwater in Ontario, 1977-82.
Measure concentration of arsenic and other chemical parameters in the groundwater near Deloro, Ontario.
Investigate the factors affecting the movement of arsenic through the subsurface.
364. JOHNSTON, L.M., Environment Canada (National Hydrology Res. Instit., Groundwater Div.): LRTAP related groundwater studies (Haliburton Highlands), 1980-84.
Determine role of groundwater in modifying effects of acid rain on the hydrologic cycle. Participate in groundwater portion of interdisciplinary studies underway in the LRTAP study basins. Participate in studies involving other (non-acid rain) effects of LRTAP.
365. JOHNSTON, L.M., Environment Canada (National Hydrology Res. Instit., Groundwater Div.): Long range transport of airborne pollutants (LRTAP) related groundwater studies (Turkey Lakes), 1980-84.
Determine role of groundwater in modifying the effects of acid rain on the hydrologic cycle. Investigate chemical mechanisms operating in a ground water-silicate terrain system.
366. KEWEN, T., Saskatchewan Research Council (Geology Div.): Theoretical study of groundwater flow conditions in the Athabasca Formation, Saskatchewan, 1979-80.
To model existing information in an effort to determine the flow regime(s) in the Athabasca Group. This information is expected to assist in the interpretation of anomalies in formation water in exploration drill holes.
367. LIEBSCHER, H.M., Environment Canada (National Hydrology Res. Instit., Groundwater Div.): Hydrogeology Richmond sandfill, Richmond, British Columbia, 1976-81.
368. LIEBSCHER, H.M., Environment Canada (National Hydrology Res. Instit., Groundwater Div.): Pesticide contamination in groundwater, Okanagan Valley, British Columbia, 1981-83.
Develop improved understanding of groundwater flow patterns and sub-surface contamination by pesticides in vicinity of farms and fruit orchards in Okanagan Valley.
369. LYTIVIAK, A.T., BROOKS, C., Alberta Research Council (Groundwater Dep.): Central data file, 1958-.
- A continuing project consisting of a data base (hard copy) of groundwater-related phenomena; presently contains approximately 170 000 records.
370. MAATHUIS, H., MENELEY, W.A., Saskatchewan Research Council (Geology Div.): SRC observation well network, 1964-.
- Since 1964, 46 groundwater-level observation wells have been constructed in known geohydrologic environments, remote from the influence of groundwater production or artificial recharge, to measure groundwater-level fluctuations and to relate these fluctuations to changes in recharge caused by climatic changes.
The median monthly hydrographs from the observations wells indicate that groundwater in Saskatchewan is a renewable resource, which is continuously replenished by recharge from precipitation. Groundwater regimes are in dynamic equilibrium with the climate. The hydrographs show that the trend in shallow wells responds to short-term fluctuations in climate whereas the trend in deeper wells will reflect the longer-term variations in climate.
371. MAATHUIS, H., SCHNEIDER, A.T., Saskatchewan Research Council (Geology Div.): Groundwater level forecast for 1981/82, 1977-.
- Uses the groundwater level information from a 46 well observation well network to forecast annual groundwater level for the plains region of Saskatchewan.
372. MAATHUIS, H., SCHREINER, B.T., Saskatchewan Research Council (Geology Div.): Hatfield Valley aquifer system in Saskatchewan, 1981-82.
- See:
Saskatchewan Research Council, Publ. No. G-744-8-E-80, 1980.
Groundwater studies in the Melville area; Saskatchewan Research Council, Publ. No. G-743-2-E-80, 1980.
The program is designed to delineate and evaluate the Hatfield Valley aquifer system in the Melville area (62L-K), Wynyard area (72P) and Waterhen River area (73-K) of Saskatchewan. The buried valley aquifer will be investigated by rotary drilling to depths of about 500 feet. This new information will be combined with existing data. Maps showing the boundaries and distribution of the aquifer will be produced along with a number of cross sections depicting the stratigraphic sequence of the various drift units.
A preliminary assessment of the water quantity and quality that may be obtained from the aquifer will also be done. A report accompanying the maps and cross sections will describe the geology of the Hatfield Valley aquifer and the associated features.
373. MILLER, J.A., SIBUL, U., Ontario Ministry Environment (Water Resources Branch): Groundwater quality fluctuations - A pilot study, 1979-81.
A groundwater sampling and analysis program was established using 10 representative water wells in southern Ontario to study the degree of fluctuation in groundwater quality parameters over a 2-year period. The parameters analysed for include the major cations and anions, together with total iron, pH, hardness and specific conductance. Data gathered during the pilot study will also be used to establish optimum frequencies for water quality sampling and to provide input for the planning of a permanent groundwater quality monitoring network in Ontario.
374. OZORAY, G., Alberta Research Council (Groundwater Dep.): Hydrogeological mapping of the East Chipewyan-Lake Claire and Wadlin Lake-Vermilion Chutes areas, Alberta, 1980-81.
375. OZORAY, G., BORNEUF, D.M., WALLICK, E.I., Alberta Research Council (Groundwater Dep.): Hydrogeological atlas of Alberta, 1976-82.
376. RAVEN, K.G., Environment Canada (National Hydrology Res. Instit., Groundwater Div.): Chalk River hydrogeology study, Ontario, 1981-84.
Define with existing and developing tools the physical and chemical hydrogeology of a fractured crystalline rock mass measuring about 100 m x 100 m x 40 m deep.
Determine the usefulness of physical and chemical field measurements and theoretical models in defining and predicting flow in fractured crystalline rock.
377. RODRIGUES, E., FLIGG, K., Ontario Ministry Environment (Water Resources Br.): The application of geophysics in contaminant hydrogeology and groundwater supplies, 1965-.
- See:
Case histories in the application of geophysical well logging in groundwater investigations; Ontario Ministry Environment, Water Resources Paper 12, 1981.
To develop effective and economical surface geophysical techniques for mapping and monitoring contaminant plumes from landfills and other sources. A number of selected landfill sites will be studied to determine the limits of contamination to which geophysical techniques will be useful.
378. RULON, J.J., FREEZE, R.A., Univ. British Columbia (Geological Sciences): The development of multiple seepage faces on heterogeneous hillsides, 1979-83; Ph.D. thesis (Rulon).
To improve our ability to solve problems arising from seepage through consideration of the development of multiple seepage faces. The theoretical aspects are being studied with a finite element model for saturated and unsaturated flow through a heterogeneous hillside. A physical laboratory model is to be used to support the mathematical analysis. From this, the mechanism by which heterogeneity and antecedent moisture conditions control the development of multiple seepage faces will be understood. The pressure head distribution obtained from the numerical model will be put into slope stability analyses.
379. SAUVEPLANE, C., Alberta Research Council (Groundwater Dep.): Pumping test analysis for fractured/heterogeneous formations - part of a Provincial groundwater resources evaluation, 1980-.
- Interactions between energy resources developments (in situ exploitation of coal and oil sands) and groundwater quality and flow regime.
380. SCHNEIDER, A.T., ABOUGUENDIA, Z., SAWCHYN, W.W., Saskatchewan Research Council (Geology Div.): The Athabasca sand dunes of Saskatchewan: A multidisciplinary environmental study, 1979-80.
The sand dune area on the south shore of Lake Athabasca is an ecologically sensitive area. A multidisciplinary environmental study of the region has been undertaken to gather baseline information. This study concentrated on the hydrogeology aspects of the area.
381. SCHNEIDER, A.T., BECKIE, V., Saskatchewan Research Council (Geology Div.): The Estevan Valley aquifer and the Ravenscrag Formation: a digital model, 1981-82.
A portion of the Estevan Valley aquifer system was modelled to provide information for designing a test drilling and pump test program.
382. SCHREINER, B.T., KEWEN, T., SCHNEIDER, A.T., Saskatchewan Research Council (Geology Div.): Saskatchewan groundwater map, NTS-73B, 1979-82.
The Saskatoon map and report is a prototype for a new 1:250 000 scale map series. The map will depict bedrock and glacial geology. The principal aquifers, and water quality information will be included in the report.
383. SEMKIN, R., MAGUIRE, R.J., Environment Canada (National Water Res. Instit., Environmental Contaminants Div.): Hydrogeochemical responses of the Turkey Lakes Watershed to acid precipitation, 1981.
To quantify the hydrogeochemical response and controlling mechanism of the Turkey Lakes watershed, a series of non-calcareous basins within a northern hardwood forest, to acidic precipitation.

384. SIBUL, U., CHIN, V., TURNER, M., MILLER, J.A., Ontario Ministry Environment (Water Resources Br.):
Water resources inventory studies in drainage basins, 1964-.
- See:**
Water resources of the South Nation River Basin; Ontario Ministry Environment, Water Res. Rep. 13, 1980.
- The reports deal with the occurrence, distribution, quantity, quality and use of surface and groundwaters in selected drainage basins in Ontario. General hydrologic conditions in the basins are discussed rather than specific situations on a local scale. Special attention is paid to problems of natural water quality and polluted waters. Work is currently proceeding on the combined Humber and Don drainage basins, as well as the Credit River drainage basin.
385. SIBUL, U., MILLER, J.A., VALLERY, D., Ontario Ministry Environment (Water Resources Br.):
The inventory and study of acid groundwaters in Ontario, 1980-83.
- The study consists of three main components: the inventory of low pH groundwaters, the role of groundwater quality in affecting the acidification of streams and lakes in the Muskoka-Haliburton area, and the in-depth investigation of the process of acidification of groundwaters.
386. SIBUL, U., WALMSLEY, D., SZUDY, R., Ontario Ministry Environment (Water Resources Br.):
Groundwater resources in Grand River Basin, Ontario, 1978-80.
- See:**
Grand River Basin water management study; Grand River Implementation Committee, Technical Rept. 10, 1980.
- To determine the availability of groundwater throughout the Grand River Basin, with special emphasis on the availability of groundwater supplies for municipal use.
387. SLAINE, D., RODRIGUES, E., Ontario Ministry Environment (Water Resources Br.), Univ. Waterloo (Earth Sciences):
Role of geophysical methods in mapping and monitoring contaminant migration from landfills in Southern Ontario, 1981-82; M.Sc. thesis (Slaine).
- To obtain base data with which to properly evaluate the role of surface and borehole geophysics in monitoring and mapping contaminant movements around landfills in southern Ontario; to develop and evaluate new modelling and field methods for this purpose.
388. STEIN, R., Alberta Research Council (Groundwater Dep.):
Hydrogeology of the Peace Point and Fitzgerald map area, Alberta (NTS 84P and 74M), 1978-81.
389. VALLERY, D., MILLER, J.A., SIBUL, U., Ontario Ministry Environment (Water Resources Br.):
Groundwater level fluctuations in Ontario; viability of groundwater heat pump use in Ontario, 1980-82.
- See:**
Atlas of observation wells in Ontario; Ontario Ministry Environment, Water Res. Br., 1980.
- The computer analysis of a large data base pertaining to water-level fluctuations in observation wells will be undertaken in order to study the relationships between groundwater levels and the various hydrogeological and climatic conditions common to Ontario. A separate study relating the use of groundwater heat pumps to water level and water temperature trends will also be carried out.
390. VANDENBERG, A., Environment Canada (National Hydrology Res. Instit., Groundwater Div.):
Suiting a groundwater model to a surface square grid model, 1980-81.
- Prepare a groundwater flow model which can be used in conjunction with an existing surface runoff model (the square grid model).
391. VANDENBERG, A., Environment Canada (National Hydrology Res. Instit., Groundwater Div.):
Study of a groundwater contamination problem in Newfoundland, 1980-81.
- Assess by field observation and simulation techniques the extent of contamination of a thin coastal water table aquifer in Newfoundland from a municipal waste disposal site.
392. VANDENBURG, A., Environment Canada (National Hydrology Res. Instit., Groundwater Div.):
Technology transfer-Chatham, New Brunswick, groundwater model, 1981.
393. VANDENBURG, A., Environment Canada (National Hydrology Res. Instit., Groundwater Div.):
Hydrological effects of rural land drainage, 1981-82.
- Establish need for research program on the effect of rural land drainage on storm or snow melt runoff and the river hydrograph.
394. VAN EVERDINGEN, R.O., Environment Canada (National Hydrology Res. Instit., Groundwater Div.):
Northern groundwater and engineering problems, 1979-.
- Identify and investigate major groundwater discharge areas in the permafrost region north of 60°N. Develop methodology and instrumentation for groundwater studies in a permafrost environment.
395. VAN EVERDINGEN, R.O., Environment Canada (National Hydrology Res. Instit., Groundwater Div.):
Thermal springs in Rocky Mountain National Parks, 1981-.
- Provide information on hydrology, geochemistry and seasonal variations of thermal springs at sites where redevelopment of public facilities is anticipated or being planned.
396. WANG, K.T., OSTRY, R.C., Ontario Ministry Environment (Water Resources Br.):
Groundwater probability mapping, 1966-.
- Probable groundwater yields for the counties of Ontario are mapped, based on information from existing water-well records. Maps for the north and south portions of Simcoe County are in draft stage; work is proceeding for Grey County.
397. WANG, K.T., OSTRY, R.C., Ontario Ministry Environment (Water Resources Br.):
Hydrogeologic environments and the susceptibility of groundwater to contamination, 1980-.
- See:**
Hydrogeologic environments and the susceptibility of groundwater to contamination - Map S100; Ontario Ministry Environment, Water Resources Br., 1980.
- The mapping delineates the degree of susceptibility of groundwater to pollution from surface or near-surface contamination sources. Work is in progress for the St. Thomas topographic sheet (1:50 000 scale).
398. WEYER, K.U., Environment Canada (National Hydrology Res. Instit., Groundwater Div.):
Hydrogeology of excavations and impoundments, 1976-83.
- To apply modern groundwater dynamics to hydraulics of open pit mining. To determine influence of dewatering on regional and local geohydrodynamics and hydrochemistry.
399. WEYER, K.U., Environment Canada (National Hydrology Res. Instit., Groundwater Div.):
Investigation of groundwater flow in the Pine Point region, Northwest Territories, 1977-82.
- Develop improved understanding of the local and regional groundwater flow systems in the Pine Point lead-zinc district. Investigate the interaction between dewatering of the mines and groundwater flow. Investigate relationship between groundwater flow, tectonics, karst solution channels, dewatering and ore genesis at the site of the open pits and sub-surface mines in the Pine Point district.

MARINE GEOSCIENCE/OCÉANOGRAPHIE

400. BLASCO, S.M., Geol. Surv. Can.:
Surficial geology of Lomonosov Ridge, Arctic Ocean, 1978-.
401. HESSE, R.F., HARRISON, W.E., GIESKES, J.M., McGill Univ. (Geological Sciences):
Diagenesis in active continental margins, Middle America Trench and Slope off Guatemala, 1979-81.
- See:**
Gas-hydrates (clathrates) causing pore-water freshening and oxygen isotopic fractionation in deep-water sedimentary sections of the continental margins; Earth Planet. Sci. Lett., 1981.
- Relationship between sedimentary facies and interstitial water chemistry of slope, trench and Cocosplate sites from the Mid-America Trench Transect, Active margin off Guatemala; Initial Reports, Deep Sea Drilling Project 67, 1981.
- The Deep Sea Drilling Project Mid-America Trench transect off Guatemala; Geol. Soc. Amer. Bull., pt. 1, vol 90, no. 7, p. 421-432, 1980.
- Deep Sea drilling results from the Pacific Middle America margin off Guatemala (IPOD, leg 67); Int. Alfred Wegener Symp., Berliner Geowissenschaftlich Abhandlungen, A19, p. 83-86, 1980.
- Gas-hydrates (clathrates) as a cause of pore water freshening and possible retardation of diagenetic reactions in deep-water sedimentary sections of the continental margins; 26th Int. Congr. Geol. Paris, Résumés 11, p. 484, 1980.
- Abnormally low pore water salinities in deep-marine sections of the continental margins related to gas-hydrate (clathrate) occurrence; Geol. Soc. Amer., Abstracts with Program, vol. 12, no. 7, p. 466, 1980.
- Diagenetic effects of gas-hydrates (methane-clathrates); Geol. Assoc. Can./Mineral. Assoc. Can., Abstracts, vol. 6, p. A-25, 1981.
- Interstitial water chemistry of DSDP holes on Guatemala transect (leg 67) related to occurrence of gas-hydrates (methane-clathrates); Soc. Econ. Paleontol. Mineral., Annual Meeting, Abstracts, 1981.
- Premiers résultats des forages profonds dans le Pacifique au niveau de la fosse du Guatemala; C.R. Acad. Sci. Paris, t. 289, Série D, p. 1215-1220, 1980.
402. LEWIS, C.F.M., Geol. Surv. Can.:
Ice scouring of Continental Shelves, 1979-.
403. LOGAN, A., Univ. New Brunswick (Saint John, Geology):
Study of cryptic communities, in caves of reefs, Grand Canyon, B.W.I., 1979-81.
404. LOGAN, A., Univ. New Brunswick (Saint John, Geology):
Hard substrate communities, in shallow and offshore waters of Bay of Fundy, 1980-82.
405. MACLEAN, B., Geol. Surv. Can.:
Eastern Baffin Island shelf bedrock and surficial geology mapping program, 1976-.
- See:**
Petroliferous core from a diapir east of Cumberland Sound, Baffin Island; Geol. Surv. Can., Paper 81-1A, p. 399, 400, 1981.
- Natural hydrocarbon seepage at Scott Inlet and Buchan Gulf, Baffin Island shelf; *ibid.* p. 401-403, 1981.
406. MUEHLENBACHS, K., Univ. Alberta (Geology):
Isotopic study of the alteration of the sea floor, 1976-82.
- See:**
The alteration and aging of the basaltic layer of the sea floor: oxygen isotope evidence from DSDP/IPOD Legs 51, 52 and 53; Initial reports DSDP, vol. 51, 52, 53, p. 1159-1167, 1980.
- This ongoing study has been expanded to include isotopic analyses of ophiolites and the "hot" rocks from DSDP Legs 69/70.
407. SCHAFER, C.T., Geol. Surv. Can.:
The Newfoundland continental slope at 49°N to 50°N: nature and magnitude of contemporary marine geologic processes, 1978-.
408. UMPLEBY, D.C., Geol. Surv. Can.:
Regional subsurface geology, continental shelf and slope, offshore Labrador, Baffin Island and related areas, 1976-.
409. VILKS, G., Geol. Surv. Can.:
Environmental geology of the deep ocean, 1979-.

COAL GEOLOGY/GÉOLOGIE DU CHARBON

410. BROWN, T.D., GRANSDEN, J.F., JORGENSEN, J.C., PRICE, J.T., MONTGOMERY, W.J., EMR (CANMET): Evaluation of Canadian coking coals.
To demonstrate the technical and economic parameters affecting the use of coal and other carbonaceous materials in cokemaking by quantifying the effects of partial briquetting, preheating, additives, dry and wet quenching rates, and coal beneficiation on the quality of coke made from Canadian or offshore sources.
To define the physical, chemical and petrographic properties of coals and cokes so as to provide an understanding of the mechanism of cokemaking and to provide improved bench scale experimental facilities and techniques for predicting and/or assessing coke quality.
411. BUSTIN, M., Geol. Surv. Can.: Geology of mine sites, Alberta and British Columbia, 1978-.
- See:** Oxidation characteristics of some sheared coal seams of the Mist Mountain Formation, south-eastern Canadian Cordillera; Geol. Surv. Can., Paper 80-1B, p. 249-254, 1980.
412. BUSTIN, R.M., MATHEWS, W.H., Univ. British Columbia (Geological Sciences): Categorization of British Columbia coals, 1979-82.
413. CAMERON, A.R., Geol. Surv. Can.: Petrographic examination of coking coals from the Kootenay Formation, Alberta and British Columbia, 1961-.
414. CAMERON, A.R., Geol. Surv. Can.: Petrographic analysis of Saskatchewan lignites, 1972-.
415. CHURCH, B.N., British Columbia Ministry Energy, Mines, Petrol. Res. (Geol. Div.): Geological studies of the Hat Creek coal deposit, British Columbia, 1979-.
- See:** Further studies of the Hat Creek coal deposits, (A) Combustion metamorphism, (B) Palynology results; British Columbia Ministry Energy, Mines, Petrol. Res., Geol. Div. Paper 1981-1, p. 73-77, 1981.
To achieve further understanding of the Hat Creek coal deposit and to assist exploration for similar deposits in the Province.
416. GRAHAM, P.S., Geol. Surv. Can.: Evaluation of coal deposits of western Canada, 1976-.
417. GRIEVE, D.A., SUTHERLAND-BROWN, A., British Columbia Ministry Energy, Mines, Petrol. Res. (Geol. Div.): Geology of Elk Valley coalfield, southeastern British Columbia, 1979-83.
- See:** Geology and rank distribution of the Elk Valley coalfield, Southeastern British Columbia; Geol. Assoc. Can./Mineral. Assoc. Can., Program with Abstracts, vol. 5, p. 74, 1980.
1:50 000-scale mapping of coalfield complete; rank distribution complete on regional scale; detailed mapping (1:10 000) of south half of coalfield to be completed this year and published; more detailed rank distribution analysis underway; and coal quality determinations underway (petrographic).
418. HACQUEBARD, P.A., Geol. Surv. Can.: Rank and petrographic studies of coal and organic matter dispersed in sediments, 1968-.
419. HACQUEBARD, P.A., Geol. Surv. Can.: Microscopic study of pyrite in main seams of Sydney Coalfield, Nova Scotia, 1975-.
420. HOWSE, A.F., DEAN, P.L., Newfoundland Dept. Mines and Energy:
An assessment of the coal deposits of western Newfoundland, 1981-.

An assessment will be made of the coal resource potential of the Pennsylvanian Barachois Group in the Bay St. George Basin of southwestern Newfoundland and the Howley Beds in the Deer Lake Basin to the northeast. Initial work will consist of detailed mapping aimed at elucidating the stratigraphic and structural setting of the known coal deposits on the Barachois and Robinsons Rivers and at Howley. Trenching and stripping of these deposits will be carried out and the coal will be sampled for petrological and palynological study.

421. HUGHES, J.D., Geol. Surv. Can.: Resource evaluation of coal deposits of western and northern Canada, 1977-.
- See:** Geology and coal resource potential of early Tertiary strata along Tintina Trench, Yukon Territory; Geol. Surv. Can., Paper 79-32, 1980.
422. KALKREUTH, W.D., Geol. Surv. Can.: Optical properties of coals and dispersed organic materials, 1975-.
423. KALKREUTH, W.D., Geol. Surv. Can.: An investigation of the semi-inert constituents of western Canada coals, 1979-.
424. LONG, D.G.F., Geol. Surv. Can.: Studies of coal deposits of western and northern Canada, 1977-.
- See:** Geology and coal resource potential of early Tertiary strata along Tintina Trench, Yukon Territory; Geol. Surv. Can., Paper 79-32, 1980.
425. MARCHIONI, D.L., Geol. Surv. Can.: Compositional characteristics of coals from Hat Creek, British Columbia, 1977-.
426. MARCHIONI, D.L., Geol. Surv. Can.: Surface oxidation of variously ranked coals, 1977-.
427. MARCHIONI, D.L., Geol. Surv. Can.: Mineral matter and trace element content of Canadian coals, Alberta, 1978-.
428. MATHEWS, W.H., BUSTIN, R.M., Univ. British Columbia (Geological Sciences): Gasification of coal, a natural occurrence, Elk River Valley, British Columbia, 1979-80.
429. NANDI, B.N., MACPHEE, J.A., EMR (CANMET): Behavior of different coal macerals during coal liquefaction, 1978-81.
430. NANDI, B.N., MACPHEE, J.A., CIAVAGLIA, L.A., EMR (CANMET): Oxidation studies and alkane distribution of eastern and western Canadian coals, 1977-83.
431. NANDI, B.N., MACPHEE, J.A., CIAVAGLIA, L.A., EMR (CANMET): Upgrading the combustion and carbonization propensities of oxidized, inert rich Canadian bituminous coals using C_0 and H_2 , 1980-81.
- See:** The role of mesophase in upgrading, inert-rich, oxidized coal for combustion; Fifteenth Conf. on carbon, Univ. Pennsylvania, 1981.
The use of C_0 and H_2 in the upgrading of oxidized, inert rich bituminous coals used for combustion or carbonization is currently being studied. The work employs the use of high pressure techniques.
432. NURKOWSKI, J.R., Alberta Research Council (Geol. Surv.): Geology and coal resources of the upper part of the Horseshoe Canyon Formation, Red Deer area, Alberta, 1978-81.
New projects: include proximate and ultimate analysis of Alberta plains coals, and depositional environments and their relationship to coal distribution of the Scollard Formation.
433. RAHMANI, R.A., Alberta Research Council (Geol. Surv.): Stratigraphy, sedimentology and coal resources of the Edmonton Group (Cretaceous-Tertiary) of the Alberta Plains, 1979-83.

INDUSTRIAL MINERAL/SUBSTANCES
MINÉRALES INDUSTRIELLES

434. BOEHNER, R.C., GILES, P.S., Nova Scotia Dept. Mines Energy:
Salt in Nova Scotia, 1977-81.
- See:** Stratigraphy and depositional history of marine evaporites in the Lower Carboniferous Windsor Group, Shebenacadie and Musquodoboit structural basins, Nova Scotia; Compte Rendu 9th Int. Cong. Carb. Strat. and Geol., Urbana Illinois, 1979.
A history of potash exploration in Nova Scotia; Nova Scotia Dept. Mines and Energy, Rept. 81-1, 1981.
To update the locations, limits and structural configurations of Nova Scotian salt deposits from a review and compilation of all available relevant data. A file system containing the data on 13 deposits and 14 occurrences has been completed. The data on each deposit-occurrence is further subdivided into subfiles of Historical Background, Geography and Physiography, Geological Data, Geophysical Data, Geochemical Data, Economic Considerations, Source Documents and Assessment of File Quality. A major report incorporated the above data and entitled salt in Nova Scotia is in the final stages of completion.
435. CHRISTIE, R.L., Geol. Surv. Can.: Geology of bedded phosphate deposits in Canada, 1976-.
- See:** Paleolatitudes and potential for phosphorite deposition in Canada; Geol. Surv. Can., Paper 80-1B, p. 241-248, 1980.
436. EDWARDS, W.A.D., Alberta Research Council (Geol. Surv.): Aggregate potential derivative map of the Sand River area, Alberta, 1981.
This map is one of a series of reconnaissance-level, aggregate potential maps (at a scale of 1:250 000) derived primarily from existing surficial geology information. It is intended to provide aggregate resource data for general land-use planning, land management or aggregate exploration until such time as more detailed maps or report are available for the area.
437. EDWARDS, W.A.D., FOX, J.C., RICHARDSON, R.J.H., SHAM, P., Alberta Research Council (Geol. Surv.): Sand and gravel resources of the Vegreville area, Alberta, 1981-82.
Twelve 1:50 000 NTS sheets near Vegreville, Alberta will be surveyed in 1981.
438. FOX, J.C., Alberta Research Council (Geol. Surv.): Sand and gravel resources of the Athabasca oil sands region, northeastern Alberta, 1980-.
- See:** The Athabasca oil sands region is located in northeastern Alberta, and encompasses approximately 29,450 km². Fort McMurray is central to the region. This report assesses the available information and summarizes the sand and gravel resources using this information.
439. FOX, J.C., Alberta Research Council (Geol. Surv.): Aggregate potential derivative map of the Edson area, Alberta, 1981.
This map is one of a series of reconnaissance-level, aggregate potential maps (at a scale of 1:250 000) derived primarily from existing surficial geology information. It is intended to provide aggregate resource data for general land-use planning, land management or aggregate exploration until such time as more detailed maps or report are available for the area.
440. HAMILTON, W.N., Alberta Research Council (Geol. Surv.): Mineral resource studies, 1979-.

- To conduct "short term" mineral resource surveys and reviews and to maintain current inventory of mineral deposits in Alberta. Sub-projects dealt with during 1980 include a review of salt and gypsum in Alberta, a study of limestone resource exploitability in the Rocky Mountains, and a summary review of identical minerals production and resource potential in Alberta.
441. HAMILTON, W.N., BAINEY, S.J., Alberta Research Council (Geol. Surv.):
Economic minerals map of Alberta, 1979-83.
All known deposits have been compiled. Map editing and preparation of a coding and a cross indexing system waits to be done.
442. HORA, Z.D., British Columbia Ministry Energy, Mines, Petrol. Res. (Geol. Div.):
Sand and gravel inventory, British Columbia, 1979-82.
See:
Sand and gravel study (1980), British Columbia Lower Mainland; British Columbia Ministry Energy, Mines, Petrol. Res., Paper 1980-10, 1981.
Available data on Pleistocene geology along all major transportation corridors and surrounding areas of major communities were compiled onto 1:50 000 topo maps and existing gaps filled in by air-photo interpretation. Field reconnaissance documented existing gravel pits in the areas of study and identified those parts of compiled data needed for further revision and corrections. These were consequently done after the field season was finished.
443. HORA, Z.D., HANNA, M., British Columbia Ministry Energy, Mines, Petrol. Res. (Geol. Div.):
Economic potential of silica deposits, British Columbia, 1981-83.
From reported occurrences of silica in British Columbia to identify those that may have economic potential; evaluate the size and quality and genesis of individual occurrences as well as the logistics of individual sites.
444. HORA, Z.D., RAYNOR, R., British Columbia Ministry Energy, Mines, Petrol. Res. (Geol. Div.):
Economic potential of barite deposits, British Columbia, 1980-83.
Evaluation of the economic potential for some so far undeveloped barite deposits in British Columbia. Compilation of data on geology and quality from available sources, complete such information with our own research and provide analysis of supply-demand aspects of barite in the North American continent.
445. JONES, N.K., Alberta Research Council (Geol. Surv.):
Aggregate potential derivative map of the Wabamun Lake area, Alberta, 1981.
This map is one of a series of reconnaissance-level aggregate potential maps (at a scale of 1:250 000) derived primarily from existing surficial geology information. It is intended to provide aggregate resource data for general land-use planning, land management or aggregate exploration until such time as more detailed maps or report are available for the area.
446. MACDONALD, D.E., MORTON, R.D., Alberta Research Council (Geol. Surv.), Univ. Alberta (Geology):
Phosphate evaluation study, Alberta, 1978-82; M.Sc. thesis (Macdonald).
A full summers field work was completed in 1980 with several sections of the Exshaw (Mississippian) Rocky Mountain (Permian), Sulfur Mountain (Triassic) and Fernie (Jurassic) Formations (Groups), being measured and sampled for phosphate. Most of the field work has now been completed, and the 1981 field season will complete the field work for the project.
447. RICHARDSON, R.J.H., EDWARDS, W.A.D., FOX, J.C., SHAM, P., Alberta Research Council (Geol. Surv.):
Sand and gravel resources of the Medicine Hat area, Alberta, 1981-82.
Four 1:50 000 NTS sheets near Medicine Hat, Alberta will be surveyed in 1981.
448. RICKETTS, R.J., KIRBY, F.T., VANDERVEER, D.G., Newfoundland Dept. Mines and Energy:
Inventory of aggregate resources, Newfoundland and Labrador, 1978-82.
See:
Newfoundland Dept. Mines and Energy, Mineral Develop. Div., Rept. 80-1, p. 249-256, 1980 and Rept. 81-1, p. 182-187, 1981.
Field work for the project was completed in 1980, covering a 6 km wide corridor (parallel all major transportation routes) throughout Newfoundland and Labrador. A total of 978 samples (366 tills, 246 gravels, 258 sands, 20 silt, 14 clay, 72 rock and 2 organics) were collected in 1980, making a total of 8,286 samples collected and analysed for particle sizes since 1975.
A surficial geology (Landform Classification) series of maps for the study area is being compiled on 1:50 000 scale. Zones of granular potential and sample localities are being compiled also on a 1:50 000 scale and summarized on 1:250 000 and 1:500 000 scale maps. A summary of bedrock geology particularly in relation to its geotechnical properties for quarry activity is being prepared on 1:250 000 scale maps. This data is in various stages of completion with some releases scheduled for late 1981 and others by March 31, 1982.
Work is currently progressing on a computer package that will compile and report on all coded field and laboratory data in an "English-like" format and enable the search and retrieval of selected data for various purposes and for various users.
449. SEAMAN, A.A., BARNETT, D.E., New Brunswick Dept. Nat. Res. (Mineral Res. Br.):
Granular aggregate resources of the Burts Corner (21 J/2) map-area, New Brunswick, 1980-81.
Field mapping and sampling of surficial deposits was carried out in the Burts Corner centred region, York County, New Brunswick. This project, sponsored by the Federal Department of Regional Economic Expansion (DREE), was undertaken so as to provide basic information on the location and extent of granular aggregate deposits, and on the quality and quantity of this material.
450. SHAM, P., Alberta Research Council (Geol. Surv.):
Aggregate potential derivative map of the Whitecourt area, Alberta, 1981.
451. SHETSEN, I.P., Alberta Research Council (Geol. Surv.):
Sand and gravel resources of the Calgary area, Alberta, 1978-81.
The project has been completed, the report is written and is expected to be on the Alberta Research Council open file in July, 1981. The maps at a scale of 1:50 000 and the report provide the information on the distribution, origin, quality and reserves of gravel-bearing deposits in the Calgary area.
452. TELFORD, P.G., JOHNSON, M.D., VERMA, H.M., RUSSELL, D., Ontario Geol. Surv.:
Manitoulin limestone-dolostone assessment project, Ontario, 1978-..
The Manitoulin limestone-dolostone resource assessment project will produce a number of maps and reports outlining the economic potential for the bedrock resources on the island. The completed maps will indicate areas of the island by rock purity and engineering strength properties. Thus far, 29 diamond drill cores have been drilled for this project, this has yielded some 1360 metres of H.Q. core, also 3500 localities on the island have been studied. Both field samples and sections from the drill core have been chemically analyzed and engineering tested. It is anticipated to tie the rock purity data and engineering properties of the rocks directly to the stratigraphy of the island, to permit future workers to make reliable assertions as to the rock purity, simply by identifying a rock stratigraphic position and field properties.
453. THIBAUT, J.J., BARNETT, D.E., New Brunswick Dept. Nat. Res. (Mineral Res. Br.):
Granular aggregate resources of the Fredericton-Junction (21 G/10) map area, New Brunswick, 1980-81.
Field mapping and sampling of surficial deposits was carried out in the Fredericton-Junction centered region, York and Sunbury counties, New Brunswick. This project, sponsored by the Department of Regional Economic Expansion (DREE), was initiated to provide basic information on the location and extent of granular aggregate deposits and on the quality and quantity of the material.
454. THIBAUT, J.J., SEAMAN, A.A., BARNETT, D.E., New Brunswick Dept. Nat. Res. (Mineral Res. Br.):
Granular aggregate resources of the Fredericton (21 G/15) map area, New Brunswick, 1980-81.
Field mapping and sampling of (21 G/15) surficial deposits was carried out in the Fredericton centered region, York and Sunbury counties, New Brunswick. This project, sponsored by the Department of Regional Economic Expansion (DREE), was initiated to provide basic information on the location and extent of granular aggregate deposits and on the quality and quantity of the material.
455. WATSON, D.M., DEAN, P.L., Newfoundland Dept. Mines and Energy:
Assessment of dimension stone and mineral filler resources of Insular Newfoundland, 1980-..
During the past season (1980), possible sources of dimension stone throughout the Island of Newfoundland were visited and sampled. Potential sources of ground mineral fillers were also sampled at the same time. These samples are presently being tested for their physical properties and suitability as dimension stone or fillers.
It is proposed during the coming season to do some detailed geology on those areas that have the greatest potential as sources of dimension stone or fillers. These include Mt. Peyton (black "granite"), Bay d'Espoir (slate), and Corner Brook (marble). These are the areas that have been shown to be of the most interest to those people in industry that have seen the samples collected this season.
456. WILLIAMS, D.A., LEVEILLE, J., CHANDRA, S., New Brunswick Dept. Nat. Res. (Mineral Res. Br.):
Salt-potash potential of New Brunswick, 1977-82.

MINERAL DEPOSITION EXPLORATION/ EVALUATION/RECHERCHE ET ÉVALUATION DES GÎTES MINÉRAUX

457. AGGARWAL, P.K., NESBITT, B.E., MORTON, R.D., Univ. Alberta (Geology):
Geology and geochemistry of the Chu Chu massive sulfides, British Columbia, 1981-82; M.Sc. thesis (Aggarwal).
The Chu-Chu massive sulfide deposit, located north of Kamloops, British Columbia, contained within upper Paleozoic rocks which consist of pillowed basalts, tuffs, cherts and other sediments. Because it is one of the first deposits to be discovered in this area, there is little known about its geology and geochemistry and the regional geological setting of massive sulfides in this tectonic province. The deposit consists of lenticular bodies of sulfides which are mainly pyrite with chalcopyrite and minor sphalerite. The objective of this thesis is to characterize and geochemistry of the Chu-Chu deposit by means of petrographic, chemical and stable isotope studies.
458. BACHINSKI, D.J., Univ. New Brunswick (Geology):
Metamorphism of the East Mine cupriferous iron sulfide deposit, Rambler district, Newfoundland, 1981.
Metamorphism of the East stratabound cupriferous iron sulfide deposit occurring in Ordovician (?) mafic volcanogenic sedimentary rocks (Pacquet Harbour Group) in the Burlington Peninsula area results in textures indicative of desulfidation reactions. These textures post-date the main deformation (D²). Systematic relationships between iron sulfide minerals (ore petrology) and silicate minerals compositions (microprobe) suggest that equilibration of sulfides and ferromagnesian silicates occurred during metamorphism. Textural

- evidence for desulfidation reactions (pyrite replacement by monoclinic pyrrhotite and hexagonal pyrrhotite rims on monoclinic pyrrhotite) is conspicuous in those samples with Mg-rich gangue ferromagnesian silicates and it is probable that sulfur released during local desulfidation reactions has interacted with ferromagnesian minerals. Overall, these effects are minor: host rocks were relatively magnesium-rich prior to metamorphism.
459. BELL, R.T., Geol. Surv. Can.:
Geology of uranium resources of Canada, 1975-.
- See:
Preliminary evaluation of uranium in Sustut and Bowser successor basins, British Columbia; Geol. Surv. Can., Paper 81-1A, p. 241-246, 1981.
460. BOEHNER, R.C., GILES, P.S., Nova Scotia Dept. Mines Energy:
Geology and mineral deposits of the Lock Lomond Basin, Cape Breton Island, Nova Scotia, 1980-83.
- See:
Preliminary report on the geology and mineral deposits of the Lock Lomond Basin, Cape Breton Island; Nova Scotia Dept. Min. Energy, Rept. 81-1, 1981.
- The Loch Lomond Basin is a Carboniferous structural basin that has had a fluctuation history of mineral exploration and mining. Celestite ore associated with evaporites, limestone and terrigenous rocks of the Windsor Group was produced between 1970 and 1976 by Kaiser Celestite Mining Ltd. Base metal occurrences are common but none have been economically mined. This project was undertaken to document the stratigraphic onlap of Windsor Group rocks in a high relief marginal basin setting and to assess the distribution and origin of the numerous deposits and occurrences (principally Sr, Ba, Cu, Pb, Zn, Mn and Fe).
461. CHANGKAKOTI, A., MORTON, R.D., NESBITT, B.E., Univ. Alberta (Geology):
The origin, transportation and deposition of elements in the Echo Bay-Camsell River area, Northwest Territories, 1981-84; Ph.D. thesis (Changkakoti).
- To determine the origin, mechanisms of transport and deposition of Ag-Ni-U-Co-Bi-As in the Great Bear Lake area, Northwest Territories. The study will include detailed sampling of the Contact Lake, El Bonanza, Terra, Norex and Northrim Mines along with investigation of the mineralogy, petrology, fluid inclusions and stable isotopes of the veins, host and country rocks. In addition, the effects of P, T, fO_2 , fS_2 and pH on the chemistry of the ore bearing fluids will be examined. The potential sources of the economic elements will be investigated in order to propose a model for the genesis of the deposits.
462. COUSINEAU, P., CIMON, J., DUGAS, J., Québec Ministère Énergie et Ressources:
Évaluation du potentiel en Tungstène des Appalaches, 1980-81.
463. DAWSON, K.R., Geol. Surv. Can.:
Geology of barium, fluorine and strontium deposits in Canada, 1972-.
464. DI LABIO, R.N.W., Geol. Surv. Can.:
Drift prospecting methods and models, 1978-.
465. DUKE, J.M., Geol. Surv. Can.:
Chromium resources in Canada, 1980-.
466. DUNSMORE, H.E., Geol. Surv. Can.:
Geology of uranium resources of Canada, 1976-.
467. EKSTRAND, O.R., Geol. Surv. Can.:
Geology of Canadian nickel and platinum group deposits, 1963-.
468. GALE, G.H., Manitoba Dept. Energy and Mines (Mineral Res. Div.):
Mineral deposit studies in the Kiseynew Gneiss belt, Manitoba, 1979-84.
- Documentation of mineral deposit occurrences has been completed for a portion of the area. A model for stratigraphic controls has been identified and will be investigated further in the coming field season.
469. GALE, G.H., NIELSEN, E., Manitoba Dept. Energy and Mines (Mineral Res. Div.):
Evaluation of sulphide erratics in Pleistocene of Manitoba, 1980-84.
- To establish the source of galena erratics reported from tills in Manitoba.
470. GANDHI, S.S., Geol. Surv. Can.:
Geology of uranium resources of Canada, British Columbia - District of Mackenzie, 1977-.
- See:
Geology and uranium occurrences of the MacInnis Lake area, District of Mackenzie; Geol. Surv. Can., Paper 80-1B, p. 107-127, 1980.
- Uranium and thorium variations in two monzonitic laccoliths, east of the Great Slave Lake, District of Mackenzie; *ibid.*, p. 233-240, 1980.
471. HAMILTON, W.N., Alberta Research Council (Geol. Surv.):
Geology of the Clear Hills iron formation, Alberta, 1974-82.
- All drill hole and outcrop data have been compiled. Bibliographic review was completed to assess geological, mineralogical and ore body definition work done to date. Further work is proposed on petrology and sedimentology of the oolitic iron formation with additional bulk sampling and test drilling.
472. HARPER, C.T., DEVOTO, R.H., Saskatchewan Geol. Surv., Colorado School of Mines:
Uranium metallogenetic studies: Cluff Lake area, Saskatchewan, 1980-82; Ph.D. thesis (Harper).
- See:
Saskatchewan Geol. Surv., Summ. Invest., p. 36-43, 1980.
- Drill core from the Cluff Lake OP, N and F uranium deposits was logged and also sampled for trace metal and whole rock geochemical studies. These deposits are considered to be of 'unconformity type', occurring in close proximity to the Helikian sub-Athabasca Group unconformity in crystalline basement rocks forming the core of the Carswell meteorite impact structure.
- Typical cross sections, as revealed in drill core, are described from each of the mineralized zones. Geological relationships exposed by the commencement of open pit mining of the high grade D ore zone are also reported. Mineralogical and fluid inclusion studies on material from these ore zones are planned.
473. HAYNES, S.J., Brock Univ. (Geological Sciences):
Uraniferous pegmatites, Anstruther tp., Bancroft region, Ontario, 1980-82.
- Completed projects: 1) Metallogeny of South Iran-Tectonics completed, published in Nature, vol. 283, p. 561-563, 1980, metallogeny paper in preparation;
2) relation of hypogene and supergene alteration to copper mineralization, Satcheshoneh, Iran - M.Sc. thesis completed, paper in preparation.
3) Pb-Zn occurrences, Niagra Peninsula, paper submitted to Mineralium Deposita;
4) genesis of the Cavendish and Crystal Lake uranium deposits, Final report Ontario Geol. Surv., O.F.R. No. 5302, paper in preparation.
- New project: To determine the geological parameters governing the transport and deposition of uranium minerals associated with pegmatite. This involves field mapping and petrographic examination of the pegmatite, host rocks and wall-rock alteration assemblages.
474. HOEVE, J., Saskatchewan Research Council (Geology Div.):
Uranium metallogenetic studies, northern Saskatchewan, 1976-.
- Unconformity-type uranium ore bodies form a relatively new class of deposits, whose origin is still being debated - to gain an understanding of geological controls and conditions of formation, and ultimately to provide industry with improved exploration concepts.
475. JURAS, S.J., BACHINSKI, D.J., Univ. New Brunswick (Geology):
Stockwork sulfide mineralization, Brunswick No. 12 Mine, New Brunswick, 1978-81; M.Sc. thesis (Juras).
- The multiply deformed and metamorphosed stratiform Brunswick No. 12 Pb-Zn-Cu-Ag deposit has a large complexly folded alteration pipe (>900 m x 600 m x 60 m) that cuts footwall felsic pyroclastic and sedimentary rocks. Tuffs, which underlie 0-150 m of sedimentary rock, contain both Na- and K-feldspar crystals (now low albite and perthite maximum microcline) and afford an excellent opportunity to monitor brine - rock interaction during alteration. The alteration pipe is characterized by stringer and disseminated sulfides (pyrite > chalcopyrite > sphalerite > pyrrhotite) and consists of a quartz + chlorite core (Zone I) and an outer quartz + sericite + chlorite zone (Zone II). Chlorite throughout the pipe is iron-rich ($F = 0.6$ to 0.8 where $F = FeOT/(MgO + FeOT)$ in moles). Part of the quartz in the pipe is pseudomorphous after original feldspar. A marginal alteration zone (Zone III) contains chessboard albite formed by sodium exchange of K-feldspar as a result of interaction between NaCl-rich brine and unconsolidated felsic pyroclastic rock. Zone III-type alteration is also found beneath banded pyrite-sphalerite-galena ores up to 1.5 km laterally from the discharge site. This alteration cannot be directly connected to the alteration pipe given current information and may represent an extension of the marginal alteration zone (Zone III) formed by laterally percolating brines, or be related to yet unrecognized additional discharge sites in the Brunswick No. 12 depression. Chessboard albite, easily recognized in thin section, always occurs in footwall pyroclastic rocks peripheral to the Brunswick No. 12 deposit and therefore has potential as an exploration tool in the Bathurst district.
476. KIRKER, J.K., HUTCHEON, I.E., Univ. Calgary (Geology and Geophysics):
Petrology and ground preparation of Rusty Springs, base metal deposit, Yukon Territory, 1979-81; M.Sc. thesis (Kirker).
- Further petrographic study of host rock to evaluate effect of diagenesis, Pb-isotope analysis, S-isotope analysis, and fluid inclusion study.
477. KIRKHAM, R.V., Geol. Surv. Can.:
Geology of copper and molybdenum deposits in Canada, 1970-.
- See:
Native copper in Superior shoal, Ontario; Geol. Surv. Can., Paper 80-1C, p. 160, 1980.
478. KWONG, Y.T.J., GREENWOOD, H.J., Univ. British Columbia (Geological Sciences):
A new look at the Afton copper mine in the light of mineral distributions, host rock geochemistry and irreversible mineral-solution interactions, 1978-81; Ph.D. thesis (Kwong).
- See:
Mineral distributions and mineral-solution equilibria at Afton Mines, southcentral British Columbia, Canada; Proc. 3rd Inter. Symp. on Water-Rock Interaction, p. 88, 1980.
- This study incorporates field observations, theoretical modelling and geochemical data to interpret the various aspects of the copper mineralization at Afton. The presentation is divided into three main parts. Part I describes and discusses mineral distributions within and about the Afton orebody. Part II presents a thermodynamic reconstruction of supergene alteration at Afton. Parameters affecting the development of supergene enrichment are identified in the computer simulations. Part III considers the major element geochemistry of rocks within the close vicinity of the Iron Mask pluton. Special emphasis is placed on the comparison of the major element geochemistry of the Afton rocks with the general trends derived from the analyses of the major phases of the batholith. It is concluded that the primary copper mineralization at Afton was an orthomagmatic product of the fractional crystallization of the Iron Mask batholith. Local trapping of late magmatic fluid helped to remobilize and concentrate the original disseminated sulfides to form the hypogene ore. Subsequent supergene alteration was constrained to take place in a basic pH domain to stabilize abundant native copper without much enrichment.

479. LORENZINO, G., MORTON, R.D., Univ. Alberta (Geology):
Gold and platinum group elements in Alberta, 1981-82; M.Sc. thesis (Lorenzino).
To perform the first modern scientific study of the occurrence and origins of gold and platinum in placer/sedimentary environments in Alberta. In particular, the drainage basins of the North Saskatchewan River, the Red Deer River, the Athabasca River and the McLeod River will be studied. The present study will concentrate upon the geographic variations in the chemistry of the gold and platinum and endeavour to locate the original ultramafic volcanics and/or vein deposits which theoretically could have been the source of these metals.
480. LYDON, J.W., Geol. Surv. Can.:
Geology of lead and zinc resources of Canada, 1977-.
481. McDOUGALL, F.H., WATTERS, B.R., PARSLOW, G.R., Saskatchewan Geol. Surv.:
Flin Flon base metals project, Saskatchewan, 1978-; M.Sc. thesis (McDougall).
See:
Saskatchewan Geol. Surv., Summ. Invest., p. 65-69, 1980.
This year's project was a detailed laboratory lithochemical study of approximately 900 samples collected during the 1979 field mapping of the area east of Amisk Lake. The objective was to characterize and subdivide geochemically the Amisk Group volcanics, since post-volcanic region metamorphism has made subtle field subdivision impossible.
Another objective of the project was to gain a better understanding of the controls and distribution of mineralization in the area. Two observations can be made: 1) the economic Cu concentrations of Flexar and Birch Islands, and subeconomic Cu concentrations in the area in general, are apparently restricted to andesitic pyroclastic rocks in the Lower Quartz Tholeiite unit. Further studies around other mines to the east are warranted, to see if they are localized in a similar stratigraphic position; and 2) although the data for Au (by neutron activation) are very erratic, values are clearly higher in carbonatized rocks. Further work on the Au distributions is desirable.
482. MELLINGER, M., Saskatchewan Research Council (Geology Div.):
Geology and geochemistry of the Maurice Bay uranium deposit (northern Saskatchewan), 1979-81.
See:
Uranium metallogenic studies: Maurice Bay deposit; Saskatchewan Geol. Surv., Misc. Rept. 80-4, p. 89-92, 1980.
To provide an understanding of the genesis of the Maurice Bay deposit, an unconformity-type uranium deposit in the Athabasca Group of northern Saskatchewan. A direct application of the project is to develop criteria for the recognition of mineralogical and geochemical alteration patterns in order to help exploration for this type of deposit. The following aspects are studied: pre-Athabasca weathering of basement metasediments, lithostratigraphy of the Athabasca group sediments, diagenetic overprinting, ore mineralogy, host-rock alterations. Methods used are: drill-hole logging, petrography, semi-quantitative XRD clay mineral analysis, lithochemistry. Studies completed so far show that mineralization was deposited under diagenetic conditions (anchizone) by U-bearing brines which reacted with hydrothermal fluids discharged through reactivated basement faults. U-bearing brines were probably rich in K⁺ and Mg²⁺; CO₂ was a likely complexing agent for UO₂²⁺ ions in solution.
483. MILLER, J.A., BACHINSKI, D.J., Univ. New Brunswick (Geology):
Sulfide deposits in Carboniferous sedimentary basin: New Brunswick and Nova Scotia, 1981-82; M.Sc. thesis (Miller).
Ore-forming hydrothermal fluid models will be developed in terms of hydrodynamic constraints on subsurface flow in porous media and chemical constraints based on rock-water interaction.
The nature of mineral deposits in the Carboniferous basins of New Brunswick and elsewhere will be compared with properties predicted on the basis of the models.
484. MILLER, R.G., MORTON, R.D., Univ. Alberta (Geology):
Uranium mineralisation of Bear Province, Northwest Territories, 1979-82; Ph.D. thesis (Miller).
Involves a study of uranium mineralisation in Bear Province - the distribution, paragenesis, emplacement, source and geochronology of known occurrences. Field work and sampling has been completed, and microscopy, geochronology and trace-element (U,Th) studies are in progress.
485. NADEAU, A.N., AUBERTIN, R., Québec Ministère Énergie Ressources:
Prévisions de minéral cupro-zincifère dans le nord-ouest québécois, 1980-.
Délimiter et évaluer des cibles d'exploration pouvant mener à la prise de réserves d'exploration minière de la part du ministère de l'énergie et des ressources du Québec, en se basant sur l'étude scientifique, dite "systémique", du potentiel cupro-zincifère dans le nord-ouest québécois réalisée par R. Assad et G. Favini en 1980.
486. NELSON, G.E., BACHINSKI, D.J., Univ. New Brunswick (Geology):
Volcanic stratigraphy and mineralization in the Austin Brook-Brunswick No. 6 area, New Brunswick, 1979-81; M.Sc. thesis (Nelson).
Felsic metapyroclastic rocks underlying the Brunswick Mining and Smelting No. 6 deposit and Austin Brook display alteration patterns similar to those at Brunswick No. 12: chessboard albite is conspicuous in peripheral areas of feeder systems. Original plagioclase is altering to K-feldspar (rims and cracks) in a zone outside this zone of albitization. These features are interpreted to result from alkali exchange prior to regional metamorphism and deformation and are important as an exploration tool in the Bathurst district.
487. NESBITT, B.E., Univ. Alberta (Geology):
Metamorphism of the Thompson nickel deposits, Manitoba, 1980-83.
To evaluate the nature and extent of interactions between the ore and wall rocks during metamorphism and the effects of metamorphism on grade and location of the ore. Metamorphism of the Thompson nickel deposits ranges in grade from amphibolite to granulite facies and has led to extensive sulfide-silicate reactions affecting the mineralogy and chemistry of the silicates in the ore and wall rocks. This metamorphism has also led to movement of the ore and possibly to the development of nickel rich zones within the ore.
488. PEARSON, J.G., Saskatchewan Geol. Surv.:
Flin Flon gold project, Saskatchewan, 1978-82.
See:
Saskatchewan Geol. Surv., Summ. Invest., p. 70-80, 1980.
This project was initiated in 1978 to evaluate the mode of occurrence, grade and possible genesis of gold occurrences in the Flin Flon area, as well as the gold exploration potential of the area.
Gold mineralization is concentrated in three locations within the Flin Flon area - in the vicinity of Douglas Lake, Amisk Lake and Phantom Lake. Of these the first two have been examined.
In the Douglas Lake area, there are two types of gold occurrences. One type consists of several massive quartz-sulphide veins filling strike-slip fractures in a sequence of tholeiitic flow rocks. A second (and possibly later) type occurs as fine-grained gold-quartz replacement veins filling faults which strike at approximately right angles to the local foliation.
In the West Channel area of Amisk Lake, gold occurs in two settings that were probably emplaced about the same time. One type of occurrence consists of northerly trending gold-quartz-sulphide veins in sheared greywacke. The second group of occurrences are pyritic shear zones which occur in all rock types in the area. These shear zones have significant alteration zones and contain pyrite and arsenopyrite with varying amounts of chalcopyrite, sphalerite and magnetite.
489. POWERS, L., STAUFFER, M.R., HOEVE, J., Univ. Saskatchewan (Geological Science):
Mineralogy and petrogenesis of the Midwest Lake ore deposit, 1981-83; M.Sc. thesis (Powers).
The Midwest Lake uranium ore body in Northern Saskatchewan occurs at the intersection between a fault and the unconformable contact between Proterozoic gneisses and the overlying Athabasca Formation. It is mineralogically and texturally complex and contains numerous oxide and arsenide, including nickle arsenides. Initial work will describe the mineralogy, textures, and petrogenetic sequence as the first part of a study to attempt to determine the details of the ore-forming processes.
490. PRETO, V.A., British Columbia Ministry Energy, Mines, Petrol. Res. (Geol. Div.):
Geology and mineral deposits of the Eagle Bay Formation, British Columbia, 1978-81.
Project aims at a better understanding of the stratigraphy, structure, age and correlation of rocks of the Eagle Bay and Fennell formations which are on the western flank of the Shuswap Metamorphic Complex. The study was also designed to achieve a better knowledge of the setting and nature of numerous stratabound base metal deposits of probable volcanogenic origin.
491. ROSCOE, S.M., Geol. Surv. Can.:
Metallogeny of the northwestern part of the Canadian Shield, 1979-.
492. ROSS, D., CROCKET, J.H., McMaster Univ. (Geology):
Distribution of gold and platinum metals in uraniferous conglomerates from the New Quirke Mine, Ontario, 1977-81; M.Sc. thesis (Ross).
To determine the controls on the concentration and distribution of gold and iridium in the uranium conglomerates of Elliot Lake. Iridium is taken to represent the platinum group elements. An integration of sedimentological, major and trace element and noble metal data forms the data base for the study.
Preliminary results indicate that most of the gold present (average, 80 ppb) is contained in the matrix pyrite, and that the gold content of a sample is dependant on its pyrite content. Sporadic high gold values do occur, and may indicate the presence of some free gold. Such highs seem to be associated with certain sedimentary structures.
493. ROUSELL, D.H., Laurentian Univ. (Geology):
Mineralization in the Whitewater Group, Sudbury Basin, Ontario, 1980-82.
494. RUITENBERG, A.A., FYFFE, L.R., New Brunswick Dept. Nat. Res. (Geol. Surv. Br.):
Mineralization associated with granitoid rocks and related sub-volcanic intrusion in New Brunswick.
See:
Mineralization associated with granitoid rocks and related sub-volcanic intrusions in New Brunswick; Abstract, Can. Mining and Metall. Bull. 73, p. 68-69, 1980.
495. RUZICKA, V., Geol. Surv. Can.:
Geology of uranium and thorium resources of Canada, 1975-.
- See:**
Studies on uranium in Canada, 1980; Geol. Surv. Can., Paper 81-1A, p. 133-144, 1981.
496. ST. LOUIS, R.M., MORTON, R.D., NESBITT, B.E., Univ. Alberta (Geology):
The distribution and geochemistry of the Platinum group elements in the Tulameen Complex, British Columbia, 1980-82; M.Sc. thesis (St. Louis).
To determine the concentration, distribution and mineralogy of platinum within the complex. An extensive sampling survey will be undertaken; these samples are to be analyzed by neutron activation, electron microprobe, fire assay, and flame photometry. The ultimate goal of the project is to determine the rock units favourable for exploration for platinum within the complex.

497. SANGSTER, D.F., Geol. Surv. Can.:
Geology of lead and zinc deposits in Canada, 1965-
- See:**
Three potential sites for the occurrence of strontium, shale-hosted lead-zinc deposits in the Canadian Arctic; Geol. Surv. Can., Paper 81-1A, p. 1-8, 1981.
498. SCHIARIZZA, P., PRETO, V.A., Univ. Calgary (Geology and Geophysics):
Structural and stratigraphic relations between Eagle Bay and Fennell formations between Clearwater and Barriere, British Columbia, 1980-82; M.Sc. thesis (Schiarizza).
499. SCHROETER, T.G., British Columbia Dept. Energy, Mines, Petrol. Res. (Geol. Div.):
1) Toodoggone Mineral District, British Columbia.
2) Gold-silver deposits in northern British Columbia.
3) Equity silver (Goosly) deposit, British Columbia, 1974-.
- Mineral deposit studies in Northern British Columbia include: 1) precious metals; 2) porphyries (Cu \pm Mo \pm Au \pm Ag); and 3) massive sulphides.
500. SIBBALD, T.I.L., LEWRY, J.F., Saskatchewan Geol. Surv.:
Uranium metallogenic studies: Lodge Bay area, Lake Athabasca, Saskatchewan, 1980-82.
- See:**
Saskatchewan Geol. Surv., Summ. Investig., p. 44-48, 1980.
- The area, centered on Lodge Bay, Lake Athabasca and bounded by latitudes 59° 25' N and 59° 30' N and longitudes 108° 30' W and 108° 45' W, was mapped at 1:31 680 scale. The study was carried out to provide a geological framework for future investigations of uranium and gold deposits and to elucidate regional stratigraphic, structural and metamorphic relationships.
- Coarse clastic sediments of the Martin Formation lie with angular unconformity on a Hudsonian metamorphic basement comprising supracrustals of the Tazin Group, intrusive basic sills and granitoids. The supracrustals form discrete zones within and between the granitoids which contain intrusive, metasomatic and conceivably older, pre-supracrustal basement elements.
- Two major Hudsonian deformation events accompanied by amphibolite facies metamorphism are recognized.
- Arguments are presented for interpreting the Tazin Group supracrustals as an Apebian sequence, and tentative correlations are made with the Hurwitz Group in the Northwest Territories.
501. SINCLAIR, A.J., CAMPBELL, S.W., Univ. British Columbia (Geological Sciences):
Metallogeny of Cu deposits in southwestern Yukon, 1973-81; Ph.D. thesis (Campbell).
- This project is concerned with the following investigations:
1) general geology of the Quill Creek area and detailed geology of Cu deposits in and near Quill Creek;
2) origin of komatiite intrusions of Permian age in the Klane Mountains;
3) sulphur isotopes and metallogeny in southwestern Yukon; and
4) development of a general model for contamination of ultramafic/mafic complexes by sulphur from wallrock.
502. SINCLAIR, A.J., CHAMPIGNY, N., Univ. British Columbia, (Geological Sciences):
Geological and geostatistical evaluation of Cinola Gold deposit, Queen Charlotte Islands, British Columbia, 1979-81; M.A.Sc. thesis (Champigny).
- See:**
Specogna gold deposit of Consolidated Cinola Mines, an example of structured property exploration; Western Mines, June, p. 33-44, 1980.
- Progress report on the geology of the Specogna (Babe) gold deposit; British Columbia Ministry Energy, Mines, Petrol. Res., Paper 1980-1, p. 158-170, 1980.
- Genetic implications of fluid inclusion studies Cinola gold deposit, Queen Charlotte Islands, B.C.; British Columbia Ministry Energy, Mines, Petrol. Res., Rept. 1981-1, 1981.
- This study has the following components:
1) description of a structured exploration case history for a "micron" gold property;
2) detailed geology of the Cinola deposit including development of a genetic model with the aid of fluid inclusion studies;
3) redefinition of age and origin of the Miocene Skonum Formation, host to Cinola gold-quartz deposit;
4) statistical approach to evaluation of litho-geochemical, soil and silt data in and around Cinola deposit; and
5) development of a geostatistical model for ore grade estimations by kriging.
503. SINCLAIR, A.J., GOLDSMITH, L.B., READ, P.B., BENTZEN, A., Univ. British Columbia (Geological Sciences):
Metallogeny of vein camps, southern British Columbia, 1979-82; M.Sc. thesis (Goldsmit).
- This study is concerned with a systematic evaluation of quantitative data for individual vein camps in British Columbia. In particular we have emphasized 1) the use of mean grades of production data to define regional zoning patterns, 2) the importance of statistical methods in establishing fundamentally different size categories of deposits in a given camp, 3) the use of spatial densities to define arbitrary limits to mining camps, and 4) methods of presenting and summarizing information to provide insight into conceptual ore targets.
504. SINCLAIR, A.J., WETHERELL, D., SHEN, K., Univ. British Columbia (Geological Sciences):
Genetic model for Sam Goosly deposit of Equity Silver Mines Ltd., British Columbia, 1978-82.
505. SINCLAIR, W.D., Geol. Surv. Can.:
Geology of copper and molybdenum resources of Canada, 1977-.
506. THEYER, P., Manitoba Dep. Energy and Mines (Mineral Res. Div.):
Mineral deposit studies in the Island Lake area, Manitoba, 1980-84.
- To document and classify mineral occurrences in the Superior Province of Manitoba; investigate the relationships between ultramafic rocks, gold deposits and stratigraphy.
507. THOMAS, D., Saskatchewan Geol. Surv., Univ. Regina (Geological Sciences):
Uranium metallogenic studies: Pegmatite prospects, 1979-80; M.Sc. thesis.
- See:**
Uranium metallogenic studies: uraniferous pegmatite prospect geology; Saskatchewan Geol. Surv., Summ. Investig., p. 49-53, 1980.
- Five separate areas in the Cree Lake zone of northern Saskatchewan known to have a high density of radioactive pegmatites were mapped in order to make regional comparisons. The study areas selected were centred around the Charlebois Lake, Cup Lake, Karin Lake, Pipewrench Lake and Pluto Bay area, while short visits were also made to pegmatite prospects in the Middle Foster Lake and Wollaston Lake areas.
- The data collected from each study area involved the recognition of lithostructural and lithostratigraphic relationships between the pegmatites and their country rocks, while a limited amount of thin sections and geochemical analysis was performed to supplement the field data.
- Conclusions to date from this study indicate that the 'pegmatites' comprise syngenetic uranium occurrences and the degree of U and Th enrichment is dependent upon the parental material that produced the anatectic melts during the Hudsonian thermotectonic episode. U and Th are found to be enriched in particular Apebian lithostratigraphic units, notably within basal pelites and calc-silicates as well as similar enrichments within their equivalent anatectic melts.
508. THORPE, R.I., Geol. Surv. Can.:
Geology of silver and gold deposits in Canada, 1968-.
509. TREMBLAY, L.P., Geol. Surv. Can.:
Geology of uranium resources of Canada, 1975-.
510. WATKINSON, D.H., GIBSON, H., McEWEN, J., BUCK, M., ATKINSON, M., Carleton Univ. (Geology):
Relationship of silicification, and later alteration to Cu-Zn deposits, Noranda, Québec, 1976-85; Ph. D. thesis (Gibson), M.Sc. thesis (McEwen), B.Sc. theses (Buck, Atkinson).
- See:**
Copper mineralization and hydrothermal alteration of volcanic rocks, at Bedford Hill, Noranda area, Quebec; Geol. Surv. Can., Paper 80-1A, p. 119-123, 1980.
- Silicification of mafic rocks in the Noranda camp is a synvolcanic process that has sealed active geothermal systems, thus confining flow to brecciated zones where metalliferous brines exhaled onto the seafloor. In the Amulet group of mines, metal deposits formed shortly after Amulet rhyolite (actually silicified andesitic rocks) emplacement and early in the onset of Amulet andesite volcanicity. Study continues on the Amulet rhyolite in general, as well as the Bedor, F-shaft and Mines Gallen deposits.
511. WATKINSON, D.H., MAINWARING, P.R., Carleton Univ. (Geology):
Chromite in Ontario, 1978-81.
- See:**
Chromite in Ontario: Geology of chromite zones, Puddy Lake - Chrome Lake area and chromite chemistry; Ontario Geol. Surv., MP93, p. 220-234, 1980.
- Geological mapping of chromite occurrences in Ontario (Puddy Lake - Chrome Lake, Shebandowan - Loch Erne, Crystal Lake) and electron microprobe analyses of chromite, enclosing minerals and inclusions in chromite were completed. Sodium rich solid and fluid inclusions in chromite indicate that fluids, and not only magma, were involved in the concentration of chromite in gabbros, peridotites and dunites.
512. WATKINSON, D.H., TALKINGTON, R., MAINWARING, P.R., Carleton Univ. (Geology):
Precious metal deposits in layered complexes of the Canadian shield, 1980-82.
- The emplacement and mobilization of platinum-group elements plus gold in large layered complexes of the Canadian Shield are being examined. The complexes at Lac des Iles, Coldwell, Big Trout Lake, Bird River Sill and some ophiolitic complexes are under investigation.
513. WHITTAKER, P.J., WATKINSON, D.H., Carleton Univ. (Geology):
Chromite in ophiolitic rocks of British Columbia, 1980-83, Ph.D. thesis (Whittaker).
- See:**
Chromite in some ultramafic rocks of the Cache Creek Group, British Columbia; Geol. Surv. Can., Paper 81-1A, p. 349-355, 1981.
- Geological mapping of chromite showings in British Columbia was carried out. Study is concentrating on the Murray Ridge area, Trembleur Intrusions, British Columbia. Petrography and mineral chemistry plus study of solid and fluid inclusions are underway to understand the concentration of chromite in these rocks.

PETROLEUM EXPLORATION/EVALUATION/ RECHERCHES ET ÉVALUATION DES GÎTES PÉTROLE

514. BARNES, C.R., LEGAU, F., FRITZ, P., BARKER, J.F., MACQUEEN, R.W., Univ. Waterloo (Earth Sciences):
Source, correlation and thermal maturation history of hydrocarbon mineral deposits of Ontario, 1979-82; M.Sc. thesis (Legau).
515. CANT, D.J., MOSSOP, G.D., Alberta Research Council (Geol. Surv.):
Petroleum geology, northwestern Alberta, 1980-82.
- To develop an understanding of the distribution of reservoir rock in the Spirit River Formation; this unit in Alberta's Deep Basin is a major gas producer. The project involves subsurface facies analysis because the reservoirs are stratigraphic traps.

516. CHESHIRE, S.G., WARDLAW, N.C., Univ. Calgary (Geology and Geophysics):
An integrated geological and engineering study of the Devonian Meekwap Field, Alberta, 1974-81; Ph.D. thesis (Cheshire).
The reservoir characteristics of the Meekwap Oil field are being investigated using an integrated approach which includes geological modelling, log analysis, statistical analysis, petrophysical methods and numerical simulation.
A geological model has been constructed based on the identification of major petrophysical types within the field. All field wells have been subjected to log analysis using a computer program written by Mr. Cheshire. The data include log and core porosity, various measures of permeability, water saturation, secondary porosity, shaliness and dolomitization. A factor analysis is being performed to elucidate the underlying relationships and causal influences on all of these variables.
517. FOSCOLOS, A.E., Geol. Surv. Can.:
Diagenesis of organic matter and clay mineral in sediments in relation to petroleum generation, 1975-.
518. FOSCOLOS, A.E., Geol. Surv. Can.:
Fluid rock interaction in sandstones, 1980-.
To study the effects of fluid pH and temperature on the stability of authigenic clays in sandstone reservoirs with special reference to hydrocarbon reservoir exploitation.
519. GRANT, A.C., Geol. Surv. Can.:
Geological interpretation of geophysical data as an aid to basin synthesis and hydrocarbon inventory, 1974-.
520. KALKREUTH, W.D., Geol. Surv. Can.:
The relationship between kerogen type (known petrographic rank) and chemical extract data, for the purpose of source rock evaluation, 1977-.
521. NANDI, B.N., CIAVAGLIA, L.A., EMR (CANMET):
Coking characteristics of the various constituents of Athabasca bitumen, Alberta, 1976-.
522. NANDI, B.N., CIAVAGLIA, L.A., EMR (CANMET):
Binders processed from Athabasca bitumen for non-coking coals, Alberta, 1977-81.
523. NANDI, B.N., CIAVAGLIA, L.A., EMR (CANMET):
Petrographic characterization of oil sands coke and fly ash from Suncor and Syncrude, 1977-81.
This project was aimed at petrographically characterizing delayed coke produced by Suncor and Fluid Coke produced by Syncrude during upgrading of Athabasca bitumen. Bench-scale combustion trials were carried out with this coke and the fly-ash was examined microscopically to determine the nature of the unburnt carbon.
524. NANDI, B.N., MACPHEE, J.A., CIAVAGLIA, L.A., EMR (CANMET):
Upgrading of marginal Canadian coking coals using Japanese pitch binders, 1981-82.
In the framework of international co-operation several Japanese pitch binders are being tested with marginal Canadian coking coals in an effort to produce metallurgical coke of satisfactory strength.
525. REID, J., WARDLAW, N.C., Univ. Calgary (Geology and Geophysics):
Effects of vuggy porosity on the production of carbonate hydrocarbon reservoirs, 1978-80; M.Sc. thesis (Reid).
See:
Development of secondary porosity in a Meekwap reef and its effects on reservoir properties; Can. Soc. Petrol. Geol., Core Conference, F.A. Stoakes, (Ed.), p. 3-6, 1981.
526. WARDLAW, N.C., Univ. Calgary (Geology and Geophysics):
Pore systems in sedimentary rocks and their influence on multiphase fluid movements, 1973-82.
See:
The influence of pore structure in rocks on the entrapment of oil; Can. Soc. Petrol. Geol., Mem. 6, p. 193-208, 1980.
- The effects of pore structure on displacement efficiency in reservoir rocks and in glass micro-models; Symp. Enhanced Oil Recovery, AIME Soc. Petrol. Engineers, p. 345-352, 1980.
The efficiency with which oil and gas can be displaced from a reservoir is dependent on the nature of the fluids and the geometric and topologic aspects of the pore systems. Recovery efficiency (oil displaced as a % of oil in place) varies widely from 10% to 80%. A major objective of the project has been to understand how the geometry of pore systems influence recovery efficiency.
- ### GENERAL/GÉNÉRALITÉS
527. CARTER, T.R., COLVINE, A.C., CHERRY, M.E., Ontario Geol. Surv.:
Metallogeny of the Grenville Province, south-eastern Ontario, 1977-83.
See:
Geology of base metal, precious metal, iron, and molybdenum deposits, Pembroke-Renfrew area; Ontario Geol. Surv., Mineral Deposits, Circ. 20, 1981.
To establish a model for the metallogenetic development of the Grenville Province in south-eastern Ontario, concentrating on supracrustal and related intrusive rocks of the Grenville Supergroup. To date, the geologic relationships of metallic mineral deposits in the area have been established, genetic processes responsible for their formation interpreted, resulting in a comprehensive metallogenetic classification of all metallic mineralization. Emphasis in 1980 was on geologic and interpreted genetic relationships of gold mineralization. In 1981 stratigraphic relationships of, and between, stratiform zinc, graphite, and talc mineralization will be examined.
528. CHATTERJEE, A.K., Nova Scotia Dept. Mines Energy:
Metallogenetic studies, southern Nova Scotia, 1979-85.
Results on various aspects of regional geological setting, metallogeny and guides to mineralization were presented at GAC Halifax 1980, uranium workshop, Ottawa, 1980, and International Geological Congress, Paris 1980.
529. DAWSON, K.M., Geol. Surv. Can.:
Metallogeny of the northern Canadian Cordillera, 1974-.
530. FRANKLIN, J.M., Geol. Surv. Can.:
Metallogeny of the southwestern part of the Canadian Shield, 1975-.
See:
Native copper on Superior Shoal, Ontario; Geol. Surv. Can., Paper 80-1C, p. 160, 1980.
Copper and gold mineralization in an Archean trondhjemitic intrusion, Sturgeon Lake, Ontario; Geol. Surv. Can., Paper 81-1A, p. 9-14, 1981.
531. GALE, G.H., Manitoba Dep. Energy and Mines (Mineral Res. Div.):
Mineral deposit studies in the Flin Flon area, Manitoba, 1980-85.
Establish distribution and intensity of alteration around selected mineral deposits in the Flin Flon area.
532. GRIFFITHS, J.R., Univ. Alberta (Geology):
Mineralization in British Columbia, 1975-81,
Comprehensive data-files for over 1500 mineral occurrences in central British Columbia include data on metals and minerals (ore, gangue), host-rock age and lithology, age and type of any related plutonism, and type of deposit. Manual analysis of data for over 100 Cu-Mo porphyry deposits shows two distinct sources of metals: the Cu-Mo ratio reflects the primary melt composition, allowing potential for "mapping" the lower crust. Minor, usually peripheral mineralization, reflects the age and lithology of the stratigraphic host unit, suggesting concentration of Pb, Zn, Ag, etc., by hydrothermal systems during pluton emplacement. Lead distribution in vein deposits is strongly controlled by lithofacies within certain stratigraphic units. Local stratigraphic variations are thus an important key to understanding metal distribution patterns. Together, the above plus other conclusions are forming the basis for development of exploration models based on geologic, tectonic, and petrogenetic concepts.
533. GROSS, G.A., Geol. Surv. Can.:
Geology of mineral resources in the ocean, 1976-.
534. MACINTYRE, D.G., British Columbia Ministry Energy, Mines, Petrol. Res. (Geol. Div.):
Driftpile Creek - Akie River project, British Columbia, 1979-85.
See:
British Columbia Ministry Energy, Mines, Petrol. Res., Paper 1980-1, p. 55-67, 1980.
British Columbia Ministry Energy, Mines, Petrol. Res., Paper 1981-1, p. 33-47, 1981.
Geological and stratigraphic mapping act as a base to research the origin and genesis of stratiform-barite-lead-zinc deposits, such as the Cirque deposit. Extensive rock geochemical studies are in progress also.
535. O'REILLY, G.A., CHATTERJEE, A.K., KEPPIE, J.D., Nova Scotia Dept. Mines Energy:
Metallogenetic investigations of Nova Scotia, 1979-81.
536. SCOTT, S.D., SPRY, P.G., BRYNDZIA, L.T., TROOP, G., KALOGEROPOULOS, S.I., FARR, J.E., Univ. Toronto (Geology):
Geology and geochemistry of massive sulphide deposits, 1975-; Ph.D. theses (Spry, Bryndzia, Kalogeropoulos), M.Sc. theses (Troop, Farr).
See:
Geology and structural control of Kuroko-type massive sulphide deposits; Geol. Assoc. Can., Sp. Paper 20, p. 706-721, 1981.
Sphalerite geobarometry applied to metamorphosed sulfidated ores of the Swedish Caledonides and U.S. Appalachians; Norges Geol. Undersøk., vol. 360, p. 59-71, 1980.
There are two complementary aspects of our work on massive sulfides: 1) Field studies and 2) Experimental. In the field, we are studying the geology, tectonic setting, geochemistry and mineralogy of the Kuroko ores of Japan as members of a large international research team from the U.S. and Japan. Our involvement at Toronto has been mainly on footwall alteration, geochemistry of exhalites and structural control.
We are now beginning to apply our new information to massive sulfides in Canada, specifically Seneca, British Columbia, South Bay, Ontario, Noranda, Quebec, Bathurst, New Brunswick, and Buchans, Newfoundland. In the laboratory we are doing experiments on systems which will help us to quantify better the conditions of formation or deformation of ores. Chief among these are the sphalerite geobarometer, kinetics of sulfide reactions, synthesis and stability of Gahnite ($ZnAl_2O_4$) and chlorite-sulfide reactions.
537. SMITH, P.K., Nova Scotia Dept. Mines Energy:
Meguma Group studies, Nova Scotia, 1980-83.
See:
Geology of the Sherbrooke area, Guysborough County, Nova Scotia; Nova Scotia Dept. Mines, Energy, Rept. Activities 1981.
This project deals with the delineation and mapping of stratigraphic units subdivisible from the Goldenville and Halifax Formations (Cambro-Ordovician Meguma Group). From this models will, and are being generated, for location of mineralization (specifically gold) within the group. Metamorphic isograds and small scale stratigraphic variations are measured. A new deposition model for the Meguma Group has been developed and more work is being conducted to give conclusive proof of its validity.
538. SOUTHER, J.G., Geol. Surv. Can.:
Geothermal energy resources in Canada, 1973-.
539. SUTHERLAND BROWN, A., PANTELEYEV, A., HOY, T., British Columbia, Ministry Energy, Mines, Petrol. Res. (Geol. Div.):
Metallogeny of Canadian Cordillera, 1974-.
See:
Metallogeny by numbers; Geoscience Canada, vol. 7, no. 3, p. 95-102, 1980.

540. SWINDEN, H.S., Newfoundland Dept. Mines and Energy:

A study of the economic geology of the Hermitage Flexure, Newfoundland, 1979-81.

The Hermitage Flexure of Southern Newfoundland comprises a belt of Ordovician volcanic and sedimentary rocks which are host to both syngenetic Pb-Zn-Ag mineralization related to the volcanism and to vein-type occurrences related to the intrusion of later granites. It is the purpose of this project to investigate the known mineral occurrences, classify them according to their genesis and to investigate the regional geology and stratigraphy as it related to these mineral occurrences. The object is to produce a model for

metallogeny in the Hermitage Flexure and to relate the mineralization in this area to that seen elsewhere in Central Newfoundland.

541. VEIZER, J., JANSEN, S., Univ. Ottawa, (Geology): Quantification of metallogenetic epochs during terrestrial evolution, 1981-84.

See:

Basement and sedimentary recycling and continental evolution; *J. Geol.*, vol. 87, p. 341-370, 1980.

542. YOLE, R.W., IRVING, E., NORTH, F.K., GUNTER, A., Carleton Univ. (Geology): Paleogeographic and age relationships of sediment related resource deposits, 1979-82. Episodes of source-sediment deposition (2) the episodes in individual close-up; *J. Petrol. Geol.*; vol. 2, no. 3, p. 323-338, 1980.

MINERALOGY/CRYSTALLOGRAPHY/MINERALOGIE/CRISTALLOGRAPHIE

543. BACHINSKI, S.W., SIMPSON, E.L., Univ. New Brunswick (Geology):

Chemistry of phlogopites in the Shaw's cove minette: a comparison with the micas of other lamprophyres, ultrapotassic rocks, kimberlites, and mantle xenoliths, 1979-81.

Minette micas, usually sharply zoned, are titaniferous phlogopites ($mg = 0.67 - 0.89$, $TiO_2 = 1 - 11$ wt.%) with significant concentrations of Cr, Ni, Ba, and F and are thus wholly distinct from micas of common igneous rocks. Micas chemically indistinguishable from those of minettes may be found in other lamprophyres, (ultra) potassic rocks, kimberlites, and mantle xenoliths from a variety of rock types. The chemical identity of minette mica phenocryst cores and phenocrysts of diverse mantle-derived rocks implies crystallization under similar conditions. By analogy with the chemistry of phlogopites produced experimentally in potassic systems at high pressures and with studies of equilibration conditions of natural phlogopites, phenocrystic phlogopites in minettes may form at temperatures and pressures as high as $\sim 1250^\circ C$ and ~ 40 kb and under relatively high f_{O_2} .

544. BAYLISS, P., Univ. Calgary (Geology and Geophysics):

Crystal-chemistry study of the pyrite group, 1963-.

See:

Crystal structure refinement of a cobaltian ullmannite; *Am. Mineral.*, vol. 65, p. 154-156, 1980.

545. BRISTOL, C.C., Brandon Univ. (Geology):

Textures produced by metamorphism of massive sulphide ores of northern Manitoba, 1981.

Relationship of textures of massive sulphide ores of northern Manitoba to grade of metamorphism of rocks adjacent to those ores.

546. CABRI, L.J., EMR (CANMET):

Platinum, 1971-81.

See:

Determination of ideal formulae for new minerals of the platinum group; *Proceed. I.M.A. XIth Meeting, Novosibirsk*, p. 157-165, 1980.

547. CABRI, L.J., EMR (CANMET):

Mineralogical characterization of inorganics in Canadian coals, 1977-.

548. CERNY, P., Univ. Manitoba (Earth Sciences):

Mineralogy and petrology of pegmatites, 1971-.

See:

The Tanco pegmatite at Bernic Lake, Manitoba. XII. Hafnian zircon; *Can. Mineral.*, vol. 18, p. 313-321, 1980.

Continuing investigation of the Tanco pegmatite deals recently with the compositional variations of the Ta-oxide minerals and associated phases and their distribution in the deposit; a study of hafnian zircon has been published, and examination of a multigeneration sequence of triphylite-lithiophilite has been started. Studies of niobian rutile and niobian titanite from the Huron Claim pegmatite are finished. Crystal chemistry of monarite from southeastern Manitoba, petalite, wodginitite, pollucite and beryl are in progress. Feldspar investigation concentrates on the petrology of feldspar crystallization in different paragenetic and geochemical types of pegmatites.

549. CHEN, T.T., EMR (CANMET):

Mineralogy of mercury in Canadian sulfide ores; 1979-.

To study the occurrence, distribution and mineralogy of mercury in Canadian sulphide ores, and in Canadian non-ferrous metal extraction circuits.

550. CHEN, T.T., PETRUK, W., EMR (CANMET):

Distribution of silver and other trace elements in New Brunswick ores, 1976-80.

See:

Mineralogy and characteristics that affect recoveries of metals and trace elements from the ore at Heath Steele Mines, New Brunswick; *CIM Bull.*, vol. 73, no. 823, p. 167-179, 1980.

551. DONNAY, G., KIHAVA, K., McGill Univ. (Geological Sciences):

Relation of properties to structure in crystals, 1975-85.

552. DUKE, J.M., Geol. Surv. Can.:

Mineralogy of nickel deposits in serpentinized ultramafic rocks, 1975-.

553. ERCIT, T.S., CERNY, P., Univ. Manitoba (Earth Sciences):

Crystal chemistry and paragenesis of simonite, 1980-82; M.Sc. thesis (Ericit).

Crystal chemistry of the complex oxide of aluminum and tantalum is examined and its formula verified. Conditions leading to crystallization at a dozen of its localities are studied.

554. HAWTHORNE, F.C., Univ. Manitoba (Earth Sciences):

The crystal chemistry of the amphiboles, 1968-.

See:

A three-amphibole assemblage from the Tallan Lake Sill, Peterborough County, Ontario; *Can. Mineral.*, vol. 18, p. 275-284, 1980.

An extensive review of amphibole crystal chemistry has been submitted for publication, and chapters on crystal chemistry and spectroscopy of amphiboles are currently being prepared for the Mineralogical Society of America's *Reviews of Mineralogy*, vol. 9, *Amphiboles and other Hydrous Pyroboles*. In addition, several aspects of amphibole crystal chemistry are currently being investigated.

555. HAWTHORNE, F.C., CERNY, P., Univ. Manitoba (Earth Sciences):

Studies of pegmatite minerals, 1977-.

See:

Crystal chemistry of milarite; *Can. Mineral.*, vol. 18, p. 41-57, 1980.

Examination of structural controls on the chemistry and physical properties of accessory minerals in granitic pegmatites and pegmatitic granites. Current studies concentrate on garnets, complex Ta/Nb/Sn/Ti oxides and beryl.

556. HAWTHORNE, F.C., FERGUSON, R.B., Univ. Manitoba (Earth Sciences):

The structural chemistry of hydroxy-hydrated minerals, 1976-.

General survey of the topologic characteristics of hydroxy-hydrated mineral structures with a view to characterizing important polyhedral complexes common to numerous structures. Work on the solution of unknown crystal structures is also continuing. The structure of pachnolite has been completed and the structure of tancoite is in the final stages.

557. MOSSMAN, D.J., DELABIO, R., MCINTOSH, D., Univ. Saskatchewan (Geological Sciences), Geol. Surv. Can., Cominco:

Mineralogy of clay marker seams in some Saskatchewan potash mines, 1978-82.

See:

Geol. Assoc. Can./Mineral. Assoc. Can., Annual Meeting, Abstracts, vol. 6, p. A-41, 1981.

To report on the clay mineralogy of Potash ore zones of some Saskatchewan mines, and to relate this to diagenetic/metamorphic history of the deposits.

The first stage of this project involved compilation of data on over 100 oil basins. Data for phosphorites (over 200 deposits) and oil-shales (over 100 deposits) on a worldwide basis have now been compiled. The data are computer processable, and keyed to the RESMAP program, modified for use on Carleton computers, so that paleogeographic maps showing resource distributions for selected intervals of geologic time can be constructed. Some of the resource data has already been plotted on a new set of 20MA interval maps provided through E. Irving (phosphorites, oil shales) and a manuscript report on phosphorite time-space distributions prepared.

558. MOSSMAN, D.J., PLANT, A.G., Univ. Saskatchewan (Geological Sciences), Geol. Surv. Can.:

Mineralogy and chemistry of davidite - Canadian occurrences, 1978-82.

To determine the chemistry and mineralogy of Canadian occurrences of the uranium - titanium oxide mineral davidite.

559. MULHERN, P.J., BERGER, G.W., HUNTLEY, D.J., Simon Fraser Univ. (Physics):

Magnetic separation of silt sized sediments, 1980.

560. PETERSON, R.C., Queen's Univ. (Geology):

Charge density analysis of silicate structures, 1980-83.

Through the use of highly accurate x-ray diffraction data it is possible to study the distribution of electrons within mineral structures. Work has been completed on the Al_2SiO_5 polymorphs kyanite and andalusite and sillimanite and work is beginning on a sheet silicate mineral muscovite.

Through studies of the valence electron distribution it may be possible to extend our understanding of bonding in these inorganic mineral systems.

561. PETRUK, W., EMR (CANMET):

Mineralogy applied to ore dressing of Zn-Pb-Cu ores from northwestern New Brunswick, 1975-81.

562. PLANT, A.G., Geol. Surv. Can.:

Electron beam microanalysis, 1962-.

563. RIMSAITE, J.Y.H., Geol. Surv. Can.:

Mineralogy of uranium deposits in granitic rocks in the Grenville structural province, Ontario and Quebec, 1977-.

See:

Petrochemical and mineralogical evolution of radioactive rocks in the Baie-Johan-Beetz area, Québec: A preliminary report; *Geol. Surv. Can., Paper 81-1A*, p. 115-131, 1981.

564. RUCKLIDGE, J.C., LAYNE, G., Univ. Toronto (Geology):

Astrophyllite from Kangediugssuaq, East Greenland, 1981-.

Astrophyllite occurs in an undersaturated dyke at Bagnaesset, East Greenland, and 10 miles away in a saturated pegmatite. The habit of the crystals in the two localities is quite different. Microanalytical studies, and x-ray diffraction measurements are being made to determine the fundamental differences in the two occurrences.

565. TREMBATH, L.T., CHERRY, M.E., Univ. New Brunswick (Geology):

Disordering of alkali feldspar: The effect of H_2O on the disordering process, 1979-81.

The project is designed to unravel the disordering/ordering process(es) in alkali feldspars by systematically varying pertinent controls of the process(es).

566. UCAKUWUN, E.K., CERNY, P., Univ. Manitoba (Earth Sciences):

Granitic pegmatites and granitoids of the Dryden area, northwestern Ontario, 1979-81; M.Sc. thesis (Ucakuwun).

Be, Li + Ta, and Li + Cs + Ta bearing pegmatites northwest of Dryden appear to be linked to late intrusions of pegmatitic granites.

567. VON BITTER, P.H., GAIT, R., Royal Ontario Museum (Invertebrate Palaeontology, Mineralogy and Geology):

Calcite pseudomorphs from the Pleistocene of western Newfoundland - possible palaeoenvironmental indicators, 1976-82.

INVERTEBRATE/INVERTÉBRÉS

568. BAMBER, E.W., Geol. Surv. Can.: Carboniferous and Permian biostratigraphy and coral faunas, western and northern Canada, 1971-.
569. BARNES, C.R., CARSON, D.M., LANDING, E., Univ. Waterloo (Earth Sciences): Ordovician conodont biostratigraphy of southern Devon Island, eastern Arctic Archipelago, 1978-82; M.Sc. thesis (Carson):
See:
Subsurface stratigraphy and conodont zonation of the Lower Paleozoic succession, Arctic Platform, southern Arctic Archipelago; Geol. Surv. Can., Paper 80-1A, p. 209-215, 1980.
570. BARNES, C.R., MCCracken, A.D., NOWLAN, G.S., DUFFIELD, S.L., UYENO, T.T., FAHRAEUS, L.E., Univ. Waterloo (Earth Sciences), Geol. Surv. Can., Memorial Univ. (Geology):
Conodont and acritarch biostratigraphy and paleoecology of the Upper Ordovician and Lower Silurian of Anticosti Island, Québec, 1975-; Ph.D. thesis (Duffield).
See:
Gamachignathus, a new multielement conodont genus from the latest Ordovician, Anticosti Island, Québec; Geol. Surv. Can., Paper 80-1C, p. 103-112, 1980.
571. BARNES, C.R., UYENO, T.T., DRUCE, E., COOPER, B.J., BERGSTRÖM, S.M., Univ. Waterloo (Earth Sciences), Geol. Surv. Can., Australia Dept. Trade, South Australian Dept. Mines, Ohio State Univ. (Geology):
Paleontology, biostratigraphy and paleoecology of Lower Paleozoic conodonts in Canada, Spitzbergen and Australia, 1976-.
572. BRAND, U., ETHINGTON, R.L., Univ. Missouri, Brock Univ. (Geology):
Conodont biostratigraphy of U.S. midwest, 1974-; M.Sc. thesis (Brand).
See:
Oneotodus simplex (Furnish) and the genus *Oneotodus* (Conodont); J. Paleontol., vol. 55, no. 1, p. 239-247, 1981.
573. BRAUN, W.K., BROOKE, M.M., JOHNSTON, P., FOWLER, S., Univ. Saskatchewan (Geological Sciences):
Mesozoic biostratigraphy and microfaunas of western and northern Canada, 1965-; Ph.D. theses (Johnston, Fowler).
Jurassic biostratigraphy and microfaunas of Arctic Canada (Johnston, nearing completion) and Early Cretaceous microfaunas and biostratigraphy of northern Richardson Mountains and adjacent regions (Fowler, in progress). Continuation of studies on the Jurassic microfaunas of the western interior regions and the Rocky Mountains (M.M. Brooke). The study of the Fernie sequences of Alberta and British Columbia is in process of completion.
574. BRAUN, W.K., FEATHERSTONE, R., MATHISON, E., YAYCHUK, D., HALABURA, S., Univ. Saskatchewan (Geological Sciences):
Devonian biostratigraphy and microfaunas of western and northern Canada, 1965-; M.Sc. theses (Featherstone, Mathison, Yaychuk, Halabura).
M. Sc. theses nearing completion include biostratigraphy and ostracode faunas of the Middle Devonian Slave Point Formation of northern Alberta (Featherstone), microfaunas of the Middle and Upper Devonian sequences of Saskatchewan (Mathison), and Frasnian microfaunas and faunal provincialism in western Canada (Yaychuk); M.Sc. thesis commencing is the Upper Devonian Birdbeak Formation of Saskatchewan (Halabura). Continuation of studies on the biostratigraphy and ostracode faunas of western and northern Canada (W.K. Braun).
575. CAMERON, B.E.B., Geol. Surv. Can.: Tertiary foraminiferal succession of western Cordillera and Pacific Margin, 1969-.
- See:**
Biostratigraphy and depositional environment of the Escalante and Hesquiat Formation (Early Tertiary) of the Nootka Sound Area, Vancouver Island, British Columbia; Geol. Surv. Can., Paper 78-9, 1980.
Stratigraphy and paleontology of the Upper Yakoun Formation (Jurassic) in Alliford Bay Syncline, Queen Charlotte Islands, British Columbia; Geol. Surv. Can., Paper 80-1C, p. 37-44, 1980.
576. CAMERON, D.A., HOOPER, K., Carleton Univ. (Geology):
Paleoecologic study of benthonic Foraminifera in Neogene sediments, 1979-80; B.Sc. thesis (Cameron).
Forty one ecologically significant benthonic Foraminifera, late Miocene/early Pliocene in age, were examined for the purpose of reconstructing the paleobathymetry of the Waindina Sandstone, Suva Mar, and Korovou Sandstone located on Viti Levu, Fiji.
The criteria used to determine the paleobathymetric environment include the compilation of recent ecological data, the evaluation of faunal trends, and the recognition and application of morphological variations.
577. CHATTERTON, B.D.E., Univ. Alberta (Geology):
Systematic and biostratigraphic studies of trilobite and conodont faunas of western and northern Canada, 1972-.
- See:**
Ontogenetic studies of Middle Ordovician trilobites from the Esbatottine Formation, Mackenzie Mountains, Canada; Palaeontographica Abt. A, vol. 171, p. 1-74, 1980. The ontogeny of *Failliana* and the origin of the Bumastinae (Trilobita); Geol. Magazine, vol. 117, no. 5, p. 471-478, 1980.
Efforts are currently concentrated on Silurian trilobite and conodont faunas from western and Arctic Canada.
578. CLARK, F.E., HOOPER, K., Carleton Univ. (Geology):
Upper Cretaceous Foraminifera and biostratigraphy of C-Y Creek, Western Australia, 1977-79; M.Sc. thesis (Clark).
A suite of thirty-six samples from the Upper Cretaceous of C-Y Creek in Western Australia is examined. Three formations, the Gearle Siltstone, Toolonga Calcilitite, and Korojon Calcarenite, are represented in the suite of samples. The Foraminifera contained therein are identified and the systematic paleontology is presented.
Differences in the lithologies and the foraminiferal faunas between the calcilitite and the calcarenite are thought to establish the presence of the Toolonga Calcilitite as a formation distinct from the Korojon Calcarenite at C-Y Creek. Foraminiferal criteria for the distinction of the one formation from the other are determined, as well as a foraminiferal criterion that distinguishes the Gearle from both the Toolonga and the Korojon. In addition, the changes in the foraminiferal faunas that occur in the Upper Cretaceous succession are noted, and intervals characterized by certain species compositions are observed.
Several species, most of them planktonic are used to correlate the formations with the standard European stages. The upper Gearle Siltstone is of possible Turonian age, the Toolonga Calcilitite ranges in age from Santonian to Campanian, and the Korojon Calcarenite is of Campanian to Early Maastrichtian age.
579. COPELAND, M.J., Geol. Surv. Can.:
Paleozoic ostracodes of Canada, 1972-.
- See:**
Inuitbeyrichia, a new Silurian ostracode genus from the Canadian Arctic; Geol. Surv. Can., Paper 80-1B, p. 29-37, 1980.
The occurrence of Ostracoda 'southern' Appalachian affinities in the Lower Devonian Shiphead Formation, Forillon Peninsula, Gaspé, Québec; *ibid.*, p. 255-258, 1980.
Bungonibeyrichia N. Gen. (Ostracoda, Beyrichiidae) from New South Wales, Australia, with observations on the genus *Velibeyrichia* Henningsmoen, 1954; Geol. Surv. Can., Paper 81-1A, p. 41-44, 1981.
580. DIXON, O.A., Univ. Ottawa (Geology):
Ordovician and Silurian heliolitid corals of Anticosti Island, Québec, and Canadian Arctic Islands, 1968-.
581. ELIAS, R.J., Univ. Manitoba (Earth Sciences):
Upper Ordovician solitary rugose corals of central and western North America, 1979-.
- See:**
Solitary rugose corals of the Selkirk Member, Red River Formation (Upper Middle or Upper Ordovician), Southern Manitoba; Geol. Surv. Can., Bull. 344, 1981.
Work in progress: 1) Solitary rugose corals of the Stony Mountain Formation (Upper Ordovician), southern Manitoba; and 2) Upper Ordovician solitary corals of the Klannath Mountains, northern California.
582. EXTON, J., HOOPER, K., Carleton Univ. (Geology):
Benthonic microfaunal associations from Liassic (L. Jurassic) of Zambujal, west-central Portugal, 1975-78; M.Sc. thesis (Exton).
Thirty-one surface samples, collected from sediments belonging to the Pliensbachian and Toarcian stages (Lower Jurassic) exposed near Zambujal in west-central Portugal, have been analysed from Foraminifera and ostracods. A total of 112 species of Foraminifera and 35 species of ostracods have been identified and systematically described.
The boundary between the Pliensbachian and Toarcian stages is marked by a mass extinction of species; only 3 species of Foraminifera and 2 species of ostracods are common to both stages, these are: *Ammobaculites alaskensis* Tappan, *Trochammina* sp. 1, *Lenticulina gottgensis* (Bornemann), *Astaculus varians* (Bornemann), *Dentalina bartensteini* Tappan, *Dentalina sinemuriensis* Terquem, *Dentalina pseudocommunis* Franke, *Eoguttulina liassica* (Strickland), *Polycopse* sp. 1, and *Cytheropteron* sp.
Six microfaunal associations have been recognized based upon percentage abundances of species, taxa of restricted occurrence, and recurring combinations of species and morphological trends.
583. GRADSTEIN, F.M., Geol. Surv. Can.:
Biostratigraphic history of the Mesozoic and Cenozoic sediments of the Grand Banks, northeast Newfoundland and Labrador Shelves (based on Foraminifera and Ostracoda), 1974-.
584. GRADSTEIN, F.M., Geol. Surv. Can.:
Taxonomy, biostratigraphy, paleoecology and paleobiogeography of Mesozoic - Cenozoic agglutinated Foraminifera, 1979-.
585. HALL, R.L., Univ. Calgary (Geology and Geophysics):
Lithostratigraphy and biostratigraphy of the Fernie Formation, 1978-82.
Measurement and sampling of stratigraphic sections in the Fernie Formation (Jurassic) in the Foothills and Front Ranges of the Rockies is being continued in southern and central western Alberta and south-eastern British Columbia. In many of these sections a relatively thick shale succession immediately overlying the well-known Lower Bajocian strata has been demonstrated to be of Bathonian age. In fact, it now appears that strata representing Lower, Middle and Upper Bathonian units are all present within the Fernie. Identification and description of fragmental ammonites representing various parts of the Bathonian is now in progress and it is anticipated that a taxonomic study of the abundant belemnites from the Fernie will be commenced soon. Additional sections of the Rock Creek Member sandstones will be studied and sampled in the Cadomin-Jasper region this summer in an attempt to determine the detailed stratigraphy, age and environment of deposition of this misunderstood unit.
586. HOFMANN, H.J., Univ. Montréal (Géologie):
Precambrian paleontology, 1969-.
- See:**
Stromatolites and fenestral fabric in Early Proterozoic Huronian Supergroup, Ontario; Can. J. Earth Sci., vol. 17, no. 10, p. 1351-1357, 1980.

- Occurrence of Oldhamia and other trace fossils in Lower Cambrian(?) argillites, Selwyn Mountains, Yukon; Geol. Surv. Can., Paper 81-1A, p. 281-289, 1981.
- World-wide synthesis of data on Aphebian microfossils completed. To be published jointly with J.W. Schopf by Princeton Univ. Press in 1981 as a chapter in a book on Origin and Evolution of the Earth's earliest atmosphere.
587. HOOPER, K., Carleton Univ. (Geology): Distribution of Foraminifera south of Sherbrooke, Nova Scotia, 1976-78.
- Bottom sediment samples (depths to 25m) from St. Mary's River, Gogogan, Wine Bay, Indian and Holland's Harbours, Nova Scotia, identified for the Foraminifera by Habbishaw in 1970, were factor-vector analyzed. Based on 'total' populations 4 benthonic foraminiferal assemblages, not strictly biozones, are recognized. Assemblage I, dominated by *Miliammina fusca*, has a mean diversity of 4.75, a mean depth of 1.85 m, a mean pH (substrate) of 6.7, and the substrate is coarse-grained. This assemblage is found in the Upper Estuarine (intertidal) Zone in St. Mary's River, south of Sherbrooke. Assemblage 2 dominated by *Eggerella advena*, has a mean diversity of 12.5, a mean depth of 7 m, a mean pH (substrate) of 8.16, and the substrate is very fine-grained. It is found in the Lower Estuarine Zone in the lower reaches of St. Mary's River, Wine Harbour Bay, the western and northern areas of Gogogan Harbour, and the eastern shore south of Port Bickerton. Assemblage 3, dominated by *Elphidium clavatum*, has a mean diversity of 14.3, a mean depth of 9m, a mean pH (substrate) of 7.2, and the substrate is coarse-to fine-grained sand. It occurs in the Marginal Marine Zone (Scott) or Nearshore Biofacies (Bartlett) in St. Mary's River (3 to 5 km from the mouth) and at the head and near the mouth of Indian Harbour. Assemblage 4 dominated by *Cibicides lobatulus*, *Eggerella advena*, *Elphidium clavatum*, has a mean diversity of 19.9, a mean depth of 12.2m, a mean pH (substrate) of 7.16, and the substrate is medium- to fine-grained sand. It occurs in the Open Ocean Nearshore Zone (Scott) or the Open Bay Biofacies (Bartlett), inside and outside Holland's Harbour, the southwest and central area of Indian Harbour, at the mouth of St. Mary's River, on the eastern side of Gogogan Harbour, and east of Crook Point.
588. HOOPER, K., Carleton Univ. (Geology): Magnesium in 19 species of eastern Canadian Holocene Foraminifera, 1976-78.
- The tests of 18 benthonic and one planktonic species of modern Foraminifera from 8 bottom samples recovered from the eastern Canadian shelf fall into two, or perhaps three groups with respect to mean mole percent $MgCO_3$, as follows: Group 1 - 0 to 2.5% $MgCO_3$; and Group 3 - 5 to 9% $MgCO_3$. The watermass characteristics and depth of each population are: Upper Watermass, -1 to 3 or 5°C, 33 o/oo salinity, 62 m and 73 m; Intermediate Watermass, 0°C, 34 o/oo salinity, 99m; and Deep Watermass, 4 to 5°C, 35 o/oo salinity, 263m, 431 m, 475 m and 509 m.
- In the samples examined low magnesium forms (Group 1) occur in all three water-masses and in a late-glacial beach sample. The intermediate magnesium form *Ephidiella arctica* and *Q. seminulum* occur in the Upper Watermass. Populations of the low magnesium species *Buccella inusitata*, *Islandiella helenae* and *Nonionella labradorica* are each found in both Upper and Deep Watermasses. The low magnesium value of *Quinqueloculina stalkerii* may indicate that the form should be placed in another genus.
589. HOOPER, K., Carleton Univ. (Geology): Holocene microfauna of the Queensland Shelf, 1978-83.
- Most abundant species of the Queensland Shelf so far recovered include: *Operculina ammonoides*, *O. complanata*, *O. granulosa*, *Textularia agglutinans*, *Peneroplis pertusus*, *Quinqueloculina pseudoreticulata*, *Textularia foliacea*, *Amphistegina radiata*, *A. cellanthus craticulatus*, *Pararotalia ozawai*, *Quinqueloculina samoensis*, *Reusella spinulosa*, *Textularia candeiana*, *Alveolinella quoyi*, *Cibicides lobatulus*. Several new species have been recovered and await description.
590. HOOPER, K., Carleton Univ. (Geology): Miocene-Holocene microfauna/microflora of Oceania, 1980-85.
- Paleoecologic, taxonomic and biostratigraphic analysis of microfauna/microflora of Oceania largely from Deep Sea Drilling Program cores.
591. JELETZKY, J.A., Geol. Surv. Can.: Cretaceous and Upper Jurassic paleontology and biostratigraphy, western and Arctic Canada, 1980-.
592. JONES, B., Univ. Alberta (Geol.): Silurian and Devonian brachiopods of Arctic Canada, 1971-.
- During the period 1980-81, the following topics have been examined in detail: 1) Lower Devonian brachiopods from the 'Bird Fiord' Formation of the Vendom Fiord area, Ellesmere Island - this covers taxonomy, dating of strata and correlation with strata elsewhere in Arctic Canada; 2) Devonian brachiopods from the Bird Fiord Formation of the Goose Fiord area, Ellesmere Island - covering taxonomy, dating of strata, and environmental setting of fauna; 3) taxonomy of Lower Devonian spiriferids from southwest Ellesmere Island - detailed investigation of brachiopods previously assigned to *Fimbriospirifer*; 4) brachiopod communities of the Eids Formation of Ellesmere Island with G.P. Smith, McGill Univ.; and 5) comparison of *Atrypa* faunas of Arctic Canada and southern China: detailed comparison of *Atrypa* species and communities in both areas (with Rong Jia-Yu, Nanjing Institute, China).
593. KOBLUK, D.R., Univ. Toronto (Geology): Paleogeology of Paleozoic reef cavities, 1977-.
- See: Cavity - dwelling biota in Middle Ordovician (Chazy) bryozoan mounds from Québec; Can. J. Earth Sci. vol. 18, p. 42-54, 1981.
- Upper Ordovician (Richmondian) cavity - dwelling (coelobiontic) organisms from southern Ontario; Can. J. Earth Sci., vol. 17, p. 1616-1627, 1980.
- A study of cavity - dwelling organisms (coelobionts) found preserved in Lower Paleozoic mounds and reefs, mostly of Cambrian, Ordovician, and Silurian age. Coelobionts are an abundant part of the biota in modern reefs, but in ancient reefs, have been unstudied largely. Cavities in reefs in the Paleozoic are ubiquitous, and are found to contain an abundant and diverse biota of organisms that lived within them. This project is designed to describe Lower Paleozoic cavity biotas and trace their general development through some of the Lower Paleozoic, in an attempt to understand the role these organisms played in some of the earliest reef systems, and to understand the origins of the complex and very important modern coelobiontic community.
594. KUKALOVA-PECK, J., Carleton Univ. (Geology): Morphology and evolution of Paleozoic insects with reference to phylogeny of Recent insects, 1970-.
- Study of the evolution of wing articulation in winged insects (Pterygota) is close to completion. Giant Carboniferous Palaeodictyoptera Mazon Creek, Illinois, give evidence that the early wing-moving sclerites were more numerous, regular, and serial than those of modern insects. Instead of merely three so-called "axillaria" (1Ax, 2Ax, 3Ax) the wings were moved by 32 dorsal, almost homonomous, sclerites and by about the same number of ventral sclerites. The sclerites were primitively arranged in a band which formed a basal, flattened ring of pleural origin, to which the wing was articulated. So-called "axillaria" of modern insects are secondary structures that evolved by reduction, clustering, and fusion of the ancestral, more numerous, and serially arranged, sclerites. This process was profoundly different in the Neoptera and in the Paleoptera.
- Study of the venation of dragonflies (Odonata) has been completed. The venal pattern of modern Odonata is presently interpreted as lacking two veins, MP and CuA. This makes dragonflies unlike all other Pterygota. The fossil record shows that the venation has been misinterpreted, and that it is fully homologous to all winged insects. The ancestral venal pattern closely resembles that of Paleozoic mayflies (Ephemeroptera).
595. LAROCHE, C.H., HOOPER, K., Carleton Univ. (Geology): Recent deep water benthonic Foraminifera of the northwestern Atlantic Ocean, 1976-79; M.Sc. thesis (Larouche).
- Twenty-one core top samples from the western North Atlantic yielded a benthonic foraminiferal fauna of 208 species. This study describes the fauna and relates the distribution of abundant species to the deep water masses in the western North Atlantic Ocean.
- Fifteen samples were collected in the Mid Atlantic Ridge area near latitude 45° N., two samples were recovered from the continental slope off the Grand Banks and four samples from the continental slope off Nova Scotia.
- Four assemblages, defined in terms of the abundant species (i.e. abundance greater than or equal to 5% of the population), are correlated with temperature and salinity values of the deep water masses. Assemblage I is established with a high degree of confidence; it is recognized at eleven stations and has been described in previous studies. Assemblage II is proposed with less confidence. Though its distribution has been documented in the literature, it is recognized at only one station. Assemblages III and IV are presented as suggestions: each is defined on the basis of a unique sample and there is no published information available to substantiate the existence of these assemblages.
- Assemblage I is characterized by *Epistominella exigua* (Brady), *Eponides tumidulus* (Brady) and *Loxostomum truncatum* Philiger and Parker. These species comprise approximately 50% of the population in eleven samples from the Mid Atlantic ridge area. This assemblage is associated with North Atlantic Deep Water (NADW).
- Alabamina ? umbonifera* (Cushman), which has been correlated by authors with the presence of Antarctic Bottom Water (AABW), characterizes Assemblage II. Assemblage II is present at only one station in the Mid Atlantic Ridge area. It is suspected that small size specimens, including species characteristic of NADW, have been selectively removed from this sample by bottom currents. This view is further supported by the temperature-salinity values which are of NADW. AABW is known to be present in the deepest part of the North American basin only. Thus the presence of *Alabamina ? umbonifera* in the Mid Atlantic Ridge area suggests a localized phenomenon.
- Two species, *Cassidella complanata* (Egger) and *Elphidium excavatum* (Terquem), both of which are believed to be indicative of Labrador Sea Water, form Assemblage III. The assemblage is recognized at a single Nova Scotian Slope station with temperature-salinity values of Labrador Sea Water.
- Assemblage IV is recognized at a single station on the Grand Banks Slope. It is defined by the abundance of *Cassidulina obtusa* (Williamson). The temperature-salinity values are those of Labrador Sea Water.
- Five samples contain elements from a mixture of assemblages. The fauna from these samples is believed to be transitional, indicating areas of mixed water masses.
596. LEE, C.W., HOOPER, K., Carleton Univ. (Geology): Early Cretaceous *Hedbergella* (Foraminifera) from Darwin, Australia: A biometric approach, 1977-79; M.Sc. thesis (Lee).
- Multivariate morphometric analysis on the morphologically similar planktonic foraminiferal species *Hedbergella delioensis* (Carsey), *Hedbergella planispira* (Tappan) and *Hedbergella infracturea* (Glaessner) from core material of one horizon of Aptian age from the Darwin area, N.T. indicates that previous non-biometric studies did not allow clear interspecific differentiation, and that intraspecific variations were neglected. Results of stepwise discriminant analysis in this study establish three distinct forms (species) in the sample and that the essential morphological differences are related to the height of the spire and the size of the last chamber. Results of principal component analysis show that the first two principal components can account for most of the morphological variations within each species; the first component can be explained as a variation in size of the test and the second as a variation in shape of the test as influenced by variation in size of the last chamber.

597. MCGUGAN, A., Univ. Calgary (Geology and Geophysics):
1) Occurrence of *Palaeacis*. 2) Permian-Pennsylvanian stratigraphy, disconformities, facies changes, Spray/kananaskis area. 3) Cretaceous Foraminifera, taxonomy, 1980-.
- See:
Pelecocrinus cf. *P. banffensis* from the Banff Formation, Kananaskis Valley, Alberta; Can. J. Earth Sci., vol. 17, p. 1588-1591, 1980.
598. McLEAN, R.A., Amoco Canada Petrol. Co. Ltd., (Exploration Tech. Group):
Middle - Upper Devonian paleontology (corals, stromatoporoides), western Canada, 1979-.
599. McNEIL, D.H., Geol. Surv. Can.:
Mesozoic and Cenozoic Foraminifera of the Arctic western mainland of Canada, 1978-.
600. MARCHANT, T.R., Amoco Canada Petrol. Co. Ltd. (Exploration Tech. Group):
Upper Devonian Foraminifera and calcareous algae from western Canada, 1980-.
601. MATTHEWS, J.V., Jr., Geol. Surv. Can.:
Late Cenozoic fossil insects and Late Cenozoic paleoecology, 1973-.
602. MORGAN, A.V., MORGAN, A., Univ. Waterloo (Earth Sciences, Biology):
Spatial changes in the Canadian insect fauna during the late Pleistocene and Recent.
- See:
Beetle Bits - The Science of Paleontology; Geoscience Canada, vol. 7, no. 1, p. 22-29, 1980.
- Faunal assemblages and distributional shifts of Coleoptera during the Late Pleistocene in Canada and the northern United States; Can. Ent., vol. 112, p. 1105-1128, 1980.
- Our preliminary research 10 years ago used a "shotgun" approach to site investigation, in an effort to cover a wide geographic area and as many different time horizons as possible. We are now reaching a stage where we can begin to postulate changes in climate within a restricted area through time, or where we can compare different ecological conditions over a wide area for a specific time zone. Our present objectives are to continue analysing Pleistocene sites in southern Canada and the adjacent U.S. for fossil faunas. Each analysis provides paleoecological information which can be used to reconstruct the movement of the Canadian insect fauna prior to and following the retreat of the last ice sheet. Fossil insects from sites south of the Wisconsin limit can be compared with modern species living in the tundra and boreal zones of Canada. Periods of climatic deterioration and amelioration can be checked and compared with the information provided by plants. Finally, refugia, colonisation routes and zoogeographic shifts can be determined for the present Canadian beetle fauna.
603. NOBLE, J.P.A., LOGAN, A., Univ. New Brunswick (Geology):
Ecology of Recent brachiopods, 1974-82.
- Comparative studies of life and associated death assemblages of the North Atlantic brachiopod *Terebratulina septentrionalis* shed considerable light on the processes of fossilization of brachiopod populations. Comparison of size frequency distributions, growth curves, morphologic variation and other parameters in the natural environment and in experimentally controlled seawater tanks allow the assessment of factors of population dynamics in producing fossil populations, and the separation of these factors from taphonomic factors. Patterns of recruitment appear more important than patterns of mortality and both appear more important than taphonomic factors in controlling the age structure and other aspects of the fossil population.
604. NOWLAN, G.S., Geol. Surv. Can.:
Paleozoic conodonts of eastern Canada, 1977-.
- See:
Gamachignathus, a new multielement conodont genus from the latest Ordovician, Anticosti Island, Québec; Geol. Surv. Can., Paper 80-1C, p. 103-112, 1980.
605. PARKINS, W.G., DIXON, O.A., Univ. Ottawa (Geology):
Late Silurian rugose corals of Somerset and Cornwallis Islands, Arctic Canada, 1977-82; Ph.D. thesis (Parkins).
606. PICKERILL, R.K., Univ. New Brunswick (Geology):
Paleontology, ichnology, sedimentology and stratigraphy of selected Lower Paleozoic sequences in Eastern Canada, 1976-.
- See:
An early Paleozoic plate-tectonic model of Newfoundland; Earth and Planet. Sci. Letters, vol. 48, no. 1, p. 8-14, 1980-.
- Shallow subtidal sediments of Soudleyan (Caradoc) age in the Berwyn Hills, North Wales and their palaeogeographic context; Proc. Geol. Assoc., vol. 91, no. 3, p. 177-194, 1980.
- Phanerozoic flysch trace fossil diversity - observations based on an Ordovician flysch ichnofauna from the Aroostook - Matapedia Belt of northern New Brunswick; Can. J. Earth Sci., vol. 17, no. 9, p. 1259-1270, 1980.
- Structure and sedimentology of the Siluro-Devonian between Edmundston and Grand Falls, New Brunswick; N.E.I.G.C. 1980, p. 262-277, 1980.
- The Northern Appalachian Geotraverse: Quebec - New Brunswick - Nova Scotia; G.A.C./M.A.C. Fieldtrip Guidebook, Halifax, 1980.
- Ordovician and Devonian strata of northern New Brunswick and southern Gaspé; Can. Pal. and Biostat. Seminar, Fredericton, Field Guide, 1980.
- Resedimented volcanoclastics in the Carmanville area, northeastern Newfoundland - depositional remnants of Early Paleozoic oceanic islands; Can. J. Earth Sci., vol. 18, no. 1, p. 55-70, 1981.
- Trace fossils in a Lower Paleozoic submarine canyon sequence - the Siegas Formation of northwestern New Brunswick, Canada; Maritime Sediments and Atlantic Geology, vol. 17, no. 1, p. 37-58, 1981.
- Some aspects of the pre-Carboniferous geology of Saint John, New Brunswick; Geol. Surv. Can., Paper 81-1A, p. 23-30, 1981.
- Current research is directed toward several continuing and almost completed projects. Immediate plans for future research are still not finalized but I do intend this summer (1981) to examine ichnology of the Arisaig Group together with selected paleoecological studies of the group with J.M. Hurst, Greenland Survey. In addition, I plan to examine the ichnology of two selected flysch sequences in Maine with W. Forbes - one Silurian and the other Ordovician. Ongoing research includes paleoecological analysis of the Trenton Group between Québec City and Montréal (plus sedimentology/ichnology), sedimentology ichnology and paleontological studies of Cambrian medusoids in the St. John area (with K.L. Currie, D. Nance and G. Pajari), and continuation of ichnological and sedimentological research of the Lower Paleozoic Aroostook-Matapedia Basin of New Brunswick, Maine and Gaspé.
607. PLINT-GEBERL, H.A., von BITTER, P.H., Univ. Toronto (Geology), Royal Ontario Museum (Invert. Palaeo.):
Conodont biostratigraphy, palaeoecology, and taxonomy of the Windsor Group (Lower Carboniferous), Les Îles de la Madeleine, Québec, 1978-81; M.Sc. thesis (Plint-Geberl).
- The *Taphrognathus*, *Cavusgnathus*, and *Gnathodus* conodont assemblage zones of the Codroy Group of southwestern Newfoundland have been recognized in Windsor Group strata on les Îles de la Madeleine, Québec, permitting biostratigraphic correlation of conodont-bearing strata of the islands with southwestern Newfoundland. The multielement assemblages of *Cavusgnathus windsorensis* and *Taphrognathus* n.sp. A as described by von Bitter and Plint-Geberl (in press) have been recognized as well as elements of the apparatuses of *Cavusgnathus regularis* and *Hindeodus crinitus*. *Spathognathodus scitulus*, *S. campbelli*, *Apatognathus* spp., *Ozarkodina laevipostica*, and *Spathognathodus* n.sp. A of von Bitter and Plint-Geberl (in press) were also recovered. Specific factors controlling the distribution of the Îles de la Madeleine conodont faunas have been difficult to determine. Comparison of the conodont distribution on the island with distributional models proposed by other authors for Carboniferous conodonts indicates a shelf fauna dominated by *Cavusgnathus windsorensis*.
608. PRICE, R.J., Amoco Canada Petrol. Co. Ltd. (Exploration Tech. Group):
1) Early Cretaceous graphic correlation and composite standard (using ostracodes, diatoms and charophytes). 2) Jurassic and early Cretaceous paleoenvironments, 1979-.
609. RIVA, J., Univ. Laval (Geology):
Ordovician graptolites, 1967-.
- See:
Graptolites from the Honorat and Matapedia groups of Gaspé and New graptolites from Anticosti Island; in Stratigraphy and Paleontology, vol. II, Field Meeting, Anticosti - Gaspé, Québec, 1981, Univ. Montreal, Dept. Geology, 1981.
- The major progress during this last year has been achieved in 1) understanding the morphology and actual range of *Didymograptus bifidus* (Hall), *Didymograptus protobifidus* and *Didymograptus altus* Lapworth at most of its reported occurrences in North America; 2) the re-establishing *Glossograptus ciliatus* Emmons as a valid taxon; and 3) a revision of the graptolites collected by M. Churkin and C. Carter from the Phi Kappa Formation of Idaho and their bearing on late Ordovician graptolite biostratigraphy.
610. RODRIGUES, C.G., HOOPER, K., Carleton Univ. (Geology):
Holocene microfauna and paleo-oceanography of the Gulf of St. Lawrence, 1976-81; Ph.D. thesis (Rodrigues).
- One hundred and eighty-eight benthonic foraminiferal species and varieties, four planktonic foraminiferal species and forty-six ostracode species were recognized in bottom sediment samples from the Laurentian Channel and Jacques Cartier Passage. The distribution of the microfauna is water mass-related.
- Temperature versus depth and salinity versus depth profiles based on spring, summer, autumn and winter measurements reveal that the water mass in the Gulf of St. Lawrence consists of an Upper and a Deep layer which are separated by a Transitional zone. The Upper layer, from 0 to 125 m, is characterized by a seasonally variable upper zone and a cool lower zone. The Transitional zone occupies the interval 125 to 200 m. The Deep layer lies below 200 m and consists of a warm upper zone and a cooler lower zone.
- Seven water mass-related and one fossil benthonic foraminiferal associations are recognized from cluster analysis of 84 bottom sediment samples ranging in depth from 55 to 520 m.
611. SARJEANT, W.A.S., Univ. Saskatchewan (Geological Sciences):
Bibliography of the history of geology and its subdivisions, 1972-.
- See:
Geologists and the History of Geology: An International Bibliography from the Origins to 1978; New York: Arao Press; London: Macmillan, vol. 1-5, 1980.
- An Irish naturalist in Cuviers laboratory. The letters of Joseph Pertland, 1820-1932; Bull. Br. Mus. Nat. Hist. (Hist. Ser.), vol. 6, no. 7, p. 245-319, 1980.
- William Howson Wilcockson (1891-1976): his life and his geological achievements; Sorby Record, no. 17, p. 8-13, 1980.
- 1) The basic project on geological bibliography has been completed, but the publishers are already pressing for a supplement and I am currently seeking funds to support this work (the preparation of new bibliography cards is already in progress).
- 2) During the period under review, obituary notices of the geologist L.J. Wills and of my father Harold Sarjeant have been sent to press.
- 3) In co-operation with Edward Kennedy (Arts and Science), the preparation for publication of the Pertland-Forbes scientific correspondence is in progress.
612. SMITH, P.L., Univ. British Columbia (Geological Sciences):
Toarcian ammonites and the Lower/Middle Jurassic boundary of western North America, 1980-82.

- To describe the sequence and morphology of ammonoid faunas that span the Lower/Middle Jurassic boundary in selected areas of North America thus providing a basis for the recognition and dating of rocks in areas of tectonic complexity or poor exposure.
613. STORCK, P., von BITTER, P.H., Royal Ontario Museum (New World Archaeology, Invert. Palaeontology):
Micropalaeontology and source bed analysis of cherts used by Palaeo-Indians of Ontario, 1978-81.
The Silurian Fossil Hill Formation of south Georgian Bay has been identified as the source of a high percentage of the chert used by Palaeo-Indian Man living in southern Ontario approximately 10 000 ± years b.p.
614. STRONACH, N.J., Univ. Calgary (Geology and Geophysics):
Lithostratigraphy and biostratigraphy of the Fernie Group (Jurassic), Alberta, 1978-81; Ph.D. thesis.
The project is concerned with the sedimentology and paleoecology of the Fernie Formation in south-west Alberta, concentrating particularly on certain anomalous faunally-rich horizons of Middle Jurassic age. Sections have been measured, described and sampled in all of the main areas of Jurassic outcrop in the Front Ranges of the Rocky Mountains and in the Fernie area of south-east British Columbia. Subsequent laboratory analysis has included detailed counting and description of the macro-faunas, along with micropaleontological work and thin-section, X-ray diffraction and organic carbon analysis of the sediments. These are now almost complete and preparation of the thesis has been started. An overall model of sedimentation in the area during the Jurassic has been established which was the subject of a display at the C.S.P.G. Core Conference in Calgary (January, 1981). The paleontological studies are yielding detailed information on Jurassic bivalve ecology and giving more paleo-environmental resolution. It is anticipated that the project will be completed and the thesis defended by late summer, 1981.
615. TOZER, E.T., Geol. Surv. Can.:
Canadian Triassic Ammonoidea and Bivalvia, 1967-
Wangoceros, a new name for *Pseudotibetites* Tozer 1980, non Jeannel 1959 (Cephalopoda, Triassic); Geol. Surv. Can., Paper 80-1B, p. 276, 1980.
616. UYENO, T.T., Geol. Surv. Can.:
Conodont biostratigraphy of Siluro - Devonian rocks of the Arctic Islands, 1968-
See:
Summary of conodont biostratigraphy of the Blue Fiord and Bird Fiord formations (Lower-Middle Devonian) at the type and adjacent areas, southwestern Ellesmere Island, Canadian Arctic Archipelago; Geol. Surv. Can., Paper 80-1C, p. 81-93, 1980.
Systematic study of Conodonts in Stratigraphy and conodonts of Upper Silurian and Lower Devonian rocks in the environs of the Boothia uplift, Canadian Arctic Archipelago; Geol. Surv. Can., Bull. 292, p. 39-54, 1980.
617. von BITTER, P.H., Royal Ontario Museum (Invert. Palaeontology):
Palaeoecology and biostratigraphy of Lower Carboniferous (Windsor Group) conodonts, Atlantic Provinces, Canada, 1971-.
618. von BITTER, P.H., MERRILL, G.K., Royal Ontario Museum (Invert. Palaeontol.), College of Charleston (Geology):
Conodont distributions in the Pennsylvanian of North America - their taxonomic and palaeo-ecological implications, 1968-
See:
Naked species of *Gondolella* (Conodontophorida): their distribution, taxonomy and evolutionary significance; Royal Ontario Mus., Life Sci. Contrib. 125, p. 1-49, 1980.
619. WAGNER, F.J.E., Geol. Surv. Can.:
Regional distribution of marine Mollusca (Gastropoda and Pelecypoda) in eastern Canada, 1980-.
620. WALL, J.H., Geol. Surv. Can.:
Reconnaissance of Mesozoic Foraminifera of Arctic Islands, 1972-.
621. WALL, J.H., Geol. Surv. Can.:
Triassic Foraminifera of the Sverdrup Basin, District of Franklin, 1979-.
622. WHITAKER, S.M., MOORE, R.G., Acadia Univ. (Geology):
Rugosa paleontology and paleoecology of the Kennetcook Limestone of the (Mississippian) Windsor Group of Nova Scotia, 1981-82; M.Sc. thesis (Whitaker).
1) To determine the Rugosa coral species present in the Kennetcook Limestone (Mississippian) locations in Nova Scotia;
2) determine the paleoenvironments of the coral locations; and 3) relate the species distribution and paleoecology to the paleogeography for the time interval indicated.
623. WIGHTON, D.C., MITCHELL, P., WILSON, M.V.H., Univ. Alberta (Genetics, Zoology):
Fossil insects from the Paleogene of western Canada, 1975-
See:
New species of Tipulidae from the Paleocene of central Alberta, Canada; Can. Ent., vol. 112, p. 621-628, 1980.
For Paleocene insects of the Paskapoo Formation in Alberta, current studies are aimed at describing new taxa of insects represented in collections from outcrops in the Red Deer area, and of making collections of insect fossils from other sites in the formation. Preliminary indications are that for some insect orders, these Paleocene assemblages contain some families and genera new to North America, although some of these occur as living forms elsewhere in the world. For the Eocene insects of British Columbia and Washington State, emphasis is on adding to the taxa known from the fauna, and on testing the usefulness of insect fossils as paleoecologic indicators through study of previously unsampled assemblages.
- ### VERTEBRATE/VERTÉBRÉS
624. DINELEY, D.L., LOEFFLER, E.J., ELLIOTT, D.K., Univ. Bristol, U.K. (Geology):
Siluro-Devonian vertebrate faunas from the Arctic Islands and from the Delorme Formation, Northwest Territories, 1968-
The project continues in its aims of describing the Silurian and Devonian vertebrate faunas from the Arctic Islands and the mainland Northwest Territories. Extensive collections are under study and a revision of the Traquairaspidae from Somerset and Prince of Wales Islands and from the Delorme Formation of the Mackenzie Mountains is in progress. A phylogenetic lineage of primitive pteraspisid forms from Prince of Wales Island can be established showing the origin of the protopteraspids from cyathaspisid ancestors. Preparation of MS for publication is in hand.
625. EDMUND, A.G., Royal Ontario Mus. (Vert. Paleontol.):
New species of giant armadillos (Pampatheriidae, Edentata) from the Late Pleistocene of Texas and Mexico, 1977-81.
Examination of Additional material from the state of Puebla, Mexico, revealed the presence of a third species of giant armadillo. Still known only from fragmentary material, it closely resembles *Platina*, a weakly-ornamented form from the Pliocene of Argentina. This material will be incorporated with the previously announced *Pampatherium* in a paper currently being illustrated and revised.
626. EDMUND, A.G., Royal Ontario Mus. (Vert. Paleontol.):
Evolution of a single phyletic line of giant armadillos (Pampatheriidae, Mammalia) in Florida during the Pleistocene, 1975-82.
Work continues on the manuscript and illustrations for the paper showing the evolution of the late Pleistocene form *Holmesina septentrionalis* from the Blancan (Hemphillian, Pliocene) form *Kraglievichia floridanus*. While the end forms are given specific names, the numerous integrades are described only as *Holmesina* sp.
627. EDMUND, A.G., Royal Ontario Mus. (Vert. Paleontol.):
Osteology and functional morphology of the Pleistocene giant armadillo *Holmesina septentrionalis* (Pampatheriidae, Xenarthra, Mammalia), 1965-82.
Work continues on illustrations and manuscript for a description of the giant armadillo *Holmesina septentrionalis*, the most widespread and common species in the U.S. and Mexico. It is clearly a species, and probably a genus, independently evolved in N. America during the Pleistocene.
628. EDMUND, A.G., Royal Ontario Mus. (Vert. Paleontol.):
Osteology, taxonomy and distribution of the giant ground sloths of the Genus *Eremotherium* (Xenarthra, Mammalia), 1964-85.
Additional, but fragmentary specimens of giant ground sloths referable to *Eremotherium mirabile* continue to be collected or discovered in museum collections. The 3.5 m tall skeleton mounted by the R.O.M. went on display at Daytona Beach, Florida in November 1980. Preparation and conservation of the remaining Daytona material continues. The complete description of *E. mirabile*, along with a revision of the genus, will not be attempted for some time.
629. EDMUND, A.G., Royal Ontario Mus. (Vert. Paleontol.):
Tertiary and Quaternary radiation of the giant armadillos (Pampatheriidae, Mammalia) in South America, 1964-84.
See:
The fossil giant armadillos of North America (Pampatheriinae, Xenarthra = Edentata); in The evolution and ecology of sloths, anteaters and armadillos (Mammalia, Xenarthra, = Edentata), G.G. Montgomery (ed.), Smithsonian Instit. Press, Washington D.C., 1981.
Fragmentary remains of a third taxon of giant armadillo from Mexico were identified with the Argentinian Pliocene Genus *Platina*. Thus, three taxonomic lines apparently migrated from South America. Attempts to identify these accurately on the basis of literature and available specimens have proven frustrating. A thorough revision resulting from a protracted examination of collections in South America is necessary, and is scheduled for September to November 1981.
630. McDONALD, H.G., EDMUND, A.G., Univ. Toronto (Geology) Royal Ontario Mus. (Vert. Paleontol.):
A description of *Scelidodon* from the Pleistocene tar seeps of Ecuador and Peru, and review of the selidotheres (Mylodontidae, Mammalia), 1978-83; Ph.D. thesis (McDonald).
Collections made by G. Edmund of the Royal Ontario Museum in tar seeps in Ecuador and Peru in 1958 and 1961 included a large number of skeletal elements of the ground sloth, *Scelidodon*. Numerous species of *Scelidodon* have been described from northwestern South America and the genus is in need of revision. Many species have been based on inadequate material or minor differences with little consideration of the range of variability. The large samples from Peru and Ecuador will permit the determination of morphometric parameters which can be used to distinguish the various species along with anatomical differences. The late Pleistocene *Scelidodon* from Peru and Ecuador will be compared with the middle Pleistocene *Scelidodon* from Tarija, Bolivia, for the purpose of establishing evolutionary trends. Comparison with *Scelidotherium* from Argentina will also be made in order to determine the relationship of the two genera.
631. NAYLOR, B.G., Univ. Alberta (Geology, Zoology):
Morphology, distribution, and evolution of fossil and Recent Amphibia, 1981-85.
See:
Radiation of the Amphibia Caudata: are we looking too far into the past?; Evolutionary Theory, vol. 5, no. 2, p. 119-126, 1980.
Cryptobranchid salamanders from the Paleocene and Miocene of Saskatchewan; Copeia, no. 1, p. 76-86, 1981.
Piceoperpeton, a giant Early Tertiary salamander from western North America; J. Paleontol., vol. 15, no. 3, p. 507-523, 1981.

Field collections of fossil amphibians from the Mesozoic and Tertiary in the Western Interior of North America, both from established localities and reconnaissance to discover new localities. Data bears on distributional and phylogenetic problems within the Amphibia.

632. SARJEANT, W.A.S., MOSSMAN, D.J., Univ.

Saskatchewan (Geological Sciences):

Vertebrate footprints from Mississippian and Pennsylvanian sediments of Nova Scotia: compilation and description of all known forms, 1974-82.

See:

How we found Canada's oldest footprints; Canadian Geol. Oct/Nov., p. 50-53, 1980.

633. SEYMOUR, K.L., EDMUND, A.G., Univ. Toronto (Geology):

A new Blencoe vertebrate fossil locality near Port Charlotte, Florida, 1980-83; M.Sc. thesis (Seymour).

A diverse vertebrate fossil fauna has been collected as a result of canal dredging near Northport, Sarasota Co., Florida. Preliminary analysis indicated a Blencoe age, with several key fossils present. While much of the collection is from spoil banks, some of the best material was obtained in situ. Further excavation of the bonebed will be made to permit taphonomic study, and the underlying and overlying marine beds will be dated, if possible, by stratigraphic, faunistic and palynological methods.

634. SKWARA WOLF, T., KUPSCH, W.O., Univ.

Saskatchewan (Geological Sciences):

Palaeontology and palaeoecology of Tertiary (Early Miocene) vertebrates from southwestern Saskatchewan, 1979-82; Ph.D. thesis (Skwara Wolf).

See:

Mammals of the Riddell local fauna (Floral Formation, Pleistocene, Late Rancholabrean), Saskatchewan, Canada; Natural History Contributions, Museum of Natural History, Saskatchewan Culture and Youth, no. 2, 1980. Biostratigraphy and paleoecology of Pleistocene deposits (Riddell Member, Floral Formation, late Rancholabrean), Saskatchewan, Canada; Can. J. Earth Sci., vol. 18, no. 2, p. 311-322, 1981.

Fossil bearing sands and gravels occur at the top of the Cypress Hills Formation in southwestern Saskatchewan. The fossils are younger than any other fossil fauna from that formation, probably Hemingfordian in age. The geology of the Cypress Hills Formation will be studied to determine if the sands and gravels from which the Hemingfordian land mammals derive can be distinguished from the underlying Eocene/Oligocene sands and gravels. Are the differences significant enough and the deposits sufficiently well distributed laterally to warrant nomenclatural changes for the Tertiary deposits of southwestern Saskatchewan.

The fauna will be identified and described, the evolutionary grade of taxa assessed, and the precise age of the fauna determined. Evolutionary affinities with Eurasian lineages are present. These relationships will be used to determine 1) if and when an early Miocene faunal found interchange between Europe and North America occurred, 2) the cause and effect of such an interchange, 3) the evolutionary and ecological pressures on endemic faunas and immigrant taxa and 4) the correlation of an interchange with climatic and geological events.

635. STORER, J.E., Saskatchewan Museum Nat. Hist.: Eocene mammals of the Cypress Hills Formation (Uintan), Swift Current region, Saskatchewan, 1980-.

A large collection (over 1,000 specimens) made in 1980 adds greatly to knowledge of the Eocene mammals of Saskatchewan. Work will concentrate on identification, description, and biostratigraphic correlation of Eocene local faunas.

636. STORER, J.E., Saskatchewan Museum Nat. Hist.: Oligocene mammals of the Cypress Hills Formation (Chadronian), Saskatchewan, 1978-.

See:

Leptomerycid Artiodactyla of the Calf Creek local fauna (Cypress Hills Formation, Oligocene, Chadronian), Saskatchewan; Nat. Hist. Contrib., Saskatchewan Mus. Nat. Hist. no. 3, 1981.

Lagomorphs of the Calf Creek local fauna (Cypress Hills Formation, Oligocene, Chadronian), Saskatchewan; Nat. Hist. Contrib., Saskatchewan Mus. Nat. Hist., no. 4, 1981.

Study of other mammalian groups is continuing. Manuscripts on Protoceratidae (Artiodactyla) and Multituberculata are in press in collaboration with other authors. The Calf Creek Local Fauna is now correlated firmly as earliest Middle Chadronian. Work on other Oligocene local faunas from the Cypress Hills Formation will centre on the biostratigraphy of the deposits.

637. WELLSTEAD, C.F., Redpath Museum, McGill Univ. (Biology):

Taxonomic re-assignment of the Miocene lizard *Peltosaurus minimus* from Nebraska, 1976-81.

638. WELLSTEAD, C.F., Redpath Museum, McGill Univ. (Biology):

Lizards from the Lower Valentine Formation (Miocene) of north-central Nebraska, 1976-81.

Fossil dentaries and maxillae representing the scincoid *Eumeces*, the iguanid *Sceloporus* and a new, extinct species of the iguanid *Leiocephalus* are reported from the Valentine Formation (Miocene: Barstovian) of north-central Nebraska. The *Leiocephalus* material confirms an earlier tentative report of the genus from the formation. The report of *Sceloporus* is the first from rocks of this age in the United States. This and other reports of "sceloporine" lizards indicates that the group was radiating at least as early as the early Miocene. A brief discussion of the historical aspects of Miocene lizard faunas in mid-continental North America indicates that the variety of genera present is attributable to the changing climatic conditions of the time.

639. WELLSTEAD, C.F., CARROLL, R.L., Redpath

Museum, McGill Univ. (Biology):

Taxonomic revision of the extinct amphibian families Lysorophidae and Molgophidae, 1977-78.

640. WILSON, M.V.H., Univ. Alberta (Zoology):

Eocene fossil fishes of western North America, 1975-.

A paper is in press in Journal of Paleontology describing Early Eocene freshwater fishes from the upper member of the Coalbrook Formation, Colorado. An assemblage similar to that of the Green River formation was found, differing in the presence of pikes (*Esox*). A new species of *Amia* is described in a paper in press in Palaeontology. The new *Amia* is from the Middle Eocene Allenby Formation of British Columbia and represents a deep-bodied piscivorous form, rather than a molluscivorous form. Current emphasis is on a new teleostean assemblage from Quilchena, British Columbia, and on species-level systematics of several small-bodied suckers of the genus *Amyzon* that occur in the Allenby Formation of British Columbia.

641. WILSON, M.V.H., Univ. Alberta (Zoology):

Eocene lake environments: depth and distance-from-shore variation in fish, insect and plant assemblages, 1975-80.

See:

Eocene lake environments: depth and distance-from-shore variation in fish, insect, and plant assemblages; Palaeogeogr., Palaeoclimatol., Palaeoecol., vol. 32, p. 21-44, 1980.

Assemblages of fishes, fish bones, fish scales, insects, plants, and coprolites from fine-grained Eocene lake deposits in British Columbia and Washington State indicate that depth and distance-from-shore in the Eocene lakes account for a large proportion of the variation among the fossil assemblages. Fish assemblages differ in taxa present and in degree of disarticulation of the skeletons. Insect assemblages differ in taxa present and in proportions of complete vs. incomplete insects. Plant assemblages differ in relative abundances of dicot leaves, wood, evergreen needles, and taxodiaceous leafy shoots. At the generic level a relatively uniform fish fauna inhabited the study area during the interval of Eocene lake-bed deposition, involving numerous lakes distributed from west-central British Columbia to northern Washington.

642. WILSON, M.V.H., Univ. Alberta (Zoology):

Paleocene freshwater fishes of western Canada, 1978-.

Freshwater teleostean fishes have now been recovered from fourteen sites in the Paskapoo Formation of Alberta, and preliminary study of these fishes shows that Paleocene pond and lake sediments contain remains of osteoglossid, hiodontid, esocid, gonorynchid, cyprinoid, percoid and asineopid fishes. This fauna is similar to Eocene faunas such as that of the Green River Formation of Wyoming, except for the presence of esocids (pikes) in the Paskapoo, and significant differences in relative abundances of the taxa and the presence of different genera and species for many of the families. This year large collections will be obtained from Paskapoo outcrops in the northern foothills region of Alberta. The isolated bones will be analysed using computerized shape-processing techniques to distinguish between allometric and taxonomic differences in shape. Eventual extension of these studies to Late Cretaceous freshwater fishes is planned.

PALEOBOTANY/PALYNOLOGY/ PALÉOBOTANIQUE ET ANALYSE POLLINIQUE

643. BARSS, M.S., Geol. Surv. Can.:

Palynological zonation of the Carboniferous and Permian rocks of Atlantic Provinces, Gulf of St. Lawrence and northern Canada, 1968-.

644. BÉLIVEAU, M., GEURTS, M.A., PHIPPS, M., Univ. Ottawa (Géographie):

Les successions écologiques se traduisent-elles dans les spectres polliniques des sols forestiers?, 1980-81; thèse de maîtrise (Béliveau).

Voir:

Essais d'analyses palynologiques dans le parc de la Gatineau (Québec) et dans la vallée de la Coppermine (T.N.O.); Geoscope, vol. 11, no. 2, p. 5-18, 1980.

Analyse écologique réalisée, palynologie de surface réalisée, et palynologie des sols forestiers en cours.

645. BOURGEOIS, J., GEURTS, M.A., Univ. Ottawa (Géographie):

Palynologie dans la vallée du Grizzly Creek, Yukon, 1979-81; thèse de maîtrise (Bourgeois).

L'étude englobe la palynologie de surface le long de la vallée de Grizzly ainsi que l'analyse palynostratigraphique de trois profils de sol. D'importantes variations de couvert végétal sont identifiées avant le dépôt des cendres volcaniques "White River Ash", datées de 1200 B.P.

646. BRAMAN, D.R., HILLS, L.V., Univ. Calgary (Geology and Geophysics):

Upper Devonian - Lower Carboniferous miopore biostratigraphy of the Imperial Formation, District of Mackenzie and Yukon, 1977-81; Ph.D. thesis (Braman).

See:

The stratigraphic and geographic distribution of Carboniferous megaspores; Palynology, vol. 4, p. 23-41, 1980.

The Imperial Formation consists of a thick sequence of alternating sandstones and shales in the western part of the District of Mackenzie and Yukon. Correlations within the formation are difficult because of lack of distinctive lithologic markers, facies changes and general paucity of macrofossils. The purpose of the research was to palynologically zone the Imperial to provide a means of subdivision and correlation within it.

Seven palynologic zones have been identified and correlated with similar assemblages elsewhere and with conodonts. These assemblage zones can be utilized for correlation within the formation except in the vicinity of the Arctic Red and Trail rivers where carbonization levels are high and miopores have been destroyed.

647. BRIDEAUX, W.W., SULLIVAN, H.J., Amoco Canada Petrol. Co. Ltd.:

Palynology and Mesozoic sedimentary paleo-environment, 1978-.

Development of criteria for recognition of sedimentary paleoenvironments using palynomorphs in co-operation with other paleontological disciplines (principally micropaleontology) and sedimentologists.

648. BROOKES, I., von BITTER, P.H., McANDREWS, J., York University (Geography), Royal Ontario Museum (Invert. Palaeontology, Botany):
Biostratigraphy and significance of a Pleistocene section containing 40 000 ± year old wood, western Newfoundland, 1978-81.
649. BUJAK, J., Geol. Surv. Can.:
Biostratigraphy and paleoecology (palynology) of Mesozoic and Cenozoic of the Atlantic Shelf, 1976-.
650. BURDEN, E., HILLS, L.V., Univ. Calgary (Geology and Geophysics):
Palynology and paleoecology of the McMurray Formation (Early Cretaceous), Alberta, 1978-81; Ph.D. thesis (Burden).
Intensive palynological sampling was undertaken on outcrops and well cores of the McMurray Formation for which the depositional environments had been determined by sedimentological criteria. The purpose was: 1) determine if the McMurray Formation could be subdivided and correlations made utilizing palynology; and 2) relate palynomorph distribution to depositional environment. To date: 1) about 400 samples have been processed and examined; 2) all taxa have been identified and counted; and 3) computer programs have been developed to test the relationship between depositional environments and palynomorph distribution. Preliminary conclusions are: 1) multiple aged strata can be recognized and correlated within the formation; and 2) palynomorph assemblages can be utilized to identify depositional environment.
651. DONALDSON, J.A., HORODYSKI, R.J., KERANS, C., ZHANG, X.Y., Carleton Univ. (Geology), Tulane Univ. (Geology), Chengdu Research Instit.:
Stromatolites and microfossils of the Dismal Lakes Group, Northwest Territories, 1977-82.
- See:**
A new shale-facies microbiota from the Middle Proterozoic Dismal Lakes Group, District of Mackenzie, Northwest Territories, Canada; Can. J. Earth Sci., vol. 17, no. 9, p. 1166-1173, 1980.
Additional microfossil assemblages from laterally equivalent stratigraphic units of the Dismal Lakes Group are now being compared with previously identified assemblages. Detailed studies of stromatolites, with emphasis on microstructures, are continuing.
652. DUFFIELD, S.L., LEGAULT, J.A., Univ. Waterloo (Earth Sciences):
Palynostratigraphy and paleoecology of Ordovician-Silurian boundary and Llandoverly beds of Anticosti Island, Québec, 1979-82.
653. EDLUND, S.A., Geol. Surv. Can.:
Vegetation distribution and relationships to surficial materials, Arctic Canada, 1976-.
654. GAUTHIER-COULLOUDON, L., MAMET, B., Université Montréal (Géologie):
Algues de l'Ordovicien-Silurien de l'île d'Anticosti, Québec, 1979-81; thèse de maîtrise (Gauthier-Coulloudon).
655. GEURTS, M.A., JOHNSON, J., LAGAREC, D., ST. ONGE, D.A., DEWEZ, V., Univ. Ottawa (Géographie):
Palynostratigraphie et variations climatiques tardiglaciaire et postglaciaires, 1980-85.
Établis une palynostratigraphie du Yukon et de la vallée de la Coppermine et tenter des corrélations entre les deux régions. Remplacer les variations climatiques reconnues deux régions dans le cadre des recherches sur les corrélations paléoclimatiques internationales entre l'Europe et l'Amérique du Nord. Atteindre une meilleure compréhension de la valeur des interprétations palynologiques dans les milieux nordiques.
656. GUAY, F., GEURTS, M.A., ST. ONGE, D.A., Univ. Ottawa (Géographie):
Palynostratigraphie Post Wisconsinienne dans la vallée de la Coppermine, T.W.O., 1980-82; thèse de maîtrise (Guay).
- Voir:**
Aspects of the deglaciation of the Coppermine River region, District of Mackenzie; Geol. Surv. Can., Paper 81-1A, p. 327-331, 1981.
- La colonisation végétale commence au moins en 8400 BP et des variations probablement d'origine climatiques apparentes entre 8400 BP et 3200 BP. Quelques échantillons seulement sont analysés. On obtiendra un profil de 4 mètres entre ces deux dates. Des analyses dans le terrasses devraient permettre de vérifier si leur origine est glacioeustatique ou climatique.
657. HILLS, L.V., Univ. Calgary (Geology and Geophysics):
Catalogue of Chitinozoa, 1979-82.
The project is designed to provide, in English, a description of all known genera and species of Chitinozoa. Information on geographic and stratigraphic distribution and literature citations will be given.
658. HOFMANN, H.J., ZHANG, YUN, Univ. Montréal (Géologie):
Morphometric analysis of stromatolite characteristics, 1980-81.
Quantification of stromatolite characteristics to facilitate comparison of taxa and establish evolutionary trends.
659. HOPKINS, W.S., Jr., Geol. Surv. Can.:
A palynological study of the Shell Anglo Harlequin D-86, Murrelet L-13, Auklet G-14, and Osprey D-36 wells, offshore British Columbia, 1974-.
660. HOPKINS, W.S., Jr., Geol. Surv. Can.:
Mesozoic and Tertiary continental microfloras from Northwest Territories, Yukon Territory, British Columbia, Alberta, 1979-.
661. IOANNIDES, N.S., Geol. Surv. Can.:
Taxonomy, biostratigraphic and paleoecology of Mesozoic and Cenozoic palynomorph assemblages from the Mackenzie Delta, Beaufort Sea, and Arctic regions, District of Mackenzie, 1978-.
662. JANSONIUS, J., HILLS, L.V., Esso Resources (Exploration Research), Univ. Calgary (Geology and Geophysics):
Genera card file spores and pollen, 1976-.
The Genera card file is a description in English translation of all genera of fossil spores and pollen. It is updated annually and available to subscribing members.
663. LEGAULT, J.A., Univ. Waterloo (Earth Sciences):
Chitinozoan biostratigraphy of the Road River Formation, Yukon, 1978-82.
664. LEGAULT, J.A., Univ. Waterloo (Earth Sciences):
Palynostratigraphy of Late Ordovician - Early Silurian strata of Manitoba, 1978-82.
665. LICHTI-FEDEROVICH, S., Geol. Surv. Can.:
Diatom analysis and paleoecological studies of Quaternary sediments, 1972-.
- See:**
Contributions to the diatom flora of Arctic Canada: Report 2, Arctic representatives of the genus *Navicula*; Geol. Surv. Can., Paper 81-1A, p. 57-62, 1981.
666. MCGREGOR, D.C., Geol. Surv. Can.:
Silurian and Devonian spores of Canada, 1975-.
667. MANN, P., HILLS, L.V., Univ. Calgary (Geology and Geophysics):
Palynology and paleoecology Bearpaw-Horseshoe Canyon (Upper Cretaceous) transition, Drumheller, Alberta, 1979-82; M.Sc. thesis (Mann).
To date the megaspores have been identified and counted, some of the microspores (including acritarchs and dinoflagellates) samples have been examined. The research is in too preliminary a state to predict results.
The depositional environments within the transition zone between the Bearpaw Formation (marine) and the Horseshoe Canyon Formation (continental) in the Drumheller Area, Alberta have been determined on the basis of sedimentary structures. In an attempt to better understand the control sedimentary processes exert on the distribution of palynomorphs an intensive study was undertaken. This research consisted of extensive palynological sampling according to previously identified depositional environments. The samples were then processed for megaspores and microspores.
668. MELCHIN, M., LEGAULT, J.A., Univ. Waterloo (Earth Sciences):
Chitinozoa from Middle and Late Ordovician rocks in southern Ontario and New York State, 1981-82; M.Sc. thesis (Melchin).
Chitinozoa are being examined from the Simcoe Group in Southern Ontario and the Black River and Trenton Groups in New York State (Middle and early Upper Ordovician). Rich faunas are similar to those found in Oklahoma and Kentucky. Biostratigraphic correlations will be made between New York and Ontario as well as with other areas and paleoecology will be studied in this carbonate, marine transgressive sequence.
669. MOTT, R.J., Geol. Surv. Can.:
Quaternary palynology, 1969-.
670. OUMET, D., GEURTS, M.A., Univ. Ottawa (Géographie):
Analyses palynologiques des argiles de la mer de Champlain dans la région de Sarsfield, Ontario, 1979-81; thèse de maîtrise (Oumet).
L'étude améliore les techniques d'extraction pollinique dans l'argile. Elle contribue à la connaissance du couvert végétal contemporain de la sédimentation argileuse.
671. SARJEANT, W.A.S., FENSOME, R.A., WHEELER, W., WALL, D., Univ. Saskatchewan (Geological Science):
Dinoflagellates and acritarchs of the Mesozoic: stratigraphical application in western and Arctic Canada and use in intercontinental correlation, 1972-.
- See:**
Dinoflagellate cysts, acritarchs and tasmanitids from the uppermost Callovian of England and Scotland: with a reconsideration of the "Xanthidium pilosum" problem; Géobios, no. 13, p. 45-99, 1980.
A restudy of some dinoflagellate cyst holotypes in the University of Kiel collections. I. The Jurassic holotypes of Walter Wetzel (1966, a, b); Meyniana, vol. 32, p. 113-138, 1980.
Restudy of a 1912-century dinoflagellate cyst holotype from the Polish Upper Jurassic; Acta Palaeontologica Polonica, vol. 25, p. 279-285, 1980.
The following work has been completed or is nearing completion:—
1) by R.A. Fensome: Palynology of the Jurassic-Cretaceous boundary beds in the Aklavik Range, District of Mackenzie, Canada.
2) J.W. Wheeler: Study of the palynomorphs of the Upper Mesozoic sediments of the Albois mountains, Iran.
3) by R.A. Fensome and W.A.S. Sarjeant: Restudy of the dinoflagellate cyst genus *Sarjeantia* Horowitz, and its associated microfossils, in the supposed "Upper Triassic" of southern Israel.
4) by W.A.S. Sarjeant: Restudy of dinoflagellate cyst holotypes originally described by W. Wetzel, from the Upper Jurassic of Germany; by M. Lejeune-Carpentier and W. Riegel, from the Upper Cretaceous of Belgium, Germany and southern Spain; by B. Klumpp, from the Eocene of Germany; and by P. von Beredek and H. Gocht, from the Oligocene of Germany.
5) A reconsideration of the morphological terminology applied to dinoflagellate cyst genera.
Work currently in progress includes:
1) by D. Wall: Study of the environmental relationship of Recent dinoflagellate cysts and silicoflagellates in the Gulfs of Santa Barbara and California, southwestern shores of the U.S.A.
2) by W.A.S. Sarjeant: Reconsideration of the morphology and taxonomy of the *Gonyaulacysta* group of dinoflagellate cysts.
672. SINGH, C., Alberta Research Council (Geol. Surv.):
Cenomanian microfloras of the Peace River district, Alberta, 1969-82.
The microphotographic work and compilation of data on age and stratigraphic distribution of 195 species of microspores, megaspores, pollen and microplankton, characterizing the strata of Cenomanian age in northwestern Alberta, have been completed. A manuscript is currently being compiled for publication as an Alberta Research Council Bulletin.

673. SINGH, C., Alberta Research Council (Geol. Surv.):
Late Cretaceous-Tertiary microfloras, west-central Alberta, 1970-84.
674. SINGH, C., Alberta Research Council (Geol. Surv.):
Palynological study of the coal-bearing Late Cretaceous strata in the Red Deer River Valley, Alberta, 1978-84.
675. SUNEBOY, L., HILLS, L.V., Univ. Calgary (Geology and Geophysics):
Palynology of Triassic-Jurassic Boundary, Sverdrup Basin, Arctic Canada, 1980-82; M.Sc. thesis (Suneboy).
676. SWEET, A.R., Geol. Surv. Can.:
Palynological studies of Mesozoic and Tertiary coal measures in western and northern Canada, 1971-.
677. SWEET, A.R., Geol. Surv. Can.:
Taxonomy and biostratigraphic distribution of Mesozoic and Paleogene megaspores, 1977-.
678. TURNER, R.E., Amoco Canada Petrol. Co. Ltd. (Exploration Tech. Group):
Devonian palynology of Western Canada, 1980-.
- To establish a zonal scheme for the Middle and Upper Devonian of western Canada utilizing palynological data integrated with data from other fossil groups. To assess the potential of palynology for paleoenvironmental studies within this framework.
679. WILLIAMS, G.L., Geol. Surv. Can.:
Classification of dinocysts, 1973-.
- ### EXPERIMENTAL/EXPÉRIMENTAL
680. ALLEN, J.M., FAWCETT, J.J., Univ. Toronto (Geology):
1) Experimental and field studies in metamorphic petrology. 2) Mineralogy and petrology of Ca-Al-rich inclusions in the Allende meteorite, 1979-.
- See:
Mineralogy and petrography of HAL, an isotopically unusual Allende inclusion; *Geochim. et Cosmochim. Acta*, vol. 44, p. 685-699, 1980.
- Experimental metamorphic petrology: Determination of equilibria among clinozoisite/zoisite, tremolite, chlorite, anorthite, calcite and quartz in H_2O - CO_2 fluids at 5-8 kbars. These equilibria are important in the interpretation of mineral assemblages and isograds in carbonate-bearing rocks of the upper greenschist-lower amphibolite facies. The experimental procedure adopted involves determining reaction directions by SEM examination of the reaction products. The SEM provides important information on reaction mechanisms by permitting observation of etch and solution textures, nucleation and crystal growth phenomena, and intermediate reaction products whose precipitation results from incongruent solution of the reactant phases.
- Regional metamorphism, Noranda area: A field and microprobe study of metamorphism of the Lac Dufault and Flavian Plutons and intervening andesitic volcanics and gabbros. Determination of regional variations in temperature and fluid composition and relation of these variations to intrusives and ore deposits.
- Ca-Al-rich inclusions in the Allende Meteorite: A mineralogical and petrological study of rims on inclusions as guides to physical/chemical conditions in the early solar system.
681. DINGWELL, D.B., SCARFE, C.M., Univ. Alberta (Geology):
Effects of halogens in granite petrogenesis, 1980-82; M.Sc. thesis (Dingwell).
682. DUNN, J.T., SCARFE, C.M., Univ. Alberta (Geology):
Structural studies of silicate melts, 1980-82; Ph.D. thesis (Dunn).
- See:
Effect of thermal history on the structure of lead orthosilicate (Pb_2SiO_4) melts; *Trans. Am. Geophys. Union*, EOS, 1981.
683. EDGAR, A.D., ARIMA, M., Univ. Western Ontario (Geology):
High pressure experiments on rocks of the West African Rift, 1979-81.
- See:
An experimental study of an olivine ugandite magma and mechanisms for the formation of its K-enriched derivatives; *J. Petrology*, vol. 21, p. 475-497, 1980.
684. EDGAR, A.D., ARIMA, M., Univ. Western Ontario (Geology):
High pressure experiments on the ultrapotassic rocks of W. Kimberley, Western Australia, 1981-82.
685. EDGAR, A.D., ARIMA, M., MITCHELL, R.S., Univ. Western Ontario (Geology):
Partitioning of REE (La, Sm, Ce) between liquids and crystals in the system K_2O - ZrO_2 - SiO_2 and K_2O - TiO_2 - BaO , 1981-82.
- Although the generalized stratigraphy is known in the eastern part of the Sverdrup Basin details of correlation are uncertain - to provide a palynological zonation of the Triassic-Jurassic Boundary interval and hopefully a means of more precise correlation of the various formations.
686. FUJII, T., SCARFE, C.M., Univ. Alberta (Geology):
Diffusion in silicate melts at high pressure, 1980.
687. MACLELLAN, E.H., TREMBATH, L.T., Univ. New Brunswick (Geology):
Crystallization of granite minimum melts, 1977-81; M.Sc. thesis (MacLellan).
- Inclusion times, growth rates and compositional changes of the crystallizing phases are being determined by a combination of X-ray diffraction and optical methods. We are concentrating on the first stages of crystallization and are making textural comparisons with reaction products from highly undercooled conditions.
688. MCPHAIL, D.C., GREENWOOD, H.J., BROWN, T.H., ROSS, J.V., Univ. British Columbia (Geological Sciences):
'Staurolite stability' or 'Edenite stability', 1980-82; M.Sc. thesis (McPhail).
- 1) To resolve the inconsistencies between experimental data and field relations for the stability of staurolite: a) successfully synthesize and properly characterize Zn-staurolite; b) examine/determine the independent reactions involving staurolite.
- 2) To calculate the free energy of edenite end member amphibole by experimental evidence combined with theoretical calculations: a) to successfully synthesize and properly characterize end member edenite; b) to examine stability of edenite e.g. $Ed + 4Q = Ab + TR$.
689. MARTIGNOLE, J., INDARÈS, A., Université de Montréal (Géologie):
Recherches pétrographiques dans le sud de la province tectonique de Grenville, 1980-81; thèse de maîtrise (Indarès).
- Analyse microsonde en cours; analyse microscopique terminée; travaux de terrain terminés.
690. MARTIGNOLE, J., SISI, J.C., Université de Montréal (Géologie):
Géothermobarométrie à l'aide de l'assemblage cordierite-grenat, 1979-81.
- Voir:
Cordierite stability in the system SrO_2 - Al_2O_3 - MgO (F.O.) H_2O at High T; *Trans. Am. Geophys. Union*, 1980.
- Réaliser le calibrage thermodynamique des assemblages métapeltiques à cordierite - grenat et biotite.
691. RAUDSEPP, M., TURNOCK, A.C., Univ. Manitoba (Earth Sciences):
The synthesis of amphiboles, and crystallographic variation with composition, 1979-82; Ph.D. thesis (Raudsepp).
- To synthesize the major end-member compositions of the amphibole group, plus compositions doped with minor and trace elements, in a form of suitable crystal size and reliable composition, to use for measurements of crystallographic parameters, and their variation with composition. This data will be used to determine the effects of ionic properties of various elements on the crystal structure, and to assist in calculations of their effects on the stabilities of selected end-members in the group.
692. ROEDER, P.L., JAMIESON, H., Queen's Univ. (Geological Sciences):
Olivine - spinel equilibria at 1300°C and its use as a geothermometer, 1977-81; Ph.D. thesis (Jamieson).
693. SCARFE, C.M., Univ. Alberta (Geology):
Properties and structures of silicate melts of geological interest, 1980.
694. SCARFE, C.M., FUJII, T., Univ. Alberta (Geology):
Partial melting in the upper mantle and the genesis of mid-ocean ridge basalts, 1980.
- ### IGNEOUS/ROCHES IGNÉES
695. ARIMA, M., EDGAR, A.D., Univ. Western Ontario (Geology):
Substitution mechanisms of Ti in phlogopites from ultrapotassic rocks and kimberlites, 1980-81.
696. BACHINSKI, S.W., BACHINSKI, D.J., Univ. New Brunswick (Geology):
Lamprophyres associated with the Lake George antimony deposit, New Brunswick, 1980-83.
- Minette-like lamprophyres are associated with ore-bearing veins and granitic intrusions in southwestern New Brunswick. Drill core intersections and underground and surface exposures of these lamprophyres afford an unparalleled opportunity to document the mineralogical and geochemical characteristics of an individual swarm of geologically old but relatively fresh 'calc-alkaline' lamprophyres. The data base for bulk-rock and mineral major- and trace-element chemistry of such rocks is scanty indeed and their petrogenetic relationship (if any) to continental rifting, granitic plutonism, alkaline magmatism, and the formation of hydrothermal ore deposits is unclear. This study should bring some light to these obscure matters.
697. BACHINSKI, S.W., ROGERS, N.W., HENDERSON, P., PARRY, S.J., Univ. New Brunswick (Geology), Imperial College (Geology and Reactor Centre), British Museum (Mineralogy):
Trace elements in minettes from the Navajo volcanic field. Arizona: a comparison with kimberlites and other mantle-derived magmas, 1977-81.
- Rare-earth and selected trace-element analyses of 15 minettes (mica lamprophyres) from the Navajo volcanic field are presented and compared with similar data from kimberlites and selected basic rocks. Despite a superficial similarity, significant differences exist between the REE abundances of kimberlites and those of minettes and basic rocks. The data suggest that the petrogenesis of minettes is more comparable to that of other basic magmas, minette magma being formed by limited partial melting of garnet lherzolite under volatile-rich conditions. The volatile phase, considered to have been derived from deeper within the mantle, is thought to possess a low $CO_2/(CO_2 + H_2O)$ ratio, in contrast to the CO_2 -rich vapor phases that control the formation of other basic magmas.
698. BARAGAR, W.R.A., Geol. Surv. Can.:
Stratigraphy and petrology of the Natkusiak Basalts, Victoria Island, District of Franklin, 1975-.

699. BARR, S.M., Acadia Univ. (Geology):
Petrology and economic potential of granitoid plutons of Cape Breton island, Nova Scotia, 1978-.
- See:
Petrology of the Gillis Mountain pluton, Cape Breton Island, Nova Scotia; Can. J. Earth Sci., vol. 18, p. 393-404, 1981.
A study of the petrology and geochemistry of granitoid plutons in Cape Breton Island was begun during the summer of 1978. To date, plutonic rocks in 10 areas have been mapped and sampled in detail. These are predominantly Late Hadrynian-Cambrian or Devonian-Carboniferous in age, have petrological features characteristic of "I-type" granitoid rocks, and some have associated Cu-Mo-W mineralization.
700. BARR, S.M., MACDONALD, A.S., DOSTAL, J., Acadia Univ. (Geology):
Geochemistry of gem-bearing aklakine basalts of southeast Asia and origin of megacryst phases, 1974-81.
Studies of trace element geochemistry of megacrysts and nodules associated with south-eastern Asian basalts are in progress.
701. BERNDT, K.A., BURWASH, R.A., Univ. Alberta (Geology):
Petrology of Coryell intrusive rocks near Salmo, British Columbia, 1979-81; M.Sc. thesis (Berndt).
Six small Coryell (Tertiary) stocks have been sampled along an 80 km profile trending south-westward across the strike of the eastern part of the Omineca Crystalline belt. The rocks range from shonkinite to leucocratic biotite syenite. The inferred parental magma is an alkaline olivine basalt.
Along the Coryell profile, values of U/Th and K₂O/Na₂O decrease progressively from north-east to southwest. This decrease corresponds to a thinning of the sialic crust westward from the Purcell Arch. The U and K₂O changes can be explained as a function of crustal assimilation, controlled by crustal thickness.
702. BESWICK, A.E., Laurentian Univ. (Geology):
Determination of the primary geochemical characteristics of Precambrian volcanism and the nature of the early upper mantle, 1980-83.
- See:
Critical comments of Frey et al., a reply; Contr. Mineral. Petrol., vol. 73, p. 175-178, 1980.
To undertake detailed comparative studies on geochemistry of Precambrian and modern volcanic suites initially to identify and quantify alteration in greenstones, and secondly to establish the primary nature and tectonic setting of Precambrian volcanism. From this, it is hoped to trace the compositional evolution of the mantle and to develop a unified model for magma genesis consistent with geochemical trends in lavas and mantle nodules and with physical constraints imposed by geothermal and density gradients in the mantle. Comparative geochemical studies will involve the continued compilation of a large data base. Processing of data will be via DEC 2020 and PDP-11 computers using a Tektronix Colour graphics terminal and plotter for visual comparisons of correlation trends, and SPSS (statistical software) for testing significance of correlations. Recognition of types of alteration patterns, particularly for trace metals, and their relations to mineralogy, texture and structure of altered rock is particularly relevant to gold and base metal exploration in greenstone belts. Development of models of magma genesis consistent with both geochemical and geophysical data should greatly aid in understanding magmatic processes generally.
703. BOSTOCK, H.H., Geol. Surv. Can.:
Volcanic rocks of the Appalachian region, 1973-
704. CAMPBELL, R.M., BARR, S.M., COLWELL, J.A., Acadia Univ. (Geology):
The petrology, geochemistry and economic geology of the Creignish Hills granitoid pluton of southwest Cape Breton Island, Nova Scotia, 1978-81; M.Sc. thesis (Campbell).
- See:
Creignish Hills pluton; Nova Scotia Dept. Mines and Energy, Rept. 80-1, p. 111-115, 1980.
The study includes mapping, sampling and petrological studies of the Creignish Hills granitoid pluton in southwestern Cape Breton. Field relationships, phases present, structural features, mineralization (if present), and petrogenesis will be studied, together with general petrography and geochemistry.
705. CHANCE, P.N., EDGAR, A.D., Univ. Western Ontario (Geology):
Petrology and geochemistry of the alkaline rocks from the Kuh-e-lar complex, eastern Iran, 1978-81; M.Sc. thesis (Chance).
706. CERNY, P., Univ. Manitoba (Earth Sciences):
Leucogranites and pegmatitic granites of the Archean pegmatite districts, western Superior Province, 1980-83.
Search for granitoid rocks parental to mineralized granitic pegmatites at nine locations in northwestern Ontario and eastern Manitoba indicates that small-to medium-size, late-tectonic stocks and plugs of leucogranites and pegmatitic granites are associated with, and show paragenetic and geochemical relationships to, the pegmatites.
707. COLWELL, J.A., KEPPIE, J.D., DOSTAL, J., Acadia Univ. (Geology), Nova Scotia Dept. Mines, St. Mary's Univ. (Geology):
Stratigraphy and geochemistry of the North Mountain Basalt, Nova Scotia, 1969-81.
A study of variation within and among the Triassic basalt flows and the tectonic significance of the volcanism. A complete core of the North Mountain Basalt Flow sequence has recently been obtained. Major and some trace element analyses are complete; other trace analyses in progress.
708. COUSENS, B., CHASE, R.L., Univ. British Columbia (Geological Sciences/Oceanography):
Areal trends in chemistry of basalts, Explorer Ridge, northeastern Pacific, 1980-81; M.Sc. thesis (Cousens).
Fifty samples of basalt from dredge hauls in area of Explorer Ridge and vicinity have been analysed for major and trace elements by XRF (pressed powder pellets). Objective is to detect trends in chemistry which may be related to ridge segments or hotspots.
709. CURRIE, K.L., Geol. Surv. Can.:
Alkaline rocks in Canada, 1968-.
710. CURRIE, K.L., Geol. Surv. Can.:
Granite studies in the Appalachians, 1973-.
- See:
Some aspects of the pre-Carboniferous geology of Saint John, New Brunswick; Geol. Surv. Can., Paper 81-1A, p. 23-30, 1981.
711. DAVIDSON, A., Geol. Surv. Can.:
Granite studies in the Ennadai - Rankin Inlet region, District of Keewatin, 1966-.
712. DAVIDSON, A., Geol. Surv. Can.:
Granite studies in the Slave Province, District of Mackenzie, 1971-.
713. EDGAR, A.D., FINN, G., SIMIGIAN, S.L., Univ. Western Ontario (Geology):
Petrology and economic potential of the Nipissing gabbro, Ontario, 1979-84; M.Sc. theses (Finn, Simigian).
714. EMSLIE, R.F., Geol. Surv. Can.:
Anorthosite study, Newfoundland-Quebec, 1967-.
715. EMSLIE, R.F., Geol. Surv. Can.:
Geology, petrology and economic potential of the anorthosite suite in southern Labrador, 1975-.
716. EMSLIE, R.F., Geol. Surv. Can.:
Petrology, mineralogy, geochemistry and mineral potential of a Helikian non-orogenic granitic suite on central Labrador and adjacent Quebec, 1979-.
717. GOAD, B.E., CERNY, P., Univ. Manitoba (Earth Sciences):
Mineralogy, geochemistry and petrology of pegmatitic granites in the Winnipeg River area, southeastern Manitoba, 1976-80; M.Sc. thesis (Goad).
- See:
Peraluminous pegmatitic granites and their pegmatite aureoles in the Winnipeg River district, southeastern Manitoba; vol. 19, pt. 1, p. 177-194, 1981.
Oxygen isotope geochemistry of the granitoids in the Winnipeg River pegmatite district, southeastern Manitoba; Can. Mineral., vol. 19, pt. 1, p. 195-204, 1981.
718. GORDON, T.M., Geol. Surv. Can.:
Petrology and structure of the Daly Bay complex and environs, District of Keewatin, 1970-.
719. GREENWOOD, R., EDGAR, A.D., Univ. Western Ontario (Geology):
Petrology of the alkaline rocks of Mount St. Hilaire, Québec, 1981-82; M.Sc. thesis (Greenwood).
720. JOLLY, W.T., Brock Univ. (Geological Sciences):
Igneous and metamorphic petrology of Ontario volcanic rocks of Huronian age, Ontario, 1980-82.
721. KUEHNER, S.M., EDGAR, A.D., ARIMA, M., Univ. Western Ontario (Geology):
Petrology and geochemistry of the ultrapotassic rocks of the Leucite Hills, Wyoming, U.S.A., 1978-80; M.Sc. thesis (Kuehner).
- See:
Origin of the ultrapotassic rocks from the Leucite Hills, Wyoming; Geol. Soc. Am., Annual Meeting Abstracts with Programmes, vol. 12, no. 7, p. 467, 1980.
722. LAMBERT, M.B., Geol. Surv. Can.:
Archean volcanic studies in the Slave - Bear Province, District of Mackenzie, 1973-.
723. LAMBERT, M.B., Geol. Surv. Can.:
Archean felsic volcanic complex near Regan Lake, District of Mackenzie, Northwest Territories, 1974-.
724. LAURENT, R., BELANGER, J., BOURQUE, P.A., Univ. Laval (Géologie):
Etude des roches volcaniques d'âge Siluro-Dévonien de Gaspésie, Appalaches du Québec, 1979-85.
- Voir:
Uppermost Silurian and lowermost Devonian volcanism in the Gaspé Basin, Quebec; Geol. Assoc. Can./Mineral. Assoc. Can., annual meeting, Abstracts, vol. 6, p. A-4, 1981.
Cartographie et étude pétrologique détaillée des formations volcaniques d'âge Siluro-Dévonien de Gaspésie, Québec. Quatre coupes-types ont été étudiées en détails dans ces roches volcaniques de composition, basaltique et andésitique. Il reste à cartographier l'ensemble et à faire une étude géochimique approfondie de ces roches. Possibilités de minéralisation en Cuivre.
725. LAURENT, R., GIRARD, M.J., Univ. Laval (Géologie):
Etude pétrologique des roches volcaniques récentes des Andes de l'Equateur, 1981-83; thèse de maîtrise (Girard).
Etude pétrologique d'une région à volcanisme actuel actif. Les résultats de cette étude resont comparés aux études conduites en parallèle sur des roches "semblables" d'âge Siluro-Dévonien de Gaspésie, Appalaches du Québec.
726. LAURENT, R., HÉBERT, Y., HÉBERT, R., RODRIGUE, G., BEULLAC, R., Univ. Laval (Géologie):
Géologie des ophiolites des Appalaches Québécoises, 1972-85; thèse de doctorat (Hebert, Y.), thèses de maîtrise (Hebert, R., Rodrigue, Beullac).
- Voir:
Paragenesis of serpentine assemblages in harzburgite tectonite and dunite cumulate from the Quebec Appalachians; Can. Mineral., vol. 17, p. 857-869, 1979.
Environnement de formation, evolution and emplacement of the Appalachian ophiolites from Quebec; Proc. Intern. Ophiolite Symp., Geol. Surv. Cyprus, p. 628-636, 1980.
Composition of parental basaltic magma in ophiolites; ibid., p. 172-181, 1980.

- 3 thèses M.Sc. terminées; 1 thèse M.Sc. et 1 thèse Ph.D. en voie d'achèvement. Il reste à publier une synthèse générale des travaux accomplis et les cartes géologiques. Ensuite, le cadre général étant bien connu, il restera un certain nombre d'études détaillées de minéralogie et de géochimie à entreprendre sur l'amiante, la chromite et les différents composés de manganèse.
727. LUTES, G.G., RUITENBERG, A.A., New Brunswick Dept. Nat. Res. (Geol. Surv. Br.): Geology and mineralization of the Pokiok Batholith, New Brunswick, 1979-81.
728. MARMONT, S., COLVINE, A.C., Ontario Geol. Surv.: Archean porphyry systems, 1980-82.
- The project is aimed at understanding and establishing the following: 1) nature, extent and phases of the intrusive body; 2) nature and extent of a) mineralization, b) alteration (both in the intrusion and wall rocks); 3) genetic and spatial link between the intrusion, the mineralization and the volcanism; 4) comparison with the more recent porphyry systems; and 5) evaluation and assessment of the economic merits of such occurrences in Ontario.
- This is planned to be done by 1) a literature search of all the showings which may bear resemblance to a porphyry type of setting and 2) field investigation of the more promising ones (both economically and theoretically) by means of detailed geological mapping, rock geochemistry and petrological studies.
729. MEINTZER, R.E., CERNY, P., Univ. Manitoba (Earth Sciences): Petrology of granitoid rocks of the Yellowknife pegmatite field, 1980-84; Ph.D. thesis (Meintzer).
- A study aimed at granitoid batholiths and plutons of the Yellowknife pegmatite field, and at the mineralized pegmatites. It is expected to establish the origin of the granitoid intrusions, the distribution and affiliation of different pegmatite types, and guidelines for exploration.
730. NICHOLLS, J., STOUT, M.Z., Univ. Calgary (Geology and Geophysics): Mineralogy and petrology of some British Columbia volcanics, origin of their magmas, inferred nature of the underlying uppermantle and heat effects of assimilation, crystallization and vesiculation of magmas, 1979-81.
- A study of the mineralogy and petrology of 16 lava flows, the conditions of origin of their magmas and the inferred nature of the underlying uppermantle has been completed. A manuscript has been submitted for publication.
- Several of the flows studied (hawaiites) carry large megacrysts of feldspar and xenoliths of partially digested granite & granodiorite. A mass balance evaluation suggests these rocks are differentiation products of parent magmas (basanites). The classic hypothesis has been that the heat required for assimilation is generated by crystallizing thermally equivalent amount of phases. To evaluate this energy balance, the heat effects of assimilation & crystallization have been investigated & calculations done for some of the B.C. lavas. The heat effects of vesiculation in magmas has also been investigated. A manuscript is in preparation.
731. NICHOLLS, J., STOUT, M.Z., Univ. Calgary (Geology and Geophysics): Comparison of nephelinite lavas from oceanic and continental volcanic centres, 1980-82.
- Nephelinite lavas are commonly found in oceanic islands but constitute only a small portion of the volcanic rocks erupted. In continental regions, nephelinites are generally rare and also small in volume. The purpose of the project is to compare in detail the chemistry and mineralogy of lavas from the two environments. The objective of the study is to determine if possible, why such rocks are common on oceanic islands but rarely found on continents.
- The methodology will be to analyze the rocks with the methods of analytical chemistry and the constituent minerals with the electron-microprobe. With these data and the methods of chemical thermodynamics, inferences about the conditions of origin can be made. Such conditions include the temperatures and depths in the earth at which the lavas formed and the mechanism of separating the melt from the surrounding solid earth.
732. NIXON, G.T., ARMSTRONG, R.L., Univ. British Columbia (Geological Sciences): Petrology of Iztaccihuatl volcano, central Mexico, 1975-81; Ph.D. thesis (Nixon).
- Continuing projects to be completed within the coming year include: 1) major and trace element geochemistry of the Trans-Mexican Volcanic belt, with A. Demant (Université d'Als, Marseille, France); 2) Sr-isotopic composition of Quaternary lavas of the Trans-Mexican Volcanic belt, with A. Demant; and 3) contribution to K-Ar geochronometry of Quaternary volcanic rocks in the Trans-Mexican Volcanic belt - with J.E. Havakel and A. Demant.
733. O'LOUGHLIN, J.P.S., BARR, S.M., COLWELL, J.A., Acadia Univ. (Geology): Geology of the Deer Lake ophiolite complex, Newfoundland, 1980-81; M.Sc. thesis (O'Loughlin).
- Includes mapping, sampling and petrological studies of the Deer Lake ophiolite complex, Newfoundland, a complex of particular interest because it is an extension of the Baie Verte Lineament.
734. PARBERY, D., EDGAR, A.D., Univ. Western Ontario (Geology): Petrology of the Seabrook Lake carbonatite, Ontario, 1981-83; M.Sc. thesis (Parbery).
735. SAGE, R.P., TROWELL, N.F., Ontario Geol. Surv.: Alkaline rocks - carbonatites, Ontario, 1975-81.
736. SCARFE, C.M., FUJII, T., Univ. Alberta (Geology): Petrology and geochemistry of mantle nodules from British Columbia, 1980.
737. SCHAU, M., Geol. Surv. Can.: Volcanic rocks of the Prince Albert belt, Districts of Franklin and Keewatin, 1972-.
738. SCHAU, M., Geol. Surv. Can.: Geology of southeast Baker Lake, District of Keewatin, 1976-.
739. SETTER, J.R.D., BARR, S.M., COLWELL, J.A., Acadia Univ. (Geology): Petrology, geochemistry, and economic geology of the Long Island pluton, Boisdale Hills, Cape Breton Island, Nova Scotia, 1980-81; M.Sc. thesis (Setter).
- Includes mapping, sampling, and petrological studies of the Long Island pluton in the Boisdale Hills of Central Cape Breton Island, a pluton of particular interest because of associated tungsten mineralization.
740. SIMPSON, E.L., BACHINSKI, S.W., Univ. New Brunswick (Geology): Mineralogy and geochemistry of an ocellar minette sill, northern New Brunswick, 1978-80; M.Sc. thesis (Simpson).
- Rock and mineral major- and trace-element chemistry and textural relationships between felsic ocelli and mafic matrix indicate that liquid immiscibility is the most plausible explanation for the ocellar texture of this minette.
741. SOUTHER, J.G., Geol. Surv. Can.: Geology of the Mt. Edziza volcano, British Columbia, 1965-.
742. STAUFFER, M.R., COLEMAN, L.C., ARNDT, N., Univ. Saskatchewan (Geological Sciences): Magmatic evolution of the Churchill province near Flin Flon, Manitoba and Saskatchewan, 1974-; Ph.D. thesis (McQuarrie).
- Island arc - like volcanism of the tholeiitic Amisk group volcanics began about 1875 Ma. Some granodioritic intrusion began about the same time but plutonism culminated near the end of the orogenic phase about 1000 Ma. Work is continuing on the magmatic evolution of the Amisk gp. These rocks appear to be of considerable importance because they are part of one of the few Aphebian greenstone belts recognized to date.
743. THOMAS, W.C., BARR, S.M., COLWELL, J.A., Acadia Univ. (Geology): The petrology and geochemistry of the River Lake granitoid pluton, Halifax County, Nova Scotia, 1981-82; M.Sc. thesis (Thomas).
- The study will describe the detailed geology of the River Lake granitoid pluton. The field relationships, phases present, the distribution of the phases, and contact zones with the Meguma Group will be investigated. The petrology of the pluton will lead to an interpretation of the petrogenesis and tectonic setting.
744. TREMBATH, L.T., CHERRY, M.E., Univ. New Brunswick (Geology): Petrogenetic implications of textural variations in a granite dike, 1979-81.
- The project is designed to use textural and chemical variations across a 30 m wide granitic dike to evaluate the conditions of emplacement, solidification and cooling of the dike.
745. VOS, M.A., Ontario Geol. Surv.: The industrial minerals of the alkalic (carbonatite) complexes in Northern Ontario, 1980-84.
- A study to improve understanding of the genesis of the mineral deposits and to enable better evaluation of the potential for future development.

METAMORPHIC/ROCHES METAMORPHIQUES

746. BARAGAR, W.R.A., Geol. Surv. Can.: Studies in the Seal Lake volcanic province, Newfoundland, 1968-.
747. BURWASH, R.A., KRUPICKA, J., Univ. Alberta (Geology): Uranium and thorium in crystalline rocks of the Western Shield, 1976-83.
- Suites of samples are being collected from a number of areas with varied polymetamorphic histories. Using textural criteria, the degree of cataclasis and recrystallization are estimated for individual samples. From a number of samples, an index number of cataclasis and recrystallization is calculated for a given area. This is compared with major element and uranium and thorium analyses. Correlation coefficients are then being determined for all measured parameters in an attempt to trace the mobility of uranium and thorium in polymetamorphic rocks.
748. DUDLEY, J.S., GHENT, E.D., Univ. Calgary (Geology and Geophysics): Zeolitic alteration of the Howson facies volcanics (Jurassic), British Columbia, Canada, 1976-81; Ph.D. thesis (Dudley).
- See: Zeolitic hydrothermal alteration of the Howson facies volcanics (Jurassic), British Columbia; Geol. Assoc. Can./Mineral. Assoc. Can., Program with Abstracts, vol. 5, p. 49, 1980.
- The subject of this research is a regional petrologic study of low grade zeolitic alteration of Jurassic volcanics in north - central British Columbia. The thesis is that this alteration is predominantly a water-rock interaction in a hydrothermal system associated with the volcanism. The goals of this study have been to establish: 1) the identity of the secondary minerals; 2) the characteristic chemical compositions of these minerals; 3) the distribution of the authigenic species stratigraphically, areally and with respect to their order of formation; and 4) a physicochemical model of the alteration process.
749. FRASER, J.A., Geol. Surv. Can.: Metamorphism in the Canadian Shield, 1974-.
750. FRISCH, T., Geol. Surv. Can.: Gneisses of the Prince Albert belt, Districts of Franklin and Keewatin, 1972-.
- See: Tonalite gneisses, western Melville Peninsula, District of Franklin; Geol. Surv. Can., Paper 80-1C, p. 217-219, 1980.
751. FROESE, E., Geol. Surv. Can.: A survey of metamorphism in the Canadian Shield, 1978-.
- See: Metamorphism in the Snow Lake area; Geol. Surv. Can., Paper 78-27, 1980.

752. FROESE, E., Geol. Surv. Can.:
Metamorphism in the Kisseynew Subprovince, 1980-.
- See:
Geology of the eastern vicinity of Kisseynew Lake, Manitoba; Geol. Surv. Can., Paper 81-1A, p. 311-313, 1981.
753. GETSINGER, J.S., GREENWOOD, H.J., ROSS, J.V., MCTAGGART, K.C., Univ. British Columbia (Geological Sciences):
Metamorphism and structure of Three Ladies Mountain area, Cariboo Mountains, British Columbia, 1979-83; Ph.D. thesis (Getsinger).
The area west of the North Arm of Quesnel Lake is underlain mainly by amphibolite facies metasediments mapped as the upper Precambrian (Hedrynian) Snowshoe Formation (including parts previously called Isaac Formation). Objectives are to sort out the internal stratigraphy and structure of the poorly-defined Snowshoe Formation, as well as to locate more accurately the metamorphic isograds and determine their relationship to the polyphase folding and faulting in the area and thus to the regional tectonic history. In the summer of 1980, mappable lithologic units were recognized in the Snowshoe Formation, including pelitic and psammitic schists, micaceous quartzite, carbonate and calc-silicate layers, and amphibolite. Preliminary mapping suggests that two phases of coaxial folding were accompanied by prograde metamorphism followed by later phases of folding, faulting, and retrograde metamorphism. New evidence for late, low-angle faulting was found. The transition from staurolite-kyanite zone to the first appearance of sillimanite was mapped between Three Ladies Mountain and the North Arm of Quesnel Lake.
Further mapping is expected to clarify the nature of the contact with the overlying Cariboo Group, and needed to establish the internal stratigraphy and/or structural sequence in the Snowshoe Formation, so that it may be compared and hopefully correlated with units in other map areas. Structural analysis and study of metamorphic reactions will help define the conditions of metamorphism and deformation under which the rocks were formed, and therefore contribute to an understanding of the regional tectonics of the Cariboo Mountains.
754. GHENT, E.D., STOUT, M.Z., Univ. Calgary (Geology and Geophysics):
Petrological and geochemical studies in the Cordillera and electron microprobe study of minerals, 1976-82.
- See:
Geometry and pressure - temperature significance of the hydantite - sillimanite isograd in the Mica Creek area, British Columbia; Contrib. Mineral. Petrol., vol. 74, p. 67-73, 1980.
Structural and metamorphic evolution of northeast flank of Shuswap Complex, southern Canoe River area, British Columbia; Geol. Soc. Am., Mem. 53, p. 445-461, 1980.
A study of regional metamorphism in the Mica Creek area and an area near Blue River, British Columbia is in progress. A comparative study of geobarometers and geothermometers in garnet to sillimanite zone pelitic rocks is underway. We are also developing new geothermometers and geobarometer to apply to metabasic rocks, and are forming our attention on garnet - hornblende, plagioclase - garnet equilibria. We are also studying mixed volatile equilibria in these rock and plan to do fluid inclusion studies as an independent method to estimate fluid compositions attending metamorphism.
755. GODFREY, J.D., LANGENBERG, C.W., NIELSEN, P.A., BAADSGAARD, H., Alberta Research Council (Geol. Surv.), Univ. Alberta (Geology):
Metamorphism in the Precambrian shield of Alberta, 1976-80.
Continuing microprobe analytical studies and geochronological investigations.
756. GORDON, T.M., Geol. Surv. Can.:
Metamorphism of volcanic rocks, Crowduck Bay, Manitoba, 1980-.
- See:
Metamorphism in the Crowduck Bay area, Manitoba; Geol. Surv. Can., Paper 81-1A, p. 315, 316, 1981.
757. HUBREGTSE, J.J.M.W., MACEK, J.J., Manitoba Dep. Energy and Mines (Mineral Res. Br.):
Sapphirin in Pikwitonei domain, Manitoba, 1980-81.
758. RAESIDE, R.P., GHENT, E.D., Univ. Calgary (Geology and Geophysics):
Structure, metamorphism, migmatization and pegmatite intrusion, Mica Creek area, British Columbia, 1978-81; Ph.D. thesis (Raeside).
Mapping has been completed to the south and west edges of sheet 83D/2 (west half of 1:250 000 sheet Canoe River). The upper five of the seven map units established in the Horsethief Creek Group at lower metamorphic grade have been trailed south, into the Shuswap complex, beyond the disappearance of Muscovite Isograd.
Samples collected from across the project area have been analyzed chemically (by electron microprobe) and petrographically to derive the conditions of temperature, pressure and H₂O of their origin. The chemistry and oxygen isotopes of minerals from pegmatites and migmatites will be compared to determine the relationship (if any) in the starting materials of the two rock types, and if they originated from anatexis of metasediments or fractionation of the deep level magmatic bodies.
759. REED, S., BAER, A.J., Univ. Ottawa (Geology):
Metamorphic petrology of cordierite-gedrite assemblages at Fish Tail Lake, Ontario, 1980-81.
Studies of the mineral assemblages aimed at establishing conditions of P and T during metamorphism; comparison of a number of possible geothermometers.
760. SCOATES, R.F.J., MACEK, J.J., Manitoba Dep. Energy and Mines (Mineral Res. Div.):
Churchill-Superior boundary zone, 1976-84.
- See:
The Circum-Superior Belt: a Proterozoic Plate Margin?; Precambrian Plate Tectonics, Developments in Geotectonics Series, Elsevier, 1981.
- SEDIMENTARY/ROCHES SÉDIMENTAIRES
761. HESSE, R.F., FONG, C., ISLAM, S., POLAN, K., McGill Univ. (Geological Sciences):
Shale diagenesis recorded in carbonate concretions, 1980-84; M.Sc. thesis (Islam), B.Sc. thesis (Polan).
- See:
Mineralogy and isotopic composition of carbonate concretions, Québec Appalachians: Record of early and middle diagenetic shale maturation; Geol. Assoc. Can./Mineral. Assoc. Can., Abstracts, vol. 6, p. A-18, 1981.
762. HESSE, R.F., LE GALLAIS, C., ISLAM, S., MOROGAN, T., RUPPEL, S., McGill Univ. (Geological Sciences):
Diagenesis and depositional environments of Paleozoic Continental margin sediments in the Northern Appalachians, 1978-84; M.Sc. thesis (Le Gallais), Ph.D. theses (Islam, Morogan).
- See:
Pre- and synorogenic diagenesis and epimetamorphism in Early Paleozoic continental margin sequences of the Northern Appalachians near Quebec City, Canada; Bull. Can. Petrol. Geol., vol. 27, no. 4, 1981.
Albite of secondary origin in Charny sandstone, Québec: a re-evaluation; Jour. Sedimentary Petrol., vol. 51, no. 2, 1981.
Isopleth maps for shale diagenesis in the Taconic Belt of Gaspé Peninsula; Geol. Assoc. Can./Mineral. Assoc. Can., Program with Abstracts, vol. 53, p. 63, 1980.
Thermal maturation of Cambro-Ordovician flysch, Northern Appalachians, Québec; Geol. Soc. Am., Northeastern Sec., Abstracts with program, vol. 13, no. 3, p. 139, 1981.
Stages in post-depositional history of Lower Paleozoic continental margin sediments, Quebec Appalachians; ibid., p. 137, 1981.
Middle Ordovician bryozoan faunas and depositional environments in the Appalachians of Tennessee and Québec; Geol. Soc. Am., Northeastern Section, Abstracts with program, vol. 12, no. 2, p. 79, 1980.
Sedimentology of the Quebec City and Citadel formations (Middle Ordovician) of the Northern Appalachians; Geol. Assoc. Can./Mineral. Assoc. Can., Program with Abstracts, vol. 5, p. 78, 1980.
763. HOEVE, J., Saskatchewan Research Council (Geology Div.):
Clay mineral host rock alteration as a guide to unconformity-type uranium mineralization, northern Saskatchewan, 1980-82.
- Hydrothermal host rock alteration haloes around mineralized zones may 1) provide insight into the overall process of mineralization, and 2) allow enlargement of drill-targets in exploration programs. The present study is aimed at identifying clay mineral haloes around unconformity-type uranium deposits in the Athabasca Basin and establishing the background clay mineral stratigraphy of the "normal" diagenetic Athabasca Group rocks. Criteria are being developed to recognize diagnostic host rock alteration and to apply quantitative XRD-analysis for clay minerals as a tool in drill core evaluation.
764. OLDERSHAW, A.E., HUTCHEON, I.A., Univ. Calgary (Geology and Geophysics):
Diagenesis of clastic and carbonate sediments and sedimentary rocks, 1979-.
- See:
Diagenesis of Cretaceous sandstones of the Kootenay Formation; Geochimica et Cosmochimica Acta., vol. 44, p. 1425-1435, 1980.
Cementation in the Devonian Kaybob Reef Complex, Alberta; J. Sediment. Petrol., vol. 51, 1981.
The main objectives are 1) to determine the sequences of mineralogical and fabric transformations which accompany burial of argillaceous sandstones and carbonates, 2) to establish the physical and chemical controls that determine specific sequences, and 3) to apply the resulting data to the resolution of problems associated with deleterious mineral transformations that result from reaction with drilling and completion fluids in conventional hydrocarbon reservoirs, and with steam in heavy oil extraction techniques.
The scientific approach involves a detailed comparison of (a) mineral assemblage, form, distribution and geometric relationship to porosity/permeability, in natural rock systems with (b) artificially stimulated reservoir rocks of similar burial history.
Observed changes in mineral assemblage and fabric are being correlated with depth of burial and geothermal gradient using stratigraphic, vitrinite reflectance, illite crystallinity and fluid inclusion data. Petrographic relationships and mineralogies are determined by analytical (XED) scanning electron microscopy and x-ray diffraction. Mineral phase relationships for burial depth, steam-flood conditions and type of well treatment will be established in co-operation with Ian Hutcheon (Calgary). The expected significance of the research is twofold: it will contribute directly to a greater understanding of fluid/rock interactions in potential reservoirs and form the basis for recommendations on more efficient completion and extract practices.
765. WILSON, J., GODFREY, J.D., Alberta Research Council (Geol. Surv.):
Subsurface study of the Athabasca Basin, 1979-.
- The stratigraphy and history of the Athabasca Basin in Alberta is being reconstructed primarily through the study of drill core. The sub-Athabasca regolith and underlying crystalline basement also form part of this investigation.
- GENERAL/GÉNÉRALITÉS
766. DRESSLER, B., Ontario Geol. Surv.:
The footwall of the Sudbury Irruptive, Ontario, 1979-83.
In 1979 and 1980 areas along the east and north ranges of the Sudbury Irruptive were studied in detail (sublayer, distribution and orientation of Sudbury Breccia bodies, distribution of shock metamorphic features, chemical investigations of Sudbury Breccias, computer assisted analysis of joining in footwall rocks).
767. SOLES, J.A., EMR (CANMET):
Durability of concrete, 1960-.
- See:
Petrography in the evaluation of aggregates and concrete; CANMET Rept. MRP/MSL 80-89 (IR), 1980.
Continuing petrographic investigations of deteriorating concretes and natural aggregates contained in them, to establish the stability of aggregate materials in different environments.
768. TRZCIENSKI, W.E., J.R., BIRKETT, T., CHEVÉ, S., Univ. Montréal (Géologie):
Petrology and tectonics in the Canadian Appalachians, 1973-.

769. ALLEY, D.W., KUPSCH, W.O., CHRISTIANSEN, E.A., Univ. Saskatchewan (Geological Sciences):
Quaternary and older surficial geology of the 64-D Reindeer Lake South area, Saskatchewan, 1975-81; Ph.D. thesis (Alley).
Investigation of periglacial phenomena (involutions, felsenmeer) in the study area in the light of recent palynological research; investigation of previously published occurrence of pre-Pleistocene tillite occurrences; study of modern permafrost phenomena (polsen, earth hummocks).
770. ANDERSON, T.W., Geol. Surv. Can.:
Quaternary paleoecology, Great Lakes, 1978-.
771. ANDRIASHEK, L.D., Alberta Research Council (Geol. Surv.):
Surficial geology and Quaternary stratigraphy of Edmonton, NTS Sheet 83H, Alberta, 1978-83.
772. ANDRIASHEK, L.D., RUTTER, N.W., FENTON, M.M., Univ. Alberta (Geology):
Surficial geology and glacial stratigraphy in the Cold Lake area, north-central Alberta, 1976-81; M.Sc. thesis (Andriashek).
773. BAKER, C.L., EYLES, N., Ontario Geol. Surv.:
Quaternary geology of the Kirkland Lake area, northern Ontario, 1978-83.
See:
Quaternary geology of the Kirkland Lake area, District of Timiskaming; Ontario Geol. Surv., Prel. Map P. 2382, 1980. Ontario.
Quaternary geology of the Ramore area, Districts of Cochrane and Timiskaming; Ontario Geol. Surv., Prel. map P. 2381, 1980.
The third year of the Kirkland Lake Initiatives Program (KLIP) saw completion of Quaternary mapping of the Magusi River topographic sheet (32D/5), latitudes 48°15' and 48°30'N and longitudes 79°30' and 80°00'W. Approximately sixteen weeks were spent in the field describing surficial deposits, measuring indicators of ice movement and recording Quaternary stratigraphy.
Additional projects which were undertaken included regional till sampling of the Kirkland Lake area for subsequent geochemical analysis of the heavy minerals to provide a data base in aid of drift exploration. A study of an esker-delta complex on the Munro Esker, east of Kirkland Lake, was commenced in an attempt to define parameters affecting the use of glacio-fluvial systems as a exploration tool.
774. BARNETT, P.J., EYLES, N., Ontario Geol. Surv.:
Quaternary geology of Renfrew County, Ontario, 1977-82.
The Quaternary geology for six, 1:50 000 N.T.S. map sheets in the Ottawa Bonnechere Valley have been mapped during the summers of 1977, 1978 and 1979. Compilation of this data is in progress and several of the preliminary Quaternary geology maps have been published (Prel. maps P. 2356, P. 2366, P. 2367). A report discussing the properties, distribution and relationships of the deposits mapped will follow.
775. BARNETT, P.J., EYLES, N., Ontario Geol. Surv.:
Quaternary geology of the Bancroft area, Ontario, 1978-81.
The Quaternary geology of the Bancroft (31F/4 N.T.S.) area has been mapped and a preliminary map has been published. A geoscience report discussing the properties, distribution and relationships of the deposits is in preparation. The trace element geochemistry of the Quaternary sediments, especially till, will be emphasized in this report.
776. BLAKE, W., Jr., Geol. Surv. Can.:
Quaternary geochronology, Arctic Islands, 1975-.
See:
Lake sediment coring along Smith Sound, Ellesmere Island and Greenland; Geol. Surv. Can., Paper 81-1A, p. 191-200, 1981.
777. BLASCO, S.M., Geol. Surv. Can.:
Surficial geology and geomorphology, Mackenzie Bay - continental shelf, 1970-.
778. CATTO, N.R., RUTTER, N.W., HUGHES, C.L., SCHWEGER, C.E., Univ. Alberta (Geology):
Quaternary geology of the Richardson Mountains, Northwest Territories - Yukon, 1981-85; Ph.D. thesis (Catto).
To delineate and describe the Quaternary stratigraphy and palaeoenvironmental succession of the Richardson Mountains region, through lithologic, mineralogic, sedimentologic, palaeomagnetic, palaeontologic, and palynologic analyses of the sediment present. The goal is to derive a chronology of glacial and non-glacial events (including ice front positions, meltwater spillway activity, and lake impoundment) and palaeoclimatic regimes. The importance of marginal glaciotectionic activity as an influence on drainage basin configurations will also be investigated. This information will permit the correlation of events between the Mackenzie Delta region to the east and the Old Crow and Bell River Basins to the west. Such correlations would be of value in the interpretation of the anthropological/archaeological data collected from these areas, in addition to their geological and palaeoenvironmental significance.
779. CHAUVIN, L., Québec Ministère Énergie et Ressources:
Géologie du Quaternaire de la région de Thetford Mines, Québec, 1978-82.
Poursuivre l'étude de la géologie du Quaternaire de la région. Établir la stratigraphie et l'histoire de la déglaciation.
780. CLAGUE, J.J., Geol. Surv. Can.:
Quaternary geology, terrain inventory, Prince Rupert - Terrace, Smithers area, British Columbia, 1975-.
781. COAKLEY, J.P., KARROW, P.F., National Water Res. Instit., Univ. Waterloo (Earth Sciences):
Post-glacial evolution of the north shore of Lake Erie, 1981-83; Ph.D. thesis (Coakley).
Boreholes logged and sampled for the principal researcher (together with other sub-surface data available) will be analysed in order to define the post-glacial stratigraphy of the Long Point area. Uplift history of the lake outlet will be used to estimate the rate and extent of lake level rises in the Erie basin. Both the above data sets will be combined to reconstruct the evolution and stages in the shoreline development of the Lake Erie Canadian shoreline. This reconstruction will take particular notice of the origin, growth, and trends of the three prominent coastal forelands: Point Pelee, Pointe-aux-Pins, and Long Point, Ontario.
782. CRONIN, J.T., KARROW, P.F., Univ. Waterloo (Earth Sciences):
Quaternary geology, Penetang and Christian Island, Ontario, 1980-82; M.Sc. thesis (Cronin).
To determine glacial history of the south-eastern Georgian Bay area. Some of the area contains classic sequences of raised shorelines of glacial lakes (Algonquin-Nipissing sequence). Previous records will be extended, supplemented, and tied in to nearby areas such as Lake Simcoe. The southern margin of the Shield is included and it is hoped it will be possible to trace shorelines north of the Severn River outlet area.
783. DREDGE, L.A., Geol. Surv. Can.:
Surficial geology: Sept Îles - Cap Chat, Québec, 1971-.
784. DREDGE, L.A., Geol. Surv. Can.:
Quaternary geology, northeastern Manitoba, 1975-.
785. DREDGE, L.A., Geol. Surv. Can.:
Quaternary geology-terrain inventory, north-western Manitoba, 1980-.
See:
Trace elements in till and esker sediments in northwestern Manitoba; Geol. Surv. Can., Paper 81-1A, p. 377-381, 1981.
786. DUBOIS, J.M.M., GWYN, Q.H.J., Univ. Sherbrooke (Géographie):
Le Quaternaire d'Anticosti, Québec, 1979-84.
- 1) Cartographie au 1:100 000e de la géomorphologie et des formations meubles; 2) étude de la limite marine maximale; 3) stratigraphie et événements quaternaires; 4) évolution post-glaciaire de la zone côtière; 5) étude de l'évolution récente des littoraux. Un premier éte de terrain a été effectué en 1980 et un autre est prévu en 1981.
787. DYKE, A.S., Geol. Surv. Can.:
Quaternary geology - terrain inventory, Boothia Peninsula, northeast Keewatin, and Somerset and Prince of Wales Islands, 1975-.
See:
Redated Holocene whale bones from Somerset Island, District of Franklin; Geol. Surv. Can., Paper 80-1B, p. 269, 170, 1980.
Radiocarbon - dated mudboils, central Canadian Arctic; ibid, p. 271-275, 1980.
Base metal and uranium concentration in till, northern Boothia Peninsula, District of Franklin; Geol. Surv. Can., Paper 80-1C, p. 155-159, 1980.
788. EASTERBROOK, D.J., WESTGATE, J.A., BRIGGS, N.D., Western Washington Univ. (Geology), Univ. Toronto (Geology), U.S. Geol. Surv.:
Quaternary tephrochronology of Washington State, U.S.A., 1980-82.
See:
Age of the Salmon Springs glaciation in Washington; Geology, vol. 9, pp. 87-93, 1981.
Tephrochronology palaeomagnetism, and amino-acid dating of pre-Vashon deposits in Northwest Washington; Geol. Soc. Am., Program with Abstracts, vol. 13, p. 53, 1981.
789. EYLES, C., WESTGATE, J.A., Univ. Toronto (Geology):
Sedimentology of the Meadowcliffe till, Scarborough Bluffs, southern Ontario, 1980-82; M.Sc. thesis (Eyles).
790. EDLUND, S.A., Geol. Surv. Can.:
Surficial geology - terrain inventory, Bathurst-Cornwallis and eastern Melville Islands, District of Franklin, 1974-.
791. FENTON, M.M., Alberta Research Council (Geol. Surv.):
Quaternary stratigraphy and surficial geology of the Vermilion map sheet 73E, Alberta, 1978-81.
Fieldwork completed 50 per cent of area; a number of test holes drilled.
792. FENTON, M.M., ANDRIASHEK, L.D., Alberta Research Council (Geol. Surv.):
Quaternary stratigraphy and surficial geology Sand River map sheet, Alberta, 1976-81.
Surficial map being detailed, stratigraphic synthesis nearing completion.
793. FILLON, R.H., Geol. Surv. Can.:
Late Cenozoic paleo-oceanography of the Labrador Sea, 1975-.
See:
Labrador Sea bio-, tephro-, oxygen isotopic stratigraphy and Late Quaternary paleoceanographic trends; Can. J. Earth Sci., vol. 17, no. 7, p. 831-854, 1980.
Terrigenous sand in Labrador Sea hemipelagic sediment and paleoglacial events in Baffin Island over the last 100 000 years; Boreas, vol. 10, p. 107-124, 1981.
794. FILLON, R.H., Geol. Surv. Can.:
Surficial geology and paleoglaciology of the central Labrador Shelf Nain, Makkovik and Harrison Banks, 1979-.
795. FINAMORE, P.F., KARROW, P.F., Univ. Waterloo (Earth Sciences):
Quaternary geology, Fenelon Falls area, Ontario, 1981-82; M.Sc. thesis (Finamore).
The area contains the outlet of Lake Algonquin at Kirkfield. Evidence will be sought for multiple outlets or multiple usage of outlets in relation to possible ice readvances. Raised shorelines will be mapped and traced into nearby areas previously mapped.

796. FITZGERALD, W.D., KARROW, P.F., Univ. Waterloo (Earth Sciences): Late Quaternary history of the Minesing swamp area, Ontario, 1978-81; M.Sc. thesis (Fitzgerald).
797. FORD, J., EYLES, N., PREST, V.K., Ontario Geol. Surv.: Quaternary geology of the Pakwash Lake area, Ontario, 1981-82.
798. FULTON, R.J., Geol. Surv. Can.: Quaternary geology inventory, southern Labrador, 1969-.
799. FULTON, R.J., Geol. Surv. Can.: Quaternary geology of the Canadian Cordillera, 1975-.
800. GADD, N.R., Geol. Surv. Can.: Correlation of Quaternary geology: Great Lakes - St. Lawrence Valley region, 1978-.
- See:**
Late-glacial regional ice-flow patterns in eastern Ontario; Can. J. Earth Sci., vol. 17, no. 11, pl. 1439-1453, 1980.
801. GAUTHIER, R.C., Geol. Surv. Can.: Géologie du Quaternaire région de Bathurst-Campbellton, Nouveau Brunswick, 1976-.
802. GRANT, D.R., Geol. Surv. Can.: Surficial geology St. Anthony - Blanc Sablon map areas, Newfoundland, 1969-.
803. GRANT, D.R., Geol. Surv. Can.: Surficial geology, Cape Breton Island, Nova Scotia, 1970-.
804. GRANT, D.R., Geol. Surv. Can.: Surficial geology of Newfoundland, 1974-.
805. GRANT, D.R., Geol. Surv. Can.: Quaternary stratigraphy Yarmouth region, Nova Scotia, 1979-.
806. HICOCK, S.R., DREIMANIS, A., ARMSTRONG, J.E., ALLEY, N.F., Univ. Western Ontario (Geology): Quaternary stratigraphy of Southwestern British Columbia; Genesis of glacial deposits in southwestern British Columbia; nature and mechanisms of west coast cordilleran glaciation, 1980-.
- See:**
Submarine flow tills at Victoria, British Columbia; Can. J. Earth Sci., vol. 18, p. 71-80, 1981.
Stratigraphic studies including radiocarbon dating, palynological, aminoacid, paleontological analyses on organic matter from Quaternary sediments in southwestern British Columbia, in conjunction with genetic and structural studies of glacial deposits, will aid in correlating these sediments between Vancouver Island and mainland British Columbia. Together with provenance and directional studies of these sediments this data will allow the glacial history and glaciodynamic mechanisms operating in the area to be reconstructed. Such information is important for understanding the nature of west coast glaciation, which is vital for effective mineral exploration through drift prospecting, mapping the distribution of Quaternary sediments, and to engineering, and environmental problems related to the Quaternary geology.
807. HODGSON, D.A., Geol. Surv. Can.: Surficial geology and geomorphology of central Ellesmere Island, District of Franklin, 1972-.
808. HODGSON, D.A., Geol. Surv. Can.: Quaternary geology - terrain inventory, Dundas Peninsula, District of Franklin, 1980-.
809. HUGHES, O.L., Geol. Surv. Can.: Quaternary geology, Aishikik Lake, Yukon, 1965-.
810. HUGHES, O.L., Geol. Surv. Can.: Quaternary stratigraphy of Old Can. Basin and Porcupine River Valley, Yukon, 1968-.
811. HUGHES, O.L., Geol. Surv. Can.: Quaternary geology, Mayo-McQuesten, Yukon Territory, 1979-.
812. JACKSON, L.E., Jr., Geol. Surv. Can.: Quaternary geology, terrain inventory, Kananaskis Lakes, Alberta, 1974-.
813. KARROW, P.F., GREENHOUSE, J.P., Univ. Waterloo (Earth Sciences): Stratigraphy and geophysical logging of buried valley fills, Elora and Rockwood, Ontario, 1977-82.
Work on the Elora Valley has been largely completed. At Rockwood a 60 m rotary hole to rock has been electrologged and a core will be obtained with which to calibrate the logs. These valleys may be valuable aquifers.
814. KARROW, P.F., HEBDA, R.J., PRESANT, E.W., ROSS, G.J., Univ. Waterloo (Earth Sciences), British Columbia Museum, Agriculture Canada: Guelph interstadial site, Ontario, 1975-81.
Analyses have been completed and manuscript in preparation.
815. KARROW, P.F., MILLER, B.B., Univ. Waterloo (Earth Sciences), Kent State Univ. (Geology): Lake history, Huron basin, 1968-82.
- See:**
The Nipissing transgression around southern Lake Huron; Can. J. Earth Sci., vol. 17, p. 1271-1274, 1980.
Collection of molluscan assemblages continues from additional sites between Grand Bend and Midland, Ontario. Additional surveys of valley terraces and raised shorelines is continuing in the Kincardine and St. Joseph Island areas. In the latter, good shorelines extend from the Algonquin to Nipissing levels.
816. KARROW, P.F., MORGAN, A., HANN, B.J., POPLAWSKI, S., KALAS, L.L., Univ. Waterloo (Earth Sciences, Biology), Environment Canada (C.C.I.W.): Paleontology of the Toronto interglacial, 1963-.
817. KARROW, P.F., WARNER, B.G., Univ. Waterloo (Earth Sciences): Stratigraphy of the Waterloo interstadial site, Ontario, 1980-82.
Continuous core to 41 m and rotary electro-logged hole to 47 m has penetrated about 6 m of fossiliferous sediment under at least two tills. Pollen, plant macrofossils, and ostracodes suggest interstadial conditions. With further analyses correlation with local stratigraphy is expected.
818. KLASSEN, R.A., Geol. Surv. Can.: Quaternary geology inventory, lower Nelson River basin, Manitoba, 1971-.
819. KLASSEN, R.A., Geol. Surv. Can.: Surficial geology and Quaternary stratigraphy of north Baffin - Bylot Islands, District of Franklin, 1978-.
- See:**
Aspects of the glacial history of Bylot Island, District of Franklin; Geol. Surv. Can., Paper 81-1A, p. 317-326, 1981.
820. LAST, W.M., TELLER, J.T., NAMBUJIRI, E.M.V., CARTER, A., Univ. Manitoba (Earth Sciences): Sedimentology and post-glacial history of Lake Manitoba, 1977-81; Ph.D. thesis (Last).
- See:**
Lake Manitoba stratigraphic record: evidence for repeated hypsithermal dessication; AMQUA abstracts volume, 6th Biennial meeting, Orono, Maine, p. 123-124, 1980.
Most of the mineralogical, chemical, textural, and biological data for the Lake Manitoba project have been collected and interpreted, and are now in the process of being written up for publication. However, within the past six months a detailed SEM study of the clay particle microstructure and morphology was begun with initial emphasis placed on the characteristics of the marker (drying) zones and on the authigenic components of the sediment (high-Mg calcite and framboidal pyrite). Further funding has been secured to conduct a sampling program during the summer of 1981 in order to collect authigenically precipitated Mg-calcite from the water columns. Further analysis of the sediment pore water is also planned.
821. LEYLAND, J., EYLES, N., Ontario Geol. Surv.: Quaternary geology of the Tweed and Belleville areas, Ontario, 1981-82.
Involves assessment of Quaternary materials for a variety of users - geotechnical, aggregate inventory etc.
822. MCNAMARA, S.J., KUPSCH, W.O., Univ. Saskatchewan (Geological Sciences): Surficial geology of the area of the Phelps Lake map sheet (64M), Saskatchewan, 1979-81; M.Sc. thesis (McNamara).
The main objective of the present study was to show on a 1:250 000 scale map of the Phelps Lake area (64M) the distribution of surficial deposits and landforms. The report which accompanies the map describes the methodology used in compiling the final map and gives a detailed description of the surficial deposits and landforms.
823. MARTINEAU, G., LASALLE, P., Québec Ministère Énergie et Ressources: Géologie des dépôts meubles de la Beauce et du Bas St. Laurent, Québec, 1976-82.
Période de vérification et d'homogenisation des données de terrain. Compléter et augmenter l'échantillonnage.
824. MUEHLENBACHS, K., BOMBIN, M., Univ. Alberta (Geology): Stable isotope analyses of fossil organic and inorganic materials as paleoenvironmental tools, 1980-83.
- See:**
Potential of $^{18}\text{O}/^{16}\text{O}$ ratios in opaline plant silica as a paleoclimatic tool; AMQUA, 6th Biennial Meeting Abstracts, p. 43-44, 1980.
A variety of stable isotope measurements will be made on fossil materials to determine the isotope ratios of Quaternary precipitation and vegetation. Such ratios can be used to quantify paleoenvironmental studies.
825. PELLETIER, B.R., Geol. Surv. Can.: Quaternary paleo-sea level map of Canada, 1978-.
826. PERTTUNEN, M.S., EYLES, N., Ontario Geol. Surv.: Quaternary geology of the Cobalt area, northern Ontario, 1980-81.
The Quaternary geology of the Cobalt (3/M/5) area has been mapped and a preliminary map will be published. A report discussing the properties, distributions and relationships at the deposits is in preparation. The till lithology has been made of 27 samples and it will be discussed in report.
827. PROUDFOOT, D.N., MORAN, S.R., RUTTER, N.W., Alberta Research Council (Geol. Surv.), Univ. Alberta (Geology): Quaternary geology and stratigraphy of the Medicine Hat - Lethbridge area, Alberta, 1978-82; Ph.D. thesis (Proudfoot).
Work during 1980-81 produced a significant refinement of the framework in the Medicine Hat area through an in-depth study of sedimentary facies relationships in fluvial units in the valley fill. This has permitted a significant clarification of stratigraphic relationships in the complex cut and fill valley fill sequence.
828. RICHARD, J.A., KARROW, P.F., Univ. Waterloo (Earth Sciences): Glacial history of the Hearst area, Ontario, 1981-83; M.Sc. thesis (Richard).
An area along the south edge of the Cochrane glacial advance will be studied to clarify the history and significance of the advance. River valley stratigraphy will shed light on southward extent of interglacial Missinaibi Formation.
829. RICHARD, S.H., Geol. Surv. Can.: Surficial geology, Tawatinaw area, Alberta, 1968-.
830. RICHARD, S.H., Geol. Surv. Can.: Surficial geology, Ottawa Valley lowlands, Ontario-Quebec, 1974-.
- See:**
Surficial geology: Papineauville-Wakefield region, Quebec; Geol. Surv. Can., Paper 80-1C, p. 121-128, 1980.
831. RITCHIE, J., WESTGATE, J.A., WILLIAMS, D.D., FRITZ, P., MATTHEWS, J.V., Jr., HARRINGTON, C., Univ. Toronto (Geology), Univ. Waterloo (Earth Sciences): The Quaternary palaeoenvironmental history of the Liard Plain region, southern Yukon, 1981-84.

832. RUTTER, N.W., Univ. Alberta (Geology):
Quaternary history of parts of Alberta, British Columbia and Yukon, 1976-.
833. RUTTER, N.W., CRAWFORD, R.J., Univ. Alberta (Geology):
Development of amino acid racemization dating techniques, 1976-.
834. SADO, E.V., EYLES, N., Ontario Geol. Surv.:
Quaternary geology of the Windsor-Essex area, southwestern Ontario, 1980-82.
835. SADO, E.V., EYLES, N., Ontario Geol. Surv.:
Quaternary geology of the Chatham and Romney map areas, southwestern Ontario, 1981-82.
836. ST-ONGE, D.A., GEURTS, M.A., BRUNEAU, H., GUAY, F., Univ. Ottawa (Géographie):
Le lac Glacière Coppermine, T.N.O., 1979-82.
- See:**
Glacial Lake Coppermine, north-central District of Mackenzie, Northwest Territories; Can. J. Earth Sci., vol. 17, no. 9, p. 1310-1315, 1980.
Aspects of the deglaciation of the Coppermine River region, District of Mackenzie; Geol. Surv. Can., Paper 81-1A, p. 327-331, 1981.
Les travaux durant l'été - 1981 sont porter sur les dépôts résultant du drainage du lac dans un haut niveau marin du golfe du couronnement.
837. SCHREINER, B.T., Saskatchewan Research Council (Geology Div.):
1:IM Quaternary compilation of Saskatchewan, 1979-81.
This project involves compiling all existing Quaternary information for southern Saskatchewan, including maps, reports on geology, soils, and geomorphology. Air photo interpretation has been done for all newly mapped areas. The result is a revised Quaternary map for each NTS area in southern Saskatchewan. To date maps have been completed to 52°. A compilation map at scale 1:IM summarizes the information for the area. No field work is planned in this initial compilation. However, all existing field information is incorporated into the new maps.
This work will continue north from 52° as time permits. This will eventually be combined with the Quaternary map of northern Saskatchewan (Schreiner, B.T., in preparation) to produce a provincial Quaternary compilation map.
838. SCHREINER, B.T., MACNAMARA, S.J., ALLEY, D.W., CHRISTIANSEN, E.A., Saskatchewan Research Council (Geology Div.):
Quaternary geology of the Precambrian Shield area, Saskatchewan, 1974-81.
All mapping completed. Maps at scale of 1:250 000 for each of 20 NTS areas involved are in final preparation. A compilation map at scale 1:1 000 000 accompanies a report which describes the Quaternary geology of the area. The report is in editorial stage.
The NTS maps being produced will be coupled with a computer printout of all project data. This information is the baseline data for the study. Requests for information pertaining to all, one or part of an NTS area can be made to Sask. Geological Survey or Sask. Research Council in the near future.
839. SCHREINER, B.T., SIMPSON, M., Saskatchewan Research Council (Geology Div.):
Aggregate inventory of Saskatchewan, 1980-.
A program has been initiated to combine aggregate data with new compilation maps of the Quaternary geology in southern Saskatchewan. These maps will provide the framework for the inventory while the data will provide site specific information. The maps at scale 1:250 000 will delineate areas of aggregate and will indicate the location of site information. A data file will provide the site specific details such as grade and volume. This inventory will summarize the proven resources and will also indicate possible additional resources.
840. SHARPE, D.R., EYLES, N., Ontario Geol. Surv.:
Quaternary geology of the Chesley - Tiverton area, Ontario, 1977-81.
Strong glacial flow through the area in late Wisconsinan time (23 000; Missouri stadial) deposited a thick unit of coarse, stoney generally massive till. Glacial ice remained in the area for much of late-Wisconsinan time when glacial ice was active once again (Port Huron stadial). This glacial activity was less stable as ice advanced over proglacial lake sediments which formed as ice blocked drainage into the lake basins. The sediments produced in this environment range from lacustrine sediments, debris flows, flow tills to gradational sequences of tills produced by glacial stacking or rapid surging due to high groundwater pressures.
841. SHARPE, D.R., EYLES, N., Ontario Geol. Surv.:
Quaternary geology of the Toronto area, Ontario, 1978-.
- See:**
Quaternary geology of the Toronto and surrounding area; Ontario Geol. Surv., Map P. 2204, 1980.
The map compiles existing Quaternary mapping studies and reports plus soil engineering (minor) for the Metropolitan Toronto area. Reference sections depict the best exposed and well-described stratigraphy from the Toronto area (Scarborough Bluff, the Brickyards and Woodbridge). Cross-sections along the Yonge St. and Bloor St. subway lines supplied by the Toronto Transit Commission provided a 3 dimensional view for the downtown area. Summary marginal notes outline the Quaternary history of the Toronto area and a lengthy reference list completes the presentation. A bedrock topography map of Metropolitan Toronto is the next publication in preparation for this urban geology series.
842. SHARPE, D.R., EYLES, N., Ontario Geol. Surv.:
Quaternary geology of the Brampton area, Ontario, 1980-.
- See:**
Quaternary geology of the Brampton area, southwestern Ontario, Ontario Geol. Surv., Mics. Paper 96, p. 104, 105, 1980.
The impressive feature of the Brampton area is to extent, thickness and variability of the Halton Till. Compositional banding within the Halton Till is common and reflects the differing substrata; Georgian Bay Formation shales and limestone provide a dark yellowish brown banding which overlies a reddish banding produced from the Queenston Shales. The upper portion of the Halton till is interbedded with flowtills, debris flows and other lacustrine beds of Glacial Lake Peel.
843. SHARPE, D.R., JAMIESON, G., WEST, L.N., EYLES, N., Ontario Geol. Surv.:
Quaternary geology of the Gravenhurst, Bracebridge, Huntsville area, Ontario, 1978-.
- See:**
Quaternary geology of the Gravenhurst, Bracebridge and Huntsville areas; Ontario Geol. Surv., Misc. Paper 82, p. 152-154, 1980.
Deltas formed by outwash streams (West, 1979) and deltas formed at ice-margins plot below the main Lake Algonquin waterplane projected northward from the Lake Simcoe Area. This discontinuity could relate to the post-Kirkfield phase of Glacial Lake Algonquin.
Study of varved lake clays (Jamieson, 1979; Sharpe, unpubl.) in the area suggest that varved sediments are produced by density undercurrents which are generally restricted to small (<10 Km²) basins within Glacial Lake Algonquin. Where these basin sediments overlapped, intrabasin correlation is possible. A confirmed record of 800 years of lake sedimentation and possibly 1292 years of record is available from this area.
844. SHETSEN, I.P., MORAN, S.R., ANDRIASHEK, L.D., RUTTER, N.W., FENTON, M.M., Alberta Research Council (Geol. Surv.):
Quaternary geology map of southern Alberta, 1978-83.
During 1980-81 a 1:1 000 000 map of the southern 330 km of the province was completed. Field checking of this map is expected to be completed during the summer of 1981.
845. SHILTS, W.W., Geol. Surv. Can.:
Properties and provenance of till, 1969-.
846. SHILTS, W.W., Geol. Surv. Can.:
Quaternary geology inventory - southern Keewatin, 1973-.
847. SHILTS, W.W., Geol. Surv. Can.:
Glacial erosion of the Canadian Shield, 1978-.
848. SPARKES, B.G., VANDERVEER, D.G., Newfoundland Dept. Mines and Energy:
Surficial and glacial mapping of the Central Mobile Belt, Insular Newfoundland, 1978-83.
- See:**
Badger-Grand Falls surficial and glacial mapping; Newfoundland Dept. Mines and Energy, Mineral Develop. Div., Rept. 80-1, p. 257-262, 1980.
Field mapping was completed on the Lake Ambrose-Noel Paul's Brook 1:50 000 map areas in 1978, the Badger-Grand Falls areas in 1979, and the Star Lake-Victoria Lake areas in 1980. Information was obtained along: 1) all existing roads, 2) most lake shorelines, and 3) many streams. A backhoe was used in 1978 and 1979 to dig pits for samples and to provide suitable exposures to do till fabrics. Hand-dug pits were used in 1979 and 1980. A helicopter provided access to the more remote areas.
To date, 105 pits have been dug and 85 till fabrics obtained. During the field work 1800 sites have been noted and 220 sets of glacial striae have been recorded. 950 samples have been taken of which 750 were till and the remainder either silt/clay, sand, gravel or rock. At 260 of the 600 sites for till sampling, a representative pebble fraction was obtained and the pebble lithologies were determined. Till samples have been sieved for particle size analyses and analysed for Cu, Pb, Zn, Co, Ni, Ag, Mn, Fe, Mo and U elemental concentrations.
849. STALKER, A.MACS., Geol. Surv. Can.:
Quaternary of southern Alberta, 1965-.
850. STALKER, A. MACS., Geol. Surv. Can.:
Quaternary of southern Alberta, 1965-.
Synthesis of Quaternary geology, Great Plains of Canada, 1975-.
851. STEA, R.R., COOKE, H.B.S., PIPER, D.W.J., SCHENK, P.E., OGDEN, J.G., III, Nova Scotia Dept. Mines Energy, Dalhousie Univ. (Geology):
Pleistocene geology and till provenance in central Nova Scotia, 1979-82; M.Sc. thesis (Stea).
Thesis involves study of the main sedimentary and geochemical parameters for 10 sections in central Nova Scotia. The principal aim is local correlation. Pollen analyses are done on organic beds exposed at Miller Creek, in Hants County.
852. STEA, R.R., FOWLER, J.H., CHORK, C.Y., Nova Scotia Dept. Mines Energy:
Till geochemistry, mainland Nova Scotia, 1977-83.
Project will continue to expand to southwest Nova Scotia. 4 more map sheets with compiled Pleistocene Geology and geochemistry including 17 elements, Ag, Cd, Cu, Pb, Zn, Co, Ni, Mo, U, Ca, Mg, Fe, Mn, Hg, As, Sn, and W, will be produced at a scale of 1:100 000.
853. STEELE, K.G., RUTTER, N.W., Univ. Alberta (Geology):
Utilizing glacial geology in mineral exploration, 1981-82; M.Sc. thesis (Steele).
854. TELLER, J.T., Univ. Manitoba (Earth Sciences):
The Lake Agassiz-Lake Superior connection, 1980-83.
The Quaternary sediments and morphology of northwestern Ontario are largely unstudied. An understanding of the sedimentology and chronology of events in this region is essential in order to establish the relationship between the Prairies to the west and the Great Lakes to the east. Of particular importance to this understanding is the history of Lake Agassiz and its periodic connection with Lake Superior through northwestern Ontario. The size and morphology of the various overflow channels in that region, and the nature of the sediment within and adjacent to them, will contribute a great deal to our understanding of glaciation and deglaciation in north-central North America.

Field and air photo studies during 1980 indicated that the Lake Agassiz-Lake Superior connection may have taken place catastrophically, with much of Lake Agassiz draining in only a few weeks. This study will identify, map, measure, describe, and sample the many overflow channels and their sediments and examine the regional Quaternary stratigraphy of northwestern Ontario. This information will be used to correlate late Quaternary events in the Prairies and Great Lakes, and will establish the paleohydrology of the connecting channels and determine their role in the interrelationship between east and west.

855. VANDERVEER, D.G., Newfoundland Dept. Mines and Energy:

Quaternary mapping - Upper Humber River area, Newfoundland, 1980-81.

See:

Newfoundland Dept. Mines and Energy, Mineral Develop. Div., Rept. 80-1, p. 257-262, 1980.

Quaternary field mapping was carried out between June and September of 1980 in the Upper Humber River area covering all of map sheet 12H/6 and parts of map sheets 12H/3, 12H/10 and 12H/11. Glacial striae record an early eastward ice flow across the study area from a center in the Long Range Mountains

followed by a southwestward flow down the Humber River and through Deer Lake. Four large end moraines located west of Birch Lake record a readvance most probably associated with the retreat of the southwest ice flow. Stratigraphy in the area shows 1) a light pink-grey till related to the easterly movement of ice of the Long Range Mountains, 2) a red clay rich till containing gabbroic erratics most probably derived from the north, and 3) a local immature till related to local bedrock lithologies that usually overlies the red clay rich till, although in some areas flaciofluvial deposits of gravel, sand and/or silt may separate the two tills. The immature till has been interpreted as being transported towards the south or southwest as indicated by an analysis of terrain, meltwater channels and glacial striae. Textural analysis of till samples and compilation and release of a series of 1:50 000 scale surficial geology maps is planned.

856. VINCENT, J.S., Geol. Surv. Can.:
Surficial geology inventory, Banks Island, District of Franklin, 1974-.

857. VINCENT, J.S., Geol. Surv. Can.:
Surficial geology, Lac Kipawa region, Québec, 1979-.

858. WATERS, P.L., RUTTER, N.W., Univ. Alberta (Geology):
Early Quaternary stratigraphy and paleoecology of the Porcupine and Old Crow Basins, Yukon, 1979-82; Ph.D. thesis (Waters).

859. WESTGATE, J.A., GORTON, M.P., PEARCE, G.W., ROBERTSON, S., Univ. Toronto (Geol.):

Quaternary tephrochronology of western Canada and Alaska, 1970-.

See:

Bridge River tephra: revised distribution and significance for detecting old carbon errors in radiocarbon dates of limnic sediments in southern British Columbia; Can. J. Earth Sci., vol. 17, p. 1454-1461, 1980. Dating methods of Pleistocene deposits and their problems: V. tephrochronology and fission-track dating; Geoscience Can., vol. 7, p. 3-10, 1980.

860. WESTGATE, J.A., WILLIAMS, N., WILLIAMS, D.D., PEARCE, G.W., YAGISHITA, K., Univ. Toronto (Geology, Zoology):

Quaternary geology of the Markham - Scarborough Bluffs area, southern Ontario, 1978-.

861. YOUNG, D., RUTTER, N.W., Univ. Alberta (Geology):

Surficial stratigraphy of the Golden map sheet, British Columbia, 1980-84; Ph.D. thesis (Young).

REMOTE SENSING/TELEDETECTION

862. BÉLANGER, J.R., Geol. Surv. Can.:
Remote sensing applied to Quaternary geology and mineral tracing, 1978-.

See:

Studies in Quaternary geology: an approach using remote sensing information; Geol. Surv. Can., Paper 80-1B, p. 287-291, 1980.

863. BONN, F.J., BROCHU, R., BERNIER, M., Univ. Sherbrooke (Géographie):
Utilisation du concept d'inertie thermique et des données du satellite HCMM en sciences de la Terre, 1978-83.

Voir:

Cartographie de l'inertie thermique de certains secteurs du Québec à partir de données aériennes et du satellite HCMM; 6th Can. Symp. on Remote Sensing, Halifax, 1981.

Le projet vise à explorer le potentiel d'application du concept d'inertie thermique pour la reconnaissance par télédétection de l'humidité des sols et dépôts meubles. Il s'appuie sur des mesures au sol, des thermographies aériennes et des données du satellite H.C.M.M (Heat Capacity Mapping Mission).

864. BONN, F.J., DUBOIS, J.M.M., GWYN, Q.H.J., Univ. Sherbrooke (Géographie):
Utilisation des techniques de télédétection pour les ressources en eau, les dépôts meubles et le microclimat 1977-83.

Le but de ce projet est de faire une étude comparée de diverses techniques de télédétection appliquées à la géomorphologie aux ressources qu'eau et au microclimat. L'accent est mis en particulier sur une approche interdisciplinaire (projet d'équipe).

865. BONN, F.J., GWYN, Q.H.J., DUBOIS, J.M.M., Univ. Sherbrooke (Géographie):
Utilisation des techniques de télédétection dans l'étude des dépôts meubles et des ressources en eau dans les Appalaches et les Basses-Terres du Saint-Laurent, 1980-85.

Etude de l'utilisation maximale des techniques de télédétection pour la cartographie des dépôts meubles et de la géomorphologie ainsi que pour la détermination des teneurs en eau des sols incluant les relevés hydrogéologiques. Projets pilotes en cours à Anticosti et près de Sherbrooke.

866. DANIEL, C., Univ. Sherbrooke (Géographie), Québec Ministère Tour. Chasse et Pêche:
Géomorphologie et potentiel de productivité des rivières des principales régions physiographiques du Québec pour les salmonidés, 1979-80; thèse de maîtrise.

Voir:

Géomorphologie et habitat du saumon en Gaspésie; 48e Congrès de l'ACFAS, Québec, Annales de l'ACFAS, vol. 47, no. 1, p. 116, 1980.

Télédétection de l'habitat du saumon de l'Atlantique en Gaspésie; in Coastal studies in Canadian geography, St. Mary's Univ. Occ. Papers in Geogr. no 4, 1980.

Ce projet possède deux buts. Le premier est de démontrer l'efficacité de la télédétection dans l'étude de la géomorphologie et de la sédimentologie des cours d'eau. Le deuxième est d'établir des relations entre la géomorphologie et la localisation des habitats des salmonidés. La thèse a été terminée en 1980.

867. DONALDSON, J.A., DONALDSON, J., DOW, D.R., Carleton Univ. (Geology):
Aerial photography by means of radio-controlled model aircraft as an aid to geological field studies, 1980-82.

To test the feasibility of using a 35 mm camera, mounted beneath a radio-controlled model helicopter, to obtain high-resolution vertical photographs of outcrops from elevations of 5 to 500m above ground. Such low-level photography should permit comparisons of primary sedimentary and volcanic structures in sections across well-exposed sequences of steeply inclined strata, provide documentation of features too large to photograph from the ground, and expedite preparation of base maps for detailed mapping (scales of 1:10 to 1:500). The technique should be applicable to field research in biology, environmental sciences, geography, forestry, geomorphology and limnology. Technological applications are foreshadowed in agriculture, forestry, wildlife surveys, urban planning and civil engineering.

868. DUBOIS, J.M.M., GWYN, Q.H.J., BONN, F.J., CASTONGUAY, J., BOISVERT, J.J., LAURIOL, B., Univ. Sherbrooke (Géographie);

Voir:

Géomorphologie du littoral de la Côte Nord du Saint-Laurent: analyse sommaire; Geol. Surv. Can., Paper 80-10, p. 215-238, 1980.

Estimé des mouvements actuels de sédiments littoraux à partir de critères géomorphologiques, sédimentologiques, et hydrodynamiques télé-identifiables; C.N.R.C., Conférence Can. sur le littoral 1980, comptes rendus, p. 309, 1980.

Télédétection et études d'impact sur le littoral des barrages hydroélectriques (Québec); 26e Congrès international de géologie, Paris, résumés vol. 3, p. 1188, 1980.

Géomorphologie des îles Saint-Pierre et Miquelon: premier rapport d'étape; Dept géographie, Univ. Sherbrooke, 1980.

Géomorphologie, télédétection et aménagement hydroélectrique au Québec; 2e Colloque sur le géographe et l'aménagement au Québec, Univ. Sherbrooke, résumés des communications, p. 4-5, 1980.

Evolution historique du littoral de la Côte Nord du Saint-Laurent, Québec, Canada; 24e Congrès international de géographie, Tokyo, Comm. Env. Côtier, 1980.

Etude de l'évolution des littoraux du nord du golfe du Saint-Laurent aux échelles millénaire, centenaire, décennale, annuelle et saisonnière en utilisant des méthodes de terrain et de télédétection. Etude amorcée sur la Moyenne Côte Nord, Anticosti et Saint-Pierre et Miquelon.

869. TANGUAY, M.G., HUET, D., JULLIEN, J.L., École Polytechnique (Génie Minéral):

Applications des images Landsat en génie et en géologie, 1979-82; thèse de maîtrise (Huet).

Trouver une méthodologie d'application des données des images Landsat aux diverses fins en géologie et en génie; exploration minière, cartographie géologique, tectonique, étude d'environnement, investigation des sites.

ANCIENT SEDIMENTS/SÉDIMENTS ANCIENS

870. AKHURST, M., KENT, D.M., Univ. Regina (Geology):
Pore geometry of the Frobisher-Alida Beds in the Innes field, southeastern Saskatchewan, 1980-82.
871. ASPLER, L., DONALDSON, J.A., Carleton Univ. (Geology):
Sedimentology, stratigraphy and structure of the Nonacho Basin, Northwest Territories, 1978-81; Ph.D. thesis (Aspler).
1) Define stratigraphic and facies relationships within the Nonacho Group; 2) determine paleo-current patterns; 3) determine depositional environments and prepare paleogeographic reconstructions; 4) define the relationship between tectonics and sedimentation and determine the structural evolution of the basin; 5) attempt to date directly, mudstones of the Nonacho Group using the Rb/Sr whole rock method; and 6) determine the relationship between the Nonacho Basin and other Proterozoic basins in the Canadian Shield.
872. CHANDLER, F.W., Geol. Surv. Can.:
Redbed sequences in Canada, 1976-.
873. CHANDLER, F.W., Geol. Surv. Can.:
Proterozoic red beds of Richmond Gulf, Québec, 1977-.
- See:
Tectonics of the Richmond Gulf area, northern Québec - a hypothesis; Geol. Surv. Can., Paper 80-1C, p. 59-68, 1980.
874. COOK, D.G., Geol. Surv. Can.:
Comparative studies of ancient and modern sedimentary environments, 1970-.
875. DALRYMPLE, R.W., Queen's Univ. (Geological Sciences):
Sedimentology of Cambrian sandstones in southeastern Ontario, 1981-84.
To determine the conditions of deposition responsible for the Potsdam, Napean and March formations of southeastern Ontario, with initial concentration in the Kingston area. To date, shallow marine (with 10m high sandwaves) and beach (?) environments have been recognized. Effort will concentrate on: determining the relative importance of tidal, storm and semi-permanent currents in sediment transport and deposition; determining the influence of bedrock topography during deposition; and delineation of the paleogeography.
876. DONALDSON, J.A., KERANS, C., ROSS, G., Carleton Univ. (Geology):
Sedimentology and stratigraphy of the Hornby Bay and Dismal Lakes groups, Northwest Territories, 1978-81; Ph.D. theses (Kerans, Ross).
See:
Tectonism and depositional history of the Helikian Hornby Bay and Dismal Lakes groups, Northwest Territories; Geol. Assoc. Can. Abstracts with Program, vol. 5, p. 49, 1980.
Field work for this project has been completed. Theses (Kerans and Ross) are in preparation, and a manuscript summarizing the tectonism and depositional history of the study area has been submitted for publication by the Geological Survey of Canada.
877. DONALDSON, J.A., RICKETTS, B.D., ROOTS, C., MCEWEN, J., WARE, M., Carleton Univ. (Geology), Geol. Surv. Can.:
Sedimentology, stratigraphy and basinal analysis of the Belcher Group, Hudson Bay, 1976-84; Ph.D. theses (Ricketts), M.Sc. theses (Roots).
See:
Sedimentary history of the Belcher Group of Hudson Bay; Geol. Assoc. Can., Program with Abstracts, vol. 5, p. 78, 1980.
Basin analysis of the eastern Belcher Islands has been completed, with emphasis on depositional environments, sedimentary structures, dispersal patterns and basin evolution. Work will continue in 1982 on the western Belcher Islands, with emphasis on the influence of volcanism on sedimentation and basin evolution. A paper on the sedimentary history of the Belcher Group has been submitted for publication by the Geological Survey of Canada.
878. DUNN, C.E., Saskatchewan Geol. Surv.:
The Middle Devonian Dawson Bay Formation and its relationship to the Prairie Evaporite in the Saskatoon potash mining district, Saskatchewan, 1974-81.
See:
Saskatchewan Dep. Mineral Res., Rept. 194, 1981.
Describe the geology of the Dawson Bay Formation within a geographic area which includes all the potash mines in the general vicinity of Saskatoon. The study includes stratigraphy, sedimentation, depositional environment, diagenesis, structure, groundwaters, and some paleontologic, rock mechanics, mineralogic, geochemical and geophysical observations; of prime concern is the relationship of the strata to the underlying potash horizons of the Prairie Evaporite.
879. FLACH, P.D., Alberta Research Council (Geol. Surv.):
Sedimentology of the McMurray Formation, Athabasca oil sands, Alberta, 1977-84.
Mapping of northern half of deposit nearly complete.
880. HARRISON, R.S., Alberta Research Council (Geol. Surv.):
Sedimentology and stratigraphy of the bitumen-bearing Upper Devonian Grosmont Formation in northern Alberta, 1980-84.
See:
The Upper Devonian Grosmont Formation: Preliminary observations on a major bitumen-bearing carbonate horizon; Abstract, GAC/MAC Annual Meeting, vol. 6, p. A-24, 1981.
The geologic setting of the Grosmont thermal recovery project, northeastern Alberta; Advances in Petroleum Recovery and Upgrading, AOSTRA Conf., Calgary, 1981.
Many of the Paleozoic formations which subcrop beneath the pre-Cretaceous unconformity in northern Alberta contain large amounts of very low API gravity bitumen. Of particular and immediate interest is the Upper Devonian Grosmont Formation, the subcrop edge of which is currently being evaluated by a steam-injection pilot project funded by Alberta Oil Sands Technology and Research authority, Canadian Superior Oil and Gas, and Union Oil of Canada, the latter company being the project operator.
In the area of investigation the Grosmont consists of a dolomitized series of shallowing-upward depositional cycles. Sedimentary facies encompass small reef-like buildups, subtidal low-energy carbonate sands and muds, and intertidal/supratidal sequences with minor evaporites. The rocks are extremely porous (commonly in excess of 20%) and have bitumen saturations which average well over 60%.
881. HEATON, M.J., REISZ, R.R., Univ. Toronto (Erindale College, Earth and Planetary Sciences):
Late Paleozoic terrestrial sedimentology and paleoecology (1st Part - Sedimentology and paleoecology of a late Pennsylvanian coastal lagoon near Garnett, Anderson Co., Kansas), 1980-81.
Problems exist in late Paleozoic terrestrial stratigraphy because biostratigraphic indicator fossils have been chosen from two temporal and environmental extremes, hydrophytic floras from Early to Mid-Pennsylvanian coalswamps and xerophytic floras from Permian conifer dominated uplands. Rare dry Pennsylvanian terrestrial non-coalswamp environments and their fossils need to be studied to bridge the gap between wet and dry environments particularly during the Late Pennsylvanian as North America became progressively drier from southwest to northeast.
The goal is to eliminate environmental bias in the use of certain types of fossils (particularly plants and their spores and pollen) as biostratigraphic index or zone fossils. To do this, a reference point must be established to which comparisons can be made; where a xeric terrestrial sequence can be tied to a well known marine sequence of known age. A large suite of fossils must be available for correlation with other sites and these fossils must be definitely referable to very specific sedimentary environments for which the original depositional parameters are well understood.
The initial stage of this study will be an investigation of the sedimentology and paleoecology of the Garnett, Kansas site that, as the world's most prolific producer of Pennsylvanian non-coalswamp terrestrial fossils, can serve as that needed reference point. Detailed analyses of the mineralogy, petrology, sedimentary structures, and depositional history of the four distinct facies, represented in the calcilutites at the site, will serve as the basis for a paleoecological model to be used for comparison with other Pennsylvanian localities and their fossils.
882. HEIN, F.J., Univ. Alberta (Geology):
1) Facies models of Gog Group quartzites;
2) Sedimentology and geotechnique of deep-sea clays and silts: California Borderland, 1980-81.
See:
Sedimentological and geotechnical aspects of fine-grained mass-flow deposits, California Borderland Basins; Geol. Assoc. Can. - Mineral Assoc. Can., Program with Abstracts, vol. 5, p. 70, 1980.
1) Develop a facies model for the Gog Group quartzites and to reconstruct the paleogeography of the depositional setting, and determine the diagenetic history of the Gog Group, with bearing on the origins of otho-quartzites.
2) Document sedimentary fabrics and relate these to bulk strength properties for different types of sedimentary facies, study the mineralogy both at the surface and downcores to ascertain relative contributions of different sources in basin filling of the study area, obtain radiometric dating of sediments, using Pb²¹⁰ method, to determine sedimentation rates, and relate bulk strength and geotechnical properties to sedimentary facies, grain size characteristics and to sedimentation rates.
883. HENDRY, H.E., WING, S.J.C., Univ. Saskatchewan (Geology):
Sedimentology of Upper Cretaceous-Tertiary sediments, Plains of southern Saskatchewan and Alberta, 1973-; M.Sc. thesis (Wing).
Work so far has been on Cretaceous deposits. There are two main projects: 1) reconstruction of paleogeography and dispersal patterns for Alberta/Saskatchewan/Montana plains in region of 49th parallel for latest Cretaceous facies; and 2) investigation of Late Cretaceous marine to non-marine transition in southernmost Alberta and Saskatchewan.
884. HESSE, R.F., TASSÉ, N., McGill Univ. (Geological Sciences):
Diagenesis and tectonic setting of the Cretaceous Flysch à Helminthoids Basin, Embrunais, French West Alps; tectonic significance of Cretaceous flysch deposits of Alpine-Carpathian Arc, 1977-81; Ph.D. thesis (Tassé).
See:
The Alpine-Carpathian Arc - a Tethyan analogue of the Atlantic loop-arc structures of the Caribbean and South Scotia Seas; in Leggett, J., (ed.); Trench and Fore-arc Sedimentation and Tectonics in Modern and Ancient Subduction Zones, p. 12-13 (abstr.) 1980.
Evaluation of the diagenesis and tectonic setting of Cretaceous deep-sea turbidites based on detailed sedimentological analysis.
885. KALDI, J.G., PATERSON, D.F., Saskatchewan Geol. Surv.:
Sedimentology, stratigraphy and diagenesis of the Midale Beds of the Midale Field, southeastern Saskatchewan, 1980-82.
The oil-bearing Midale Beds occur on the northeastern flanks of the Williston Basin. The strata consist of carbonates and evaporites deposited during several transgressive-regressive episodes in a shelf environment dominated primarily by restricted subtidal to

- supratidal conditions. Most hydrocarbon recovery is from the Midale Carbonate member, which is subdivided into 3 subtidal deporegimes: 1) The lower zone represents a restricted (lagoon?) environment in which moderate energy conditions prevailed. 2) The middle zone formed in a moderate to high energy environment and probably represents a transgressive shoal which migrated over the lower zone sediments. 3) The upper zone carbonate marks a return of restricted subtidal conditions, probably due to regression of the Midale Sea over deposits of the middle zone.
- Bored surfaces, contemporaneous fractures and intracasts within the middle and upper zones suggest periods of hardground formation. The most productive oil reservoirs are within the middle zone in argillaceous bioturbated dolomites having abundant intercrystalline or vuggy porosity. In some places, however, anhydrite has occluded much of this secondary porosity.
886. KOSTER, E.H., Alberta Research Council (Geol. Surv.):
Gamma ray log response of Horseshoe Canyon Formation lithology, 1980-82.
- Using statistical procedures and recent core data of the Alberta Geological Survey, the principal aim is to account for the observed gamma-ray log response of lithologies in the coal-bearing Horseshoe Canyon Formation on the basis of textural and compositional variables, and thereby to recognize limitations that apply to attempts at interpreting both individual lithologic units and facies sequences from logs alone. Log response of this Formation has generally been found to be equivocal because of hybridizing lithologic effects (for example, bentonitic sandstone and carbonaceous shale) with the result that so-called 'sand and shale lines' are difficult to recognize.
887. KRAMERS, J.W., Alberta Research Council (Geol. Surv.):
Sedimentology of the Grand Rapids Formation, Wabasca oil sand deposit, Alberta, 1976-83.
- Continuing study of the sedimentology, facies relationships, petrology and diagenesis of the bitumen saturated Grand Rapids formation in northeastern Alberta (tp. 70-90, rge. 13W4 - rge. 5 W5).
888. LAJOIE, J., Univ. Montréal (Géologie):
Paléogéographie archéenne de la région de Rouyn - Val D'Or, Québec, 1981-.
889. LAST, W.M., TILLEY, B.J., Alberta Research Council (Geol. Surv.):
Sedimentology of the Lloydminster-Suffield heavy oil sands, Alberta, 1979-.
- To gain a fundamental understanding of the geology of the heavy oil sands deposits in east-central Alberta. Specifically, we plan to conduct an indepth study of the Mannville Formation in this area to decipher the sedimentology, petrology, and diagenesis of the oil-bearing units and how these factors control oil saturation.
890. LORSONG, J.A., PATERSON, D.F., Saskatchewan Geol. Surv.:
Sedimentology of the Mannville Group (Lower Cretaceous), Celtic and Pikes Peak Fields, west-central Saskatchewan, 1979-82.
- See:
Geometry of nearshore sand bodies in the upper Mannville Group, Celtic field, Saskatchewan; Saskatchewan Geol. Soc. Spec. Publ. no. 5, p. 236-266, 1980.
- 1) Delineate small scale sedimentological parameters and controls (e.g., lithofacies, grain size, diagenesis, sand body geometry) which affect reservoir performance in the Mannville Group in the Lloydminster area of Saskatchewan, especially with respect to thermal enhanced recovery techniques.
- 2) Develop a detailed, sedimentary facies model of the Mannville Group in order to aid prediction and delineation of sedimentological parameters which affect reservoir performance. This is being accomplished by very detailed study of some 2,000 m of long, slabbled, closely-spaced cores, primarily from Celtic and Pikes Peak fields.
- Most cores have been logged, and detailed correlation and sedimentological, statistical analysis is well under way. Studies of diagenesis, micropaleontology in early stages.
891. LOWEY, G., HILLS, L.V., Univ. Calgary (Geology and Geophysics):
Tertiary sedimentology central Yukon, 1981-84; Ph.D. thesis (LoweY).
- The Tertiary stratigraphy of the central Yukon is poorly understood. Recent work indicates that an understanding of the Tertiary will help resolve problems relating to the timing of tectonic events and that the sediments may have economic uranium and coal deposits - to refine the known stratigraphy, utilize palynology to date the sediments, reconstruct depositional environments, relate sedimentology to tectonic events, and to investigate potential economic significance of the deposits.
892. MIDDLETON, G.V., NADON, G., McMaster Univ. (Geology):
Triassic sediments of southern New Brunswick, 1979-81; M.Sc. thesis (Nadon).
- See:
Paleocurrent analysis of Triassic alluvial fan, eolian, and fluvial sediments, St. Martins, southern New Brunswick; Geol. Assoc. Can./Mineral Assoc. Can., Annual Meeting, Abstracts, vol. 6, p. A-42, 1981.
893. MOSSOP, G.D., Alberta Research Council (Geol. Surv.):
Sedimentology and petrology of the Athabasca oil sands, Alberta, 1975-84.
- See:
Facies control on bitumen saturation in the Athabasca oil sands; Can. Soc. Petrol. Geol., Mem. 6, p. 609-632, 1980.
- Geology of the Athabasca oil sands; Science, vol. 207, p. 145-152, 1980.
- Facies distribution, depositional environments, paleocurrent patterns, paleo-hydrology, basin development, provenance, paleogeography, oil migration and maturation history, mineralogy, petrography, synergistic and geotechnical characteristics of the McMurray Formation oil sands in the Athabasca deposit.
894. NOBLE, J.P.A., YOUNG, G., POPE, C., Univ. New Brunswick (Geology):
Analysis of sedimentary basins in the Appalachian-Caledonian Orogen, 1979-86; M.Sc. thesis (Pope), B.Sc. thesis (Young).
- During the summer of 1980 more stratigraphic sections in New Brunswick and Gaspé were measured and sampled. The preliminary, taxonomy of the tabulate corals of the Silurian of New Brunswick and Gaspé has been completed and 12 species established, described and illustrated. Work is continuing on their paleoecology and biostratigraphy. An honours thesis (Young) on this topic was supervised to completion.
- Large collections of stromatoporoids were made from the West Point Reef Complex in Gaspé (Pope) and work is progressing on their taxonomy and paleoecology.
- Preliminary collections were made of corals and stromatoporoids from the Silurian of Wales an Gotland for eventual comparison with the Appalachian region.
895. REINSON, G.E., Geol. Surv. Can.:
Depositional environments and diagenesis of Viking Sandstone reservoirs, Alberta, 1979-.
896. ROTTENFUSSE, B.A., Alberta Research Council (Geol. Surv.):
Peace River oil sands study, Alberta, 1975-.
- See:
Techniques for SEM and EDS characterization of oil sands; Scanning Electron Microscopy, vol. IV, p. 97-102, 1980 (ARC contribution no. 1034).
- Factors affecting mineralogy, porosity, and permeability within the Peace River oil sands; Applied oil sands Geoscience Proc. ARC contribution no. 1035, 1980.
- Cores have been logged throughout the heavy oil sands deposit and data on grain size, heavy oil saturation and mineralogy are being generated. Depositional environments, diagenesis, and mineralogy affect saturation and potential extraction of the heavy oil. Data will be provided to aid in planning in-situ recovery projects.
897. RUST, B.R., Univ. Ottawa (Geology):
Sedimentology of terrestrial and marginal marine sediments in relation to tectonics of Paleozoic Continental margin, eastern Canada, 1977-82.
- Differences between Devonian and Carboniferous alluvial successions in Eastern Gaspé are interpreted as responses to different tectonic styles. The Devonian alluvium conformably overlies shelf carbonates with interbedded andesitic flows and pyroclastics. It changes progressively upwards from sandstones of meandering and distal braided plains (Battery Point Formation) to proximal braidplain conglomerates (Malbaie Formation). The Malbaie Conglomerates are laterally persistent, horizontally stratified, clast-supported and imbricate. Although depositional slopes were quite steep, there is no indication of abrupt relief in source terranes.
- The Carboniferous Cannes de Roche Formation overlies the Malbaie with angular unconformity. Like other Maritime Carboniferous successions it has abundant alluvial fan deposits, characterized by rapid lateral facies variation and by muddy matrix-supported breccias or conglomerates (debris flow deposits). In contrast with the Devonian formations, this indicates that deposition was influenced by locally abrupt source relief, due to differences in the style of deformation. Continental collision in the Devonian gave rise to broadly warped terrestrial basins to the northwest of the main orogen, whereas shearing along the intercontinental suture in the Carboniferous produced a complex of fault-bounded basins. This is consistent with paleomagnetic evidence for transient displacement of coastal regions relative to the North American craton during Carboniferous times.
898. RUST, B.R., GOSTIN, V.A., Univ. Ottawa (Geology):
Flow tills in subaqueous outwash deposits of the Champlain Sea near Ottawa, Ontario, 1980-82.
- Study of sand and gravel pits in subaqueous outwash ridges south of Ottawa shows a wide variety of facies. In the Twin Elm ridge layers and lenses of till pass upward and downward into stratified sands and gravels. They are interpreted as flow tills, which were incorporated in the subaqueous outwash by sliding off adjacent glacial ice.
899. RUST, B.R., MASSON, G., Univ. Ottawa (Geology):
Clastic sedimentology of Sydney Coal Basin in relation to depositional environments of coal, 1981-85; Ph.D. thesis (Masson).
- Part of the coastal exposure of the coal-bearing succession in the Sydney Basin will be examined in detail after reconnaissance of the whole section. Paleocurrents and facies analysis will be completed and compared with data from cores taken near the studied coastal exposure to compile a regional picture.
900. RUST, B.R., MUIR, I., Univ. Ottawa (Geology):
Sedimentology and tectonic setting of a Lower Devonian coastal fan complex, Cornwallis Island, Northwest Territories, 1979-81; M.Sc. thesis (Muir).
- The Snowblind Bay Formation (Lower Devonian) is divisible into 3 facies associations, which occur in ascending order as follows: 1) tidal flat association, with rippled sandstone, burrowed siltstone, salt casts, flaser bedding etc. Minor alluvial conglomerates are present; 2) conglomerate/sandstone association, representing deposition or a distal alluvial fan complex; and 3) conglomerate association, representing the proximal region of the fan complex. Coarsening upward/fining-upward cycles are abundant.
- The formation represents the response to uplift of the extension of the Boothia structure into Cornwallis Island, causing alluvial fans to prograde directly across tidal flats. Paleocurrents directed towards the south and southeast indicate that the uplift extended north of the area investigated.
901. RUST, B.R., ZAITLIN, B., Univ. Ottawa (Geology):
The sedimentology of Paleozoic red bed successions in the Baie de Chaleur Region, Gaspé and New Brunswick, and their tectonic setting, 1979-81; M.Sc. thesis (Zaitlin).

- The sedimentology and tectonic setting of the following formations have been investigated. Pirate Cove and Fleurant formations (Devonian) and the Bonaventure Formation (Carboniferous). They represent various types of alluvial plain sedimentation, which occurred in response to various stages of plate margin deformation during the Acadian Orogeny (*sensu lato*).
902. SCHENK, P.E., PRIME, G., Dalhousie Univ. (Geology): Sedimentologic-stratigraphic studies of Early through Late Paleozoic sedimentary rocks of Nova Scotia, 1963-; M.Sc. thesis (Prime).
Early and Middle Paleozoics. The Maguma Zone is the largest unique block of the Appalachians, may be exotic as a part of another continent, and is prospected extensively now. Time 0 control is essential for relating detailed sedimentologic studies. Continued digestion will yield more acritarchs, Chitonozoa, possibly conodonts as well as macrofauna. The apparently glacio-genetic unit requires confirmation because of its paleogeographic implications. Strain analysis of widely spaced areas will assist construction of palinspastic maps. Analysis of rare earths may help trace the origin of Meguma sands.
Late Paleozoics. A variety of carbonate mounds are now being extensively drilled and mined for Pb/Zn. Detailed petrographic studies of polished slabs and thin sections are necessary to map and interpret them, especially the succession of diagenetic processes such as dolomitization and leaching. Almost no detailed petrographic work has been done on anhydrite, despite the great quantities of core now available and rotting to gypsum (a major resource of the province). Preliminary work reveals several major varieties of anhydrite, as well as massive, large scaled replacement of microdolomite by anhydrite. The basal Macumber carbonate is a remnant of this precursor; mineralized carbonate mounds stood as hills above the anhydritizing fluids. Provenance and dispersal study of Carboniferous redbeds indicate topographic reversal within oblique-slip, wrench fault tectonics.
903. SHILTS, W.W., Geol. Surv. Can.: Mineral indicator tracing, southern Keewatin, 1970-.
904. SONNEVELD, E.M., BARNES, W.C., Univ. British Columbia (Geological Sciences): Lithofacies analysis of the lower Mannville Group in an area northeast of Calgary, using seismic stratigraphy and statistical mapping methods, 1981-82; M.Sc. thesis (Sonneveld).
905. TILLEY, B.J., Alberta Research Council (Geol. Surv.): Sedimentology and clay mineralogy of the glauconitic sand in the Suffield area, Northeastern Alberta, 1980-82.
Heavy gravity oil (12-17° API) occurs in the Glauconitic Sand Formation of the Lower Cretaceous Mannville Group in southeastern Alberta. The Alberta Energy Company Suffield heavy oil pilot project, located on the north-western corner of the Suffield block, is the application of in-situ combustion in a reservoir whose oil zone is underlain by water. The objective of this geological study is to predict possible production problems due to reservoir mineralogy and diagenesis and reservoir geometry and to characterize the reservoir rock with engineering considerations in mind. This will be done through core studies, thin sections, x-ray diffraction and scanning electron microscope examinations of samples from the study area. Selected samples will also be subjected to simulated conditions similar to those experienced in a wet firehold in-situ recovery program, and the resulting rock characteristics analyzed.
906. WAHEED, A., MIAL, A.D., Univ. Toronto (Geology): Sedimentology of some coal deposits in southern Alberta, 1981-82; M.Sc. thesis (Waheed).
The project is aimed at the sedimentology of coal-bearing rocks of Upper Cretaceous - Lower Tertiary age in Alberta Plains. Studies will be centred on the sedimentology of mainly alluvial facies and possibly some deltaic facies.
907. WELLSTEAD, C.F., Redpath Museum, McGill Univ. (Biology): Sedimentology of Norden Bridge and Egelhoff Fossil quarries (Miocene) of north-central Nebraska, 1976-81.
Measured sections demonstrate the position of the Norden Bridge and Egelhoff fossil quarries in the local stratigraphy and show the Egelhoff quarry to be topographically higher. The sections do not resolve the relative stratigraphic positions of the quarries. Descriptions of the sediments at the two quarries demonstrate that coarser sediments exist at Norden Bridge Quarry. However, these coarse sediments, as well as the remains of large vertebrates, are limited to two particular beds at Norden Bridge, while three other beds comprise sediments either finer or statistically indistinguishable from those at Egelhoff. The association of large clasts and large bones suggests hydraulic sorting of these sedimentary particles and supports the suggestion that the difference in fossil faunas between the two quarries is depositional in nature. Evaluation of cross-strata sets at both quarries indicates that local paleocurrents do not reflect the easterly regional dip of local Tertiary strata.
908. WIGHTMAN, D.M., Alberta Research Council (Geol. Surv.): Cold Lake oil sands, Alberta, 1980-84.
To gain insight into the controls on oil saturation in the Lower Cretaceous Mannville Group by doing regional stratigraphy and detailed facies analysis on the sands.
909. YAGISHITA, K., MIAL, A.D., Univ. Toronto (Geology): Cretaceous sedimentation in the Queen Charlotte Islands, British Columbia: lithofacies, paleocurrent, petrographic and diagenetic analyses of sandstones, 1980-83; Ph.D. thesis (Yagishita).
Despite a widespread interest in basin analysis of the tectonically active Circum-Pacific Belt, no systematic studies of sedimentology have been carried out in the west coast of Canada. To clarify the sedimentological aspects of the deposits formed during the Cretaceous, that is considered to be the most crucial time in the history of Circum-Pacific orogenic movement. Components of this project will include 1) lithology of the four Cretaceous formations, 2) paleocurrent analyses, 3) petrography of the sandstones, and 4) diagenesis of sediments.
- RECENT AND UNCONSOLIDATED SEDIMENTS/
SÉDIMENTS RÉCENTS ET NON CONSOLIDÉS**
910. ADSHEAD, J.D., Geol. Surv. Can.: Geological characterization of Arctic lakes: sediment properties and sedimentary processes, 1977-.
911. AMOS, C.L., Geol. Surv. Can.: Sediment dynamics at the head of the Bay of Fundy, 1978-.
- See:** The sedimentary character of the Minas Basin, Bay of Fundy; Geol. Surv. Can., Paper 80-10, p. 123-152, 1980.
912. AMOS, C.L., Geol. Surv. Can.: Stability and transport of sediments in Continental Shelves, 1980-.
913. BORNHOLD, B.D., Geol. Surv. Can.: Marine surficial geology and sedimentation, British Columbia, 1975-.
914. BORNHOLD, B.D., Geol. Surv. Can.: Coastal geology - British Columbia, 1978-.
- See:** Morphology and littoral processes of the Pacific Coast of Canada; Geol. Surv. Can., Paper 80-10, p. 339-380, 1980.
915. BUCKLEY, D.E., Geol. Surv. Can.: Multidisciplinary environmental marine geological analysis of the Miramichi Estuary and Bay, New Brunswick, 1975-1980.
916. CHEEL, R.J., MIDDLETON, G.V., McMaster Univ. (Geology): Hydraulic equivalence studies of the origin of plane lamination and the nature of upper flow regime sediment transport, 1979-84; Ph.D. thesis (Cheel).
917. DALRYMPLE, R.W., Queen's Univ. (Geological Sciences): Sedimentation dynamics and facies modelling of Cobequid Bay sediments - a macrotidal estuary, 1979-84.
See: Geomorphology and sedimentology of the Bay of Fundy; GAC-MAC Field Trip Guidebook, Trip 23, 1980.
Cobequid Bay and the two rivers that extend inland from its head constitute a sand-dominated, macrotidal estuary. Three major facies areas can be recognized from the seaward end: an area of elongate, tidal sand bars; an area of high-energy (upper flow regime) sand flats surrounded by lower-energy sand and mud flats; and the tidally-influenced meandering rivers. All aspects of the physical sedimentology of these three areas is under investigation, with the aim of developing a comprehensive facies model for such an environment. The general characteristics of the outer sand bars are now well documented, and future work will concentrate on the sand flats and tidally-influenced rivers. Detailed studies of the hydraulic regime will be related to information on sedimentary structures and sediment size characteristics. The vertical sequence of deposits present in the areas will be examined using a portable vibrocorer which is presently under construction.
918. DAY, T.J., Geol. Surv. Can.: Gravel stream beds, 1975-.
919. DAY, T.J., Geol. Surv. Can.: Fluvial and mass wasting processes, Banks Island, District of Franklin, 1975-.
920. FILLON, R.H., Geol. Surv. Can.: Surficial geology and paleogeology of Saglé Bank, Labrador Shelf, 1976-.
- See:** Labrador Sea bio-, tepro-, oxygen isotopic stratigraphy and Late Quaternary paleoceanographic trends; Can. J. Earth Sci., vol. 17, no. 7, p. 831-854, 1980.
921. HENDRY, H.E., Univ. Saskatchewan (Geology): Stratigraphy and sedimentology of floodplain sediments, South Saskatchewan River Valley near Saskatoon, Saskatchewan, 1980-82.
To establish relationship between patterns of river migration as determined from meander-scar topography and stratigraphy of alluvial plain sediments.
922. JANS, L.F., Geol. Surv. Can.: Stratigraphy and sedimentology of the Mesozoic and Tertiary rocks of the Atlantic continental margin, 1971-.
923. LAST, W.M., Univ. Manitoba (Earth Sciences): Sedimentology of saline lakes in southern Saskatchewan, 1981-84.
The hydrochemical and biological characteristics of the saline and hypersaline lakes in southern Saskatchewan have been studied for over fifty years. However, despite the fact that several of the lakes are an important source of sodium sulfate, there exists very little modern sedimentological or stratigraphic data from these lakes. This project will 1) examine the modern sedimentary facies patterns and distribution within selected saline lakes; 2) study the genesis and diagenesis of both clastic and chemical sediments in the basins; and 3) identify and interpret the physical, chemical and biological changes that have occurred during the post-glacial period.
Because the lakes occupy closed basins, their sediments are good indicators of changes in water levels and the hydrologic budget within each watershed. The stratigraphic sequence is thus a sensitive record of fluctuations in climate over the past 13,000 years. Furthermore, both the modern and post-glacial sediments within these saline lakes offer an excellent and relatively inexpensive opportunity to study various diagenetic reactions involving both clastics and chemical precipitates.
924. LUTERNAUER, J.L., Geol. Surv. Can.: Fraser Delta sedimentation, British Columbia, 1974-.
- See:** Genesis of morphologic features on the western delta front of the Fraser River, British Columbia - status of knowledge; Geol. Surv. Can., Paper 80-10, p. 381-396, 1980.

925. LUTERNAUER, J.L., Geol. Surv. Can.: Marine delta sedimentation, British Columbia, 1979-.
926. MCLAREN, P., Geol. Surv. Can.: Environmental geology of eastern Arctic coasts, 1976-.
927. MUDROCH, A., Environment Canada (National Water Res. Instit., Environmental Contaminants Div.): Adsorption of metals on CaCO_3 , 1980-81.
928. OTTO, J.E., DALRYMPLE, R.W., Brock Univ. (Geological Sciences): Terrain characteristics and physical characteristics in small lagoon complexes, 1980-82; M.Sc. thesis (Otto).
To obtain information on the existing sedimentation patterns and processes operating in the lagoons at the mouths of the Sixteen-Mile and Twenty-Mile Creeks, on Lake Ontario, and to trace the development of these lagoons over the last 4000 years. These physical data together with information on the temporal and spatial distribution of pollutants will aid in assessing the role of such lagoons as pollution traps.
929. PELLETIER, B.R., Geol. Surv. Can.: Bottom studies of the Beaufort Sea, 1972-.
930. RASHID, M.A., Geol. Surv. Can.: Geochemical transformations and reactions of organic compounds in Recent marine sediments, 1975-.
931. REINSON, G.E., Geol. Surv. Can.: Shelf environments of central Labrador and Ungava Bay, Newfoundland, 1979-.
932. RUKAVINA, N.A., Environment Canada (National Water Res. Instit., Hydraulics Div.): Time-lapse photographic studies of nearshore erosion and bottom changes, 1977-82.
Previously undocumented effects of winter storms on nearshore erosion were recorded by an underwater photologger system during the period December 1979 to May 1980. The resultant film shows several episodes of sediment resuspension and coarse-particle movement associated with storms. Moderate to high concentrations of suspended sediment were observed for about 30 per cent of the study period.
933. RUKAVINA, N.A., Environment Canada (National Water Res. Instit., Hydraulics Div.): Nearshore profile changes in the Great Lakes, 1978-82.
- See:
Seasonal changes in the nearshore profile of Van Wagner's Beach, Hamilton, Ontario; Abstracts, 1980 Conf. Great Lakes Res., IAGLR, May 1980.
934. SCHAFER, C.T., Geol. Surv. Can.: The Recent paleoclimatic and paleoecologic records in fjord sediments, 1980-.
935. SHEPPERD, J.E., BARNES, W.C., Univ. British Columbia (Geological Sciences): Development of a salt marsh on the Fraser Delta at Boundary Bay, British Columbia, 1980-81; M.Sc. thesis (Shepherd).
936. TAYLOR, R.B., Geol. Surv. Can.: Coastal morphology and sediment dynamics, southeast and east Cape Breton Island, Nova Scotia, 1980-.
937. VILKS, G., Geol. Surv. Can.: Pleistocene-Holocene basin sedimentation, 1975-.
938. MOORE, T.R., McGill Univ. (Geography): Soil forming processes, opal photoliths and archaeological features in boreal, subarctic and arctic soils, 1979-82.
Three main objectives: 1) The reasons for the northward decrease in podzolization along the boreal-subarctic-arctic transect in eastern Canada are being investigated through an examination of the ability of aqueous extracts of species to mobilise Fe and Al from their amorphous hydroxides. Initial experiments have shown that mobilising powers are highest in tundra species, yet podzolization is weakly expressed in arctic and subarctic soils. This suggests that the organic soil horizons play a major role in modifying the mobilising power of the plant extracts, have passed through arctic, subarctic and boreal organic horizons. 2) Opal photoliths are being extracted from arctic, subarctic and boreal plants, with a view to their use as indicators of palaeo-vegetation patterns. 3) Soils beneath pre-historic Cree and Montagnais settlement sites in the Caniapiscau region are being analysed for their potential use in the identification and interpretation of archaeological features. Studies of colour, iron, magnetic susceptibility, pH, organic matter fractionation and extractable nutrients are being made on selected samples and then applied to a grid network of samples.
939. MORAN, S.R., WALLICK, E.L., MACYK, T., LI, R., TRUDELL, M., SCAFE, D.W., Alberta Research Council (Geol. Surv.): Reclamation of open-pit mined coal deposits, 1979-84.
The overall objectives of this project are to assess the potential for reclamation of lands that are subject to large scale surface mining of coal in the plains region of Alberta and to assess the long-term impacts of mining and reclamation practices on the land and water resources of the region. More specifically, the objectives of the project are: to evaluate the potential for change, over time, in the productive capability of soils that are established on reclaimed landscapes as a result of the release of salts through weathering of cast overburden material followed by transport and accumulation of salt by subsurface water. To evaluate the potential for the change, over time, in the chemical quality of groundwater within or beneath reclaimed areas and of surface water that is fed from reclaimed areas. To evaluate the potential for reoccupation and utilization of post-mining landscapes from the standpoint of availability of water supply, surface subsidence and stability, and slope stability adjacent to valley edges. To evaluate whether techniques of surface contouring or selective material placement can significantly mitigate any potential deleterious conditions that are identified as likely to occur.
- ### SOIL SCIENCE/PÉDOLOGIE
- ### STRATIGRAPHY/STRATIGRAPHIE
- #### PRECAMBRIAN/PRÉCAMBRIEN
940. AITKEN, J.D., Geol. Surv. Can.: Helikian and Hadrynian stratigraphy Eastern Cordilleran and Interior Platform, 1973-.
941. CAMPBELL, F.H.A., Geol. Surv. Can.: Geology of the Coronation Gulf area, District of Mackenzie, 1977-.
942. CHANDLER, F.W., Geol. Surv. Can.: Geology of the Helikian sediments and adjacent gneisses, Fury and Hecla Strait area, District of Franklin, 1979-.
- See:
Potassium-argon age of Late Proterozoic Fury and Hecla Formation, Northwest Baffin Island, District of Franklin; Geol. Surv. Can., Paper 81-1A, p. 37-40, 1981.
943. EISBACHER, G.H., Geol. Surv. Can.: Stratigraphy and sedimentation of the Proterozoic Rapitan Group and related rocks, Mackenzie, Wernecke and Ogilvie Mountains, District of Mackenzie and Yukon Territory, 1975-.
944. EISBACHER, G.H., Geol. Surv. Can.: Stratigraphy, sedimentation, structure and tectonic setting of the Windermere Supergroup, 1979-.
945. FRALICK, P.W., MIAL, A.D., Univ. Toronto (Geology): Depositional history and controls on lithic variability in the basal Huronian Matinenda Formation of Ontario, 1980-83; Ph.D. thesis (Fralick).
The Huronian Matinenda Formation represents the first clastic influx into a basin developed at a boundary between two crustal plates. A 3.5 B.Y. old plate is located to the south and a 3.7 B.Y. old terrain underlies and stretches to the north of the basin. This northern terrain appears to have supplied sediment to the Matinenda Formation.
The limited sedimentology carried out on the Matinenda Formation by various authors points towards a braided stream origin for the unit and the placer uranium deposits it contains. This study will investigate this possibility and attempt to construct a paleogeographic sketch of the area during the interval of Matinenda deposition. On a smaller scale provenance-dispersal studies will be conducted including an investigation of hydrodynamic factors controlling heavy mineral concentration.
946. HENDERSON, J.R., Geol. Surv. Can.: Geology of the Foxe Fold belt (East half), Baffin Island, District of Franklin, 1979-.
947. HOFFMAN, P.F., Geol. Surv. Can.: Hepburn batholith, Hepburn Lake map-area, District of Mackenzie, 1977-.
- See:
Revision of stratigraphic nomenclature, foreland thrust-fold belt of Wopmay Orogen, District of Mackenzie; Geol. Surv. Can., Paper 81-1A, p. 247-250, 1981.
Contemporaneous thrusting and conjugate transcurrent faulting during the second collision in Wopmay Orogen: implications for the subsurface structure of post-orogenic outliers; *ibid.*, p. 251-257, 1981.
948. JACKSON, G.D., Geol. Surv. Can.: Operation Borden, District of Franklin, 1977-.
949. MCGLYNN, J.C., Geol. Surv. Can.: Stratigraphy, sedimentology and correlation of Nonacho Group, District of Mackenzie, 1965-.
950. MCGLYNN, J.C., Geol. Surv. Can.: A study of Bear Batholith rocks and basement to the Bear batholith, 1978-.
951. WALLACE, H., Ontario Geol. Surv.: Geology of the Red Lake area, a synoptic survey Ontario, 1978-83.
The geology and mineral deposits of the Red Lake Belt are being reviewed in light of all data now available from government mapping, company exploration programs and university-based research. The ultimate goal of the project is to unravel the stratigraphic and structural complexities of this very important mining camp, and to determine controlling factors for gold mineralization.

952. ZWANZIG, H.V., SYME, E.C., GILBERT, H.P., Manitoba Dept. Energy and Mines (Mineral Res. Div.):
Lynn Lake project, Manitoba, 1976-82.
- See:**
Geology of the metavolcanic and volcanoclastic metasedimentary rocks in the Lynn Lake area; Manitoba Mineral Res. Div., Geol. Paper GP 80-1, 1980.
Progress on the Lynn Lake project includes completion of the first publication and final maps in 1981. Work continues on aspects of stratigraphy, structure and geochemistry (including trace-elements, REE). New fieldwork was done by H.P. Gilbert to complete mapping at 1:50 000, the Barrington Lake-Magrath Lake portion of the Lynn Lake greenstone belt.
- PALEOZOIC/PALÉOZOÏQUE**
953. AITKEN, J.D., Geol. Surv. Can.:
Lower Paleozoic stratigraphy, southern Rocky Mountains, Alberta and British Columbia, 1972-
954. BARNES, C.R., NORFORD, B.S., SKEVINGTON, D., Univ. Waterloo (Earth Sciences), Geol. Surv. Can.:
Correlation chart of Ordovician strata throughout Canada, 1978-81.
955. BEAUCHAMPS, B., MAMET, B., Univ. Montréal (Géologie):
Coelienates, foraminifères et algues, Formation Shunda, Monkman Pass, Colombie-Britannique, 1981-83; thèse de maîtrise (Beauchamps).
956. BOLTON, T.E., Geol. Surv. Can.:
Silurian-Ordovician macrobiostratigraphy of Anticosti Island, Québec, 1974-.
- See:**
Colonial coral assemblages and associated fossils from the Late Ordovician Honorat Group and White Head Formation, Gaspé Peninsula, Québec; Geol. Surv. Can., Paper 80-1C, p. 13-28, 1980.
Studies of the Early Silurian Anthozoa of Chaleurs Group, Gaspé Peninsula and Late Ordovician and Early Silurian Anthozoa of Anticosti Island, Québec, have been completed to provide background material for the 1981 USGS Summer field conference on Anticosti Island and Gaspé Peninsula.
957. BRISEBOIS, D., MAMET, B., Univ. Montréal, (Géologie):
Stratigraphie du Permo-Carbonifère des Îles de la Madeleine, Québec, 1980; thèse de doctorat (Brisebois).
958. BROUGHTON, P.L., Saskatchewan Geol. Surv.:
Stratigraphy of the Interlake Group (Silurian) in southern Saskatchewan, 1981-83.
The Interlake Group, representing the Silurian System in southern Saskatchewan, is divided into lower, middle and upper carbonate strata, but informally into five units. This project will define appropriate units into formation ranks, map their subsurface extents and evaluate the stratigraphic and sedimentologic relationships.
959. CARSON, D.M., TELFORD, P.G., Ontario Geol. Surv.:
Paleozoic stratigraphy of Peterborough-Kingston area, Ontario, 1979-81.
In the 1980 Field season, the Kaladar, Tweed, Belleville, Wellington, Tichborne, Sydenham and Yorkshire Island N.T.S. sheets were mapped at a scale of 1:50 000. Preliminary maps for these areas are currently in press. In the 1981 Field season, the Bath, Wolfe Island and Gananoque N.T.S. sheets will be mapped and preliminary maps for the Bath-Yorkshire Island and Gananoque-Wolfe Island areas will be prepared. Following completion of this field work, a formal geological report covering the areas mapped in the 1979, 1980 and 1981 field seasons will be produced.
960. CECILE, M.P., Geol. Surv. Can.:
Lower Paleozoic basin - to - platform relationships in the Cordillera, District of Mackenzie - British Columbia, 1977-.
- See:**
Nahanni integrated multidisciplinary pilot project geochemical studies Part I: Geochemistry and mineralogy of shales, cherts, carbonates and volcanic rocks from the Road River Formation, Misty Creek Embayment, Northwest Territories and Part 2: Some thoughts on the source, transportation and concentration of elements in shales of the Misty Creek Embayment, Northwest Territories; Geol. Surv. Can., Paper 80-1B, p. 149-171, 1980.
Occurrence of Oldhamia and other trace fossils in Lower Cambrian argillites, Nidderly Lake map area, Selwyn Mountains, Yukon Territory; Geol. Surv. Can., Paper 81-1A, p. 281-290, 1981.
961. CHRISTIE, R.L., Geol. Surv. Can.:
Geological reconnaissance, southeastern margin of Franklinian geosyncline, 1980-.
962. DIXON, O.A., NARBONNE, G.M., JONES, B., Univ. Ottawa (Geology), Univ. Alberta (Geology):
Upper Silurian carbonate facies of Somerset Island, Canadian Arctic, 1971-.
- See:**
Event correlation in Late Silurian rocks of the Canadian Arctic; Amer. Assoc. Petrol. Geologists, Bull., vol. 65, p. 303-311, 1981.
963. EASTWOOD, G.E.P., British Columbia Energy, Mines, Petrol. Res. (Geol. Div.):
Sicker project - Mount Richards area, British Columbia, 1978-81.
- See:**
Geology of the Mt. Richards area (part of 92B/13); British Columbia Ministry Energy, Mines, Petrol. Res., Prel. map 40, 1980.
In 1980 the detailed mapping was extended to the east and southeast to cover gaps in the established section caused by numerous intrusions and extensive overburden. The progression of rock types in the Sicker Group was confirmed, and the overall structure of Mount Richards appears to be homoclinal. This homoclinal succession should continue westward through Little and Big Sicker Mountains. The purpose is to delineate stratigraphy in the Sicker Group and apply the stratigraphy in an attempt to understand the genesis of polymetallic mineral deposits such as Lenora-type on Big Sicker Mountain.
964. FAY, I., CALDWELL, W.G.E., COPPER, P., Univ. Saskatchewan (Geological Sciences); Laurentian Univ. (Geology):
Early Silurian (Llandoveryan) reefs of Manitoulin Island, Ontario, 1979-82.
To investigate the stratigraphic position and geometry of a series of patch reefs in the Early Silurian sequence of Manitoulin Island; to describe the reef and off-reef sedimentary rocks exposed at the surface and cored in shallow drill holes; to identify and describe the frame-building organisms of the reefs; to describe systematically the solitary and compound rugose and tabulate corals and the stromatoporoids found in the reefs and associated rocks; to explain the association of barrier and patch reefs; to attempt to relate the reefs to others of younger age found higher in the Silurian sequence of the Michigan basin; and to discuss the ages and positions of the reefs in a context of the geological evolution of the Michigan basin. An attempt also may be made to compare the Manitoulin reefs to those of similar age found in other cratonic basins.
965. FRITZ, W.H., Geol. Surv. Can.:
Cambrian biostratigraphy of the Canadian Cordillera, 1965-.
- See:**
Two new formations in the Lower Cambrian Atan Group, Cassiar Mountains, north-central British Columbia; Geol. Surv. Can., Paper 80-1B, p. 217-225, 1980.
Two Cambrian stratigraphic sections near Gataga River, northern Rocky Mountains, British Columbia; Geol. Surv. Can., Paper 80-1C, p. 113-119, 1980.
Two Cambrian stratigraphic sections, eastern Nahanni map area, Mackenzie Mountains, District of Mackenzie; Geol. Surv. Can., Paper 81-1A, p. 145-156, 1981.
966. GELDSETZER, H.H.J., Geol. Surv. Can.:
Carboniferous and Triassic strata of Appalachian region, 1974-.
967. GELDSETZER, H.H.J., Geol. Surv. Can.:
Middle and Upper Devonian rocks of central British Columbia and Alberta, 1979-.
968. GILES, P.S., BOEHNER, R.C., Nova Scotia Dept. Mines, Energy:
Windsor Group stratigraphy and paleogeography and their relationship to base metal concentration, 1975-81.
Windsor Group stratigraphic research is expanding into Cape Breton Island and regional synthesis will hopefully soon be possible. Present emphasis will focus upon the River Denys basin, currently under intensive exploration for potash minerals.
969. GLOBENSKY, Y., Québec Ministère Énergie et Ressources:
Géologie de la région de St.-Chrysostome et partie sud de Lachine, Québec, 1981-82.
Révision de la carte géologique de cette région avec production d'une nouvelle carte et rapport géologique. Le tout s'insère dans une compilation de toutes les Basses Terres du Saint Laurent, avec préparation d'une nouvelle carte géologique de tout ce secteur.
970. GOODBODY, Q., JONES, B., Univ. Alberta (Geology):
Biostratigraphy of the Bird Fiord and Weatherall Formations of Arctic Canada, 1980-84; Ph.D. thesis (Goodbody).
Objectives: Elucidation of the stratigraphy of the Bird Fiord Formation on Ellesmere Island, Devon Island, Bathurst Island, and its relationship to the laterally partly equivalent Weatherall Formation on Melville Island; detailed study of the sedimentology of these formations and determination of depositional environments through time; detailed study of the faunas and their sedimentological setting - in particular and taxonomy and structure of the brachiopod faunas; and the biostratigraphy of the lower-middle Devonian formations of Arctic Canada.
971. HOWIE, R.D., Geol. Surv. Can.:
Compilation of geoscientific data in the Upper Paleozoic basins of southeastern Canada, 1971-.
972. MCCUTCHEON, S.R., MOORE, R., RUITENBERG, A.A., New Brunswick Dept. Nat. Res. (Geol. Surv. Br.), Acadia Univ.:
Stratigraphy and paleogeography of the Windsor Group, southern New Brunswick, 1980-81; M.Sc. thesis.
973. MAYR, U., Geol. Surv. Can.:
Stratigraphy and correlation of lower Paleozoic subsurface, Arctic Island, 1975-.
- See:**
Stratigraphy and correlation of Lower Paleozoic formations, subsurface of Bathurst Island and adjacent smaller islands, Canadian Arctic Archipelago; Geol. Surv. Can., Bull. 306, 1980.
974. MONGER, J.W.H., Geol. Surv. Can.:
Upper Paleozoic rocks of western Canadian Cordillera, 1972-.
975. MORROW, D.W., Geol. Surv. Can.:
Stratigraphy, sedimentology and diagenesis of Paleozoic rocks in the southern Mackenzie Mountains and northern Rocky Mountains, Yukon Territory - British Columbia, 1975-.
- See:**
The Early to Middle Devonian Bear Rock Formation in the type section and in other surface regions, District of Mackenzie; Geol. Surv. Can., Paper 81-1A, p. 107-114, 1981.
976. NARBONNE, G.M., DIXON, O.A., Univ. Ottawa (Geology):
Stratigraphy, reef development and trace fossils of the Late Silurian Douro Formation in the central Arctic Islands of Canada, 1975-81; Ph.D. thesis (Narbonne).
- See:**
Selective preservation of trace fossils in fine-grained limestones from the Upper Silurian of Arctic Canada; Geol. Soc. Am., Abstr. with Progr., vol. 12, no. 7, p. 490, 1980.
977. NASSICHUK, W.W., Geol. Surv. Can.:
Stratigraphy and paleontology of Upper Paleozoic rocks on parts of Ellesmere and Axel Heiberg Islands, District of Franklin, 1968-.
- See:**
Stratigraphy and sedimentation of the Otto Fiord Formation - a major Mississippian - Pennsylvanian evaporite of subaqueous origin in the Canadian Arctic Archipelago; Geol. Surv. Can., Bull. 286, 1980.

978. NASSICHUK, W.W., Geol. Surv. Can.: Carboniferous biostratigraphy in the northern Yukon, British Columbia, and Alaska, 1975-.
979. NORFORD, B.S., Geol. Surv. Can.: Ordovician and Silurian biostratigraphy of British Columbia, Alberta, Manitoba, Yukon, Mackenzie and Franklin, 1961-.
980. NORRIS, A.W., Geol. Surv. Can.: Devonian biostratigraphy of the northern Yukon Territory and adjacent District of Mackenzie, 1970-.
981. OKULITCH, A.V., Geol. Surv. Can.: Stratigraphy and structure of the Mount Ida Group, southern British Columbia, 1972-80.
982. PACKARD, J.J., DIXON, O.A., Univ. Ottawa (Geology): Upper Silurian Barlow Inlet Formation on Eastern Cornwallis Island, Canadian Arctic, 1977-82; Ph.D. thesis (Packard).
983. PAJARI, G.E., KARLSTROM, K., PICKERILL, R.K., CURRIE, K.L., BLACKWOOD, F., Univ. New Brunswick (Geology), Geol. Surv. Can.: The stratigraphy and structure of the Ordovician-Silurian rocks of the Comfort Cove area, Newfoundland, 1981-82.
- See:**
An Early Paleozoic plate-tectonic model of Newfoundland; Earth and Planetary Sci. Letter, vol. 48, p. 8-14, 1980.
The geological work will focus on the relationship between the Davidville, Indian Islands and Botwood Groups between the Carmanville and Dunnage mélanges in northern Newfoundland. Preliminary work has indicated that a considerable section of the rocks previously mapped as the Silurian Indian Islands Group consists of olistostromed sediments containing basic and ultrabasic olistoliths. The relationship between these olistostromed sediments and the overlying siltstones (containing Favosites and crinoid discs) is controversial.
Structural and stratigraphic studies will be focused on the regional geometry of strata between the Dunnage and Carmanville mélanges. Suggestions have been made that the two mélanges were coeval.
984. PEDDER, A.E.H., Geol. Surv. Can.: Upper Silurian and Devonian biostratigraphy western and northern Canada, 1968-.
- See:**
Devonian corals of late Eifelian age from the Ogilvie Formation of Yukon Territory; Can. J. Earth Sci., vol. 17, no. 5, p. 594-617, 1980.
985. PINARD, S., MAMET, B., Univ. Montréal (Géologie): Foraminifères et algues, Formation de Pavlovich, Alaska, 1980-82; thèse de maîtrise (Pinard).
986. SANFORD, B.V., Geol. Surv. Can.: Lower Paleozoic geology of Eastern Canada, 1975-.
987. THOMPSON, R.L., Geol. Surv. Can.: Structure and stratigraphy of Paleozoic and lower Mesozoic rocks in Halfway River map-area, northeastern British Columbia, 1975-.
988. THORSTEINSSON, R., Geol. Surv. Can.: Structure and stratigraphy of western Devon Island and Vendom Fiord map-area, Ellesmere Island, District of Franklin, 1976-.
989. VAN DE POLL, H.W., Univ. New Brunswick (Geology): Bedrock geology of Prince Edward Island, 1977-81.
- See:**
Report on the geology of Prince Edward Island; Dept. Tourism, Industry and Energy, P.E.I. 1981.
990. VON BITTER, P.H., AUSTIN, R.L., WEST, L., Royal Ontario Museum (Invert. Palaeontology), Univ. Southampton (Geology): Microfaunal correlation using conodonts between the Dinantian of Atlantic Canada, England and Ireland, 1981-83.
991. VON BITTER, P.H., PLINT-GEERL, H.A., Royal Ontario Mus. (Invert. Palaeo.), Univ. Toronto (Geology): Conodont biostratigraphy of the Codroy Group (Lower Carboniferous), southwestern Newfoundland, Canada, 1977-81.
Four, stratigraphically successive, conodont assemblage zones have been recognized in the Lower Carboniferous Codroy Group of southwestern Newfoundland. The *Diplognathodus*, *Taphrognathus*, and *Cavusgnathus* Zones are correlated with the A, lower B, and upper B macrofauna subzones of Bell (1929) respectively, and the *Gnathodus* Zone is correlated with the C, D, and E macrofauna subzones collectively. The discovery of conodonts of the *Diplognathodus* Zone in marine strata that are stratigraphic and lithologic correlatives of the Macumber and the Gays River formations of Nova Scotia, now makes it possible to microfaunally characterize the A subzone, a macrofaunal subzone established in the Windsor Group of Nova Scotia.
992. YOLE, R.W., IRVING, E., Carleton Univ. (Geology): Stratigraphy and displacement history of Vancouver Island, British Columbia, 1969-82.
- See:**
New paleomagnetic evidence for displaced terranes in British Columbia; Geol. Assoc. Can., Spec. Paper 20, p. 442-456, 1980.
Displacement of Vancouver Island paleomagnetic evidence from the Karmutsen Formation; Can. J. Earth Sci., vol. 17, p. 1210-1288, 1980.
1) To determine by geological and geophysical methods whether Paleozoic and post-Triassic rocks of Vancouver Island have origins and displacement histories compatible with those based on Late Triassic data; 2) to more accurately define the age(s) of Sicker Group rocks by geological and geochronological methods; 3) to determine whether major unconformities are present within the Paleozoic sequence of Vancouver Island; and to compare Paleozoic/Mesozoic sequences and geologic history of Vancouver Island and other parts of the Insular Belt.
993. YOLE, R.W., YUAN, P., NENTWICH, F., Carleton Univ. (Geology): Stratigraphic, petrographic, and diagenetic studies of subsurface Mesozoic and Tertiary deltaic sequences, offshore areas northern and eastern Canada, 1977-82; M.Sc. theses (Yuan, Nentwich).
- See:**
Petrography, stratigraphy and petroleum potential of Neocomian Missisauqua Formation, Sable Island area; Abstract, Atlantic Margin Nova Scotia Shelf, energy conf. Atlantic City, Eastern sections AAPG, SEPM, 1981.
Sedimentology and stratigraphy of the Early Tertiary Reindeer Formation in the subsurface Mackenzie Delta, Canada; Abstract, Third Internat. Symp. on Arctic Geology, Can. Soc. Petrol. Geol., 1981.
Subsurface studies of Mesozoic and Tertiary delta systems, emphasizing stratigraphic and petrographic aspects, are intended to refine models of deltaic sedimentation and diagenesis. The addition of such data to that obtained from log analysis and geophysical work will enhance the evaluation of petroleum potential and reservoir properties for future exploration and development.
- MESOZOIC/MÉSOZOÏQUE**
994. ASCOLI, P., Geol. Surv. Can.: Biostratigraphic zonation (Foraminifera - Ostracoda) of the Mesozoic and Cenozoic rocks of the Atlantic Shelf, 1971-.
995. CALDWELL, W.G.E., NORTH, B.R., Univ. Saskatchewan (Geological Sciences): Biostratigraphic studies in the Cretaceous System of Western Canada, 1960-.
- See:**
Cretaceous rocks and their Foraminifera in the Manitoba Escarpment; Geological Assoc. Can., Spec. Paper 21, 1981.
- Recent studies have concentrated on testing the validity of the foraminiferal zonal scheme for the Interior Plains of Canada (Caldwell et al., 1978) and its applicability to hitherto uninvestigated tracts of the plains (e.g. the Manitoba escarpment), and to some of the subordinate basins in the western interior of the United States (e.g. the Powder River basin of Wyoming) using surface and subsurface sections applied by the United States Geological Survey.
996. DIXON, J., Geol. Surv. Can.: Geology of the Beaufort - Mackenzie Basin, 1979-.
997. EMBRY, A.F., Geol. Surv. Can.: Mesozoic stratigraphy and basin analysis of the western Queen Elizabeth Islands, Arctic Archipelago, 1975-.
998. EMBRY, A.F., Geol. Surv. Can.: Mesozoic stratigraphy and basin analysis of eastern Sverdrup Basin, Arctic Archipelago, 1975-.
999. GIBSON, D.W., Geol. Surv. Can.: Stratigraphic and sedimentological studies of Lower Cretaceous rocks, Rocky Mountain Foothills and Front Ranges, Alberta and British Columbia, 1975-.
1000. GIBSON, D.W., Geol. Surv. Can.: Stratigraphy and sedimentology of the Lower Cretaceous Gething Formation, Rocky Mountain Foothills, Alberta and British Columbia, 1979-.
1001. HAYES, B.J.R., WILLIAMS, G.D., Univ. Alberta (Geology): Upper Jurassic and Lower Cretaceous stratigraphy of southeastern Alberta and northern Montana, 1978-81; Ph.D. thesis (Haynes).
To provide a systematic and comprehensive regional stratigraphic framework for the Upper Jurassic and Lower Cretaceous strata of a critical area of southern Alberta and northern Montana. The background reference research was completed in 1980. All data, including all applicable drill cores, from which thin sections and paleontological analyses were taken, and numerous geophysical logs, have been assembled. Hayes now compiling and correlating the data, with completion scheduled for Fall 1981.
1002. JANS, L.F., Geol. Surv. Can.: Reconnaissance field study of the Mesozoic sequences outcropping on the Iberian Peninsula, 1977-.
1003. JELETZKY, J.A., Geol. Surv. Can.: Cretaceous and Jurassic of Richardson Mountains, Porcupine Plains and Eagle Plains, Yukon Territory and District of Mackenzie, 1955-.
- See:**
Lower Cretaceous and Jurassic rocks of McDougall Pass area and some adjacent areas of north-central Richardson Mountains, northern Yukon Territory and northwestern District of Mackenzie, N.W.T. (NTS-116P/9 and 116P/10): a reappraisal; Geol. Surv. Can., Paper 78-22, 1980.
1004. MIAL, A.D., Univ. Toronto (Geology): Stratigraphy and sedimentology of the Eureka Sound Formation (Cretaceous-Paleogene), Canadian Arctic Islands, 1973-83.
- See:**
Late Cretaceous and Paleogene sedimentation and tectonics in the Canadian Arctic Islands; Geol. Assoc. Can., Spec. Paper 24, 1981.
The Eureka Sound Formation occurs in seven major basins within the Arctic Islands, and as continental terrace wedges flanking Baffin Bay and the Arctic Ocean. It was formed during the breakup of Sverdrup Basin by the several phases of the Eureka Orogeny, and is a synorogenic clastic deposit up to at least 3200 m thick deposited in fluvial, deltaic, lacustrine and shallow marine environments. Stratigraphic work has led to the development of a model for the tectonic control of sedimentation which can be related to the plate history of North America and Greenland.

1005. MONGER, J.W.H., Geol. Surv. Can.:
Stratigraphy of the Takla Group, northwestern British Columbia, 1975-.
- See:**
Upper Triassic stratigraphy, Dease Lake and Tulsequah map areas, northwestern British Columbia; Geol. Surv. Can., Paper 80-1B, p. 1-9, 1980.
1006. POULTON, T.P., Geol. Surv. Can.:
Mesozoic biostratigraphy and Jurassic paleontology of northern Yukon and adjacent District of Mackenzie, 1975-.
1007. POULTON, T.P., Geol. Surv. Can.:
Jurassic biostratigraphy of selected areas of western and Arctic Canada, 1976-.
- See:**
Quelques coraux du Trias et du Jurassique du Canada; Geol. Surv. Can., Paper 80-1C, p. 95-101, 1980.
1008. PRICE, L.L., Geol. Surv. Can.:
Geological observations at shafts of potash mines, Saskatchewan, 1964-.
1009. STELCK, C.R., BREDIN, C., KOKE, K., Univ. Alberta (Geology):
Biostratigraphy of Middle Cretaceous, 1947-; M.Sc. thesis (Bredin).
A paper has been submitted for publication with J. Armstrong on a subsurface occurrence of *Neogastropiles* in southern Alberta. The microfauna of a portion of the *Neogastropiles* zone, the *Haplophragmium swareri* subzone has been illustrated and will be presented shortly for publication. Koke's thesis on late Middle Albian forms is being readied for publication.
1010. STEVENS, G.R., COLWELL, J.A., Acadia Univ. (Geology):
Clay mineral diagenesis in Mesozoic strata of Labrador Shelf, 1978-81.
1011. STOTT, D.F., Geol. Surv. Can.:
Jurassic and Cretaceous Minnes Group, Alberta and British Columbia, 1978-.
- See:**
Minnes coal, northeastern British Columbia; Geol. Surv. Can., Paper 80-1C, p. 135-137, 1980.
1012. TEMPELMAN-KLUIT, D.J., Geol. Surv. Can.:
Stratigraphy, structure and metallogeny of the northern part of the Intermontane Belt (Whitehorse trough) in the Canadian Cordillera, 1977-.
1013. TIPPER, H.W., Geol. Surv. Can.:
Biostratigraphic study of Mesozoic rocks in the Intermontane and Insular Belts of the Canadian Cordillera, 1975-.
- See:**
Stratigraphy and paleontology of the Upper Yakoun Formation (Jurassic) in Alliford Bay syncline, Queen Charlotte Islands, British Columbia; Geol. Surv. Can., Paper 80-1C, p. 37-44, 1980.
Jurassic biostratigraphy, stratigraphy and related hydrocarbon occurrences of Queen Charlotte Islands, British Columbia; Geol. Surv. Can., Paper 81-1A, p. 209-212, 1981.
1014. WADE, J.A., Geol. Surv. Can.:
Regional subsurface geology of Mesozoic and Cenozoic rocks of the Atlantic Continental region, 1972-.
1015. WILLIAMS, G.L., Geol. Surv. Can.:
Palynostratigraphy and paleoecology of the Mesozoic and Cenozoic rocks of the Atlantic Continental margin, 1971-.
- CENOZOIC/CENOZOIQUE**
1016. CHURCH, B.N., British Columbia Ministry Energy, Mines, Petrol. Res. (Geol. Div.):
Tertiary stratigraphy and resource potential in south-central and central British Columbia, 1979-.
- See:**
Geology of the Kelowna Tertiary outlier - West half (part of 82E/13); British Columbia Ministry Energy, Mines, Petrol. Res., Prel. Map 39, 1980.
Geology of the Rock Creek Tertiary outlier (part of 82E/2&3); *ibid.*, Prel. Map 41, 1980.
Lithology and structural setting of the Penticton Group - a proposed new Tertiary stratigraphic unit in south-central British Columbia; Abstract, Cordilleran Sect., Geol. Assoc. Can., Vancouver, February, p. 14, 1981.
1017. MATHEWS, W.H., ROUSE, G.E., Univ. British Columbia (Geological Sciences):
Stratigraphy and palynology of Tertiary rocks near Gang Ranch, British Columbia, 1980-82.
- See:**
Tertiary geology and palynology of the Quesnel area, British Columbia; Bull. Can. Petrol. Geol., vol. 27, no. 4, p. 418-445, 1980.
1018. YORATH, C.J., Geol. Surv. Can.:
Stratigraphy and structure of the Pacific Continental Slope Shelf using manned and unmanned submersibles, 1977-.
- See:**
The Apollo structure in Tofino Basin, Canadian Pacific Continental Shelf; Can. J. Earth Sci., vol. 17, no. 6, p. 758-775, 1980.

STRUCTURAL GEOLOGY/TECTONICS/GÉOLOGIE STRUCTURALE/TECTONIQUE

ALBERTA/ALBERTA

1019. CHARLESWORTH, H.A.K., GAGNON, L., HILL, K.C., WRIGHTSON, C.B., KILBY, W.E., Univ. Alberta (Geology):
Structure and stratigraphy of coal-bearing and adjacent strata, Rocky Mountain foothills, central Alberta, 1976-; M.Sc. theses (Hill, Gagnon).
- See:**
Computerized downplunge projection and the analysis of low-angle thrust-faults in the Rocky Mountain Foothills of Alberta, Canada; Tectonophysics, vol. 66, p. 287-299, 1980.
Thrust-nappes in the Rocky Mountain Foothills; Geol. Soc. London, Spec. Paper 9, 1981.
Work on the stratigraphy and structure of the coal-bearing Lower Cretaceous Luscar Formation near Cadomin has been completed. A. completed, integrated and interactive computer-based, portable system for collecting, storing, editing, retrieving structural and stratigraphic data from outcrops and drillholes has been devised and is fully operational. Work has begun on the structure of the Upper Cretaceous-Lower Tertiary Saunders Group near Coal Valley, Alberta.
1020. LANGENBERG, C.W., Alberta Research Council (Geol. Surv.):
Structural analysis of macroscopic structures in the Shield of northeastern Alberta, 1976-81.
- See:**
The geometry of folds in granitoid rocks of northeastern Alberta; Tectonophysics, vol. 66, p. 269-285, 1980.
About 60 percent of my time was spent on the structural geology of northeastern Alberta. Some work was spent on analysis, the concity of some of the folds in the domal structures. A report that summarizes the structural geology of our study area will be finished in 1981.
1021. LANGENBERG, C.W., Alberta Research Council (Geol. Surv.):
Structural geology of coal measures, Alberta, 1981-83.
Generation of basic geological information for use in exploration, development and reclamation purposes, thus facilitating access to a notable energy resource.

BRITISH COLUMBIA/COLOMBIE-BRITANNIQUE

1022. BROWN, R.L., LANE, L.S., MURPHY, D.C., REES, C.R., Carleton Univ. (Geology):
Structural investigations in the Canadian Cordillera, 1973-; Ph.D. theses (Lane, Murphy, Rees).
- See:**
Structural and stratigraphic setting of the Downie Slide, Columbia River Valley; Can. J. Earth Sci., vol. 17, p. 698-709, 1980.
Objective: To understand the structure of the Omineca Belt of the southern Canadian Cordillera and its relationship to the Foreland Thrust and Fold Belt on the east and the Intermontane Belt on the west.
Projects in progress: Kinematic and dynamic investigation of mylonitic and brittle deformation in the Columbia River Fault zone; extent and tectonic significance of detachment zones in the southern Omineca Belt; displacement and strain history of basement gneisses exposed in the structural domes of the Shuswap terrane; documentation of major shearing along the western boundary of the southern Omineca Belt; evidence for obduction of ocean crust of the Intermontane Belt onto the Omineca Belt.
Approach: Key areas are identified and examined in detail. Field mapping is concentrated in these key areas and particular attention is paid to contact relationships. Working hypotheses are developed and tested against field and laboratory data.
Significance: Domal metamorphic terranes (core complexes) are known along the length of the North American Cordillera and are characteristic features of orogenic belts throughout the world, but their tectonic significance remains uncertain and controversial. The Shuswap terrane of the southern Omineca belt is the largest and best exposed of the domal terranes; its interpretation is essential to a tectonic synthesis of the Cordillera. The kinematic study of the Columbia River fault zone will contribute to our understanding of the subsurface processes in active fault zones.
1023. CAMPBELL, R.B., Geol. Surv. Can.:
Geology of the Cariboo Mountains, British Columbia, 1968-.
1024. HUTCHISON, W.W., Geol. Surv. Can.:
Prince-Rupert - Skenna map-areas, British Columbia, 1962-.
1025. LEECH, G.B., Geol. Surv. Can.:
Geological survey of NTS 82 J W₁ (Kananaskis Lakes, W₁), British Columbia, 1962-.
1026. MCTAGGART, K.C., NAGEL, J., WRIGHT, R.L., Univ. British Columbia (Geological Sciences):
Ultramafic rocks in the southwest British Columbia, 1970-80; M.Sc. theses (Nagel, Wright).
1027. OLLERENSHAW, N.C., Geol. Surv. Can.:
Structural analysis of the Fernie Basin, British Columbia, 1975-.
- See:**
Cadomin Formation, Flathead Ridge vicinity, southeastern British Columbia; Geol. Surv. Can., Paper 81-1A, p. 341-347, 1981.
1028. THOMPSON, R.L., Geol. Surv. Can.:
Detailed geological investigation of selected areas within the Foothills and Rocky Mountains of the Monkman Pass map area - with emphasis on the structure, 1978-.

NEW BRUNSWICK/NOUVEAU-BRUNSWICK

1029. GRANT, R.H., RAST, N., Univ. New Brunswick (Geology):
Carboniferous structure and stratigraphy in southern New Brunswick, Musquash to Pocologan, 1971-81; Ph.D. thesis (Grant).
1030. STRINGER, P., PAJARI, G.E., Univ. New Brunswick (Geology):
Analysis of polyphase deformation in selected areas of New Brunswick, 1972-82.
Five generations of cleavage (S_1 to S_5) and four generations of folding (F_2 to F_5) have been mapped in the Proterozoic/Paleozoic (?) meta-sedimentary and metavolcanic rocks of Grand Manan Island, New Brunswick. S_1 foliation is

- subparallel to primary layering, and L_1 lineation trends northwest-southeast. The prevalent trends of S_2 , S_3 and S_5 crenulation cleavages are northwest-southeast. F_4 folds associated with westward dipping S_4 folds associated with westward dipping S_4 crenulation cleavage verge eastward. Correlation of the polyphase deformation with the Taconian (?) or the Variscan deformations on the adjacent mainland is proposed.
1031. VAN DER PLUIJM, B., WILLIAMS, P.F., Univ. New Brunswick (Geology):
Deformational and metamorphic history of New World Island, Newfoundland, 1981-84; Ph.D. thesis (Van der Pluijm).
Aimed at understanding the development of deformational structures and the tectonic history of New World Island. Specific problems include the reported inverted sequence over much of the Island, cleavage transected folds and the place of faulting in the tectonic history.
1032. VAN STAAL, C.R., WILLIAMS, P.F., Univ. New Brunswick (Geology):
Deformation and metamorphism of the region around Brunswick no. 6 and Brunswick no. 12, Bathurst area, New Brunswick, 1980-83; Ph.D. thesis (van Staal).
The deformation and metamorphic history of the ore bodies and surrounding rocks will be studied with a view to 1) understanding the behaviour of sulphides during deformation, and 2) looking for possible localization of the ore bodies by rock deformation and/or metamorphism.
- #### NORTHWEST TERRITORIES/ TERRITOIRES DU NORD-OUEST
1033. DILLON-LEITCH, H., FYSON, W.K., Univ. Ottawa (Geology):
Structure and petrology of the Courageous Lake volcanic belt, Slave Province, Northwest Territories, 1978-81; M.Sc. thesis (Dillon-Leitch).
1034. DYKE, L.D., Geol. Surv. Can.:
Comparative study of Campbell, White and Barn uplifts, Yukon Territory - District of Mackenzie, 1973-.
1035. FALCONER, R.K.H., Geol. Surv. Can.:
Study of the structures and origin of Baffin Bay, 1976-.
1036. HURDLE, E., FYSON, W.K., Univ. Ottawa (Geology):
Stratigraphy, structure and metamorphism of the Yellowknife Supergroup, Clan Lake, Northwest Territories, 1981-83; M.Sc. thesis (Hurdle).
1037. OKULITCH, A.V., Geol. Surv. Can.:
Geology of the Penrhyn Fold Belt, Melville Peninsula, District of Franklin, 1976-.
1038. OKULITCH, A.V., Geol. Surv. Can.:
Structure and tectonics, Innuition Fold Belt, Ellesmere Island, District of Franklin, 1979-.
1039. PUGH, D.C., Geol. Surv. Can.:
Northern basin analysis program: Peel River map-area, District of Mackenzie and Yukon, 1971-.
1040. WILLIAMS, G.K., Geol. Surv. Can.:
Northern basin analysis program: Great Bear, Redstone and Great Slave map-areas, District of Mackenzie, 1971-.
- #### NOVA SCOTIA/NOUVELLE-ÉCOSSE
1041. DONOHUE, H.V., Jr., Nova Scotia Dept. Mines Energy:
Fourchu Group studies, southeastern Cape Breton Island, Nova Scotia, 1980-84.
See:
Geological studies in southeastern Cape Breton Island, 1980; Nova Scotia Dept. Mines Energy, Rept. 81-1, 1981.
To provide a regional stratigraphic, structural and plutonic setting for mineral occurrences and deposits in the Fourchu Group.
1042. HALL, L.R., STEVENS, G.R., COLWELL, J.A., BARR, S.M., Acadia Univ. (Geology):
Geology of the La Have River area, Lunenburg County, Nova Scotia, 1980-81; M.Sc. thesis (Hall).
Detailed study of the rocks of the Meguma Group has been undertaken. An attempt to subdivide the Halifax Formation lithologically was partially successful. Several small igneous sills were sampled; geochemistry indicates that these are metadacites. Of major interest is detailed structural synthesis as previous work emphasized lithostratigraphy and sedimentation, with little attention being devoted to detailed structural analysis. The main F_1 folds are generally upright or inclined, plunge steeply, trend northeast-southeast, and range in style from open to tight. There are two cleavages. S_1 is concordant with bedding, and may also be a bedding plane fissility, S_1 cleavage which strikes around 045° may be either slaty cleavage or crenulation cleavage. These rocks have also undergone jointing, minor faulting, and kinking.
- #### ONTARIO/ONTARIO
1043. CULSHAW, N., FYSON, W.K., Univ. Ottawa (Geology):
Structural evolution of gneisses, northern part of Harvey-Cardiff arch, Grenville Province, Ontario, 1976-81; Ph.D. thesis (Culshaw).
1044. MURRAY, M.J., MOORE, J.M., BARTLETT, J.R., DAVIDSON, A., BROWN, R.L., Carleton Univ. (Geology):
Stratigraphy and structural deformation of rocks of the Grenville Supergroup in Belmont and southern Methuen Townships, southeastern Ontario, 1980-81; M.Sc. thesis (Murray).
See:
Belmont and Southern Methuen Townships, Peterborough County; Ontario Geol. Surv., Paper 96, p. 92-95, 1980.
Field work has been completed on this project. Structural data have been compiled and plotted on nets. Petrographic thin sections of a variety of rocks have been studied and more are being made. The preliminary geology map and marginal notes have been submitted to the Ontario Geological Survey. Map overlays of structural data are in preparation.
The results indicate that there is a succession of layered rocks, the oldest in the north (Central Oak Lake) and the youngest in the southeast (Crowe Lake). There does not appear to be repetition of units, either by major faults or by large-scale folds. The general succession from oldest to youngest is intermediate to felsic tephra and derived sediments topped by marble, intermediate aphyric flows and pillow basalt, calcitic and dolomitic marble, conglomerate with interbeds of finer sediment, and amygdaloidal plagioclase-phyric intermediate to mafic flows.
Regional metamorphic grade increases continuously from upper greenschist to lower granulite facies, southeast to northwest; there is evidence for prograde reaction.
At least 3 phases of folding occurred; early isoclinal axial planes are parallel to lithologies, while the 2 later phases of more open folding were in other orientations.
1045. THIVIERGE, R.H., FYSON, W.K., Univ. Ottawa (Geology):
Structure of Grenville gneiss in the York River tectonic zone, near Bancroft, Ontario, 1980-82; M.Sc. thesis (Thivierge).
- #### QUEBEC/QUÉBEC
1046. BAER, A.J., Univ. Ottawa (Geology):
A number of related studies aimed at better understanding the Grenvillian orogeny and its mechanisms, 1967-.
- See:
Two orogenies in the Grenville Belt?; Nature, vol. 290, p. 129-131, 1981.
A Grenvillian model of Proterozoic plate-tectonics Precambrian plate tectonics; Elsevier p. 353-386; 1981.
Foliated and recrystallized granites, Timber Lake pluton; Geol. Surv. Can., Paper 80-1C, p. 201-205, 1980.
1047. BÉLAND, J., RINGELE, A., Univ. Montréal (Géologie):
Structure de l'anticlinorium d'Aroostook-Matapédia en Gaspésie, 1980-83; thèse de maîtrise (Ringele).
L'état des travaux démontre assez clairement l'existence d'une tectonique superposée à peu près orthogonale. Reste à clarifier le style propre à chacune des phases et le rôle d'une grande faille de décrochement longeant l'anticlinorium au nord. Faille du Grand Pahos.
1048. DIMROTH, E., GUHA, D., CARIGNAN, D., CHOWN, E.H., Univ. Québec à Chicoutimi (Sci. de la Terre):
Evolution et métallogène de la ceinture volcano-sédimentaire de l'Abitibi, Québec, 1970-; thèses de maîtrise.
Reconstruction de l'évolution volcanique, sédimentaire, ignée métamorphique et tectonique de la ceinture volcano-sédimentaire de l'Abitibi avec considération spécial d'une comparaison des régions de Rouyn-Noranda, et de Chibougamau-Chapau. Étude des relations entre la métallogène et l'évolution géologique.
1049. SLIVITZKY, A., ST-JULIEN, P., Université Laval (Géologie):
Profil structural à travers la partie SW des Appalaches du Québec, 1980-81; thèse de maîtrise (Slivitzky).
1050. VAN DER LEEDEN, J., FYSON, W.K., Univ. Ottawa (Geology):
Nature of the Grenville Front in western Québec, 1976-81; Ph.D. thesis (van der Leeden).
1051. WOUSSEN, G., DIMROTH, E., ROY, D., CHOWN, E.H., Univ. Québec à Chicoutimi (Sci. de la Terre):
Evolution de la Province Grenville dans la région du Saguenay - Lac St.-Jean, Québec, 1978-; thèses de maîtrise.
Voir:
Crystallization and emplacement of the Lac St.-Jean anorthosite in the Chicoutimi area, Québec; Contrib. Mineral. Petrol., 1981.
The old gneiss complex east of Chicoutimi, Québec; Geol. Surv. Can., Paper 80-1A, p. 137-146, 1980.
Reconstruction de l'évolution chronologique, ignée, métamorphique et tectonique de la Province de Grenville dans la région du Saguenay - Lac St.-Jean.
- #### YUKON TERRITORY/ TERRITOIRE DE YUKON
1052. CLAGUE, J.J., Geol. Surv. Can.:
Structural geology - geomorphology, southwest Yukon, 1978-.
1053. COOK, D.G., Geol. Surv. Can.:
Structural studies in the Mackenzie Arc, Franklin Mountains and Colville Hills, Yukon and District of Mackenzie, 1975-.
1054. NORRIS, D.K., Geol. Surv. Can.:
Structural geology of northern Yukon Territory and northwestern District of Mackenzie, 1969-.
1055. TEMPELMAN-KLUIT, D.J., Geol. Surv. Can.:
Stratigraphy, structure and metallogeny of Pelly Mountains, and Yukon Plateau, Yukon Territory, 1973-.
- #### GENERAL/GÉNÉRALITÉS
1056. BAER, A.J., Univ. Ottawa:
Proterozoic orogens and crustal evolution, 1979-.
- See:
Geotherms, evolution of the lithosphere and plate tectonics; Tectonophysics, vol. 72, p. 203-227, 1981.
Defining constraints on Proterozoic crustal evolution and using these to develop better models.
1057. FARRAR, E., ARCHIBALD, D.A., KONTAK, D., Queen's Univ. (Geological Sciences):
Plate tectonics and K-Ar geochronology of the Canadian Cordillera and the Andes; Ph.D. theses (Archibald, Kontak).

See:

Ridge subduction, eduction and the Neogene tectonics of southwestern North America; *Tectonophysics*, vol. 67, p. 81-99, 1980.

Miocene ridge impingement and the spawning of secondary ridges off Oregon, Washington and British Columbia; *Tectonophysics*, vol. 69, p. 321-348, 1980.

Two research projects are currently underway. The first involves two graduate students and comprises a K-Ar study of thermal and temporal relationships in two mountain belts, the Andes and the Canadian Cordillera. We have delimited the times of intrusion, metamorphism and uplift in the Kootenay arc of British Columbia. In the Andes our aim is to clarify the temporal relationships between intrusion, extrusion and the genesis of tin-tungsten arc deposits.

The second project involves my joint research with Dr. J.M. Dixon, Queen's Univ., into the tectonic implications of ridge subduction. We have addressed the problems of ridge impingement with western North America and also with the Campbell plateau - New Zealand region. This is an ongoing study.

An important result of our collaborative research has been the suggestion that the Pacific plate split in two parts 65 Ma ago on the Emperor Trough, Line Islands lineaments. The two parts subsequently moved 1700 km in a right lateral sense.

1058. FYSON, W.K., Univ. Ottawa (Geology): Structural patterns in metamorphic rocks, 1970-.

1059. GRIFFITHS, J.R., Univ. Alberta (Geology): Comparative studies of orogenic belts, 1979-81.

Time-space diagrams showing sediments, volcanics, plutonics, metamorphics and some mineral deposit data have been completed for British Columbia, southeastern Australia, southwestern Japan, Peru/Bolivia, and New Zealand. It is apparent that there is an essential symmetry in space and time of a variety of geologic events from apparently quite different orogenic belts. Using petrogenetic constraints and mantle thermal evolution models, orogeny can be related to subduction of oceanic lithosphere. A major variable as the duration of subduction - less than 50 Ma produces "orogeny" across a zone 300 km wide, 100 Ma can produce effects up to 800 km from the trench. Several of the belts studied involve one or more overlapping orogenies, but the plots can be resolved into discrete thermal envelopes, each related to a single episode of subduction.

1060. KEEPIE, J.D., Nova Scotia Dept. Mines Energy: Tectonic map of Nova Scotia at 1:500,000; geology and tectonics of Nova Scotia, 1974-82.

Production of a tectonic map of Nova Scotia based upon plate tectonic theory, and memoir on the geology and tectonics of Nova Scotia; both nearing completion.

1061. KEEPIE, J.D., RUITENBERG, A.A., FYFFE, L.R., ST-JULIEN, P., HUBERT, C., SKIDMORE, W.B., WILLIAMS, H., BURNSALL, J.T., Nova Scotia Dept. Mines Energy, Univ. Laval (Géologie), Univ. Montréal (Géologie), Memorial Univ. (Geology):

Time of deformation map of the Canadian Appalachians, 1976-81.

Production of a map showing structural elements and areas colour-coded according to age for the Canadian Appalachians.

1062. KING, L.H., Geol. Surv. Can.: Bedrock and surficial geology, Grand Banks, 1973-80.

See:

A reconnaissance study of the surficial geology of the Grand Banks of Newfoundland; *Geol. Surv. Can., Paper 81-1A*, p. 45-56, 1981.

1063. RANALLI, G., Carleton Univ. (Geology): Role of rheology in geodynamics, 1978-84.

See:

Regional models of the steady-state rheology of the upper mantle; *Earth Rheology, Isostasy, and Eustasy*, Wiley, London, p. 111-123, 1980.

Rheological properties of the upper mantle in Canada from olivine micro-rheology; *Can. J. Earth Sci.*, vol. 17, 1499-1505, 1980.

The long-term objectives of the project are the determination of the rheology of lithosphere and mantle, and the modelling of selected geodynamic processes on the basis of realistic rheological equations. In the short term, attention is focused on the following four objectives:

1) variations of effective viscosity across the mantle transition zone and in the lower mantle - on the basis of recent results on the pressure-, temperature-, and phase change-dependence of creep activation parameters, an estimate of the effective viscosity of the lower mantle and of its effect on the depth extent of mantle flow is calculated;

2) role of transient creep in mantle flow - by examination and extrapolation of fundamental transient creep equations, deformation maps including transient creep effects are being constructed, and the possible role of transient creep in small-strain mantle deformation evaluated;

3) continuum-mechanics modelling of the geotectonic evolution of foreland belts - a pure plasticity solution for the velocity and slip-line fields in a model foreland wedge is compared with data from the Rocky Mountain Foreland Belt to test the geodynamic history of foreland belts; and

4) effects of shear zones in intra-lithospheric decoupling - available analyses on the thermo-mechanical properties of lithospheric shear zones will be extended to include the effects of grain size reduction and hydrolytic weakening; their importance will be assessed by comparison with observations.

1064. ROCHESTER, M.G., MERRIAM, J.B. (Physics): Earth and ocean tides and earth rotation, 1981-.

1065. ROCHESTER, M.G., SMYLLIE, D.E., CROSSLEY, D.J., Memorial Univ. (Physics), York Univ., McGill Univ. Long-period core oscillations, 1977-.

See:

Simple core undertones; *Geophys. J. Roy. Astron. Soc.*, vol. 73, 1980.

Compressibility, core dynamics and the sub-seismic wave equation; *Phys. Earth Planet Interiors*, vol. 24, p. 308-319, 1981.

1066. SOUTHER, J.G., Geol. Surv. Can.: Study of the Cenozoic evolution of the western Cordillera, 1977-.

1067. SRIVASTAVA, S.P., Geol. Surv. Can.: Comparative studies of the continental margins of the Labrador Sea and of the North Atlantic, 1978-.

1068. STARKEY, J., NAST, H., Univ. Western Ontario (Geology): Analysis of the fabrics of deformed rocks, 1976-.

See:

An illustration of the advantages of a complete texture analysis described by the orientation distribution function (ODF) using quartz pole figure data; *Proc. Internat. Conf. on the Effect of Deformation on Rocks*, IUGS Comm. Tectonics, Göttingen, p. 225-228, 1980.

Microstructural and chemical transformations accompanying deformation of granite in a shear zone at Miesville, Switzerland; with implications for stress corrosion cracking and superplastic flow; *Contrib. Mineral. Petrol.*, vol. 73, p. 221-242, 1980.

1069. STAUFFER, M.R., Univ. Saskatchewan (Geological Sciences): Structures in rocks, 1965-.

See:

Analysis of triaxial ellipsoids, their shapes, plane sections, and plane projections; *Math. Geology*, vol. 13, p. 135-152, 1981.

A general program intended to help understand the geometry and origin of any type of structure in any type of rock. Past papers have included studies of tectonic structures as well as some of sedimentary origin in rocks ranging in age from Proterozoic to Recent.

1070. STRINGER, P., RAST, N., TREAGUS, J.E., Univ. New Brunswick (Geology), Univ. Kentucky, Univ. Manchester:

Relation of cleavage to folding in the Caledonian-Appalachian orogenic belt, 1975-85.

See:

Non-axial planar S_1 cleavage in the Hawick rocks of the Galloway area, southern Uplands, Scotland; *J. Structural Geol.*, vol. 2, p. 317-331, 1980.

A geotraverse across a deformed Ordovician ophiolite and its Silurian cover, northern New Brunswick, Canada; *Tectonophysics*, vol. 69, p. 221-245, 1980.

S_1 cleavage non-axial planar to F_1 folds in Silurian and Ordovician strata in the Galloway area, southern Uplands, Scotland is attributed to synchronous development of the F_1 folds on planes non-orthogonal with respect to the bulk strain axes. The pattern, scale and regional distribution of the F_1 folds are consistent with deformation accompanying sequential accretion of sediments above a northwestward dipping subduction zone. Semi-recumbent F_2 folds and S_2 cleavage are superimposed upon subvertical D_1 structures in the rotated imbricate fault slices.

Deformation in Ordovician and Silurian rocks in northern New Brunswick is interpreted in terms of a model involving southeastward subduction of oceanic crust. Non-axial planar cleavage in folded Silurian sediments in northeastern New Brunswick, and bedding schistosity, polyphase deformation, cleavage refraction and deformed fossils in Ordovician - Lower Devonian metasediments in southwestern New Brunswick, are being investigated.

1071. WILLIAMS, P.F., Univ. New Brunswick (Geology): Deformation mechanisms and tectonic processes, 1900-.

See:

Vorticity and non-coaxiality in progressive deformations; *J. Structural Geol.*, vol. 2, p. 371-378, 1980.

Relationship of garnet rotation to development of crenulation cleavage and folding; *Tectonophysics*, 1980.

Deformed rocks are being studied with a view to better understanding the processes involved in their deformation. The ultimate goal is a better understanding of the processes involved in large scale tectonics.

1072. CARTER, M.W., BLACKBURN, C.E.,
Ontario Geol. Surv.:
Terrace Bay area, Ontario, 1980-81.
The map-area is underlain by Early to Late Precambrian rocks mantled by Pleistocene and Recent deposits. The Early Precambrian rocks comprise a metavolcanic-metasedimentary sequence intruded by metagabbroic and granitic-syenitic plutons. Middle to Late Precambrian rocks comprise diabase and lamprophyre dikes which intrude the earlier rocks. Metavolcanics predominate among the supra-crustal rocks and consist mainly of iron-rich tholeiitic subaqueous flows, metamorphosed to amphibolite-rank regional metamorphism. Felsic intrusive rocks comprise granite, granodiorite, quartz monzonite and quartz monzodiorite and syenitic rocks. Diabase and lamprophyre dikes trend northerly and westerly. Mineral deposits comprise gold, copper-molybdenum and copper-lead-zinc, base-metal mineralization.
1073. DIMROTH, E., Univ. Québec à Chicoutimi (Sci. de la Terre):
Volcanologie sous-marine, 1981-82.
Préparation d'un manuel de volcanologie sous-marine pour publication en 1983.
1074. HOCQ, M., CATY, J.L.,
Québec Ministère Énergie et Ressources:
Synthèse géologique JOUTEL-LEBEL l'ÉTAPE:
JOUTEL-GUYENNE, 1980-84.
Cartographier le sillon volcano-sédimentaire de Joutel-Lebel (Abitibi). Définir la stratigraphie, paléogéographie et l'évolution structurale et volcanique de la région. Interpréter les minéralisations.
1075. JENSEN, L.J., LANGFORD, F.F.,
Univ. Saskatchewan (Geological Sciences):
A petrogenetic model for the Archean Abitibi belt in the Kirkland Lake area, Ontario, 1972-81; Ph.D thesis (Jensen).
The Kirkland Lake portion of the Archean Abitibi greenstone belt was formed by two cycles of komatiitic to tholeiitic to calc-alkalic volcanism. The older cycle resulted in calc-alkalic volcanic piles whose cores were replaced by trondhjemitic batholiths and edges covered by komatiitic rocks of the younger cycle. Some trondhjemitic rock was also developed in the calc-alkalic core of the volcanic pile resulting from the younger cycle. Therefore, each volcanic cycle can be thought of as the primary steps in the formation of sial crust, and, where the calc-alkalic and sedimentary rocks are largely replaced by granitic rocks, the sima-to-sial transformation has become complete.
- A study of the distribution and relative ages of the rock-types in the Kirkland Lake area indicates that this sima-to-sial transformation came about through the downward faulting, buckling and tilting of crustal rocks occurring simultaneously with their replenishment by magmas migrating upward and cooling at surface. To explain this, megacaldrons are envisaged in which subsidence of the crustal rocks was initiated by a thick mafic crust forming above a large mantle diapir within a primary carbonaceous chondrite crust. As the crustal rocks sank they were converted to eclogite, thus perpetuating the subsidence until most of the rocks at surface were granitic rocks of low specific gravity. In the younger megacaldron, although formation of granitic rocks had begun, this last stage was not extensive. Hence, most of the volcanic rocks remain so that the different stages of the sima-to-sial transformation in the youngest megacaldron can still be observed and this rock succession used as a standard along with the model when studying other greenstone belts with less preserved volcanic successions.
1076. MUEHLENBACHS, K., Univ. Alberta (Geology):
Isotopic analyses of volcanic rocks from varied tectonic regimes, 1980-83.
Young, unaltered volcanic rocks from British Columbia, Chile, Iceland, Germany, etc. display small variations in $\delta^{18}O$. Sometimes these variations can be correlated with $^{87}Sr/^{86}Sr$ and sometimes not. In those cases crustal contamination is demonstrable. In other cases mantle heterogeneity may be suspected.
1077. ROOTS, C.F., DONALDSON, J.A.,
Carleton Univ. (Geology):
Geology of the Montana Mountain volcanic complex, south-central Yukon, 1980-81; M.Sc. thesis (Roots).
Geological mapping of Montana Mountain, west-central Yukon, has revealed a subcircular volcanic complex, about 6 km in diameter, that intrudes both oceanic basalt of Atlin Terrane (late Paleozoic) and Jurassic flysch. Intrusion breccias in the northern half are overlain by 1500 m of andesitic flows; these lavas are intercalated with sediments and debris flows farther south. A late Cretaceous granodiorite intrudes the complex; this intrusion is enriched in silica and potassium at its highest elevations. Quartz veins hosting arsenopyrite and galena (Venus mine) occur in fissures on the east side of the volcanic pile. Petrography of the breccias and study of the chemistry of the volcanic rocks, thought to belong to the Mount Nansen Group, are in progress.
1078. RUSSELL, J.K., NICHOLLS, J.,
Univ. Calgary (Geology and Geophysics):
Petrology/Geochemistry of the historic lavas of Mauna Loa, 1981-83; Ph.D thesis (Russell).
The historic flows of Mauna Loa comprise over 35 eruptive events that produced over $3.0 \times 10^6 M^3$ of basalt in approximately 150 years. This volcanic activity provides an excellent opportunity to study the magmatic processes involved in the generation of basaltic volcanism. Chemical variations in lavas and coexisting mineral phases may put definite constraints on source rock compositions and/or processes operating during magma transport. Thermodynamic equilibria while estimating the intensive characteristics of the erupted lavas may also offer estimates of P,T conditions of the source region.
The 1981 field season will be spent mapping these flows to produce a more precise estimate of volumes of erupted material as well as a base map for the sampling of the lavas. The greatest asset of this study is the certainty with which the volumes, chemistry, and timing of the eruptions can be fixed. With these parameters known, the answers to the petrological problems may be found with greater certainty.
1079. THURSTON, P.C., Ontario Geol. Surv.:
Felsic centers of volcanism, northwestern Ontario, 1979-82.
See:
Felsic centers of volcanism, Uchi and Gods Lake sub-provinces; Ontario Geol. Surv. Misc. Paper 92, p. 28-31, 1981.
Subaerial volcanism in the Archean Uchi - Confederation volcanic belt; Precambrian Res. vol. 12, p. 79-98, 1980.
To characterize the physical volcanology and trace element geochemistry of several centers of felsic volcanism in northwestern Ontario.
1080. THURSTON, P.C., HODDER, R.W.,
FRYER, B.J., Univ. Western Ontario (Geology):
Volcanology and trace element geochemistry of cyclical volcanism in the Archean Confederation Lake area, Ontario, 1976-80; Ph.D thesis (Thurston).
See:
Trace element geochemistry of repetitive basalt to rhyolite cyclical volcanism in an Archean setting; Geol. Assoc. Can./Mineral. Assoc. Can., Annual Meeting, Abstracts, vol. 6, p. A-55, 1981.
Subaerial volcanism in the Archean Uchi-Confederation volcanic belt; Precambrian Res., vol. 12, p. 79-98, 1980.
The project characterizes 3 basalt to rhyolite volcanic cycles in terms of physical volcanology, stratigraphy, geochronology and trace element geochemistry. Trace element results suggest complex petrogenetic schemes must be active. These involve mantle derivation of basalts and genesis of dacite to rhyolite suites by melting of amphibolite or liquid immiscibility. The andesitic rocks were produced by magma mixing.

ORGANIZATIONS REPORTING/ÉTABLISSEMENTS DÉCLARANTS

Acadia University, Department of Geology, Wolfville, Nova Scotia B0P 1X0	École Polytechnique, Département de Génie minéral, Campus de l'Université de Montréal, Case postale 6079, Succ. "A", Montréal, Québec H3C 3A7	National Research Council, Division of Building Research, Ottawa, Ontario K1A 0R6	Royal Ontario Museum, Department of Invertebrate Palaeontology, 100 Queen's Park, Toronto, Ontario M5S 2C6
Alberta Research Council, Geological Survey, 3rd Floor, Terrace Plaza, 4445 Calgary Trail South, Edmonton, Alberta T6H 5R7	Environment Canada, National Water Research Institute, Canada Centre for Inland Waters (CCIW), 867 Lakeshore Road, P.O. Box 5050, Burlington, Ontario L7R 4A6	New Brunswick University, Department of Geology, Box 4400, Fredericton, New Brunswick E3B 5A3	Royal Ontario Museum, Department of Vertebrate Palaeontology, 100 Queen's Park, Toronto, Ontario M5S 2C6
Alberta Research Council, Groundwater Department, 6th Floor, Terrace Plaza, 4445 Calgary Trail South, Edmonton, Alberta T6H 5R7	Environment Canada, National Hydrology Research Institute, Ottawa, Ontario K1A 0E7	New Brunswick University, Department of Geology, Tucker Park, P.O. Box 5050, Saint John, New Brunswick E2L 4L5	Saskatchewan Museum of Natural History, Wascana Park, Regina, Saskatchewan S4P 3V7
Alberta University, Department of Geology, Edmonton, Alberta T6G 2E3	Geological Survey of Canada, Department of Energy, Mines and Resources, 601 Booth Street, Ottawa, Ontario K1A 0E8	New Brunswick Department of Natural Resources, Mineral Resources Branch, P.O. Box 6000, College Hill Road, Fredericton, New Brunswick E3B 5H1	Saskatchewan University, Department of Geological Sciences, Saskatoon, Saskatchewan S7N 0W0
Alberta University, Department of Zoology, Biological Sciences Building, Edmonton, Alberta T6G 2E9	Laurentian University, Department of Geology, Ramsey Lake Road, Sudbury, Ontario P3E 2C6	Newfoundland Department of Mines and Energy, Mineral Development Division, P.O. Box 4750, St. John's, Newfoundland A1C 5T7	Saskatchewan Department of Mineral Resources, Saskatchewan Geological Survey, 1211-1914 Hamilton Street, Regina, Saskatchewan S4P 4V4
Amoco Canada Petroleum Company Ltd., Amoco Canada Building, 444 Seventh Avenue S.W., Calgary, Alberta T2P 0Y2	Laval University, Département de Géologie et Minéralogie, Cité universitaire, Québec, Québec G1K 7P4	Nova Scotia Department of Mines and Energy, 1690 Hollis Street, P.O. Box 1087, Halifax, Nova Scotia B3J 2X1	Saskatchewan Research Council, Geology Division, 30 Campus Drive, Saskatoon, Saskatchewan S7N 0X1
Brandon University, Department of Geology, Brandon, Manitoba R7A 6A9	Manitoba University, Department of Earth Sciences, Winnipeg, Manitoba R3T 2N2	Ontario Ministry of the Environment, Water Resources Branch, Suite 100-135 St. Clair Avenue West, Toronto, Ontario M4V 1P5	Université de Sherbrooke, Département de Géographie, Sherbrooke, Québec J1K 2R1
British Columbia University, Department of Geological Sciences, 6339 Stores Road, University Campus, Vancouver, British Columbia V6T 2B4	Manitoba Department of Energy and Mines, Mineral Resources Division, 993 Century Street, Winnipeg, Manitoba R3H 0W4	Ontario Ministry of Natural Resources, Ontario Geological Survey, 11th Floor - 77 Grenville Street, Toronto, Ontario M5S 1B3	St. Francis Xavier University, Department of Geology, Antigonish, Nova Scotia B2G 1C0
British Columbia University, Department of Geophysics and Astronomy, Vancouver, British Columbia V6T 2B4	McGill University, Department of Geography, 805 Sherbrooke St. West, Montréal, Québec H3A 2K6	Ottawa University, Département de Géographie, Ottawa, Ontario K1N 6N5	Simon Fraser University, Department of Physics, Burnaby, British Columbia V5A 1S6
British Columbia Ministry of Energy, Mines, and Petroleum Resources, Geological Division, Parliament Buildings, Victoria, British Columbia V8V 1X4	McGill University, Department of Geological Sciences, 3450 University Street, Montréal, Québec H3A 2A7	Ottawa University, Department of Geology, Ottawa, Ontario K1N 6N5	Toronto University, Department of Geology, Toronto, Ontario M5S 1A7
Brock University, Department of Geological Sciences, St. Catharines, Ontario L2S 3A1	McGill University, Redpath Museum, 859 Sherbrooke St. W., Montréal, Québec H3A 2K6	Polar Continental Shelf Project, Department of Energy, Mines and Resources, 880 Wellington Street, Ottawa, Ontario	Toronto University, Erindale College, Department of Earth and Planetary Sciences, 3359 Mississauga Road, Mississauga, Ontario L5L 1C6
Calgary University, Department of Geology and Geophysics, 2500 University Drive N.W., Calgary, Alberta T2N 1N4	McMaster University, Department of Geology, Hamilton, Ontario L8S 4M1	Université du Québec à Chicoutimi, Département des Sciences de la terre, 930 est, rue Jacques-Cartier, Chicoutimi, Québec G7H 2B1	Toronto University, Scarborough College, Department of Geography, West Hill, Ontario M1C 1A4
Canada Centre for Mineral and Energy Technology (CANMET) Department of Energy, Mines and Resources, 555 Booth Street, Ottawa, Ontario K1A 0G1	Memorial University of Newfoundland, Department of Geology, St. John's, Newfoundland A1B 3X5	Université du Québec à Québec, Institut National de la Recherche Scientifique (INRS-Pétrole), 555, boul. Henri IV, Case postale 7500, Ste-Foy, Québec G1V 4C7	Toronto University, Department of Physics, Toronto, Ontario M5S 1A7
Carleton University, Department of Geology, Ottawa, Ontario K1S 5B6	Memorial University of Newfoundland, Department of Physics, St. John's, Newfoundland A1B 3X7	Queen's University, Department of Geological Sciences, Kingston, Ontario K7L 3N6	Waterloo University, Department of Earth Sciences, Waterloo, Ontario N2L 3G1
Dalhousie University, Department of Geology, Sir James Dunn Building, Halifax, Nova Scotia B3H 3J5	Ministère de l'Énergie et des Ressources du Québec, 1620, boul. de l'Entente, Québec, Québec G1S 4N6	Regina University, Department of Geological Sciences, Regina, Saskatchewan S4S 0A2	Western Ontario University, Department of Geology, Biological and Geological Building, London, Ontario N6A 5B7

LIST OF GRANT AWARDS IN THE EARTH SCIENCES FOR 1980-81/
LISTE DES SUBVENTIONS ATTRIBUÉES AUX SCIENCES DE LA TERRE EN 1980-81

Department of Energy, Mines and Resources, Research Agreements 1980-81/
Ministère de l'Énergie, des mines et des ressources, conventions de recherche 1980-81

BRITISH COLUMBIA

University of British Columbia

Barnes, W.C. (Geological Sciences)
Salt marsh progradation, Fraser Delta, British Columbia, \$4,500.00.

Clowes, R.M. (Geophysics and Astronomy)
Interpretation of ocean bottom seismometer reflection/refraction data on Explorer/Juan de Fuca Plates, \$6,700.00.

Ellis, R.M. (Geophysics and Astronomy)
Interpretation of refraction and reflection data from the Queen Charlotte Fault Zone, \$6,700.00.

Godwin, C.I. (Geological Sciences)
Analysis of metal and rare earth element (REE) zonation in baritic stratiform and volcanogenic deposits, Canadian Cordillera - to develop genetic and exploration models, \$9,500.00.

Simon Fraser University

Huntley, D.J. (Physics)
Thermoluminescence dating of land sediments, \$4,000.00.

University of Victoria

Dosso, H.W. (Physics)
An analogue model study of electromagnetic induction in the Queen Charlotte Islands region, \$3,000.00.

ALBERTA

University of Alberta

Burwash, R.A. (Geology)
Variation of uranium and thorium concentrations in alkaline intrusive complexes, \$3,000.00.

Chatterton, B.D.E. (Geology)
Silurian trilobite and conodont faunas of the MacKenzie Mountains, \$4,000.00.

Cruden, D.M. (Geology)
Landslides in the Kamloops Group in south central British Columbia, \$9,000.00.

Evans, M.E. (Physics)
Chemical demagnetization investigations of Canadian Proterozoic redbeds, \$6,500.00.

Jones, F.W. (Physics)
An investigation of the relationships between geothermal and other geophysical data in high temperature regions of Alberta, \$7,000.00.

Rutter, N.W. (Geology)
Amino acid analysis of fossils from Northern Canada, \$4,000.00.

Stelck, C.R. (Geology)
Foraminifera of the Upper Albian-Middle Albian boundary in northeastern British Columbia, \$7,200.00.

University of Calgary

Glockner, P.G. (Mechanical Engineering)
Surface and underground deformations due to underground coal mining operations, \$15,000.00.

Simony, P.S. (Geology and Geophysics)
Stratigraphy, tectonics and metamorphism in Blue River area of Cariboo Mountains, British Columbia, \$14,500.00.

SASKATCHEWAN

University of Saskatchewan

Braun, W.K. (Geological Sciences)
Biostratigraphy and microfaunas of the Mesozoic Rocks in Western Canada, \$5,900.00.

Gendzill, D.J. (Geological Sciences)
Study of mine subsidence using geophysical techniques, \$9,000.00.

King, M.S. (Geological Sciences)
Acoustic borehole logging in the Canadian Shield, \$8,000.00.

MANITOBA

University of Manitoba

Hall, D.H. (Earth Sciences)
Interpretation of MAGSAT data and the magnetic signatures of provinces and sub-provinces in the Canadian Shield, \$6,500.00.

Moon, W. (Earth Sciences)
Seismic-electrical deep sounding along the new Manitoba Hydro Power Line (S.E. Manitoba) and interpretation of 1977 and 1979 CO-CRUST refraction seismic data, \$3,000.00.

ONTARIO

Carleton University

Brown, R.L. (Geology)
Geological mapping and compilation, Shuswap Terrane and Selkirk Mountains (82 M-W, 82 M-E, 82 N-W), British Columbia, \$5,000.00.

Donaldson, J.A. (Geology)
Sedimentology and stratigraphy of the Hornby Bay and Dismal Lakes groups, Northwest Territories, \$7,000.00.

Watkinson, D.H. (Geology)
Geological mapping and petrological interpretation of relationships between silicification, chloritization, sericitization and Cu-Zn deposits, Noranda area, \$1,000.00.

Watkinson, D.H. (Geology)
Geology, petrology and chromite chemistry of Cr occurrences in ophiolitic complexes, \$10,000.00.

McMaster University

Clarke, W.B. (Physics)
Development of a new prospecting method for uranium - measurements of $^3\text{He}/^4\text{He}$, He, Ne, and tritium in groundwater lakes and soil gas, \$10,500.00.

Crocket, J.H. (Geology)
Gold mineralization in Archean greenstone belts: a study of Dickenson Mine, Red Lake area, Ontario, \$10,750.00.

McCann, S.B. (Geography)
Sediment dispersal patterns and shore morphology along the Georgia Strait coastline of Vancouver Island, British Columbia, \$8,000.00.

McNutt, R.H. (Geology)
Geochronological studies in the English River gneiss belt and Wabigoon greenstone belt, N.W. Ontario, \$3,500.00.

University of Ottawa

St-Onge, D.A. (Geography)
Stratigraphy and sedimentology, Glacial Lake Coppermine, Northwest Territories, \$5,000.00.

University of Toronto

Bailey, R.C. (Physics)
Optimal least-squares analysis of airborne radiometric survey data, \$8,000.00.

Curran, J.H. (Civil Engineering)
Experimental investigation of the deformation/conductivity relationship for dilatant rock joints, \$7,500.00.

Dunlop, D.J. (Physics)
Paleomagnetic dating of metamorphic events in Canadian Precambrian rocks, \$5,000.00.

Gittins, J. (Geology)
Chronology of alkalic magmatism in the Haliburton-Bancroft region, Ontario, \$4,000.00.

Jopling, A.V. (Geography)
Continuous monitoring of density flows in a lacustrine environment, \$3,900.00.

Ludvigsen, R. (Geology)
Upper Cambrian and Ordovician trilobite biostratigraphy of western and central Canada, \$4,250.00.

Spooner, E.T.C. (Geology)
Tin mineralization in Nova Scotia and the Yukon, \$9,500.00.

University of Waterloo

Appleyard, E.C. (Earth Sciences)
Metallogeny of scapolite-bearing rocks of the Wollaston Lake area, Saskatchewan, \$4,500.00.

Cherry, J.A. (Earth Sciences)
Retardation of ^{226}Rn in groundwater in unconsolidated deposits near the Nordic tailings, \$10,000.00.

Fransham, P.B. (Geology)
Acoustic and mechanical behaviour of frozen soils, \$10,000.00.

Roberts, R.G. (Earth Sciences)
Stable isotopes of gold-bearing quartz veins and their carbonate-rich host rocks at Dome Mine, Timmins, Ontario, \$7,250.00.

University of Western Ontario

Beck, A.E. (Geophysics)
Recovery of climatic data over the past millenium from high resolution - high precision temperature gradient logs measured in boreholes. A feasibility study, \$7,500.00.

Luchman, B.H. (Geography)
Oxygen-isotope determination of paleotemperatures during the Hypsithermal Interval in the Middle Canadian Rockies, \$2,500.00.

QUÉBEC

Concordia University

Kumarapeli, P.S. (Geology)
Investigations into seismotectonics of Eastern Canada, \$5,000.00.

Ecole Polytechnique

Gélinas, L. (Génie Minéral)
Etude des complexes rhyolitiques de la région de Rouyn-Noranda, \$8,000.00.

Perrault, G. (Génie Minéral)
Minéralogie, pétrologie, géochimie et métallogénie de certaines occurrences d'uranium au Québec, \$4,500.00.

Pouliot, G. (Génie Minéral)
Minéralogie et géochimie des principaux gîtes d'ilménite associés aux complexes anorthositiques du Québec, \$3,500.00.

Tanguay, M.G. (Génie Minéral)
Applications des images Landsat en génie et en géologie \$9,700.00.

McGill University

Carson, M.A. (Geography)
Springtime pore pressures and landslide development in clay slopes with frozen slope surfaces, \$2,600.00.

Elson, J.A. (Geological Sciences)
Genesis and differentiation of diamictites on Somerset Island, Northwest Territories, \$2,000.00.

Francis, D.M. (Geological Sciences)
The evolution and mineral potential of the Cape Smith fold belt, \$10,000.00.

Hesse, R. (Geological Sciences)
Organic matter maturation and mineral diagenesis in the Québec Appalachians, \$7,000.00.

Jensen, O.G. (Metallurgical Engineering)
Applications of natural and artificial EM sources to ground impedance measurement (ULF, VLF, LF), \$10,000.00.

Mountjoy, E.W. (Geological Sciences)
A comparison of the sedimentology and diagenesis of Nisku coral-stromatolitic mounds at Winnifred Pass and West Pembina, \$7,000.00.

Stearn, C.W. (Geological Sciences)
Paleoecology of Blue Fiord carbonate rocks, southern Ellesmere Island, District of Franklin, \$2,000.00.

Université Laval

Béland, R. (Géologie)
Relations granite-indices d'uranium dans les terrains
grenvilliens de St-Siméon-Saguenay et du comté de
Portneuf, Québec, \$5,000.00.

Seguin, M.K. (Geology)
Paleomagnetic studies on the tectonic evolution of
Avalon Zone, eastern Newfoundland, \$7,000.00.

Université de Montréal

Mamet, B. (Géologie)
Taxonomy and stratigraphy of Carboniferous for-
aminifers and algae, British Columbia, Yukon and
District of Mackenzie, \$7,000.00.

Université du Québec à Chicoutimi

Dimroth, E. (Sciences de la Terre)
Evolution magmato-tectonique de la province
Grenville dans la région du Saguenay-Lac St-Jean,
\$10,000.00.

Université du Québec à Montréal

Occhietti, S. (Géographie)
Lithologie et stratigraphie du Quaternaire de l'île du
Cap-Breton, \$4,700.00.

Prichonnet, G.P. (Sciences de la Terre)
Cartographie des dépôts meubles de la feuille de St-
Hyacinthe (31 H/10). Eche: 1/50,000, \$4,000.00.

Université du Québec à Québec

Achab, A. (INRS-Pétrole)
Etude Palynologique du Paleozoïque de l'est du
Canada, \$5,900.00.

Tessier, A. (INRS-Eau)
Evaluation d'une méthode de lessivages "sélectifs"
des sédiments aquatiques en vue de la prospection
géochimique, \$12,000.00.

Université du Québec à Rimouski

Long, B. (INRS-Océanologie)
Conséquences sédimentologiques et géomorpholog-
iques des aménagements hydro-électriques sur les
estuaires des rivières de la Basse Côte du Golfe du
Saint-Laurent, \$5,000.00.

Université de Sherbrooke

Dubois, J.-M.M. (Géographie)
Le Quaternaire d'Anticosti: formations meubles,
stratigraphie et évolution littorale, \$8,000.00.

NEW BRUNSWICK

University of New Brunswick

Noble, J.P.A. (Geology)
Silurian-Devonian paleontology and stratigraphy of
the Northern Appalachians, \$5,000.00.

Pajari, G.E. (Geology)
The geology of the pre-Triassic rocks of the Grand
Manan archipelago, Bay of Fundy, New Brunswick,
\$1,500.00.

NOVA SCOTIA

Dalhousie University

Beaumont, C. (Oceanography)
Rheology of the lithosphere from gravity and topo-
graphic data, \$5,200.00.

Cooke, R.C. (Oceanography)
The fundamental chemical dynamics implicit in the
Sea Bed Disposal Program: The effect of high
temperatures and pressures on the mobility of
anions and cations normally associated with clay
minerals in deep marine sediments, \$16,000.00.

Hall, J.M. (Geology)

Continental margin and ocean crust geological in-
vestigations through the further development of the
Bedford Institute Shipborne Electric Drill,
\$15,000.00.

Huntley, D.A. (Oceanography)
Direct measurements of coastal waves and currents,
southern Gulf of St. Lawrence, \$7,500.00.

Jamieson, R.A. (Geology)

Cape Breton Highlands geological mapping,
\$5,850.00.

Medioli, F.S. (Geology)

A comparison of observed and theoretical Holocene
apparent sea level variations in Atlantic Canada,
\$4,500.00.

Piper, D.J.W. (Geology)

Geological mapping, sediment distribution
processes, and Quaternary stratigraphy, coastal
Nova Scotia and Newfoundland, \$15,000.00.

NEWFOUNDLAND

Memorial University of Newfoundland

Vetter, W. (Engineering and Applied Sciences)
Ocean sediment properties using acoustic sensing,
\$10,000.00.

Williams, H. (Geology)

Geology of Stephenville map-area (12-B),
Newfoundland, \$8,000.00.

Wright, J.A. (Physics)

Marine geothermal measurements offshore Eastern
Canada, \$10,000.00.

Department of Environment Canada, Water Resources Research Support Program, Research Agreements 1980-81/ Ministère des Environnement Canada, Programme de subvention à la recherche sur les ressources en eau, conventions de recherche 1980-81

University of British Columbia

Clarke, G.K.C. (Geophysics and Astronomy)
Glacier beds: their relationship to ice dynamics,
glacier hydrology and erosion, \$10,000.00.

Queen's University

Patterson, R.J. (Geological Sciences)
Geochemical controls on the mobility of radio-
nuclides in the shallow groundwater flow system,
Chalk River: role of solid iron phases, \$6,800.00.

University of Saskatchewan

Gray, D.M. (Hydrology)
Infiltration into frozen and partially frozen soils,
\$15,000.00.

Polar Continental Shelf Project Field Support Non-Governmental Activities 1980-81/ Aide de l'étude du Plateau continental polaire en faveur d'activités non gouvernementales pour 1980-81

ALBERTA

University of Alberta

England, J. and Bradley, R.S.
Glacial geomorphology, northern Ellesmere Island,
District of Franklin.

Jones, B.
Silurian-Devonian paleontology, Ellesmere and
Bathurst Islands, District of Franklin.

ONTARIO

McMaster University

Woo, M.-K.
Hydrology, Cornwallis and Devon Islands, District of
Franklin.

University of Ottawa

Dixon, O.A.
Stratigraphy and sedimentology, Cornwallis Island,
District of Franklin.

French, H.M.

Geomorphic processes, Sacks Harbour.
Geomorphology, Yukon Territory.

Sir Sanford Fleming College

Watts, S.H.
Bedrock geology, southeastern Ellesmere Island -
eastern Devon Island, District of Franklin.

University of Toronto

Miall, A.D.
Stratigraphy and sedimentology, Axel Heiberg and
Ellesmere Islands, District of Franklin.

Ritchie, J.C.

Quaternary paleobotany, Eastern Yukon Territory,
Tuk Peninsula.

University of Waterloo

Fritz, P.
Permafrost studies, Richards Island.

University of Western Ontario

Lenz, A.C.
Silurian-Devonian paleontology, Arctic Islands.

Young, G.M.
Precambrian sedimentation, Arctic Islands.

QUEBEC

McGill University

Stearn, C.W.
Devonian stratigraphy, southern Ellesmere Island,
District of Franklin.

U.S.A.

Milwaukee Public Museum

West, R.M.
Paleontology and biostratigraphy, Axel Heiberg and
Ellesmere Islands, District of Franklin.

University of Washington

Washburn, A.L.
Periglacial features, Resolute, Cornwallis Island and
Eureka, Axel Heiberg Island, District of Franklin.

**Ontario Geological Survey, Geoscience Research Grants 1980-81/
Commission géologique de l'Ontario subventions de recherche en sciences de la terre pour 1980-81**

Brock University

Dalrymple, R.W.
Terrain characteristics and physical processes in small lagoon complexes, \$6,310.00.

Carleton University

Bell, K.
Radon decay products - U exploration, \$10,000.00.
Watkinson, D.H.
Potential for chromite ore deposits, \$13,553.00.

Lakehead University

Shegelski, R.J.
Metallogeny and economic potential of Western Lake St. Joseph greenstone belt, \$9,000.00.

Laurentian University

Beswick, A.E.
Alteration patterns in Precambrian volcanic rocks, \$22,000.00.
Rousell, D.E.
Mineralization in the Whitewater Group, Sudbury Basin, \$9,250.00.
Whitehead, R.E.
Gold exploration using CO₂, H₂O and alkali 'Anomalies', \$20,622.00.

McMaster University

Crocket, J.H.
Stable isotope studies - gold metallogeny, Timmins, Ontario, \$21,000.00.

Queen's University

Dixon, J.M.
Model study of Archean greenstone granite gneiss belts, \$9,513.50.
Hodgson, C.J.
Gold ore formation at Red Lake, \$32,625.00.
Nichol, I.
Speciation of free gold in glacial overburden, \$34,050.00.

University of Toronto

Campbell, I.H.
Rare earth elements in acid volcanics, \$15,855.00.
Kenney, T.C.
Horizontal deep drains to stabilize clay slopes, \$17,500.00.
Miall, A.D.
Sedimentology of Huronian deposits, including uranium-bearing rocks, \$7,850.00.
Naldrett, A.J.
Platinum group elements in magnetic sulfide deposits, \$30,000.00.
Norris, G.
Mesozoic palynostratigraphy, Moose River Basin, \$15,000.00.
Roegiers, J.C.
Stability of compressed shales in Ontario, \$17,000.00.
Schwerdtner, W.M.
Structural controls of uranium deposits in the Bancroft-Goderham area, \$15,000.00.
Strangway, D.W.
Magnetism and stratigraphy in the Blake River volcanics, \$28,600.00.

West, G.F.
Interpretation for electromagnetic prospecting, \$27,000.00.
York, D.
Direct dating of ore minerals, \$21,200.00.

University of Waterloo

Gale, J.
Impact of groundwater on mining activities in Niagara Escarpment area, \$19,640.00.
Roberts, R.G.
Alteration and gold vein environments, \$10,850.00.

University of Western Ontario

Fyfe, W.S.
Immobilization of U-Th-Ra in mine wastes, \$25,000.00.
Fyfe, W.S.
Geochemistry-lode gold deposits in felsic igneous intrusions, \$30,000.00.
Hodder, R.W.
Evolution of an Archean felsic volcanic-plutonic complex, \$16,000.00.
Hutchinson, R.W.
Field relations and geochemistry of Au, Ni and Cr deposits, \$21,700.00.
Nesbitt, H.W.
Asbestos fibre degradation, \$6,925.00.

University of Windsor

Symons, D.T.A.
Component magnetization of iron, \$24,030.00.

Natural Sciences and Engineering Research Council Canada Earth Science Operating Grants 1980-81/ Conseil de recherches en sciences naturelles et en génie Canada sciences de la terre subventions pour dépenses courantes 1980-81

Achab, A. 10454 INRS-Pétrole E004 Québec - INRS	Chitinozoaires de l'Ordovicien inférieur et moyen du Québec et de l'Est du Canada	Baadsqaard, R. 00166 Geology A094 Alberta	Isotope geology of polymetamorphic rocks, salt beds and uranium deposits
Adamowski, K. 04611 Civil Engineering A012 Ottawa	Stochastic analysis of the hydrologic cycle	Bachinski, D.J. 08615 Geology A095 New Brunswick	Metamorphism of sulfide - rich rocks
Aldridge, K.D. 09528 Physics A033 York	1) Non-axisymmetric inertial oscillations in spherical shells of rotating fluid. 2) coordinate system for the study of core dynamics	Baer, A.J. 07928 Geology A099 Ottawa	1) Relationship between texture and mineralogy of some anorthosites 2) Structural studies in the Grenville Province
Allen, J.M. 11278 Geology E036 Toronto	1) Experimental and field studies in metamorphic petrology 2) Mineralogy and petrology of Ca-Al-rich inclusions in the Allende meteorite	Bailey, R.C. 08982 Physics/Geology E109 Toronto	Geomagnetic sounding of the crust and upper mantle/Uranium exploration
Anderson, G.M. 00084 Geology A052 Toronto	Metasomatic and ore-forming solutions	Ballivy, G. 10199 Génie civil E123 Sherbrooke	Comportement des coulis d'étanchéité et de scellement injectés dans les massifs rocheux
Anderson, M.H. 00089 Biology A055 Memorial	Contributions to palaeontology and stratigraphy, mainly Newfoundland	Barker, J.F. 11504 Earth Sciences H535 Waterloo	Aspects of organic and bio-geochemistry in the groundwater environment
Appleyard, E.C. 00107 Earth Sciences E059 Waterloo	Studies of metasomatic and altered rocks	Barnes, C.R. 00229 Earth Sciences A131 Waterloo	Lower Paleozoic conodont biostratigraphy, paleoecology and ultrastructure
Armbrust, G.A. 08437 Geology E063 Ottawa	Nature and origin of disseminated copper deposits associated with Precambrian felsic intrusive rocks	Barnes, W.C. 00230 Geological Sciences E143 British Columbia	Sedimentology and organic geochemistry of lacustrine and shallow marine sediments of southwestern British Columbia
Armstrong, R.L. 08438 Geological Sciences A076 British Columbia	Geochronometry of cordilleran igneous and metamorphic rocks	Barr, S.M. 10201 Geology E147 Acadia	Petrography, geochemistry, petrogenesis, and economic potential of intrusive igneous rocks from southwestern Nova Scotia and Cape Breton Island
Arndt, N.T. 10649 Geological Sciences E069 Saskatchewan	Petrogenesis of komatiites and some other Precambrian volcanic rocks	Bayliss, P. 00261 Geology A151 Calgary	Applied crystallographic-mineralogy
Ayres, L.D. 08556 Earth Sciences A091 Manitoba	Early Precambrian volcanism and plutonism in the Superior and Churchill Provinces, Ontario and Saskatchewan - a contribution to early crustal evolution	Beales, P.W. 00265 Geology A154 Toronto	Limestone studies and strata-ground mineral deposits

Beaumont, C. 09859 Oceanography A163 Dalhousie	Earth rheology	Carmichael, C.M. 00663 Geophysics E418 Western Ontario	Geomagnetism
Beck, A.E. 00278 Geophysics E171 Western Ontario	Investigation of pure and applied geothermal problems	Carmichael, D.M. 00664 Geological Sciences H427 Queen's	Metamorphic studies in Ontario, Quebec and the Northwest Territories
Bell, K. 06587 Geology A175 Carleton	Application of Sr isotopes to the evolution of the early crust	Carroll, R.L. 00672 Redpath Museum E425 McGill	Evolution and functional anatomy of Paleozoic and Early Mesozoic reptiles
Beswick, A.E. 00348 Geology E214 Laurentian	Determination of the primary geochemical characteristics of Precambrian Volcanism and nature of the early upper mantle	Casteel, R.W. 10217 Archaeology E437 Simon Fraser	Holocene paleotemperature
Borradaile, G.J. 11049 Geology E27C Lakehead	Metamorphic and structural geology with emphasis on Archean rocks of N. Ontario	Cawker, K.B. 10487 Geography J526 Western Ontario	Vegetation history, Manitoulin Island, Ontario
Bourque, P.A. 09307 Géologie E281 Laval	Paléogéographie, paléoécologie et paléoenvironnements du Silurien des Appalaches du Nord	Cerny, P. 06922 Earth Sciences E447 Manitoba	Mineralogy, petrology, and genesis of granitic pegmatites
Bovis, M.J. 11285 Geography E285 British Columbia	Slow mass movement in southwest British Columbia	Chao, G.Y. 00723 Geology E465 Carleton	Descriptive, comparative and structural studies of minerals from Mont St-Hilaire, Quebec
Bowen, A.J. 08844 Oceanography A276 Dalhousie	The dynamics of coastal waters and sediments	Chapman, C.H. 00724 Physics A411 Toronto	Seismic body wave theory
Braun, W.K. 00484 Geological Sciences E300 Saskatchewan	Microfaunas and biostratigraphy of western Canada	Charlesworth, R.A.K. 00729 Geology H429 Alberta	Structural study of coal-bearing and adjacent strata, Rocky Mountain Foothills, central Alberta
Brookfield, M.E. 05984 Land Resource Sc A309 Guelph	Mesozoic evolution of the Pacific margins	Chatterton, B.D.E. 06925 Geology A418 Alberta	Taxonomic, paleoecologic, biostratigraphic and biogeographic studies of Paleozoic faunas of western and northern Canada, with concentration on conodonts and trilobites
Brooks, C. 00517 Geology E317 Montréal	Evolution of the Precambrian Shield of Canada as determined by geochemical, isotopic and geochronologic analysis	Cherry, J.A. 00749 Earth Sciences E485 Waterloo	Migration of contaminants and environmental isotopes in shallow groundwater flow systems
Brown, A.C. 06594 Géologie E321 Ecole Polytech.	Etude métallogénique des gisements stratiformes de métaux non-ferreux	Chesworth, W. 00752 Land Resource Sc E488 Guelph	Weathering of igneous rocks
Brown, R.L. 00535 Geology E326 Carleton	Structural investigations in the Canadian Cordillera	Church, M.A. 06930 Geography A451 British Columbia	Studies of the hydraulics of rivers
Brown, T.H. 08446 Geological Sciences E329 British Columbia	Phase equilibria and ore genesis	Church, W.R. 00781 Geology E507 Western Ontario	Comparative evolution of ophiolite-bearing Proterozoic and Paleozoic orogenic systems
Bryan, P.B. 00556 Geography A332 Toronto	Interaction of sheetwash, rainfall and soil characteristics in initiation of soil erosion	Churcher, C.S. 00782 Zoology E508 Toronto	Quaternary mammalian faunas, especially of Canada and Africa
Burling, P.W. 00592 Oceanography E365 British Columbia	1) Inlet studies 2) Carbon dioxide in ocean and atmosphere	Clark, A.H. 00791 Geological Sciences E515 Queen's	Origin and delimitation of metallogenetic provinces at convergent lithosphere plate boundaries
Burwash, R.A. 00606 Geology H425 Alberta	Uranium and thorium in crystalline rocks of the western shield	Clark, G.S. 00796 Earth Sciences E517 Manitoba	Rb-Sr geochronology, superior Province of Northern Manitoba
Bustin, R.M. 11514 Geological Sciences H545 British Columbia	Structure and sedimentology of late Jurassic and early Cretaceous coal measures in the eastern Canadian Cordillera	Clarke, D.B. 06024 Geology E521 Dalhousie	Petrogenesis of igneous rocks: 1) Granites 2) Kimberlites and peridotites 3) Basic rocks
Byrne, P.M. 00619 Civil Engineering E382 British Columbia	Analytical methods in soil & soil-structure interaction problems	Clarke, G.K.C. 00803 Geophys./Astron. E523 British Columbia	Glaciology: field study, theory and instrumentation
Calon, T.J. 10554 Geology E389 Memorial	Structural studies of ophiolites and associated rocks	Clarke, W.B. 00805 Physics E525 McMaster	Investigations of isotope patterns in nature
Calvert, S.E. 11515 Oceanography H546 British Columbia	Geochemistry of trace metals in recent marine sediments	Clowes, R.M. 06027 Geophys./Astron. E536 British Columbia	Reflection/refraction seismology on land and at sea for crustal/upper mantle investigations
Campanella, R.G. 00636 Civil Engineering E394 British Columbia	In situ testing of soil for foundation analyses and design	Cogley, J.G. 09668 Geography E541 Trent	Palaeoclimate and global tectonics
Campbell, P.A. 00639 Geology & Geophys. E397 Calgary	Geochemistry, mineralogy, and isotope studies of rocks and ores	Coleman, L.C. 06032 Geological Sciences J533 Saskatchewan	1) Stable isotope and petrographic study of serpentinized and metamorphosed komatiites 2) Study of Flin Flon volcanic rocks
Campbell, I.H. 11781 Earth/Planet. Sci. K020 Toronto	Activity coefficients in silicate melts	Collerson, K.D. 08109 Geology A484 Memorial	The development of Archean and Proterozoic crust in Northern Labrador
Cannon, W.H. 08093 Physics E401 York	Applications of long baseline interferometry to geodesy, geophysics, and planetary dynamics		

Cooke, H.B.S. 06035 Geology A500 Dalhousie	1) Studies on the quaternary in Atlantic Canada 2) Studies on the neogene/quaternary of Africa and Eurasia	Dimroth, E. 09313 Sc. appliquées A629 Qué-Chicoutimi	1) Volcanologie physique et sédimentologie d'un bassin volcano-sédimentaire Archéen et 2) Evolution de la Province Grenville dans la région Saguenay-Lac-St-Jean
Cooke, R.C. 07648 Oceanography E565 Dalhousie	Pressure-regulated reactions in the sea	Dixon, J.M. 09012 Geological Sciences E710 Queen's	Centrifuge modelling of gravity-driven geologic structures and tectonic consequences of ridge subduction
Copper, P. 00879 Geology A504 Laurentian	Paleoecology, evolution and morphology of Ordovician to Devonian atrypoid brachiopods on a global basis	Dixon, O.A. 01088 Geology E711 Ottawa	Ordovician-Silurian invertebrate fossils and sedimentary facies
Corlett, M.I. 06944 Geological Sciences E574 Queen's	Studies in mineral chemistry	Doig, R. 01098 Geological Sciences E718 McGill	Geological applications of isotopic analysis
Crampton, C.B. 08569 Geography E596 Simon Fraser	The analysis and mapping across the Canadian North of an ecotone characterized by rapidly changing environmental conditions	Donaldson, J.A. 06076 Geology E724 Carleton	Comparative studies of Precambrian sedimentary rocks
Crocket, J.H. 00927 Geology E602 McMaster	Applications of geochemistry to mineral deposit genesis	Donnay, G. 06077 Geological Sciences A645 McGill	Relation of physical and chemical properties to crystal structure
Crossley, D.J. 10140 Mining/Metal. Eng. E604 McGill	Dynamics of rotating geophysical fluids	Dosso, H.W. 01114 Physics E729 Victoria	Geomagnetic variations and electromagnetic modelling
Cruden, D.M. 07947 Geology A537 Alberta	Stability of natural slopes in rock	Dostal, J. 09886 Geology A647 Saint Mary's	Geochemical studies of some rocks
Cumming, G.L. 00943 Physics A541 Alberta	Systematics of Pb isotope variations in ores and rocks - crustal seismic reflection studies	Drake, J.J. 08947 Geography E737 McMaster	Environmental controls of carbonate groundwater chemistry
Curran, J.H. 10773 Civil Engineering E615 Toronto	Constitutive equations for porous rocks	Dreimanis, A. C1129 Geology E740 Western Ontario	Glaciogenic deposits and stratigraphy of last glaciation in southern part of Canada
Currie, J.B. 00949 Geology E617 Toronto	Development of fracture porosity in sedimentary strata	Duckworth, K. 01143 Geology E751 Calgary	Induced polarization studies of lead zinc ores in temperate and permafrost conditions
D'Anglejan, B.F. 00956 Marine Sci. Centre E623 McGill	Benthic boundary layer sedimentation processes in estuaries	Dudas, M.J. 09490 Soil Science A667 Alberta	1) Processes in the experimental weathering of fly ash 2) Effect of humic compounds on the transport of heavy metals in soil
Daqbert, M. 10774 Génie minéral E628 Ecole Polytech.	Développement d'un simulateur informatique pour l'échantillonnage des gisements miniers	Dunlop, D.J. 06088 Physics A679 Toronto	Rock magnetism and paleomagnetism of continental and oceanic rocks
Dalrymple, R.W. 11090 Geological Sciences E631 Brock	Grain-size segregations and facies organization in selected sedimentary deposits	Durand, M. 09314 Sciences de la terre A682 Qué-Montréal	Etude des implications de la géologie urbaine pour l'aménagement et la construction à Montréal
Dalrymple, R.W. 11090 Geological Sciences K365 Queen's	Grain size segregations and facies organization in selected sedimentary deposits	Dusseault, M.B. 10784 Civil Engineering E767 Alberta	Geomechanics of oil sands: In situ processes and materials behavior
Darling, R.G. 00975 Génie minéral E636 Ecole Polytech.	Applied lithogeochemistry	Edgar, A.D. 01192 Geology A693 Western Ontario	Geochemical and experimental studies of igneous rocks and minerals
David, M. 00987 Génie minéral E640 Ecole polytech.	Développements géostatistiques pour l'inventaire de réserves	Edwards, R.W. 08137 Physics A697 Toronto	Crustal electrosounding
Davidson-Arnott, R.G.D. 10042 Geography E642 Guelph	Beach and nearshore processes - erosion and sedimentation	Eisenstein, Z. 06095 Civil Engineering E785 Alberta	1) Application of constitutive models to analysis of earth structures 2) Behaviour of tunnels in soil 3) Stress-strain behaviour of oil sands
Davis, A.M. 10559 Geography E646 Toronto	Palynology and paleoecology of peatland ecoregions in Newfoundland	Ek, C.M. 09088 Géographie J665 Montréal	* Chercheur principal P.Gangloff (Montréal)
De Albuquerque, C.A.R. 06621 Geology A583 Saint Mary's	Studies on the geochemistry of igneous and metamorphic rocks	El-Sabb, M. 09316 Océanographie A701 Québec-Rimouski	1) The dynamics of the Gaspé Current 2) Circulation dynamics in the lower St. Lawrence Estuary
De Vries, J. 01028 Soil Science A593 British Columbia	Hydrologic behaviour of soils of the urban-rural fringe area of the lower Fraser Valley	Elias, R.J. 11534 Earth Sciences E565 Manitoba	Upper Ordovician solitary rugose corals of central and western North America
Delisle, C.E. 10562 Génie civil E673 Ecole polytech.	Caractérisation et effets écologiques des précipitations sur le nord Québécois	Ellis, R.W. 01217 Geophys./Astron. E800 British Columbia	Seismic crustal and array studies
Denner, W.W. 11296 Physics E680 Memorial	Numerical modeling of ice conditions in the Labrador current		
Deutsch, E.R. 01062 Physics A617 Memorial	Rock magnetism and geological structure in the Newfoundland region		
Dickinson, W.T. 01072 Engineering E699 Guelph	Erosion and sedimentation modelling		

Elrick, D.E. 01219 Land Resource Sc E801 Guelph	Transport phenomena in natural porous media	Forester, R.W. 08148 Geological Sciences E898 Saskatchewan	Stable isotope geochemistry of ore deposits, igneous, and metamorphic rocks
Emery, J.J. 07420 Civ Eng/Eng Mech E805 McMaster	Simulation of time-dependent problems in geotechnology	Fox, R.C. 01356 Geology/Zoology A792 Alberta	Upper cretaceous and lower tertiary vertebrates from western Canada
Emery, W.J. 10565 Oceanography E806 British Columbia	Monthly surveys of the upper waters in the Central Strait of Georgia	Francis, D.M. 09130 Geological Sciences J681 McGill	* Principal investigator A.J. Hynes (McGill)
England, J. 11093 Geography E808 Alberta	Quaternary glaciation, glacio-isostasy and paleoclimatic change, Northern Ellesmere Island	Fransham, P.B. 11095 Earth Sciences E908 Waterloo	Geophysical-geotechnical testing of soils
Evans, I.J. 09676 Land Resource Sc E820 Guelph	Phenolic acids and podzolisation	Fredlund, D.G. 01370 Civil Engineering A801 Saskatchewan	Engineering behavior of unsaturated and swelling soils
Evans, M.E. 08180 Physics A722 Alberta	Paleomagnetic and geomagnetic investigations of western Canadian rocks and rock magnetic studies	Freeze, R.A. 08464 Geological Sciences A808 British Columbia	Hydrologic and geotechnical applications of hydrologic response models
Evensen, N.M. 11536 Geology H567 Toronto	Analysis and modeling of isotopic variations in geologic systems	French, H.M. 07701 Geology/Geography A811 Ottawa	1) Geomorphic process studies, Banks Island, Western Arctic 2) Late Quaternary coastal and fluvial environments, Ottawa region
Everell, M.D. 09889 Mines & métallurgie A725 Laval	Dimensionnement des circuits industriels de comminution	Frind, E.O. 07702 Earth Sciences A818 Waterloo	Mathematical modelling of groundwater flow systems
Fahey, B.D. 07685 Geography H440 Guelph	Hydration shattering as a rock weathering mechanism in cold climates	Fritz, P. 06991 Earth Sciences E921 Waterloo	Environmental isotopes in the hydrosphere and freshwater sediments for hydrogeologic and paleoclimatic investigations
Fabraeus, L.E. 06105 Geology E830 Memorial	Conodontophorid paleobiology, ordovician chrono- and biostratigraphy, and Lower Carboniferous ostracodes from south-western Newfoundland	Fryer, B.J. 07963 Geology E924 Memorial	Igneous and sedimentary geochemistry of the Precambrian and the geochronology of Newfoundland
Farquhar, R.M. 01262 Physics E842 Toronto	Lead isotope studies	Fyfe, W.S. 07964 Geology A826 Western Ontario	Fluid flow in the crust: The limit on ancient geothermal gradients
Farrar, E. 01263 Geology E843 Queen's	Cordilleran geochronology and the kinematic and tectonic consequences of ridge subduction	Fyson, W.K. 01414 Geology A827 Ottawa	Structural patterns in metamorphic rocks
Farvolden, R.W. 01265 Earth Sciences A733 Waterloo	Use of environmental isotopes in identifying sources of groundwater discharge	Gale, J.E. 10539 Earth Sciences E933 Waterloo	Factors controlling the movement of fluids through fractured argillaceous and crystalline rocks
Fawcett, J.J. 01268 Geology E848 Toronto	Field and experimental studies in igneous and metamorphic petrology	Gangloff, P. 09209 Géographie J664 Montréal	Morphosculpture du socle dans l'Ungava * avec C.M. Ek (Montréal)
Feininger, T. 11539 Geology H570 Laval	Comparative petrology and tectonic history of the Quebec Appalachians and the Ecuadorian Andes	Gardner, J.S. 09014 Geography A842 Waterloo	Ephemeral and episodic fluvial transport of debris on mountain slopes
Ferguson, R.B. 01283 Earth Sciences E860 Manitoba	Crystal-chemical and petrogenetic studies of the rock-forming feldspars and other minerals	Garland, G.D. 01442 Physics E946 Toronto	Thermal and electrical properties of the earth
Finn, W.D.L. 01298 Graduate Studies A755 British Columbia	1) Seismic response of ground, slopes and earth dams 2) Simulated earthquake testing of soils 3) Geotechnical engineering in ocean 4) Soil-structure interaction 5) Yielding and deformation of soils 6) Seepage and heat condition in soils	Garrett, C.J.R. 07707 Oceanography A848 Dalhousie	Physical oceanography
FitzGibbon, J.E. 10795 Geography H442 Saskatchewan	Water balance and runoff study of an organic drainage system	Gelinas, L. 01474 Génie minéral E966 Ecole polytech.	Géochimie et pétrogénèse des emplacements volcaniques de l'Archéen en relation avec les gisements de sulfures massifs
Fleet, M.E.L. 01313 Geology A766 Western Ontario	Crystal chemistry and physics of minerals	Gendzwil, D.J. 06139 Geology J548 Saskatchewan	A seismic recording system in Southern Saskatchewan
Fletcher, W.K. 06123 Geology E889 British Columbia	Development and utilization of regional geochemical techniques	Geurts, M.A. 11306 Géographie E977 Ottawa	Palynostratigraphie des dépôts marins et glacio - lacustres tardiglaciaires
Flint, J.J. 06643 Geology E891 Brock	Fluvial morphology and sediment transport in armoured streams	Ghent, E.D. 01487 Geology A874 Calgary	Petrologic and geochemical studies in the cordillera and electron microprobe study of minerals
Ford, D.C. 01335 Geography A773 McMaster	1) Groundwater flow and cavern genesis in soluble rocks 2) Quaternary dating & palaeothermometry of calcite speleothems 3) Karst studies in Canada	Gibson, I.L. 11419 Earth Sciences E983 Waterloo	The structure and composition of the upper part of the oceanic crust
		Gilbert, R. 09545 Geography E988 Queen's	Physical oceanography and proglacial marine sedimentation in fiords of Baffin Island, N.W.T.

Gill, D.E. 01511 Génie minéral A884 Ecole Polytech.	1) Le poinçonnement des roches dans les trous de sonde 2) Résistance des roches à long terme en atmosphère corrosive 3) Théorie de chargement des revêtements des souterrains	Harrison, R.S. 08872 Earth Sciences B024 Manitoba	Sedimentology and diagenesis of pleistocene carbonate sequences
Gillham, R.W. 09892 Earth Sciences E991 Waterloo	Reactive solute transport in porous media/Hydrologic implications of the capillary fringe	Hayatsu, A. 07034 Geophysics F161 Western Ontario	Study of initial argon by K-Ar isochron method
Gittins, J. 01524 Geology A891 Toronto	Petrogenesis of alkalic rocks and carbonatite complexes	Helbig, J.A. 11705 Physics J024 Memorial	Labrador current and Grand Banks circulation study
Godwin, C.I. 09546 Geology F006 British Columbia	Metal and rare earth element zonation in baritic stratiform and volcanogenic deposits, Canadian Cordillera	Helstaedt, H. 07731 Geological Sciences F182 Queen's	Fabrics of metamorphic rocks, tectonic setting of mineral deposits, xenoliths from kimberlites
Goodchild, M.P. 06188 Geography J702 Western Ontario	* Principal investigator D.M. Mark (Western)	Hendry, H.F. 07446 Geological Sciences F186 Saskatchewan	Studies in clastic sedimentology
Goodwin, A.M. 04711 Geology F018 Toronto	Origin of earth's crust	Heroux, Y. 09326 INPS-Pâtrole F196 Québec - INRE	Pyrobitumes asphaltiques, signification de son pouvoir réflecteur et du carbone organique
Gough, D.I. 01560 Physics A918 Alberta	Magnetometer array studies and paleomagnetism	Hesse, F.R. 04731 Geological Sciences F190 McGill	Modern and ancient continental margin sedimentation (diagenesis, processes and environments of deposition, tectonic setting)
Gravenor, C.P. 07717 Geology F047 Windsor	Environment of deposition of ancient glacial deposits	Hickin, E.J. 07733 Geography F201 Simon Fraser	The character of river-channel migration rates in western Canada
Gray, D.W. 01592 Agricult. Enq. F049 Saskatchewan	Simulation of hydrological processes	Hill, A.P. 07044 Geography B071 York	The contribution of intensive farming to nitrogen and phosphorus levels in groundwater and rivers in the Alliston area, Ontario
Gray, J. 07437 Physics F050 Alberta	An investigation of long term climatic and environmental changes by stable isotope analysis of tree ring and peat moss material	Hillaire-Marcel, C. 09327 Sciences de la terre F208 Qué-Montréal	Applications de la géochimie isotopique à l'étude des paléoenvironnements quaternaires dans l'est et le nord du Canada
Gray, J.T. 07718 Geography F051 Montréal	Studies on perennially and seasonally frozen ground in Nouveau Québec and Gaspésie	Hills, L.V. 01816 Geology & Geophys. F209 Calgary	Palynology, stratigraphy and sedimentation, and Quaternary research
Greenwood, B. 01601 Geography A944 Toronto	Coastal sedimentation	Hiscott, R.N. 10680 Geology F210 Memorial	1) Orogenic flysch sandstones, Ordovician, Appalachians 2) Late Precambrian and early Paleozoic sedimentology, Avalon zone and Labrador
Greenwood, H.J. 01603 Geological Sciences A946 British Columbia	Geological phase equilibrium studies	Hodgson, C.J. 08189 Geological Sciences B084 Queen's	Metallogenic studies of Canadian ore-bearing environments
Griffiths, J.P. 11788 Geology K028 Alberta	Mineralization in British Columbia	Hodrych, J.P. 07738 Physics/Geology F221 Memorial	Rock magnetism - its physics and its application to Newfoundland geology
Grundy, H.D. 01634 Geology F076 McMaster	The characterization of minerals and their use as indicators of earth history	Hofmann, H.J. 06185 Géologie F226 Montréal	Precambrian and lower Paleozoic paleontology and stratigraphy
Gwyn, O.H.J. 10054 Géographie F093 Sherbrooke	Lithologie, stratigraphie et étude géotechnique des dépôts quaternaires dans le sud du Québec et de l'Ontario	Hopkins, J.C. 10583 Geology & Geophys. F248 Calgary	Sedimentation and diagenesis of Mesozoic hydrocarbon-bearing sandstones
Hajnal, Z. 07017 Geology F111 Saskatchewan	1) Seismic investigation of deep seated structures in Saskatchewan 2) Seismic investigation of Precambrian contact zones	Howarth, P.J. 01883 Geography F260 McMaster	Development and applications of Landsat analytic methodology for the physical environment
Hall, D.H. 01678 Earth Sciences F117 Manitoba	Rock magnetism, regional magnetic anomalies, and explosion seismology in synthesis of crust mantle evolution	Hron, F. 09147 Physics F262 Alberta	Numerical modelling of seismic waves in structurally complicated media
Hall, J.M. 06574 Geology F119 Dalhousie	The nature, structure and history of oceanic crust through drilling, geological and geophysical investigations	Hubert, C. 01897 Géologie F268 Montréal	Analyse stratigraphique intégrée des roches ordoviciennes et siluriennes de la ceinture d'Aroostook-Matapédia dans la Gaspésie, Appalachians du Québec
Hall, R.L. 10570 Geology & Geophys. F124 Calgary	Lithostratigraphy and biostratigraphy of the Fernie Group (Jurassic), Alberta	Huntley, D.A. 09045 Oceanography B156 Dalhousie	Nearshore and boundary layer dynamics
Halls, H.C. 06662 Geology A988 Toronto	Paleomagnetism of Precambrian rocks	Hutcheon, I.E. 11057 Geology & Geophys. F285 Calgary	1) Geochemistry and water-rock interaction: 2) Theoretical and applied to economic problems
Harris, S.A. 06171 Geography B016 Calgary	Late glacial and postglacial geomorphology and climate in the south-eastern Rocky Mountains	Hutchinson, P.W. 01938 Geology B164 Western Ontario	Origin and metallogenic relationships of massive base metal sulfide and gold deposits

Hynes, A.J. 08877 Geological Sciences J680 McGill	Geologic evolution and mining potential of the Cape Smith Foldbelt, Northern Quebec * with D.M. Francis (McGill)	Kobluk, D.F. 10690 Earth Sciences F448 Toronto	Cavity-dwelling organisms in Paleozoic reefs
Ingram, R.G. 07454 Marine Sci. Centre B176 McGill	Effect of environmental changes on estuarine circulation and mining	Kramer, J.R. 02242 Geology F468 McMaster	Metal-ligand speciation and particulate interaction in natural waters
Jacobs, J.D. 09400 Geography H457 Windsor	Palaeoenvironments of the Prothier Bay area, Baffin Island	Kretz, R. 02251 Geology F474 Ottawa	Geological history of a segment of the St. Lawrence rift system
James, N.P. 09446 Geology F314 Memorial	Facies anatomy and diagenetic evolution of Paleozoic carbonates: Northern Maritime Appalachians	Krogh, T.E. 10065 Geology F479 Toronto	Research in geochronology: techniques, tests and applications to geological problems
James, R.S. 06210 Geology B203 Laurentian	Petrology and geochemistry of igneous and metamorphic rocks	Krouse, H.R. 02258 Physics B372 Calgary	Stable isotope fractionation studies
Jamieson, P.A. 11563 Geology H594 Dalhousie	Studies of ophiolites and their relation to modern oceanic crust, and the role of the Cape Breton Highlands in the evolution of the eastern Appalachians	Kukalova-Peck, J. 09557 Geology F490 Carleton	Morphology and evolution of paleozoic insects with reference to phylogeny of recent insects
Jensen, O.G. 08587 Mining/Metal. Eng. B216 McGill	Earth mechanics - seismology at ultra-long periods seismic analysis - parametric deconvolution	La Rochelle, P. 02342 Génie civil B384 Laval	Propriétés fondamentales et comportement des argiles sensibles
Jeremic, M. 09072 Mineral Eng. F329 Alberta	Deformation and failure of coal mine pillars in western Canada	Ladanyi, F. 02292 Génie civil F513 Ecole polytech.	Propriétés géotechniques des sols gelés et leur comportement en relation avec les fondations et les souterrains
Johnson, P.G. 06213 Geography F338 Ottawa	Mass movement in alpine environments: structure, deformation rates and age	Lafleur, J. 10827 Génie civil F516 Ecole Polytech.	Résistance au cisaillement des argiles altérées
Jolly, W.T. 07750 Geological Sciences F344 Brock	Metamorphism and geochemistry of the volcanic rocks of the Southern Province of the Canadian Shield and Archean geochemical studies	Lajoie, J. 02304 Géologie B402 Montréal	1) Etudes sédimentologiques des roches volcanoclastiques de l'Abitibi 2) Sédimentologie du flysch cambro-ordovicien des Appalaches du Québec
Jones, B. 10922 Geology F346 Alberta	Upper silurian and lower devonian brachiopods of Arctic Canada	Lajtai, E.Z. 02305 Geology F523 New Brunswick	Tensile fracture in rocks
Jones, F.W. 06216 Physics B234 Alberta	Electromagnetic induction, heat flow, and Earth tides and tilts	Lambert, R.S.J. 06250 Geology B411 Alberta	Isotopic and geochemical researches applied to continental margin tectonics and the Archean
Kaiser, P.K. 11567 Civil Engineering H598 Alberta	Time-dependent behaviour of rock masses (around underground openings)	Langford, F.P. 05223 Geological Sciences B420 Saskatchewan	Environment of pitchblende deposition in the Beaverlodge area, Saskatchewan
Kanasewich, E.F. 02085 Physics F380 Alberta	Geophysical investigation of the crust and mantle	Langleben, M.P. 02333 Physics B421 McGill	Drift and thermal regime of sea ice
Karrow, P.F. 02101 Earth Sciences F387 Waterloo	Quaternary chronology and interglacial-interstadial environments	Laurent, R. 07472 Géologie B436 Laval	Géologie des complexes ophiolitiques des Appalaches du Québec
Kay, B.D. 02112 Land Resource Sc B277 Guelph	Quantitative characterization of mass and heat transfer in freezing soils	Lawton, D.C. 11790 Geology & Geophys. K030 Calgary	Geophysical studies of precambrian basement structures
Kehlenbeck, M.M. 07757 Geology F397 Lakehead	Structural and stratigraphic studies on Archean rocks	Le Blond, P.H. 06257 Inst. Oceanography B445 British Columbia	Long waves and coastal oceanography
Kennedy, M.J. 02142 Geological Sciences B300 Brock	Tectonic development in mobile belts	Lebel, J. 07772 Océanographie F561 Québec-Rimouski	Les ions majeurs du St-Laurent et de la Saguenay: variations et équilibres
Kenny, T.C. 02144 Civil Engineering B301 Toronto	Properties of natural soils and rocks	Lee, D.R. 11791 Earth Sciences K031 Waterloo	Groundwater contaminant-flux to surface waters
Kerrich, R. 10688 Geology F408 Western Ontario	Isotopic and chemical alteration of submarine batholiths by seawater exchange	Lefebvre, G. 07774 Génie civil B464 Sherbrooke	Etude des caractéristiques des argiles cimentées
Kirk, A.F. 02176 Geology B321 Memorial	Ec-Cambrian studies on the Avalon and Western Platforms of Newfoundland	Leqault, J.A. 10070 Earth Sciences F583 Waterloo	Palynostratigraphy of the Early Paleozoic of Canada
Kirk, M.S. 02183 Geological Sciences B326 Saskatchewan	Mechanical and electrical properties of rocks	Lenz, A.C. 02422 Geology B479 Western Ontario	Lower and middle Paleozoic stratigraphy, paleontology, biostratigraphy and fossil community analyses
Kirk, P.H. 07080 Geography J567 Western Ontario	Persistence of soil features and the attenuation of soil contaminants	Lerbekmo, J.F. 06266 Geology F596 Alberta	Magnetostratigraphic correlation of Upper Cretaceous to Paleocene sediments; deposition and diagenesis of the Basal Belly River Sandstone
Kissin, S.A. 09902 Geology F437 Lakehead	Crystal chemistry and stabilities of sulphide minerals	Leroueil, S. 11578 Génie civil H609 Laval	Comportement général des argiles sensibles et ses applications pratiques

Lesperance, P.J. 02431 Géologie B486 Montréal	Biostratigraphie de l'Ordovicien Supérieur au Dévonien Inférieur du Québec	Mathewes, R.W. 09809 Bioloq. Sciences B657 Simon Fraser	Paleoecology of postglacial vegetation in coastal and interior biogeoclimatic zones of British Columbia
Levinson, A.A. 02439 Géologie B496 Calgary	Exploration and environmental geochemistry	Mathews, W.H. 02670 Geological Sciences B660 British Columbia	Sedimentology, geomorphology, and Cenozoic geochronology in southern British Columbia
Lewis, J.E. 09559 Geography F608 McGill	Urban climate and land-cover: Surface energy exchange as a function of urban terrain characteristics	May, R.W. 08268 Geology F751 Alberta	1) Lithology and genesis of Quaternary deposits 2) Application of statistical methods to the analysis of geological data
Lewry, J.F. 02450 Geology J573 Regina	Stratigraphic, plutonic and thermotectonic studies in the La Ronge domain, Northern Saskatchewan	McCann, S.B. 02698 Geography B675 McMaster	Morphology, sediments and dynamics of the shore zone
Lo, K.Y. 02478 Civil Engineering F634 Western Ontario	Thermal stresses and deformations in underground structures	McCaughy, J.H. 08271 Geography B676 Queen's	Measurement and estimation of radiation and energy balance components for forested and logged surfaces
Lozan, A. 02484 Geology B526 New Brunswick	Sessile invertebrate communities of cryptic habitats, Caribbean and Bay of Fundy, and their paleoecological significance	McGowan, C. 08275 Zoology B699 Toronto	Functional anatomy and phylogenetic relationship within selected vertebrates, recent and fossil
Long, B.F.W. 11809 INRS-Océanoloq. K032 Québec - INRI	Evolution sédimentologique et géomorphologique des estuaires de la côte nord du Golf du Saint-Laurent	McNutt, R.H. 02769 Geology F804 McMaster	Rb/Sr isotopic studies in the Archean; Sr isotopic studies in the Andes and Himalayas
Longstaffe, P.J. 11581 Geology F612 Alberta	Physico-chemical investigations of diagenesis in clastic sedimentary rocks	Meagher, E.P. 02775 Geological Sciences F808 British Columbia	Chemical bonding and crystal chemical studies of minerals
Luckman, B.H. 08493 Geography J575 Western Ontario	Little ice age in Jasper National Park	Medioli, F.S. 02779 Geology F809 Dalhousie	Foraminiferal distribution in coastal and inland marine water and its importance in the study of eustatic sealevel changes
Ludden, J.N. 10702 Géologie F657 Montréal	Trace element evaluations of igneous rocks from Archean to recent terrains	Menzies, J. 11065 Geography F823 Brock	The mechanics of drumlin formation and till deposition
Ludvigsen, R. 09702 Geology B548 Toronto	Biostratigraphy and community paleoecology of Ordovician trilobites	Mereu, R.F. 02798 Geophysics B739 Western Ontario	Deep and shallow seismic sounding research
Luk, S.H. 11583 Geography B614 Toronto	Soil loss variability under field simulated rainfall	Miall, A.D. 11596 Geology H626 Toronto	Sedimentology of fluvial and deltaic deposits and their relationship to local and regional tectonics
MacLean, W.H. 06279 Geological Sciences F677 McGill	Phase relations and field studies pertaining to magmatic and massive volcanogenic sulfide ore deposits	Michel, B. 02809 Génie civil B746 Laval	Mécanique des glaces
MacRae, N.D. 06282 Geology B574 Western Ontario	Geochemistry of sulfur in mafic rocks	Middleton, G.W. 02811 Geology B748 McMaster	Field and experimental studies of clastic sediments
Mackay, J.R. 02570 Geography B580 British Columbia	Origin of permafrost and ground ice, Western Arctic, and alpine permafrost in B.C.	Miller, H.G. 10706 Physics J584 Memorial	Geophysical investigations of submarine extensions of Nfld. geology
Macqueen, R.W. 10077 Earth Sciences B587 Waterloo	Paleozoic shale/carbonate suites, Western Canada: nature, origin, history, mineralization; Ontario Silurian carbonate studies	Mitchell, R.H. 08287 Geology F855 Lakehead	Petrology of kimberlites and alkaline rocks
Malpas, J.G. 09349 Geology F706 Memorial	1) Investigation of ophiolitic and related rocks and comparison to oceanic crust 2) Petrogenesis of Labrador Kimberlites	Mitchell, R.J. 06334 Civil Engineering F856 Queen's	Model studies on earth structures
Mamet, B.L. 02608 Géologie B609 Montréal	Microfaciès carbonatés de Paléozoïque; microfaune et microflore	Moon, W. 11601 Earth Sciences H631 Manitoba	Crust and upper mantle study of Precambrian shield of Canada
Mansinha, L. 02621 Geophysics B618 Western Ontario	1) Rotational dynamics of the earth 2) Exploration methods	Moore, J.M. 02879 Geology F878 Carleton	Stratigraphy, structure and metamorphism of the Grenville Supergroup
Mark, D.H. 11390 Geography J701 Western Ontario	Generalization and error in cartography and geographical data processing * with M.F. Goodchild (Western)	Moore, R.M. 10610 Oceanography F880 Dalhousie	Trace metal marine geochemistry
Martignole, J. 02652 Géologie F729 Montréal	Recherches pétrologiques dans le sud de la province tectonique de Grenville (Québec)	Moore, T.R. 07798 Geography F881 McGill	Soil forming processes and opal phytoliths in boreal, arctic and subarctic soils
Martin, R.P. 06296 Geological Sciences B644 McGill	Magmatic and metamorphic processes in the genesis of "igneous" rocks	Morgan, A.V. 07496 Earth Sciences J725 Waterloo	Spatial changes in the Canadian insect fauna during the late Pleistocene and recent * with M.A. Morgan (Waterloo)
Martini, I.P. 04783 Land Resource Sc B646 Guelph	Quantitative studies of sands and sandstones	Morgan, M.A. 08500 Biology J726 Waterloo	* Chercheur principal A.V. Morgan (Waterloo)

Morgenstern, N.R. 02888 Civil Engineering B799 Alberta	1) Geotechnical behavior of frozen ground 2) Geotechnical behavior of Athabasca oil sands 3) Failure and movement mechanisms in landslides 4) Cavities in jointed rock	Occhietti, S. 11608 Géographie H638 Qué-Montréal	Paléoenvironnements quaternaires de l'île du Cap-Breton
Mossman, D.J. 07698 Geological Sciences B813 Saskatchewan	Petrology of ore deposits in the Precambrian Shield	Oke, T.E. 03068 Geography F989 British Columbia	Climate modification by urbanization
Mothersill, J.S. 02917 Geology F902 Lakehead	1) Paleomagnetic columns of post-glacial of Great Lakes area: time parallel correlation and virtual geomagnetic north pole paths. 2) Dynamics of sedimentation: Batchawana Bay 3) Metal fractionation	Oldenburg, D.W. 10089 Geophys./Astron. F993 British Columbia	Inversion and inference of geophysical data
Mountjoy, E.W. 02920 Geological Sciences B815 McGill	Carbonate sedimentation and diagenesis Paleozoic reefs and platform margins	Oldershaw, A.E. 04811 Geology & Geophys. F994 Calgary	Diagenesis and economics potential of sedimentary rocks
Muecke, G.K. 07165 Geology F904 Dalhousie	Geochemical and isotopic studies on metamorphic and igneous rocks, minerals and ores, using established and newly developed methods of neutron activation analysis	Onley, E.D. 07815 Geography F998 Queen's	Sediment-related nutrient and contaminant transport in fluvial systems
Muehlenbachs, K. 09026 Geology B819 Alberta	Stable isotope exchange studies and their application to geological problems	Osborn, G.D. 08782 Geology & Geophys. G008 Calgary	1) Holocene glacial chronology and tephrostratigraphy. 2) Characteristics of Bergschrunds
Muller, P. 02935 Geography B826 McGill	Glaciological research on Axel Heiberg Island	Pajari, G.E. 03119 Geology B956 New Brunswick	The geology and petrology of the Carmanville area, northeastern Newfoundland
Murthy, G. 08297 Physics B833 Memorial	Paleomagnetic and rock magnetic investigations of anorthositic and other intrusive rocks from Labrador, Greenland and the island of Newfoundland and the study of implications of these results	Palmer, H.C. 03124 Geophysics B959 Western Ontario	Paleomagnetic studies of Precambrian rock units
Naldrett, A.J. 02965 Geology B850 Toronto	Field and experimental studies relating to the origin of ultramafic and mafic rocks and associated ore deposits containing Ni, Cu, and the Pt group elements	Papezik, V.S. 03129 Geology B965 Memorial	Geology and industrial mineral deposits of volcanic rocks in the Avalon zone of the Appalachian orogenic belt
Nance, R.D. 11603 Geology H633 St. F. Xavier	Structural interpretation of the Cape George Peninsula, Nova Scotia	Parslow, G.R. 04815 Geological Sciences B976 Regina	1) Evaluation of uranium distribution in lake water and sediment 2) Mineralogy, petrology & sulphide potential of layered gabbros in the Lynn Lake area 3) Uranium migration and deposition within the Athabasca formation
Nelson, S.J. 02987 Geology & Geophys. F948 Calgary	Paleozoic correlations	Patterson, R.J. 09570 Geological Sciences G049 Queen's	Geochemical controls on the subsurface transport of potential ground water contaminants
Nesbitt, H.W. 11605 Geology H635 Western Ontario	A study of some trace metal concentrations in natural waters	Pearce, T.H. 08316 Geological Sciences B995 Queen's	Petrology of Archean and analogous Phanerozoic igneous rocks
Nichol, I. 03005 Geological Sciences B885 Queen's	Geochemical exploration in Canada	Pearce, T.H. 08316 Geological Sciences K570 Queen's	Multiple frequency laser interference microscopy
Nicholls, J.W. 04807 Geology & Geophys. F960 Calgary	Chemical analyses of rocks and minerals, molar volumes of pyroxenes and H ₂ O contents of magmas	Pearce, W.G. 08786 Earth/Planet. Sci. G054 Toronto	Paleomagnetism of Paleozoic and Quaternary sedimentary deposits
Nickling, W.G. 09718 Geography H487 Guelph	Effects of surface and textural variables on the threshold velocity of sand in air	Perrault, G. 03186 Génie minéral C011 Ecole Polytech.	Recherche en minéralogie, cristallographie et géochimie analytique
Nielsen, P.A. 11797 Geology K039 Alberta	Mineralogy and petrology of the Mattberry Lake area, NWT	Phillips, B.A.M. 06390 Geography G091 Lakehead	The immediate offshore zone - morphology, history and present processes - Lake Superior Shore
Nkemdirim, L.C. 06353 Geography B899 Calgary	Calgary's urban heat island	Pickerrill, R.K. 09923 Geology G099 New Brunswick	Paleoecology, ichnology, sedimentology and stratigraphy of selected Paleozoic sequences in Eastern Canada
Noble, J.P.A. 03021 Geology F966 New Brunswick	Faunal and sedimentary history of the north Appalachian Orogen, Silurian-Devonian	Piper, D.J.W. 07827 Geology C052 Dalhousie	Quaternary history and sedimentology of the eastern Canadian continental margin
Norris, G. 03030 Geology F968 Toronto	Biostratigraphy of Mesozoic-Cenozoic microspores and dinoflagellates	Platt, E.G. 09079 Geology C058 Lakehead	Petrogenetic studies of alkaline and related rocks
Nyland, E. 06746 Physics B911 Alberta	Geodynamics of slow plate deformation at plate margins	Pond, G.S. 07527 Inst. Oceanography C073 British Columbia	Inlet and coastal circulation, dynamics and mixing
		Pouliot, G. 03272 Génie minéral G128 Ecole Polytech.	Minéralogie et géochimie des principaux gîtes de fer titanés
		Price, A.G. 10094 Geography G140 Toronto	Snowmelt and runoff in a forest
		Price, R.A. 03288 Geological Sciences G141 Queen's	Cordilleran tectonics, orogenic mechanisms, and crustal evolution
		Pride, C.R. 10717 Geology G144 Ottawa	Rare earth element geochemistry applied to the study of "granitic" rocks

Protz, R. 03294 Land Resource Sc G151 Guelph	1) Genesis of Northern Ontario gleysolic, podzolic, cryosolic and organic soils 2) Quantification of chemical and physical changes on individual mineral grains during soil genesis 3) Quantification of soil structure	Russell, D.J. 10721 Earth Sciences G333 Waterloo	Engineering geology of shales of Southern Ontario
Quigley, R.M. 03313 Civil Engineering G165 Western Ontario	Applications of soil mineralogy and physicochemistry	Russell, L.S. 03566 Geology G335 Toronto	The Cretaceous-Tertiary transition in central Alberta
Rafek, M. 11117 Geological Sciences G174 Saskatchewan	Micropaleontological study of the Triassic of the Canadian Cordillera	Russell, R.D. 03567 Geophys./Astron. C262 British Columbia	1) Isotopic studies of the early history of the earth 2) Geophysical instrumentation
Ranalli, G. 07208 Geology C120 Carleton	Rheological properties of lithosphere and mantle and their bearing on geodynamic processes	Rust, B.R. 03569 Geology C265 Ottawa	Depositional models for alluvial sedimentation
Rankin, D. 03342 Physics C123 Alberta	Magnetotellurics and micropulsations	Rutter, N.W. 09576 Geology C268 Alberta	Quaternary history of parts of Alberta, British Columbia and Yukon and development of amino acid racemization dating techniques
Reardon, E.J. C9094 Earth Sciences G208 Waterloo	Modelling water chemical evolution in the unsaturated and saturated zones	Sarjeant, W.A.S. 07855 Geological Sciences C305 Saskatchewan	Dinoflagellates and acritarchs of the Mesozoic: stratigraphical application in Western and Arctic Canada and use in intercontinental correlation
Reid, I.D. 11118 Geology G219 Dalhousie	Seismological studies of northern and eastern Canada and adjacent oceans	Saunderson, H.C. 09838 Geography G370 Wilfrid Laurier	Hydraulic interpretation of eskers
Reynolds, P.H. 04832 Physics/Geology C165 Dalhousie	K/Ar and ⁴⁰ Ar/ ³⁹ Ar geochronology, zircon geochronology and oxygen isotope geochemistry	Scarfe, C.M. 07858 Geology C319 Alberta	Physical properties and structure of silicate melts of geological interest
Risk, M.J. 07220 Geology C186 McMaster	1) Responses of modern and ancient reefs to siltation 2) Depositional environment of the Cardium Sandstone, based on trace fossils	Schenk, P.E. 03660 Geology G380 Dalhousie	Sedimentologic-stratigraphic studies of the early through late Paleozoic sedimentary rock of Nova Scotia
Riva, J. 03439 Géologie C189 Laval	Study of Ordovician graptolites (a continuing project)	Schloessin, H.H. 03667 Geophysics G383 Western Ontario	Physical properties, (mechanical, thermal, electrical, magnetic) of water under conditions of planetary interiors
Roberts, M.C. 03453 Geography C195 Simon Fraser	The impact of urbanization on the hydrology of selected watersheds, Surrey, B.C.	Schreier, H. 11627 Soil Science H657 British Columbia	An assessment of the chemical & spectral variability of terrain & soil mapping units
Roberts, R.G. 03454 Earth Sciences G256 Waterloo	The alteration of the volcanic rocks associated with Archean gold deposits and massive sulphide deposits	Schwarcz, H.P. 03683 Geology G397 McMaster	Isotopic geochemistry
Robin, P.Y.F. 08833 Geology G265 Toronto	The deformation of rocks and its petrological consequences: migmatites and mylonites	Schwartz, F.W. 08362 Geology C344 Alberta	Dispersion and mass transport in groundwater systems
Robinson, P.T. 11801 Geology K043 Dalhousie	The petrology, structure and origin of the ocean crust	Schwarz, E.J. 11361 Génie minéral G399 Ecole Polytech.	Magnetic properties of sulphide ore deposits and their significance in magnetic prospecting
Rochester, M.G. 03481 Physics C207 Memorial	Theoretical solid-earth geophysics and planetary physics	Schwerdtner, W.M. 03688 Geology C347 Toronto	Paleostrain analysis in the Canadian Shield
Roeder, P. 03487 Geological Sciences C213 Queen's	Electron probe and experimental studies of basaltic rocks	Scott, S.D. 03336 Geology G407 Toronto	Geology and geochemistry of massive sulfide ores
Rogerson, R.J. 08697 Geography G278 Memorial	Cirque glaciers, erosion and ice-marginal moraines	Sequin, M.K. 03707 Geology G419 Laval	Paleomagnetic studies of Archean Greenstone Belts of Northern Quebec
Ross, J.V. 03512 Geological Sciences G293 British Columbia	Structure and mechanical properties of silicate minerals: Structural studies in southern central B.C.	Selvadurai, A.P.S. 09580 Civil Engineering G420 Carleton	1) Group effects in soil foundation interaction; plane strain and 3-D effects 2) In-situ testing of soils by screwplate and pressuremeter tests
Rouse, W.R. 03529 Geography C238 McMaster	Energy and water budget studies in the tundra and subarctic	Shaw, D.M. 03736 Geology C374 McMaster	Geochemical studies of minerals and rocks
Roy, D.W. 07851 Sc. appliquées H499 Qué-Chicoutimi	Analyse structurale du socle dans la région du Haut-Saguenay, Québec	Shaw, J. 06784 Geography C375 Alberta	Sedimentology in lakes, rivers and by glaciers
Roy, N. 06432 Génie civil G319 Laval	Capacité portante des pieux flottants dans les argiles sensibiles	Shegelski, R.J. 10886 Geology G447 Lakehead	Precambrian sedimentation and volcanism
Rucklidge, J.C. 03550 Geology G324 Toronto	Geological studies using ultra-sensitive and x-ray analysis	Shoemaker, E.M. 03766 Mathematics G465 Simon Fraser	Applications of plasticity and viscoelasticity
		Silverberg, N. 08523 Oceanography H504 Québec-Rimouski	Sediment accumulation phenomena in the St. Lawrence Estuary

Silvestri, V. 16884 Génie civil G476 Ecole Polytech.	Résistance au cisaillement et anisotropie des argiles sensibles de la mer Champlain	Stearn, C.W. 03934 Geological Sciences C400 McGill	Paleoecology of reefs
Simony, P.S. 03790 Geology C398 Calgary	Structure of Mackie and Bonington plutons	Steiner, J. 07276 Geology G582 Alberta	Illite Pb/Sr dating of pre-Pleistocene tillites
Simpson, P. 00175 Geology C400 Windsor	Cratonic-interior sedimentation and related tectonic controls	Stesky, P.W. 09740 Earth/Planet. Sci. G586 Toronto	Geophysical properties of fractured and jointed rock
Sinclair, A.J. 03796 Geological Sciences C403 British Columbia	Mineral deposits of the Canadian Cordillera--rock geochemistry, geostatistics and genetic models	Stevens, P.K. 07878 Geology G588 Memorial	Lower Paleozoic evolution of the West Newfoundland and adjacent areas
Singh, B. 11362 Géographie G4P5 Montréal	Investigation de quelques aspects de l'hydrogéologie dans les alentours du barrage LG-2, territoire de la Baie James, Québec	Stewart, I.C.F. 09234 Physics G593 Memorial	Crustal and upper mantle structure, with particular reference to Newfoundland
Sitar, N. 11633 Geological Sciences H667 British Columbia	Behaviour of slopes in weakly cemented soils under seismic loading	Stimpson, B. 09847 Mineral Eng. G601 Alberta	Fracture and strength of simulated rock masses with particular reference to mine pillars
Skevington, D. 10108 Geology C416 Memorial	Graptolite faunas and biostratigraphy of the North Atlantic region with emphasis on Western Newfoundland	Stockey, R.A. 11072 Botany G606 Alberta	Paleobotany in western Canada
Skippen, G.B. 03814 Geology G402 Carleton	Geochemistry of pelitic schists and marbles from eastern Ontario; geochemistry of the Hotteluk Complex, British Columbia	Strandberg, D.W. 07989 Geology C515 Toronto	Magnetic and electrical studies of geological significance
Sklash, W.G. 10727 Geology G493 Windsor	Investigation of the role of groundwater in storm and snowmelt runoff	Stringer, P. 06797 Geology G613 New Brunswick	Relation of cleavage to folding in the Appalachian - Caledonian orogenic belt
Slaymaker, H.O. 03810 Geography C418 British Columbia	Theoretical and applied significance of solute and sediment production, transport and yield in southern coast mountains	Strong, D.P. 07280 Geology C519 Memorial	Metallogenic, geochemical, petrological and tectonic studies of the Appalachian-Caledonian Orogen
Smith, D.G. 09640 Geography G510 Calgary	1) Geomorphology and sedimentology of large scale anastomosed fluvial systems. 2) Sedimentation and concentration processes of heavy minerals in braided rivers	Stupavsky, M. 11637 Geology H667 Windsor	Paleomagnetism of the Grenville Front
Smith, P.G.W. 03822 Geology C425 Alberta	Applications of the electron microprobe in mineralogy, petrology, economic geology and meteoritics	Sundby, R. 09375 Oceanography H514 Québec-Rimouski	Estuarine geochemical processes
Smith, M.W. 08016 Geography H505 Carleton	Thermal properties of freezing soils	Symons, D.T.A. 06600 Geology C548 Windsor	Paleomagnetic studies on the pre-Jurassic Geotectonic evolution of the Cordillera
Smith, T.E. 04862 Geology G524 Windsor	Archaeo magmatism and tectonics: a geochemical study of the evolution of granitic rocks in the Superior Province and subsidiary projects	Syvitski, J.P.M. 11074 Geology & Geophys. G645 Calgary	Sediment dynamics of west coast fjords
Smylie, D.P. 03866 Earth Sciences G528 York	Dynamics of the earth	Tavenas, P.A. 06406 Génie civil G668 Laval	1) Lois de comportement des argiles sensibles 2) Application des concepts d'état limite aux calculs des ouvrages dans les argiles sensibles
Sonnenfeld, P. 03878 Geology C456 Windsor	Evaporite formation	Taylor, C.H. 09236 Geography C569 Trent	1) Runoff production in an inter-drainage swale 2) Effects of urbanization on streamflow of a small basin in Peterborough, Ontario
Spang, J.H. 08376 Geology & Geophys. G542 Calgary	Mechanical behavior of the thrust plates in the foothills and Front Ranges of the Canadian Rocky Mountains	Teller, J.T. 06805 Earth Sciences G683 Manitoba	The Lake Agassiz-Lake Superior connection
Spooner, P.T.C. 10729 Geology G549 Toronto	Geochemical and geological studies of economic mineral deposits	Terasmae, J. 04792 Geological Sciences G687 Brock	Correlation of radiocarbon chronology and palynostratigraphy of postglacial lake sediments and peat deposits
St-Julian, P. 04865 Géologie G559 Laval	Analyse structurale des schistes de Bernier-Sutton	Thompson, W.J. 11641 Civil Engineering H670 Ottawa	Stability of slopes in rock fill and spoil
Starkey, J. 03836 Geology G573 Western Ontario	Analysis of the fabrics of deformed rocks	Thomson, S. 04125 Civil Engineering C674 Alberta	A study of in-situ properties of stiff clay (tills) and clay shales and their application to engineering problems (tunnels)
Stauffer, M.R. 03932 Geological Sciences C489 Saskatchewan	Structures in rocks	Trembath, I.T. 04183 Geology G743 New Brunswick	Factors affecting the crystallization of feldspar in synthetic and natural systems
		Trenhaile, A.S. 09398 Geography C636 Windsor	Weathering and shore platform development in eastern Canada
		Trzcierski, W.E. 08000 Génie minéral G758 Ecole Polytech.	Petrology & tectonics of the Canadian Appalachians

Turek, A. 7573 Geology 6762 Windsor	Geochronology of Lake Superior region	Welstad, J.E. 7586 Geography 6908 Brandon	Date of formation, migration, and abandonment of meanders
Turnock, A.C. 04212 Earth Sciences 6567 Manitoba	Experimental mineralogy of pyroxene and oxides	West, G.P. 04420 Physics C785 Toronto	Regional and applied geophysics
Ulrych, T.J. 04210 Geophys./Astron. 6774 British Columbia	Communication theory and potential field research	Westermann, G.E.G. 04432 Geology 6012 McMaster	Jurassic ammonites and cephalopod shell function
Vaid, Y.P. 16321 Civil Engineering 6780 British Columbia	Stress-strain and strength properties (including time effects) and cyclic loading behavior of natural soils	Westgate, J.A. 04433 Geology C700 Toronto	Quaternary tephrochronology of western Canada and adjacent parts of Alaska
Van de Poll, H.W. 08667 Geology 6672 New Brunswick	1) Palaeoclimatic influence on the economic geology and lithostratigraphy of the carboniferous succession of eastern Canada. 2) Sedimentation in the shallow marine coastal environment of the Northumberland Strait	Westgate, J.A. 04433 Geology K153 Toronto	Mount St. Helens tephra of the May 1980 eruption: a modern analogue of past large-scale tephra eruptions in western North America (special grant)
Vanicek, P. 07574 Surveying Eng J625 New Brunswick	Non-tidal tilts of bedrock	Williams, H. 04475 Geology C822 Memorial	Anatomy of an orogen
Veizer, J. 09973 Geology 6913 Ottawa	Evolution of the terrestrial exogenic system	Williams, P.P. 11657 Geology H681 New Brunswick	Deformation mechanisms and tectonic processes
Vetter, W.J. 04282 Eng./Applied sci. K328 Memorial	Ocean sediment classification using acoustic sensing	Williams-Jones, A.E. 11645 Geological Sciences G274 McGill	An investigation of porphyry-type copper mineralization in the Gaspé region, Quebec
Walker, P.G. 04320 Geology C729 McMaster	Development of clastic facies models	Wilson, H.D.B. 04492 Earth Sciences G941 Manitoba	Facies of chemical ore deposits in gneissic terrane
Wangertsky, P.J. 04351 Oceanography C741 Dalhousie	The carbon cycle in the open ocean	Wilson, W.V.W. 04025 Geology C833 Alberta	Late Cretaceous and early Tertiary fishes of western North America
Wardlaw, N.C. 04359 Geology & Geophys. G869 Calgary	Reservoir properties of sedimentary rocks	Woo, M.K. 04037 Geography C849 McMaster	Hydrology of nival-regime basins in the high Arctic
Warren, H.V. 04266 Geological Sciences G872 British Columbia	Neutron activation in mineral exploration	Woods, D.V. 11654 Geological Sciences H683 Queen's	Forward modelling of deep-sounding transient electromagnetic (TEM) systems
Watkinson, D.H. 04275 Geology G879 Carleton	Exploration for and genesis of ore deposits	Wright, J.A. 06557 Physics G979 Memorial	Geothermal and geomagnetic measurements in Atlantic Canada
Watters, B.F. 11646 Geology H675 Regina	Geochemical study of volcanic rocks in the La Ronge and Flin Flin areas, northern Saskatchewan	Yong, P. 04560 Civ Eng/App Mech C875 McGill	Stability of soil structural units relative to transient and natural environmental stresses
Weaver, J.T. 04389 Physics G888 Victoria	Electromagnetic induction in the earth and oceans	York, D. 04574 Physics C877 Toronto	Isotope studies and age determinations
		Zentilli, M. 04020 Geology C996 Dalhousie	1) Metallogenic studies in Nova Scotia. 2) Metallogenic studies in Central Andes
		Zodrow, F.L. 08667 Geology H631 St. F. Xavier	Pyrite and hydrated sulfates in coal of Cape Breton

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