

Soil Climate Monitoring

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OBJECTIVES

- To determine the thermal characteristics of permafrost soils
- To determine thermal changes resulting from human disturbance and climate warming

LOCATIONS OF SOIL CLIMATE SITES

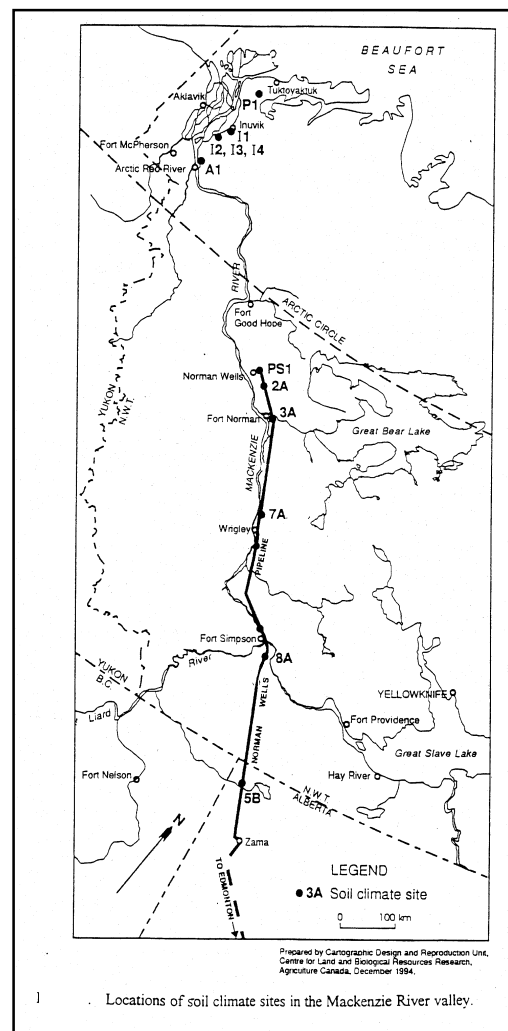
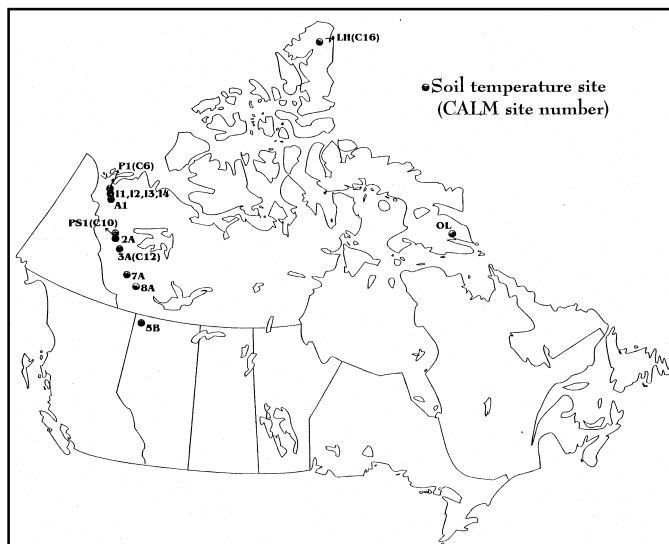
- There are 14 sites, all in northern Canada:
 - 12 sites along the Mackenzie Valley, N.W.T.
 - One site at Lake Hazen on Ellesmere Island, Nunavut
 - One site on Pangnirtung Pass on Baffin Island, Nunavut

COOPERATING AGENCIES

- The Mackenzie Valley sites are monitored with the cooperation of the Geological Survey of Canada
- The Ellesmere and Baffin Island sites are monitored with the cooperation of Parks Canada

TYPES OF DATA COLLECTED

- Soil temperatures at depths of 2.5, 5, 10, 20, 50, 100 and 150 cm
- Air temperatures
- Active layer depths
- Subsidence (Mackenzie Valley sites only)

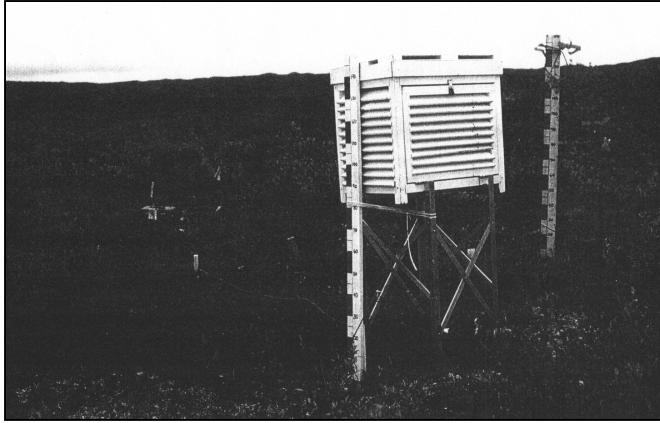


Soil climate sites

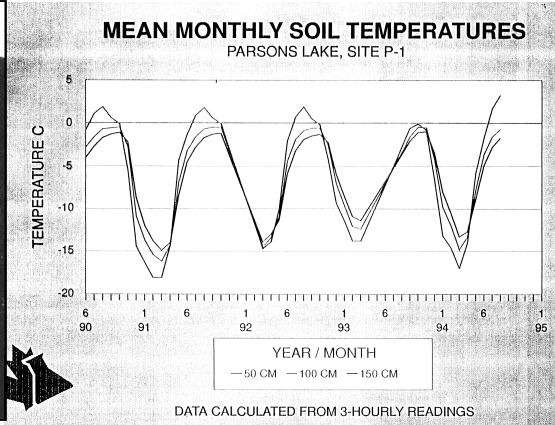
Site	Duration of data collection	
	Manually	Data logger
Parsons Lake (P-1)		Sept/89
Inuvik South I (1-1)	Sept/78-Sept/89	Sept/89
Inuvik South 2 (1-2)	Sept/78-Sept/89	Sept/89
Inuvik South 3 (1-3)	Sept/78-Sept/89	Sept/91
Inuvik South 4 (1-4)		Mar/94
Arctic Red R. (A-1)	Sept/78-Sept/89	Sept/89
Pump Station I (PS1-1)	Aug/86-May/88	May/88
Canyon Creek (2A-1)	Aug/86-May/88	May/88
Great Bear River (3A-4)	Aug/86-May/88	May/88
Table Mountain (7A-1)		Aug/86
Manner's Creek (8A-1)	Aug/86-May/88	May/88
Petitot River N (5B-1)	Aug/86-May/88	May/88
Lake Hazen (Ellesmere Is.)		July/94
Overlord (Baffin Is.)		June/95

RECOMMENDATIONS

- Continuity in data collection and commitment of the involved organizations are necessary for long-term monitoring
- Monitoring data should be centrally archived

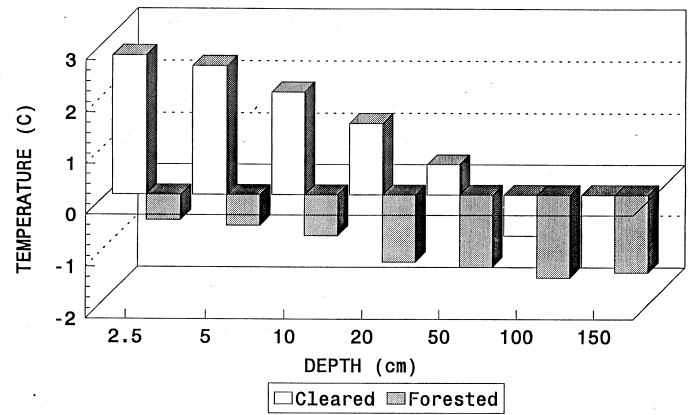


Photographs of soil climate stations.



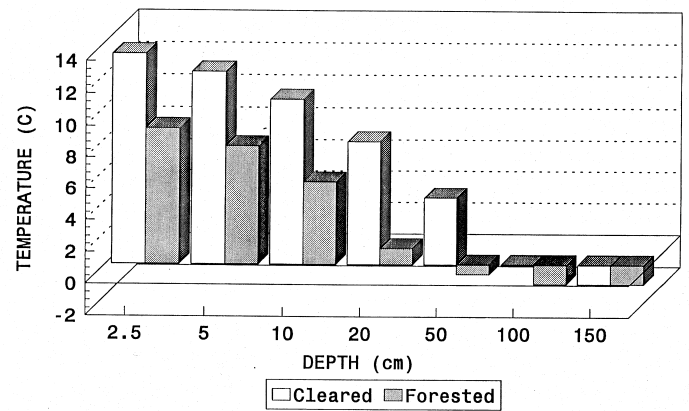
MEAN ANNUAL SOIL TEMP.

CLEARED AND UNCLEARED SITES



MEAN SUMMER SOIL TEMP.

CLEARED AND UNCLEARED SITES



CALM sites

Site		Location		Method*	Late summer thaw (cm)								
CALM No.	Name	Lat. N	Long. W		1991	1992	1993	1994	1995	1996	1997	1998	1999
C6	Parsons Lake (P1)	68° 58'	133° 33'	T/P	80	85	84	91	89	84	90	80	–
C10	Pump Station (PS1)	65° 17'	126° 53'	T/P	66	64	58	60	63	61	77	78	77
C12	Great Bear River (3A)	64° 55'	125° 35'	T/P	72	72	72	69	69	63	69	87	86
C16	Lake Hazen, Ellesmere Is.	81° 49'	71° 23'	T	–	–	–	47	51	47	46	52	43
	Table Mountain (7A)	63° 37'	123° 38'	T/P	–	–	–	93	85	88	93	98	73
	Petitot River (5B)	59° 45'	119° 31'	T/P	75	72	78	69	67	67	70	73	61
	Inuvik 1 (I1)	62° 19'	133° 26'	T/P	52	50	51	54	62	49	47	70	–
	Inuvik 4 (I4)	68° 10'	133° 30'	T/P	–	–	–	62	64	67	74	–	–

* T: interpolated depth based on temperature profile obtained by data logger; P: single point probe