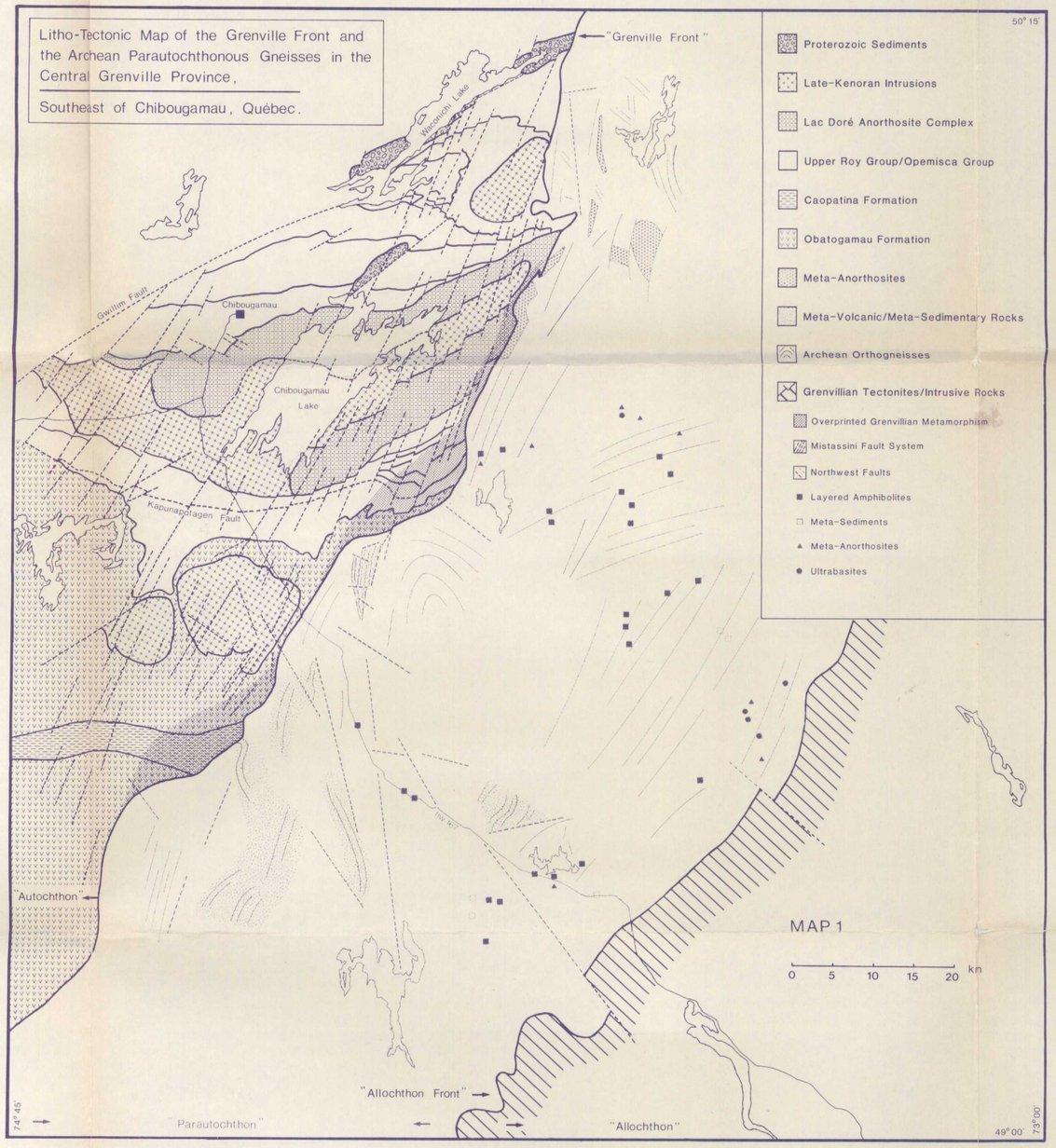

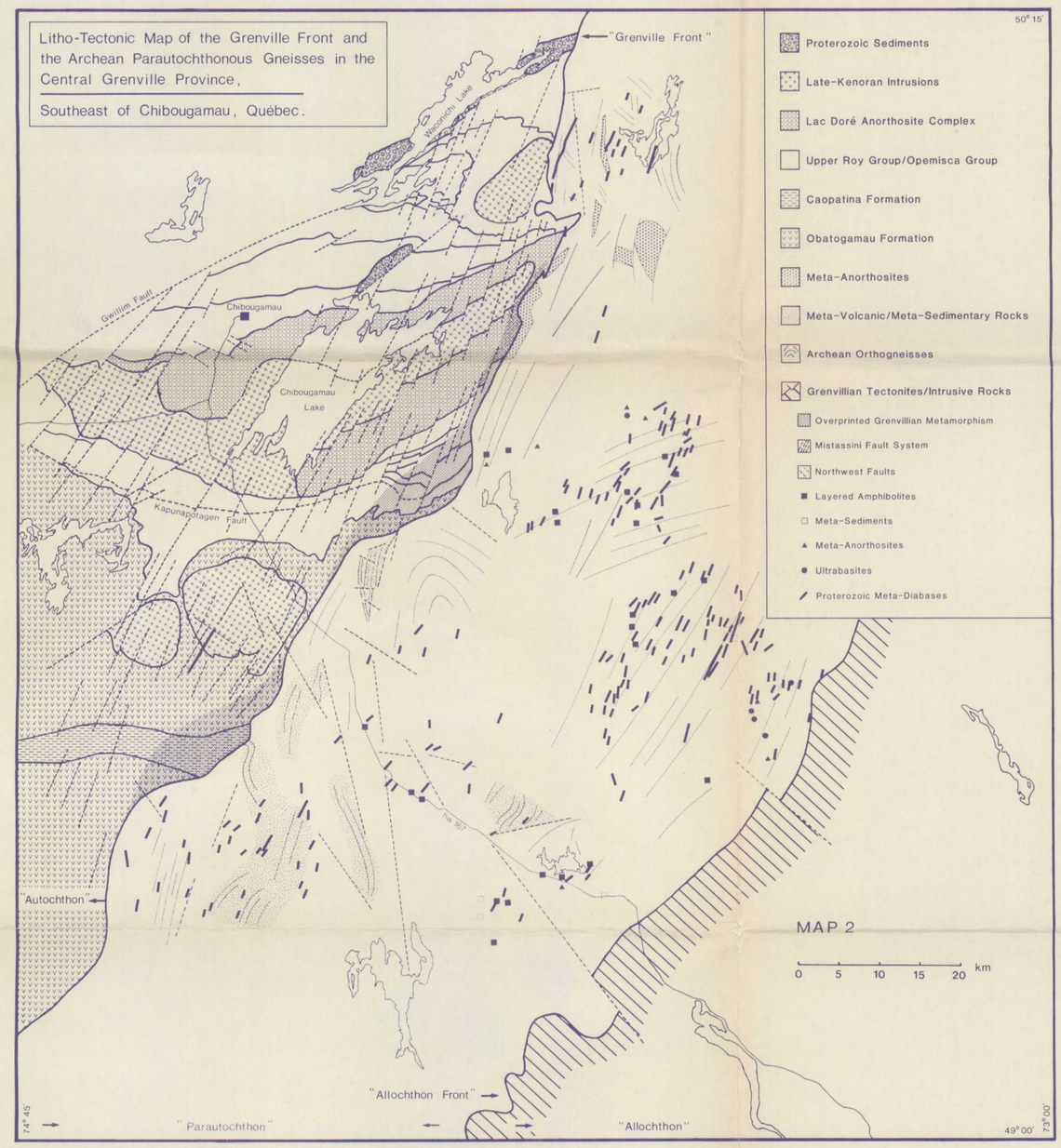

LITHO-TECTONIC MAP OF THE GRENVILLE FRONT, THE ARCHEAN PARAUTOCHTHONOUS ORTHOGNEISSES AND PROTEROZOIC DYKES IN THE CENTRAL GRENVILLE PROVINCE, SOUTHEAST OF CHIBOUGAMAU, QUEBEC

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MAP 1

In Chibougamau district, the Superior Province (the Autochthon) is composed of (1) east-trending Archean volcanic and sedimentary rocks, the Roy and Opemisca Group metamorphosed at greenschist grade, (2) pre- and late-tectonically intruded by the lac Doré anorthosite complex and tonalitic plutons and (3) by Proterozoic sediments. It is truncated by the Grenville Front (GF), a lithologic, structural and metamorphic break that defines the northwest boundary of the Grenville Province. All the rocks of the Autochthon are bent to the northeast as the GF is approached due to local sinistral movements along the Mistassini fault system (MFS) developed west of the GF. A metamorphism reaching mid-amphibolite grade dated Grenvillian overprints the greenschist volcanic rocks immediately west of the GF where flexures appear. The orthogneisses southeast of the GF (the Parautochthon) are heterogeneous on the outcrop scale but chemically homogeneous over the map area; rocks are classified in the trondhjemite-tonalite field. The gneisses show various textures, grain sizes, reworking structures (pegmatoid breccias, schlieren, in situ orthomigmatization) and inclusion content. The gneisses show (1) pre-Grenvillian east- and north-trending foliations and (2) metric to kilometric folds, and (3) Grenvillian north-northeast- trending faults near the GF and (4) northeast transposition of the foliations as the Allochthon Front (AF) is approach; the gneisses are dated 2.620 Ga (U/Pb zircon). Metric to kilometric inclusions in the orthogneisses comprises meta-volcanic and meta-sedimentary rocks at upper amphibolite/granulite grade, massive and layered amphibolites, ultrabasites, meta-anorthosites and amphibolite dykes showing various degrees of partial melting; only few cross-cutting pink pegmatites were mapped. Proterozoic meta-diabases trending north-northeast are found throughout the map area (Map 2). Given the transposition of Grenvillian age starting few kilometers northwest of the AF in the Archean orthogneisses, the Allochthon Front is mainly a lithologic boundary limiting the northwest side of the Grenvillian tectonites (the Allochthon). They are composed of pink granitic gneisses, layered and massive meta-gabbros, massive and layered amphibolites, quartzo-feldspathic gneisses and monzonitic/dioritic rocks; thin layers of anorthosites and pink pegmatites are found in mylonitic zones at the AF.

MAP 2

Diabase dykes are spread throughout the orthogneisses of the Parautochthon. The dominant family trends N 00° to N30°. The dykes have a maximum width of 30 m. and can be followed for few kilometers. They are discordant on the pre-Grenvillian deformation; their emplacement age is unknown but field evidences support a Proterozoic age. The dykes were stretched and boudined and somewhat transposed during the Grenvillian deformation and metamorphism; the margins are totally recristallized in garnet, amphibole, plagioclase, epidote and sphene. This amphibolitization is also related to fractures perpendicular to the wall orientation. The cores of the dykes preserves diabasic textures varying in grain sizes and coronotic textures are visible. Syn-genetic flow structures and pegmatoid zones were also seen. The dykes show a parallelism with the Mistassini fault system (MFS) and are believe to have emplaced during extention and reworking along MFS. A minor family of amphibolitized dykes trends N 70° and cross-cut the AF. Few fresh lamprophyre dykes were also found near the northeast GF.

References

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