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Stratigraphic revision of the Urban-Barry Belt

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Abstract

Recent geoscientific studies conducted by the ministère des Ressources naturelles et de la Faune in the Urban-Barry Belt revealed the need for a revision of the stratigraphy of this area. We present a new stratigraphic framework covering most of the Urban-Barry Belt as shown on NTS map sheets 32F01, 32G04, 32G03, 32B13 and 32B14.

The recast stratigraphy is based on new geochronology data from the ministère des Ressources naturelles et de la Faune, results of litho-geochemical analyses of about 100 new samples and a structural reinterpretation of the Urban-Barry Belt. The belt is composed of imbricated structural blocks emplaced by NNW directed thrusting. The age of the volcanic rocks that makes up the structural blocks increases progressively from the north (2707 Ma) to the south (2791 Ma).

From NNW to SSE, the main volcanic units in the Urban-Barry Belt are the Urban, Macho, Chanceux, Lacroix and Fecteau formations. The temporal succession of geodynamic settings inferred for these units suggests a relatively complete Wilson cycle. The cycle comprises the formation of a pre-Abitibi basement consisting of ancient volcanic rocks (Fecteau Formation, 2791 Ma), the opening of an ocean basin and the formation of oceanic crust with the periodic development of island arcs between 2730 and 2707 Ma and the closing and imbrication of this basin during the Kenoran Orogeny. The predominantly mafic and intermediate volcanic rocks of the Fecteau Formation are the oldest sequences; they are comparable in age to certain greenstone belts of the Opatica Subprovince. The onset of rifting was marked by the eruption of komatiites (Lacroix Formation) and possibly by the intrusion of carbonatites (Lacroix Carbonatite), suggesting the involvement of a mantle plume in the opening of the Northern Volcanic Zone. The younger units, ranging in age from 2727 to 2707 Ma, may represent the formation of island arcs on typical Northern Volcanic Zone oceanic crust.

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