

Piette-Lauziere N, Guilmette C, Pilote P, Perrouty S, 2015, Progress in characterizing regional metamorphism in the Pontiac Subprovince, Abitibi, Quebec, Abstract, AGU-GAC-MAC-CGU, Montreal, QC

The volcano-sedimentary Pontiac Archean Subprovince is located in the Eastern part of the Superior Province, South of the Cadillac-Larder Lake Fault Zone and the Abitibi Subprovince. Its strong metamorphic gradient has been qualitatively described by many workers, but recent advances in thermodynamic databases now allow a systematic quantification of its geodynamic evolution to be established. The recognition of the the Canadian Malartic world-class gold deposit located in the lower-grade section of the Pontiac also calls for a better understanding of the timing, nature and extent of regional metamorphism in the area, particularly of the timing relationships between deformation and metamorphic recrystallization. This contribution presents preliminary results derived from field and petrographic observations across the biotite-in, garnet-in, staurolite-in and kyanite-in isograds in Pontiac metasedimentary rocks. During the summer of 2014, fieldwork has been carried out in collaboration with the MERN South of Val-d'Or and Malartic. Following field observations, the description of metamorphic assemblages in thin sections helped to document mineral textures, infer reactions and assess their relationship with deformation. In the study area, the main stable mineral assemblages, listed from North to South, are biotite-chlorite-muscovite, garnet-biotite-chlorite-muscovite, staurolite-garnet-biotite-muscovite and staurolite-garnet-biotite-muscovite-kyanite. According to available phase diagrams for metapelites, the observed metamorphic gradient would be of the order of 25°C/km with maximum peak conditions in the order of 550°C and 6 kbar (qtz-pl-bt-ms-grt-st-ky). Upcoming multi-equilibria thermobarometry, P-T pseudosections and Lu-Hf Sm-Nd dating of garnet will help further constrain the Pontiac metamorphic evolution. Results will be integrated as precise P-T-t-D paths that will help quantify the Pontiac metamorphic gradient and will suggest an appropriate type of tectonic setting corresponding to its accretion to the Abitibi Subprovince.

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