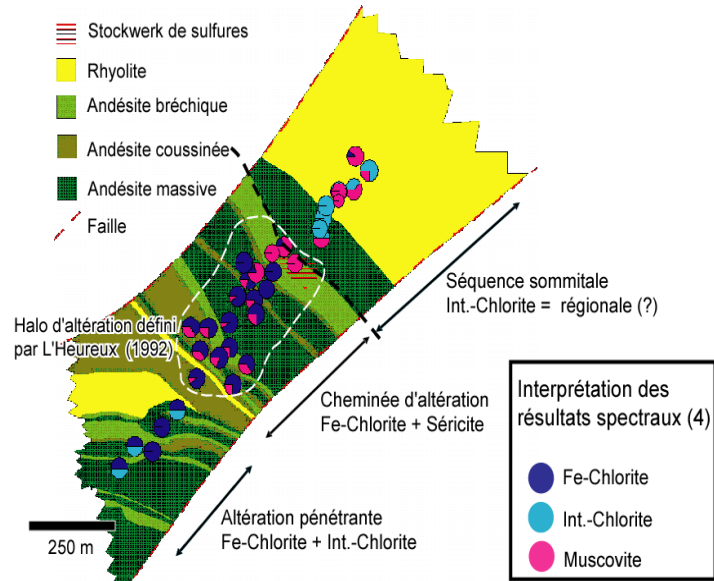


Project 2002-1A: Parameterisation of hydrothermal alteration: testing of PIMA on Archean altered rocks

The main objective of project 2002-1A was to test the performance of the spectral infrared detector PIMA-II in recognising alteration minerals in an Archean context.

A campaign for taking measurements in the field was carried out in collaboration with BRGM (Bureau de Recherches Géologiques et Minières). Measurements were taken at five locations: the Héré property, the Noranda mining camp, the Kiena mine, the Normétal mine, the Casa Bérardi mine and the Doyon mine.

In general, there is good agreement between the geometry of the mineralisation and the geometry of the zone of the alteration minerals as detected by PIMA. Some minerals such as chlorite, white micas, epidote, actinolite and pyrophyllite are easily identifiable using PIMA-II. However, carbonates are harder to identify, unless they are present in substantial quantities. For use in exploration, PIMA should be able to reveal changes in the mineral paragenesis and to guide exploration in real time to areas with the greatest potential if the mineralisation is associated with alteration mineralogy consisting of the above mentioned minerals.



Héré property used to test PIMA

To verify the agreement between spectral identification and reality, selected samples were characterised using a microprobe. For technical reasons, several compositions of chlorite and mica could not be identified in the samples because of their small crystal size. In the 4 examples selected for validation, it is difficult or even impossible to compare the composition of chlorites or micas to validate the changes in the mineralogy of the small grains (e.g. Chlorite-Fe vs. Chlorite-Mg; Muscovite vs. Illite) determined using PIMA. The study demonstrates some potential for PIMA, but it also shows the limitations of the instrument in an Archean context.

Summary: Project 2002-1A	
Objectives	<ul style="list-style-type: none"> To test the performance of PIMA-II in an Archean context; PIMA-II is an instrument used to detect alteration minerals using infrared spectrometry.
Results	<ul style="list-style-type: none"> Good agreement between the mineralisation geometry and the geometry of the zone of alteration minerals detected using PIMA-II; Identification of chlorites, white micas, epidote, actinolite and pyrophyllite using PIMA; Identification of carbonates is difficult.
Special Collaboration	<ul style="list-style-type: none"> Catherine Greffié, BRGM