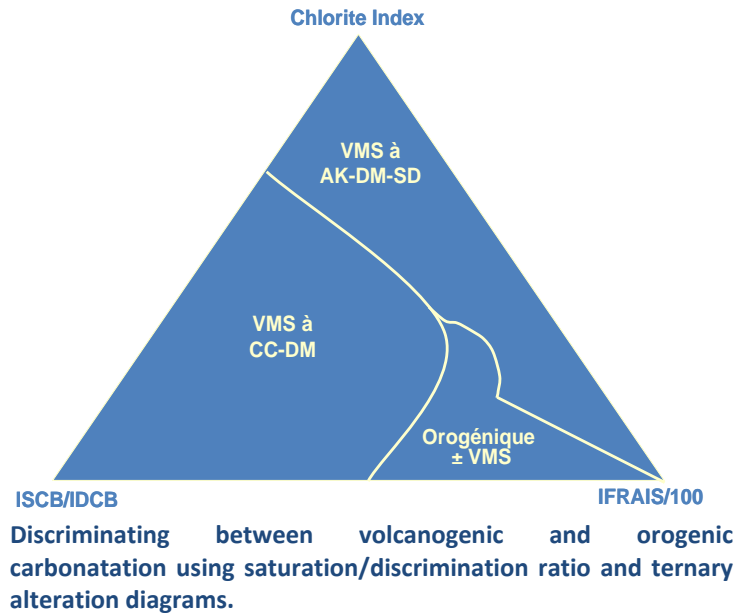


2008-08: Carbonatation phase 3: Characterisation of carbonatation in volcanogenic and orogenic environment

The carbonatation diagram developed at CONSOREM (project 2006-04) links the saturation index (ISCB) and the discrimination index (IDCB). It differentiates in part the orogenic compositional component from the volcanogenic one. However, a strong superposition of orogenic and volcanic trends is observed in the diagram. Therefore, the main objective of project 2008-08 was to improve the discrimination tool for the carbonatation signature or to develop a new approach.

A number of case studies were used to characterise carbonatation in orogenic and volcanogenic environments. Sites chosen correspond to deposits or fault segments where there is carbonatation without superposition of known or suspected volcanogenic orogenic systems.



It has been shown that the ISCB/IDCB ratio significantly improves the difference between orogenic and volcanogenic carbonatation on a carbonatation diagram. Samples from volcanogenic sites are mostly below 0.25. Principal component analysis was carried out on each site to identify relationships between the carbonatation indices and commonly used alteration indicators (e.g. IFRAIS, Chlorite Index, Hishikawa, etc.). The objective was to add a third axis to the carbonatation diagram to improve discrimination of the carbonatation signature using a ternary diagram. The ternary diagram that unites the Normat IFRAIS indices, the Chlorite index and the ISCB/IDCB ratio proved to be very discriminating (attached figure). For example, at the Louvicourt mine, 81% of the samples are located outside the field defined by samples from orogenic environments.

Project 2008-08: Summary	
Objectives	<ul style="list-style-type: none"> To identify the lithogeochemical factors unique to the different deposit types (VMS and gold in deformation corridors) and correlate the fertility factors with the carbonatation indices and other alteration indices available in the literature. To validate the discrimination diagram of carbonates on specific cases on the scale of a deposit and the exploration property. To make improvements to the tools used for determining carbonatation.
Results	<ul style="list-style-type: none"> Improving the discrimination between volcanogenic and orogenic carbonatation by using the ISCB/IDCB ratio and constructing ternary diagrams.
Innovations	<ul style="list-style-type: none"> New ternary diagrams improving discrimination between orogenic and volcanogenic signatures of carbonatation.