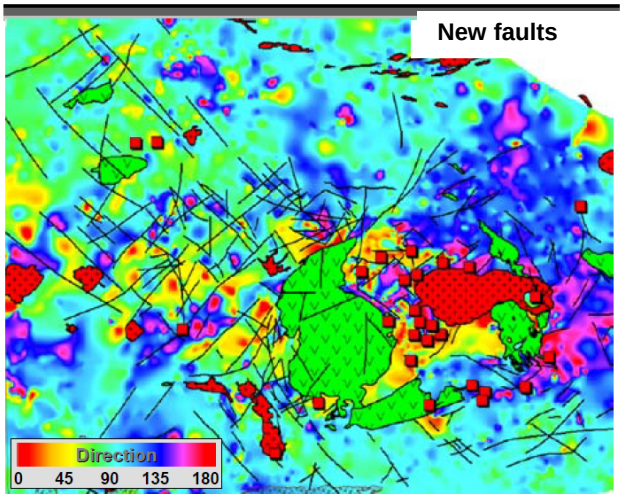
2007-3: Recognition of fertile synvolcanic structures

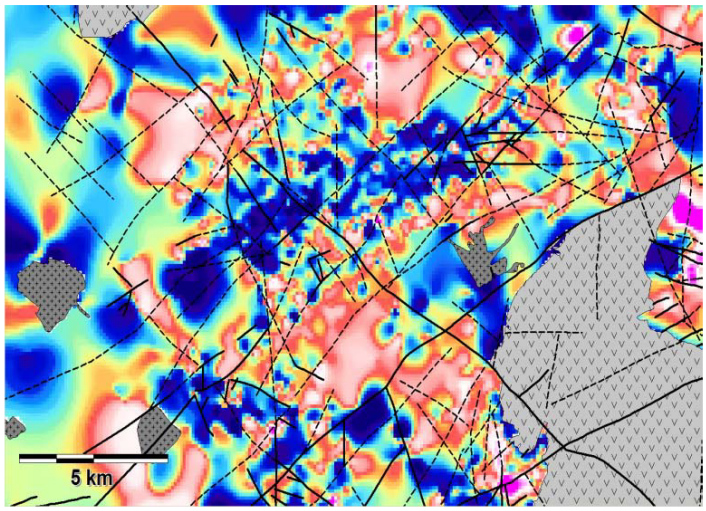
The main objective of this project was to develop a methodology for recognising and interpreting synvolcanic faults that are related to volcanogenic massive sulphide mineralisation. The Blake River region in the Abitibi became the ideal field laboratory for developing the method. It was chosen because of the level of our knowledge about it and its well-known association with base metal deposits.

The first part of the project focused on the development of a fault recognition method using discontinuities in the strike and dip of the stratification (S0). In the Blake River region, it identified close to 250 new synvolcanic faults (figure attached). The results give a new portrait of the faults and dikes in the Blake River area.



Identification of 250 new synvolcanic faults in the Blake River area based on discontinuities in the strike and dip of the stratification S0.

The second part of the project focused on assessing the fertility of the known or recently identified synvolcanic faults. A method was developed that uses the hydrothermal alteration signature along the faults. The signatures were evaluated using the spatial proximity software developed in project 2006-2. This helped distinguish the fertility (volcanogenic alteration) of several known or interpreted faults and some mafic dike networks (figure attached). Alteration halos along the faults are found to be: 1) elongated parallel to the fault segments, 2) concentrated locally, 3) at fault intersections, or 4) between parallel fault systems (grabens). The geochemical and methodological approach helps distinguish post-tectonic faults. Lastly, the signature of the Bouchard-Hébert mine showed that it is located along the margin of an enormous hydrothermal system whose apex remains to be identified.



Identification of fertile synvolcanic faults and dikes using geochemical alteration.

Project 2007-3: Summary	
Objectives	• To demonstrate the spatial proximity link between VMS and some families of mafic dikes and faults. • To develop a method for identifying faults or their extensions. • To identify dikes that are active synvolcanic faults. • To characterise the alterations along known mafic dikes and faults. • To distinguish fertile synvolcanic faults and from strile or “late” faults along the known or interpreted faults.
Results	• 250 new synvolcanic faults were identified in the Blake River area. • Spatial relationship confirmed between mines and faults. • Several mafic dikes recognised as active faults.
Innovations	• New methodology developed for identifying synvolcanic structures. • New approach developed to recognise fertile synvolcanic faults.