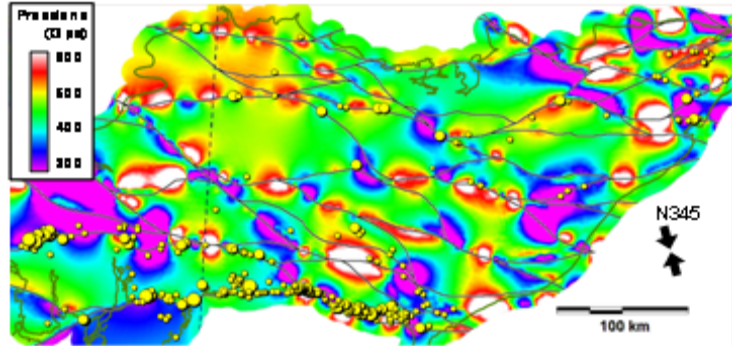


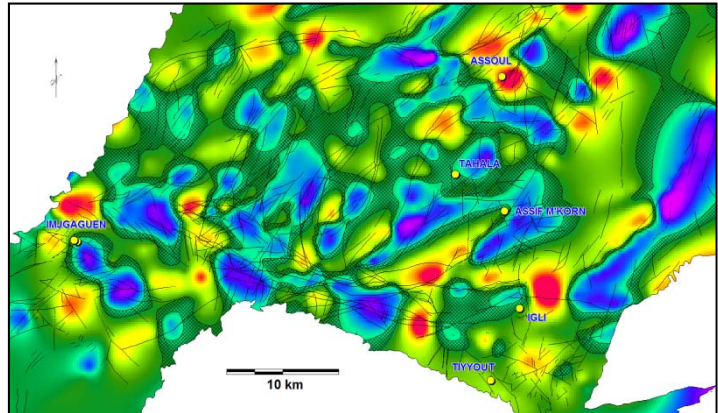
2008-01: Crustal permeability and hydrothermalism: implications for orogenic gold mineralisation in the Abitibi

Project 2007-01 aimed to illustrate crustal permeability across the Abitibi Subprovince and in the Boutonnière du Kerdous, in Morocco, and link it with orogenic gold mineralisation. The use of a numerical reconstruction of tectonic paleopressures (UDEEC) was chosen to determine the structural permeability along deformation corridors; to generate new exploration targets along the corridors, as well as to better determine and understand the structural and rheological factors controlling the emplacement of orogenic gold.



A – Modelling average paleopressures in the Abitibi, using a stress oriented N345°.

To take into account the right-lateral fault which prevailed late in the structural history of the Abitibi, two models were created: the first used stresses oriented N345 (**figure A**) and the second at N330. Modelling shows that the presence of gold along the faults can be influenced by structural and rheological factors such as minimum, intermediate or maximum pressures; the amount of tangential displacement; the tensile strength and the direction of the fault. A predictive map was generated for the deformation corridors in the Abitibi using neural networks. Several exploration targets were generated and identified using positive correlations between the classification of paleopressures established using neural networks and the regional signature of geochemical alteration deemed favourable.



B – Average paleopressures in the Boutonnière du Kerdous showing the proposed area favourable for exploration (hachuring) consistent with the 102-137 MPa interval and the position of gold showings.

For the Boutonnière du Kerdous (Anti-Atlas, Morocco), a model created using the geomechanical modeller UDEC on fault geometry can be used to generate a map of paleostresses for a late-pan-African orogenic episode. The modelled stresses are in a spatial relationship with the 6 known gold showings in the Kerdous (**figure B**). Most of the showings are limited to areas of intermediate pressure, lower than the overall average of the model, ranging between 102 and 137 MPa. The area affected by this pressure range is equivalent to 23% of the studied area. It is an area of interest for prospecting, made more interesting because it is faulted.

Project 2008-01: Summary	
Objectives	<ul style="list-style-type: none"> • To determine structural permeability along deformation corridors in the Abitibi. • To generate new exploration targets along the deformation corridors, which are mostly covered by Quaternary deposits. • To identify and understand better the structural and rheological factors controlling the emplacement of orogenic gold in greenstone belts.
Innovation	<ul style="list-style-type: none"> • A predictive tool to be used along deformation corridors in the Abitibi, combining paleopressure and hydrothermal alteration. • Integration of several geomechanical parameters.
Results	<p><u>Abitibi:</u></p> <ul style="list-style-type: none"> • Two medium paleopressure models for the Abitibi Subprovince; • Predictive map based on neural networks; • 114 exploration targets: 10 priority 1 targets; 17 priority 2 targets; 23 priority 3 targets and 64 non-prioritised targets (with no recognised favourable alteration). <p><u>Kerdous:</u></p> <ul style="list-style-type: none"> • Average paleopressure model for the Boutonnière du Kerdous and identification of an area with gold potential.
Special Collaboration	<ul style="list-style-type: none"> • Silvain Rafini