

WORKSHOP 2

Intensive course in Geophysics for geologists: gravity and magnetics applied to mineral exploration

2 days - Pre-conference - 22th to 23th of August 2015

Lyal HARRIS & Bernard GIROUX*

Venue: Ecole Nationale Supérieure de Géologie (ENSG), Bât. (Building) G, 2 Rue du Doyen Marcel Roubault - TSA 70605 - 54518 Vandœuvre-les-Nancy Cedex, France

Duration: 2 days: August 22 to 23, 2015

Leaders: Lyal HARRIS and Bernard GIROUX*, INRS-ETE, Québec, Canada

Lyal Harris is an Australian-Canadian geoscientist who integrates enhancement and interpretation of gravity, aeromagnetic and seismic tomographic data with field studies and analogue modelling in regional structural and tectonic syntheses. His applied research and consulting experience includes projects with applications to mineral exploration targeting in Australia, Canada, France, Indonesia, India, and the USA. See <http://www.ete.inrs.ca/lyal-harris>. Recent research has also included comparative studies of the Archaean Earth and Venus and mapping structures from satellite gravity in N India and the Himalayas.

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Bernard Giroux is a Canadian applied geophysicist specializing in numerical modelling and imaging and their diverse applications (including hydrogeophysics, CO₂ sequestration, and deep geothermal resources). See <http://www.ete.inrs.ca/bernard-giroux>. Bernard will present the theoretical aspects of the course.*

*Note in the case of a low number of participants, the course will be presented solely by Lyal Harris.

Attendants: 20-30

This short course will only accept 30 participants on the base “first registered-first served”
 Inscription to the SGA2015 congress is required to take part in the SGA2015 workshops/fieldtrips.

Registration deadline: May 31, 2015

Price: covers courses, lunches (22 and 23 of August 2015), break refreshments, copies of geophysical images used in exercises and documents)

SGA student member/non-member: 150€ / 175€

SGA member /non-member: 200 € / 300 €

This intensive 2-day course aims to show how geological and especially structural information can be best extracted and interpreted from magnetic and gravity data for use in regional mineral exploration programs. Whilst the course is primarily intended for geologists with a limited knowledge of geophysics, the structural interpretation aspects would also benefit geophysicists. The course comprises reviews of the theory for each potential field method and case studies illustrating data treatment and enhancement techniques for mapping and interpreting geological structures in diverse terrains, including:

- Gradient filters and their combinations (ternary images, overlays etc.);
- Edge detection techniques;
- Spectral analysis and “depth slicing” to map structures at different depths (including applications to deep crustal to SCLM structural controls on mineralization, where seismic tomographic examples will also be presented).

The course includes exercises using data from Archaean granite-greenstone, Proterozoic high-grade gneiss, and volcano-sedimentary terrains to provide participants with practical experience in structural interpretation of potential field data. Day one will focus on aeromagnetic theory, examples and interpretations, whereas day 2 will cover ground and satellite gravity theory, examples and interpretations.