

BC Geophysical Society 2019 Fall Symposium

Geophysics applications to environmental, civil and mining engineering studies

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Over the past half century and more, applied geophysics has been instrumental in creating wealth and comfort for society vis-à-vis critical scientific input for petroleum and mineral exploration. Indeed, our science can arguably lay claim to the greatest increase in the quality of life in history and from that, the greatest advancement of human existence in the arts, entertainment, health, leisure, etc.

But the advancements have not come without problems, serious problems in some cases. However, when these problems are of a geological nature or at least have a “geological” component, then applied geophysics also has an important role to play in recognizing, defining, investigating, understanding and ultimately solving these problems. Other geo-disciplines have a role to play, but it is geophysics, by its very definition - the study of the interior of the earth by physical means - that plays a central role.

Today's symposium is all about “geological” problem solving using applied geophysics. We discuss a wide variety of problems and an even wider gamut of cutting-edge geophysical techniques to help solve the problems.

BCGS Announcements:

- Reception immediately following the symposium at the Regis Room @ St Regis Bar and Grill, 608 Dunsmuir St
- Xmas Party & AGM ~ early December
- Roundup Breakfast ~ Tuesday 23 January 2020



KEGS Foundation Announcements:

- KEGS Foundation and BCGS Scholarship winners: Elena Savidge; Taylor Josephy, BSc, UVic
- Other KEGS Foundation scholarship winners from BC: Angelene Leow, BSc, UBC; Anna Diederichs, MSc, UVic; Antonina Calahorrano, PhD, SFU
- Collett Distinguished Visiting Lecturer: Michael Zhdanov ~ early March 2020, Toronto, Sudbury
- Collett Research Fellowship: TBA

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Elana – is completing her final year on an exchange program at University of Wollongong doing earthquake seismology.

Taylor – is also overseas completing his final year by correspondence, doing groundwater geophysics in Zambia.

Angelene – is into machine learning techniques in mineral exploration and worked with Minerva Intelligence this past summer.

Anna – is doing a Masters with Edwin Nissen on seismology and tectonics

Antonina – is doing a Doctorate with Glyn Williams-Jones on the structure of the Garibaldi volcanic belt using a variety of geophysical data sets. This is a continuation of similar research she carried out in her native Ecuador on the Cotopaxi volcano.

Tailings Dam Failure, Minas Feijão, Brumadinho, Brazil
25 January 2019
video clip - www.youtube.com/watch?v=Adk0AwclSHo

Tailings Dam Failure, Minas Feijão, Brumadinho, Brazil, 25 January 2019. Another, smaller, tailings dam failure occurred in Brazil just last week on 1 October at Nosso Senhora do Livramento

Mount Polley Tailings Dam Failure 4 August 2014



Letter to the Vancouver Sun , 3 February 2015

... the extent of the Upper GLU was never adequately mapped nor identified as a potential zone of weakness. In part because there were never any engineering geophysical surveys carried out during the pre-design site investigation Indeed, the only geophysical investigation carried out at the Mount Polley tailings dam site was the one carried out as part of the panel's review of what went wrong **geophysics should always be a key part of all geotechnical investigations.**

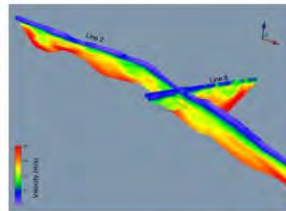


Figure 5.3-1: 3D image of seismic data 2 and 8 with anomalous zone circled

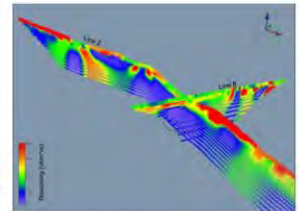


Figure 5.3-2: 3D image of resistivity data 2 and 8 with anomalous zone circled

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“the cause of the Mount Polley tailings dam failure was a design deficiency related to the unrecognized presence of a near-surface geological formation called the Upper glaciolacustrine layer or (GLU)” *Report on Mount Polley Tailings Storage Facility Breach*, 30 January 2015, by the Independent Expert Engineering Investigation and Review Panel

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