



# Technical Program Call for Abstracts

## The 45<sup>th</sup> Annual Yellowknife Geoscience Forum

### November 14 – 16, 2017

The Yellowknife Geoscience Forum provides an intimate setting for delegates from industry, academia, and government to exchange information on Mineral and Petroleum Exploration, Mining Activities, and Geoscience Research in Canada's North. The Forum consists of a trade show and a technical program. The 2017 Yellowknife Geoscience Forum is seeking oral and poster presentations on Geoscience & Environmental Science Research and Geoscience-Related topics for its technical program.

The technical program sessions for 2017 are described on the [website](#) and include:

#### **Geoscience & Environmental Science Research (Abstract – 500 word limit)**

- ❖ Geoscience & Exploration
- ❖ Diamond Geology & Exploration
- ❖ Energy in Canada's North
- ❖ Permafrost
- ❖ Environmental Monitoring and Research

#### **Geoscience-Related Presentations (Summary – up to 150 words)**

- ❖ Community Engagement & Education
- ❖ Regulatory & Policy Updates
- ❖ Mining Updates

#### **Abstract/Summaries Submission**

- Abstracts/Summaries are required for both oral and poster presentations.
- Abstracts for the Geoscience & Environmental Science Research sessions are required and have a maximum limit of 500 words (see examples below).
- Talk summaries for the Geoscience-Related Presentation sessions are required and will describe the presentation in approximately 150 words (see examples below).
- Presentations (oral and poster) from all relevant disciplines are welcome.
- All abstracts and talk summaries must be submitted **before 11:59 pm MT Friday October 20<sup>th</sup>** using the [online submission page](#). Formatting is not required.

#### **Contact**

- [Jonathan Rocheleau](#) with questions about the Technical Program
- [Doug Irwin](#) with questions about the online submission of abstracts/presentation summaries

#### **Forum Registration**

- [Registration](#) for the Geoscience Forum is through the NWT & Nunavut Chamber of Mines
- Badges will be checked at every venue.
- Both full and single day registration passes are available.
- All speakers, poster presenters, and session chairs must register for the conference.

**\*NEW FOR STUDENTS\***

**Finnigan Award for Northern Research**

This year the Northwest Territories and Nunavut Association of Professional Engineers and Geoscientists (NAPEG) is pleased to offer an award designed to provide a student with funding to attend the Geoscience Forum. The Finnigan Award for Northern Research is inspired by Dr. Craig Finnigan.

Dr. Craig Finnigan was a Professional Geoscientist who spent the majority of his short career working across the Canadian north for industry, government and academia. Craig passed away in 2014 at the age of 45, however his passion for geoscientific field work and exploration has left an imprint on those who worked with him over the years. He was recognized in 2014 with the prestigious Huestis Award (AMEBC) for his role in the discovery of the Coffee gold deposits in the Yukon. Craig was an adamant supporter of students and education. As an Adjunct Professor at Western University he co-supervised a number of graduate student theses, including studies on the Coffee gold deposits in Yukon and uranium mineralization at the Lac Cinquante uranium deposit in Nunavut. To honour Craig's memory, a student focused scholarship that encourages presentation at northern conferences has been established.

NAPEG encourages the achievement of excellence in the engineering and geosciences professions through the promotion of advanced studies and research programs. By providing financial assistance to researchers working in the northern territories the Association seeks to encourage young geoscientists to communicate effectively to their peers and the public, an important skill in the development of a professional practitioner.

To be eligible, the applicant must be enrolled in a Canadian university and registered in a Geology or Earth Sciences program that includes a thesis with a subject relevant to the territory in which the results would be presented. The applicant must also have submitted an abstract (or similar document) for a talk or poster presentation at the conference indicated on their application form. The applicant must attend this conference and give the presentation in order to receive scholarship funding.

Please visit [NAPEG](#) to apply for the Finnigan Award

## ABSTRACT EXAMPLE

### RETROGRESSIVE THAW SLUMPS AND THE LANDSCAPE SENSITIVITY OF NORTHWESTERN CANADA

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(1) Northwest Territories Geological Survey, Yellowknife, NT

(2) University of Auckland, Auckland, NZ

(3) University of Ottawa, Ottawa, ON

(4) University of Victoria, Victoria, BC

(5) Canada Centre for Remote Sensing, Ottawa, ON

(6) Brock University, ST Catharines, ON

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Retrogressive thaw slumping is an important driver of geomorphic change in ice-rich, glaciogenic landscapes. Here we summarize research on the processes of thaw slump development, with focus on research from northwestern Canada. In the Peel Plateau, individual disturbances commonly exceed 20 ha in area. These “mega slumps” displace downslope up to  $10^6$  m<sup>3</sup> of previously frozen materials, reconfigure slopes and drainage networks, and significantly increase stream sediment and solute loads. The significant acceleration of slump activity has caused this process to become a dominant driver of geomorphic change in several ice-rich environments across the western Arctic. Landsat satellite imagery (1985 to 2011) and high frequency climatic and photographic time-series from the Peel Plateau indicate that an increase in rainfall has accelerated downslope sediment flux from slump scar zones, perpetuating slump activity and intensifying this disturbance regime. Cascading effects include progressive growth of debris tongue deposits comprised of hundreds of thousands of cubic metres of sediment, development of debris dammed lakes, enhanced valley-side erosion and initiation of secondary slumps.

Remotely sensed mapping of slump-impacted terrain across a 1,275,000 km<sup>2</sup> area of northwestern Canada indicates the close association with ice-rich hummocky moraine landscapes deposited at the margins of the former Laurentide Ice Sheet. This mapping provides a quantitative basis for evaluating the potential for climate-driven landscape change and assessing the spatial distribution of ice-cored permafrost across northwestern Canada.

## ABSTRACT EXAMPLE

### **CONSTRAINING HYDROTHERMAL EVENTS RESPONSIBLE FOR REGIONAL POLYMETALLIC VEIN MINERALIZATION IN THE SOUTHERN SLAVE PROVINCES AND LINKS TO DEPOSITS IN THE GREAT BEAR LAKE MAGMATIC ZONE**

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Small polymetallic (U-As-Ni-Co-Cu-Ag-Bi-Sb) hydrothermal vein systems are dispersed throughout the Southern Slave province (e.g., Copper Pass, Blanchet Island) and have similar paragenetic characteristics to deposits at Great Bear Lake (Eldorado-Echo Bay, Contact Lake, Terra-Norex, Silverbear, Normin) but are very low in grade and tonnage at their surface expression, and lacked productive U and Ag ore stages.

Current studies of these deposits at Saint Mary's University are focusing on the systematic application of a variety of microanalytical techniques to aid in the development of exploration criteria for polymetallic vein systems and revise the current model for this deposit style, specifically with respect to metal sources, metal precipitation mechanisms, and timing of metal precipitation, and the reasons for variability in metal tenor on a regional scale. In one study, we utilizing petrographic and thermometric (CL, SEM, fluid inclusion microthermometry) and isotopic methods (SIMS, LA-ICPMS) to identify thermal, salinity and metal concentration gradients in these hydrothermal systems. In another study, we are re-examining historic gamma surveys for deposit-characteristic U/Th ratios as proxies for basinal metalliferous fluid migration to delineate areas likely to contain these deposits.

The integrated results of several studies will be examined, highlighting (i) major compositional changes to metal-carrying fluids resulting from suspected isothermal mixing of very different fluid reservoirs, as the driving mechanism for metal deposition; (ii) the critical role of organics in transporting and precipitating uranium and other metals; and (iii) the regional resetting of U-Pb systematics, leading to erroneously young ages for mineralization, a result consistent with other recent attempts at resolving the age of similar polymetallic vein systems in the Great Bear Lake magmatic zone.

## SUMMARY EXAMPLES

### **Traditional Ecological Knowledge (TEK)/Inuit Qaujimajatuqangit (IQ) & the Resource Sector**

English, C.<sup>1</sup> & Thorpe, N.<sup>2</sup>

*(1) Diavik Diamond Mines Inc, PO Box 2818, Yellowknife, NT*

*(2) Thorpe Consulting Services, 1627 Dogwood Drive, Revelstoke, BC, V0E 2S1*

A literature review was undertaken in an effort to demonstrate where TEK/IQ has been meaningfully incorporated into industrial development, specifically focusing on mineral development in the circumpolar Arctic, in the areas of baseline data collection, monitoring and closure planning.

The review resulted in 160 references that were compiled into a database and categorized as baseline, monitoring, closure, recommendations, science or other. This review helped to identify some of the reasons why TEK is not systematically and frequently integrated into mining and resource operations in a meaningful way. Eight key challenges to the integration of TEK into northern resource developments discussed in the literature and experienced as practitioners were identified and will be discussed in more detail.

### **Aboriginal mining companies helping create community benefits**

Mackenzie, G.<sup>1</sup>

*(1) President, Tli Cho Investment Corporation, Yellowknife, NT*

Aboriginal companies created as a result of mine development in the Tli Cho region today are reducing the need for social assistance for Tli Cho peoples. The Tli Cho Investment Corporation with its diversity of companies has become effective in helping local communities in large part due to their ability to offer and support training and to develop community capacity.