

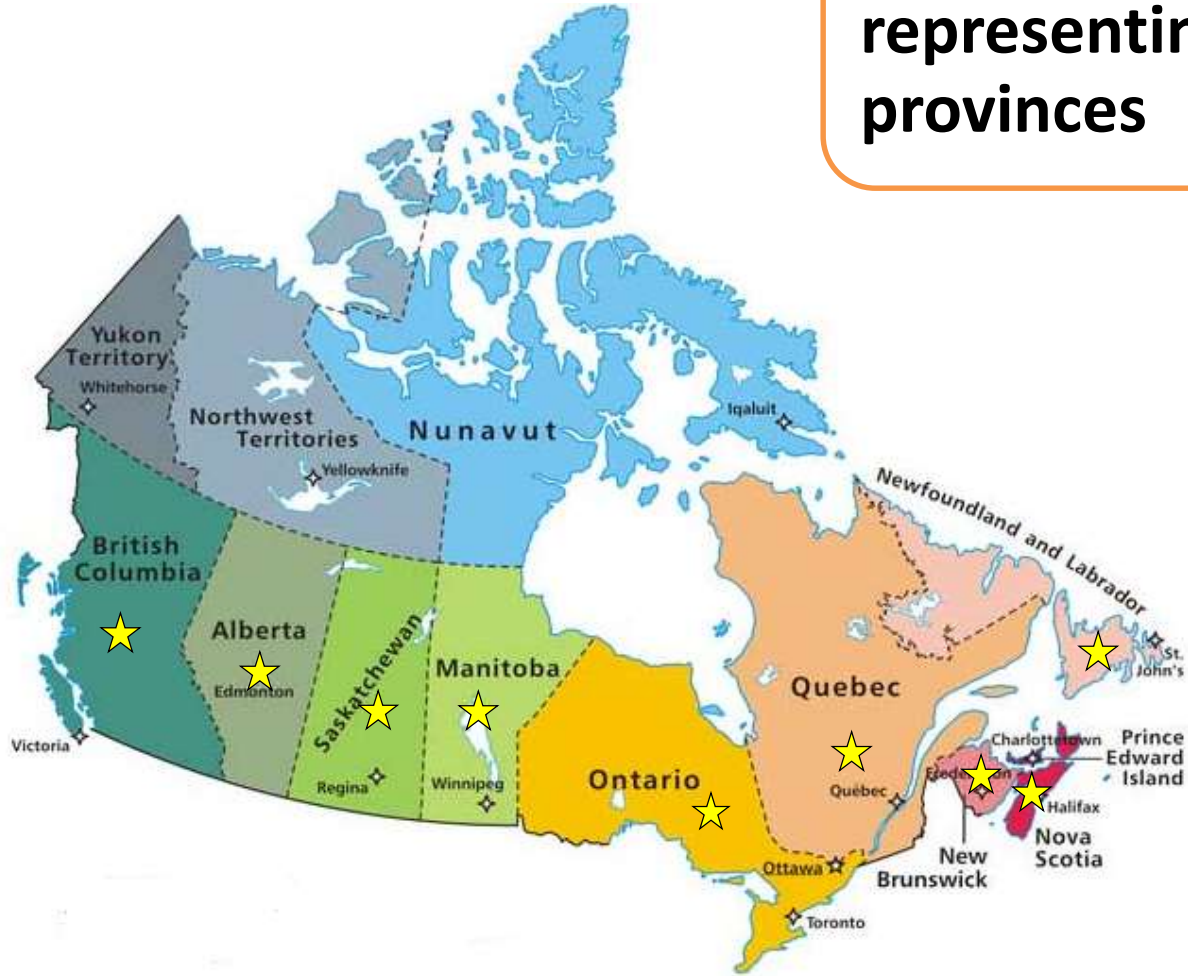


PDAC

S-IMEW

Student-Industry Mineral Exploration Workshop

**26 students accepted,
representing 9
provinces**



2015 PARTICIPANTS



Thomas Bagley
Acadia University



Carlos Bazan
British Columbia Institute
of Technology



Lianna Vice
Carleton University



Billy Garrison
Dalhousie University



Percy Clark
Fleming College



**Christopher Beckett-
Brown**
Laurentian University



Marc -Antoine Vanier
Laval University



Aidan Ditchburn
McGill University



Keaton Strongman
McMaster University



Chris Voisey
Memorial University of
Newfoundland



Logan Behuniak
Mount Royal
University



Mackenzie McConnell
Northern Alberta
Institute of Technology



Natalie Blacklock
Queen's University



Catherine Sedge
Saint Mary's University



John MacFarlane
St. Francis Xavier
University

2015 PARTICIPANTS



Lisa Côté
Université du Québec à
Chicoutimi



Melissa Friend
University of British
Columbia



Tyler Glubrecht
University of Calgary



Derek Drayson
University of Manitoba



Colin Padget
University of New
Brunswick



Allan Lion
University of Ottawa



Sean Hillacre
University of
Saskatchewan



Joseph Vrzovski
University of Toronto



Kurtis Sanderson
University of Victoria



Robin Taves
University of Waterloo



Nicolas Cookson
Western University



Follow our journey on social media



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[@the_PDAC](https://twitter.com/the_PDAC)

MacBook Pro

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Ontario



The calm before the storm - backpacks and binders await the arrival of the S-IMEW students



Official welcome by Karen Rees, Scott Jobin-Bevans, and Krishana Michaud (left to right)



Patrick McAndless (Geodude Corner) talks about careers in the geosciences, and is thanked on behalf of the students by Percy Clark (Fleming College)



Aftab Khan (APGO) explains all about the importance of professional registration, and is thanked on behalf of the students by Logan Behuniak (Mount Royal University)



Keaton Strongman (McMaster University)



Aidan Ditchburn-Trout (McGill University)



Nicolas Cookson (Western University)



Sean Hillacre (University of Saskatchewan)

There is no shortage of student questions during the morning session of Networking and Career Development Day



Tony Green presents a geoscience industry overview, and is thanked on behalf of the students by Melissa Friend (University of British Columbia)



Dave Thomas (Resource Capital Funds) introduces the students to the capital markets, and is thanked on behalf of the students by Nicolas Cookson (Western University)





Dr. Scott Jobin-Bevans (Caracle Creek) speaks about flow through shares, joint ventures, and option agreements. Sean Hillacre (University of Saskatchewan) extends an acknowledgement of gratitude on behalf of the S-IMEW students



Group photo at Dynamic Earth in front of the “Big Nickel” prior to the welcome reception

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YAMANA GOLD





Opening keynote speaker David Harquail (Franco-Nevada) with his wife Birgitta Harquail, and S-IMEW students Natalie Blacklock and Colin Padgett (left to right) at the Welcome Reception

The main presentation slide is displayed on a large screen. It features the following elements: At the top center, the 'PDAC S-IMEW' logo, where 'PDAC' is in small blue letters above 'S-IMEW' in large orange letters, with the full name 'Student-Industry-Mineral Exploration Workshop' in smaller blue text below. To the right of the text is a logo consisting of two overlapping triangles, one grey and one orange. Below the logo, the text 'Sudbury - May 2, 2015' is centered. At the bottom, the 'Franco Nevada' logo is prominent, with 'Franco' in blue, a yellow star in a circle, and 'Nevada' in blue. Below this, the tagline 'The GOLD Investment that WORKS' is written in yellow. On the left side of the slide, there is a partial image of a platinum coin with the text '.9995 PLATINUM 1 OZ.' and 'STATES RICA'. On the right side, there is a partial image of a gold coin with the text 'FINE GOLD' and '9999'.

Opening keynote speaker David Harquail (Franco-Nevada) talks about his career, and the Franco-Nevada business model that allowed the company stock to outperform other gold companies and even gold itself



Opening keynote speaker David Harquail (Franco-Nevada) speaks to a full Atlas Copco Theatre at Dynamic Earth, and is thanked on behalf of the students by Robin Taves (University of Waterloo)

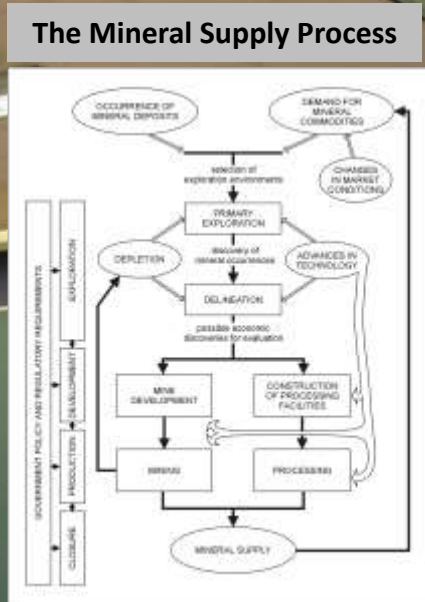


From left – Sean MacLean (MNDM), David Harquail (Franco-Nevada), and Scott Jobin-Bevans (Caracle Creek) at the Welcome Reception









“You can’t make a silk purse out of a sow’s ear” - Dr. Michael Doggett emphasizes the importance of understanding both geological quality and economic quality



S-IMEW participants are tested on their skills to identify geological quality during Dr. Michael Doggett's lecture

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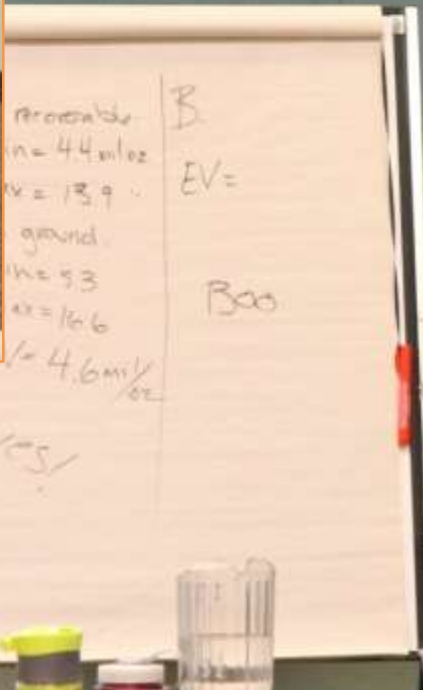
Michael Durose (Mining Research Group) talks to S-IMEW students on the topic of company evaluation before challenging them to evaluate two fictitious gold companies, and ultimately decide which company to invest in



High-risk, high-reward investments appear to be the popular strategy among the S-IMEW participants (preferably with a quick cash out), during Michael Durose’s company evaluation exercise



Dr. Michael Doggett (Michael Doggett & Associates) and Michael Durose (Mining Research Group) are thanked on behalf of the S-IMEW students by Chris Beckett-Brown (Laurentian University) and Natalie Blacklock (Queen's University)



NI 43-101 is explained in detail by James Whyte (Ontario Securities Commission) who is thanked on behalf of the S-IMEW students by Derek Drayson (University of Manitoba)



Andrew Cheatle (PDAC) takes the students on an emotional roller coaster ride during a role-playing exercise that introduces the importance of Corporate Social Responsibility (CSR)

BOARD OF DIRECTORS



Pressure builds as Bonanza Gold Mines Inc.'s board of directors impatiently demands success, and S-IMEW participants are faced with an ethical dilemma as Andrew Cheatle's role-playing scenario plays out. Andrew is thanked on behalf of the S-IMEW students by Allan Lion (University of Ottawa)



The Goodman School of Mines' Executive Director Bruce Jago talks about a career in exploration and mining at Au Pied du Rocher, and is thanked on behalf of the students by Kurtis Sanderson (UVic)



Jason Letto (Vale) introduces the Sudbury geology to S-IMEW participants, and is thanked on behalf of the students by Lisa Côté (University du Quebec a Chicoutimi)



Attila Pentek (Wallbridge Mining Ltd.) and Lindsay Hall (MNDM) introduce the first stop on the Sudbury Basin field trip



DISCOVERY OF THE SUDBURY NICKEL DEPOSITS

The significance of Sudbury's mineral deposits became apparent during construction of the Canadian Pacific Railway through the area in the 1840s. Railmen, Tom Flanagan, and others, took samples from waste rock piles nearby in 1845. Analysis of the rock revealed tephrosiderite, magnetite and the Murray Mine was subsequently established at the site. Ore bodies were soon discovered in abundance throughout the Sudbury area. Entrepreneur Samuel J. Barber founded the Canadian Copper Company at Copper Cliff in 1846. Capitalizing on developments in steel-making, Barber opened up an industrial and military market for nickel-steel alloys. With the establishment of enterprises like Ingersoll's Nickel in 1902 and Falconbridge Nickel Mines in 1924, Sudbury became the nickel capital of the world.

Queen's Heritage Trust, on behalf of the Government of Ontario

S-IMEW poses at the Sudbury nickel deposits discovery – Finally, first day in the field! Welcome to Sudbury!!

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AGNICO EAGLE



Keaton Strongman (McMaster University) inspects sulfide mineralization in the sublayer norite at the base of the Sudbury Igneous Complex.



MONDAY, MAY 4 - Sudbury Basin Field Day (Dan Farrow & Attila Pentek, Co-Chairs)



Da Da Da DAAAA, Da Da DAA....



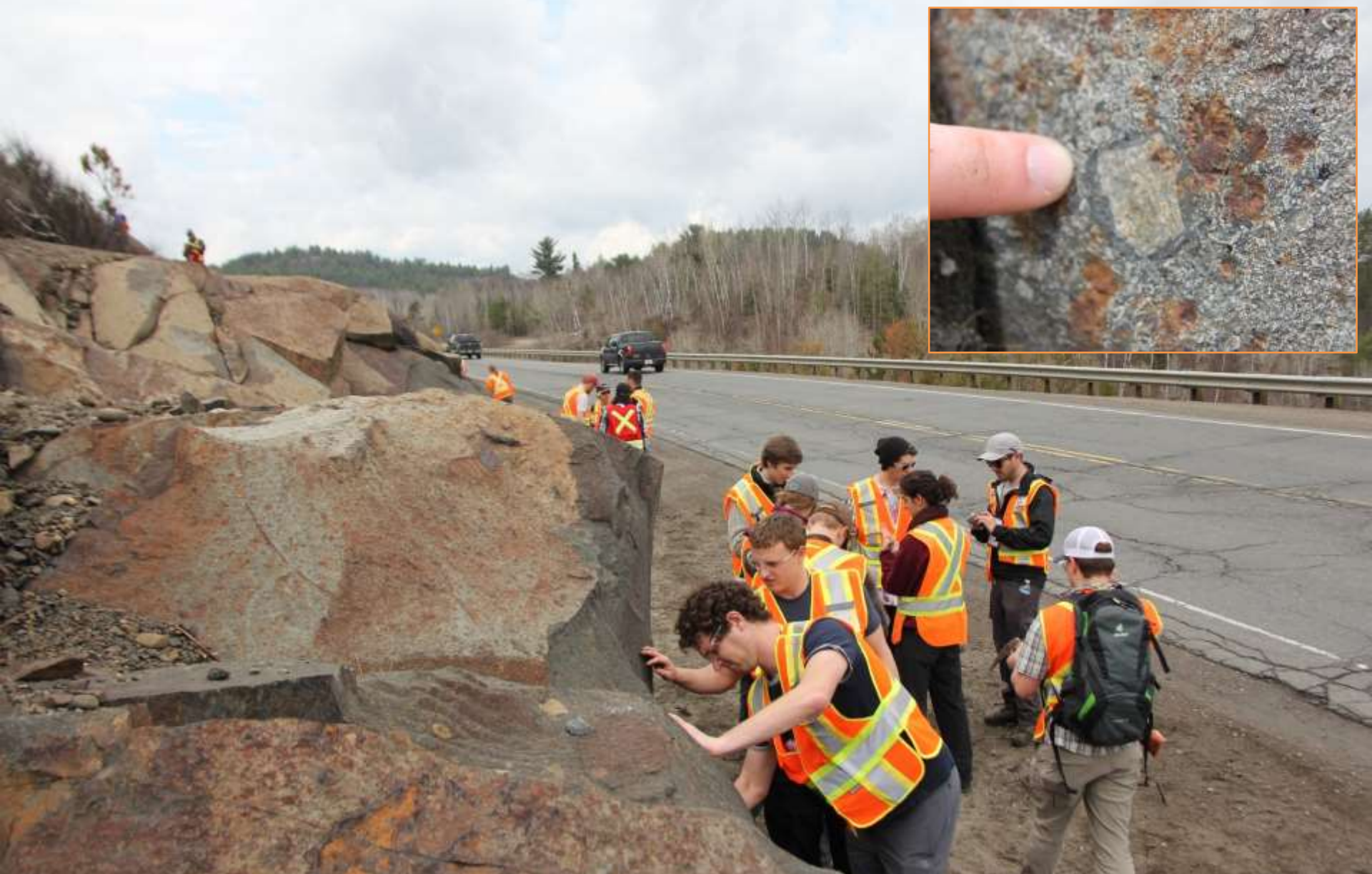
Chris Beckett-Brown (Laurentian University) points to a carbonate concretion in sandstone of the Chelmsford Formation during the Sudbury Basin field trip



A rare example of non-mineralized sublayer norite is inspected during the Sudbury Basin field trip



Lunch time followed by a group photo session at the Onaping Falls



S-IMEW students inspect the Onaping Formation during Sudbury Basin field trip. Are these cool textures consistent with a fallback breccia model, or is it more complicated than that?



Chris Beckett-Brown (Laurentian University) and Keaton Strongman (McMaster University) inspect a road cut, exposing crosscutting relationships between the Creighton granite and Sudbury Breccia



Dr. David Pearson (Laurentian University) ushers his audience to the windows of *Bryston's on the Park* to look down on what used to be a roast bed, before his talk on Sudbury's environmental history



Attila Pentek (Wallbridge Mining Ltd.), Lindsay Hall (MNDM), and Dave Pearson (Laurentian University) thanked by students Billy Garrison (Dalhousie University), Joseph Vrzovski (University of Toronto), and Catherine Sedge (Saint Mary's University) (left to right, respectively)



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Mines de la Vallée de l'Or ltée



Ben Berger (MNDM – retired) introduces the first outcrop at Laurentian University during OGS mapping day



Group photo at Laurentian University during OGS mapping day



Robin Taves (University of Waterloo) on her mapping traverse in the Laurentian University conservation area during OGS mapping day



John MacFarlane (St. Francis Xavier University) and Laura Ratcliffe (MNDM) measuring bedding orientation in the Mississagi sandstone on their traverse during Government Mapping Day



A group of silly geo's imitate Sudbury Breccia during OGS mapping day



S-IMEW students acknowledge MNDM (OGS staff) for a wonderful day in the field



Mike Fox (Fox High Impact Consulting) speaks on aboriginal participation and partnership in the mining industry, and is thanked on behalf of the S-IMEW participants by Tyler Glubrecht (University of Calgary)



Heading to the Glencore Strathcona Mill early in the AM



Sam McGarry (Glencore) guides the S-IMEW students around the sophisticated tailings facility near Glencore's Strathcona Mill and Fraser Mine



S-IMEW students are invited for BBQ lunch at Glencore, where Chef Jim is grilling burgers and sausages - mmmMMMmmm

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Université**Laurentienne**

GOODMAN SCHOOL OF MINES
ÉCOLE DES MINES



Melissa Friend (UBC) goes for a rip in the VD8000



Glencore drill site visit with Foraco International SA drillers and Glencore geologist explaining the intricacies of diamond drilling



Three deposits in 1 day....Derek Drayson (University of Manitoba) doesn't mess around!





King Kurtis Sanderson (U Vic) of the core pile!



Glencore and Foraco International SA drill visit



Foraco International SA drillers thanked on behalf of the S-IMEW participants by Thomas Bagley (Acadia University), Marc-Antoine Vanier (Laval University), and Keaton Strongman (McMaster University)



Chief mine geologist Dave Richardson (Glencore) talks about his experience at the Fraser mine in Sudbury



Brad Lazich, Guido Serafini, and Dave Richardson of Glencore are thanked for their contribution to S-IMEW by Sean Hillacre (U. of Saskatchewan), Colin Padgett (U. of New Brunswick), and Keaton Strongman (McMaster U)



Co-Chair Tim Dohey (Newmont Mining) gives a picturesque introduction to Geophysics Day by showing the places around the world where he has conducted geophysical surveys

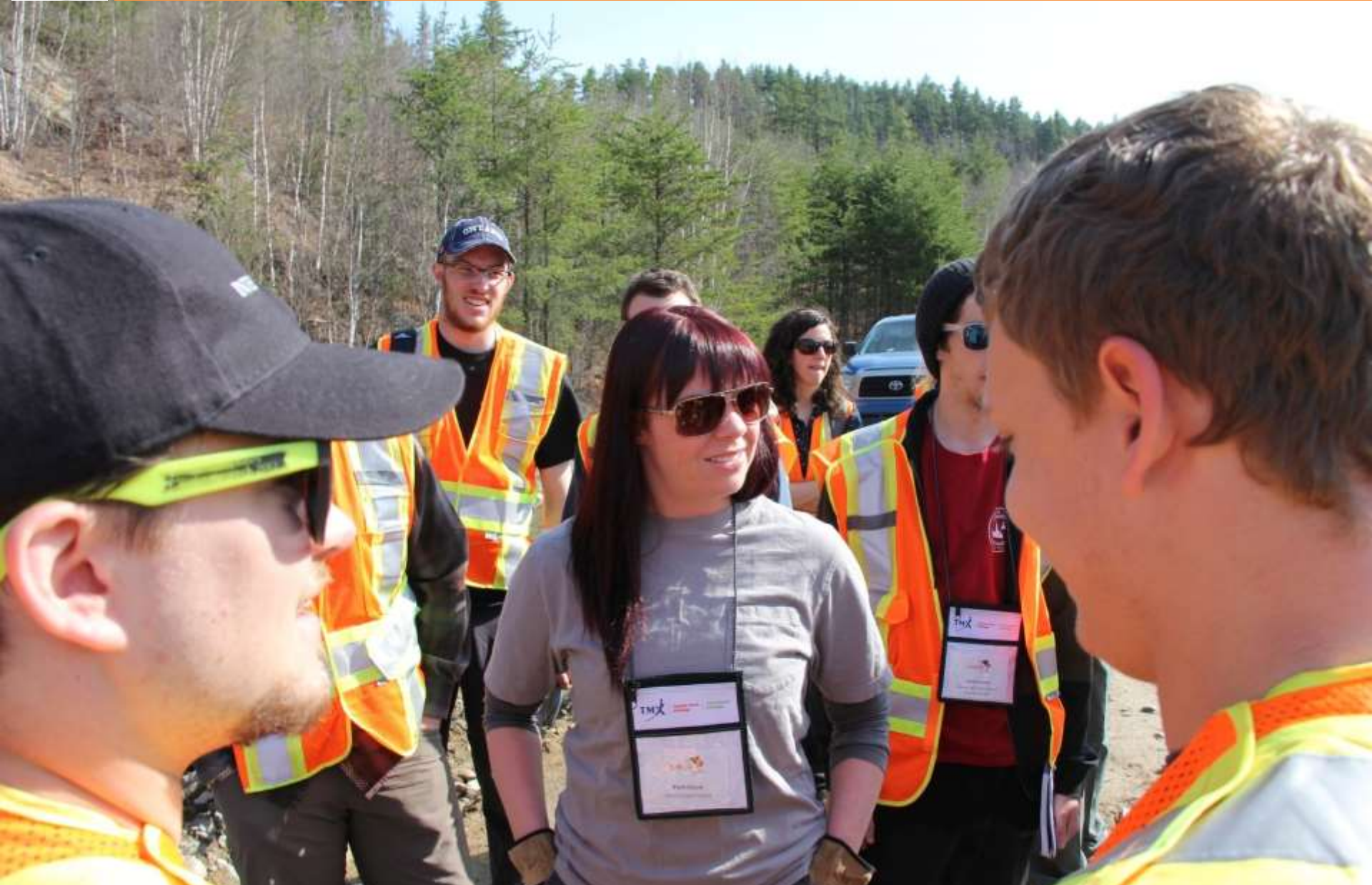


Sean Dickie (Vale) gets the geophysical surveying demonstrations underway

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S-IMEW participants huddle around Pam Coles (Abitibi Geophysics) as she explains how to conduct an IP survey



Scott Jobin-Bevans (CEO, Caracle Creek) and S-IMEW coordinator Linette MacInnis enjoying Geophysics day



Kurtis Sanderson (U Vic), Kurtis Sanderson (U Vic), and Kurtis Sanderson (U Vic) taking purple cow



Lianna Vice (Carleton University) and Mackenzie McConnell (Northern Alberta Institute of Technology) realize it is no simple task to carry geophysical equipment through the bush



Co-Chairs Brian Bengert (Vale) and Tim Dohey (Newmont Mining) in the middle of an aspiring group of S-IMEW students



NSERC Chair and Laurentian professor Richard Smith (Laurentian University) is having fun with Brian Bengert (Vale) and S-IMEW participant Aidan Ditchburn-Trout (McGill) as they test geophysical field equipment



Pam Coles (Abitibi Geophysics) presents her talk after the morning field demonstration, and is thanked on behalf of S-IMEW by Lianna Vice (Carleton University)



Dr. Richard Smith (Laurentian University) answers a question after his talk on airborne geophysical methods, and is thanked on behalf of the S-IMEW students by Robin Taves (University of Waterloo)



Krystal O'Neil (Vale) explains how to orient your EM survey to get the best coupling with the target during her afternoon talk, and is thanked on behalf of S-IMEW by Derek Drayson (University of Manitoba)



Richard Lachapelle (Scintrex) brings students outside for a demonstration during his gravity talk, and is thanked on behalf of the S-IMEW students by Mackenzie McConnell (Northern Alberta Institute of Technology)

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Chris Drielsma (DGI Geoscience) talks about borehole geophysics, and is thanked on behalf of the students by Chris Beckett-Brown (Laurentian University)





Future S-IMEW presenter Kurtis Sanderson (University of Victoria) takes the podium at Restaurant Verdicchio



Vale's Brian Bengert (Vale) receives a standing ovation after his passionate and inspiring talk on how he became a happy geophysicist after an initial Star Wars induced childhood dream of becoming an astronaut



Co-chairs Brian Bengert (right, Vale) and Tim Dohey (left, Newmont Mining) are thanked on behalf of the S-IMEW students by Marc-Antoine Vanier (Laval University) and Logan Behuniak (Mount Royal University), respectively



Stewart Hamilton (MNDM) welcomes the S-IMEW students to Geochemistry Day



Beth McClenaghan (GSC) talks about drift prospecting and indicator minerals



Outline

1. Regional lake and stream sediment geochemistry coverage in Ontario
2. General concepts and methods of stream and lake sediment geochemistry
3. The Ontario Geological Survey (OGS) lake sediment geochemistry program – methods and relevance to mineral exploration
4. Example from far north
Ontario "Ring of Fire"

Richard Dyer (MNDM) talks about regional-scale geochemical mapping in Ontario, and cool helicopter action!



Heading out to do some lake sediment sampling.....



Carlos Bazan (British Columbia Institute of Technology) sampling lake sediments during Geochemistry Day

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Kurtis Sanderson (University of Victoria) catches a lake sediment sample as it is coming out of the sampling device during Geochemistry Day



Fire assay! Yeeeah!



Andy Bajc (MNDM) performing a till sample demonstration during Geochemistry Day



Till...num num num



Glenna Keating (GeoLabs) talks about XRF and other analytical methods



S-IMEW students looking at diamond indicator minerals during Geochemistry Day, directed by Beth McClenaghan (GSC)



The beautiful Vale Living with Lakes Centre at Laurentian University, one of the most environmentally-



The Art Gallery of Sudbury hosts the dinner, and evening talk



Celebrating a S-IMEW birthday - Happy Birthday Kurtis from all of us!



Dr. Phil Thurston (Laurentian University) speaks to the S-IMEW students (and President Lincoln) during the evening reception, and is thanked on behalf of S-IMEW by Lisa Côté (University du Quebec a Chicoutimi)

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From right- Marshall Hall (Wallbridge Mining Ltd.) with Robin Taves (UW) and Lisa Côté (UQAC) exploring for Ni-Cu-PGE mineralization in the North Range of the Sudbury Structure



Logan Behuniak (Mount Royal University) and his group discuss new field observations, and what their next move should be



Györgyi Tuba (Wallbridge Mining Ltd.) and her group of S-IMEW students appear to have found something of interest on their mapping traverse



Co-Chairs Ian Trinder (top right) and Scott Jobin-Bevans (back row middle) with Wallbridge Mining geologists and S-IMEW students



Carmen Diges (REV Law) shares her experience as a lawyer in the mining business, and is thanked on behalf of S-IMEW by John MacFarlane (St. Francis Xavier University)



Dr. Phil Thurston (Laurentian University) walks through the regional geology from Sudbury to Val d'Or at a pit stop in Temagami at the beginning of the Val d'Or and Noranda Field Trip



Hanging out with a BIF in Temagami





A soft landing on some pillow basalts



Michael Rosatelli (Golden Valley Mines) explains what it takes to be successful in the exploration business

Workshop Sponsors



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AGAT Laboratories 





Michael Rosatelli (Golden Valley Mines) welcomes S-IMEW to Val d'Or and Golden Valley Mines Ltd and is



Glenn Mullan (Golden Valley Mines) invites S-IMEW students for dinner and a talk at his home in Val d'Or, and is thanked by Melissa Friend (University of British Columbia)





Ready to go underground in the LaRonde mine



Heading down to the 170 level of Agnico Eagle's LaRonde mine through the 2.2-kilometre-deep Penna Shaft (likely the deepest single-lift shaft in the Western Hemisphere)



John MacFarlane (St. FX, left) and Aidan Ditchburn (McGill University) 1.7 km underground in Agnico Eagle's



Senior Geologist David Pitre (Agnico Eagle) presents the geology of the LaRonde deposit in a refuge station 1.7 km underground – so cool! (and hot!)



A last look at the deposit scale geology before getting the hammers out





In-Kind Contributors



Golden Valley Mines Ltd.
Mines de la Vallée de l'Or Itée

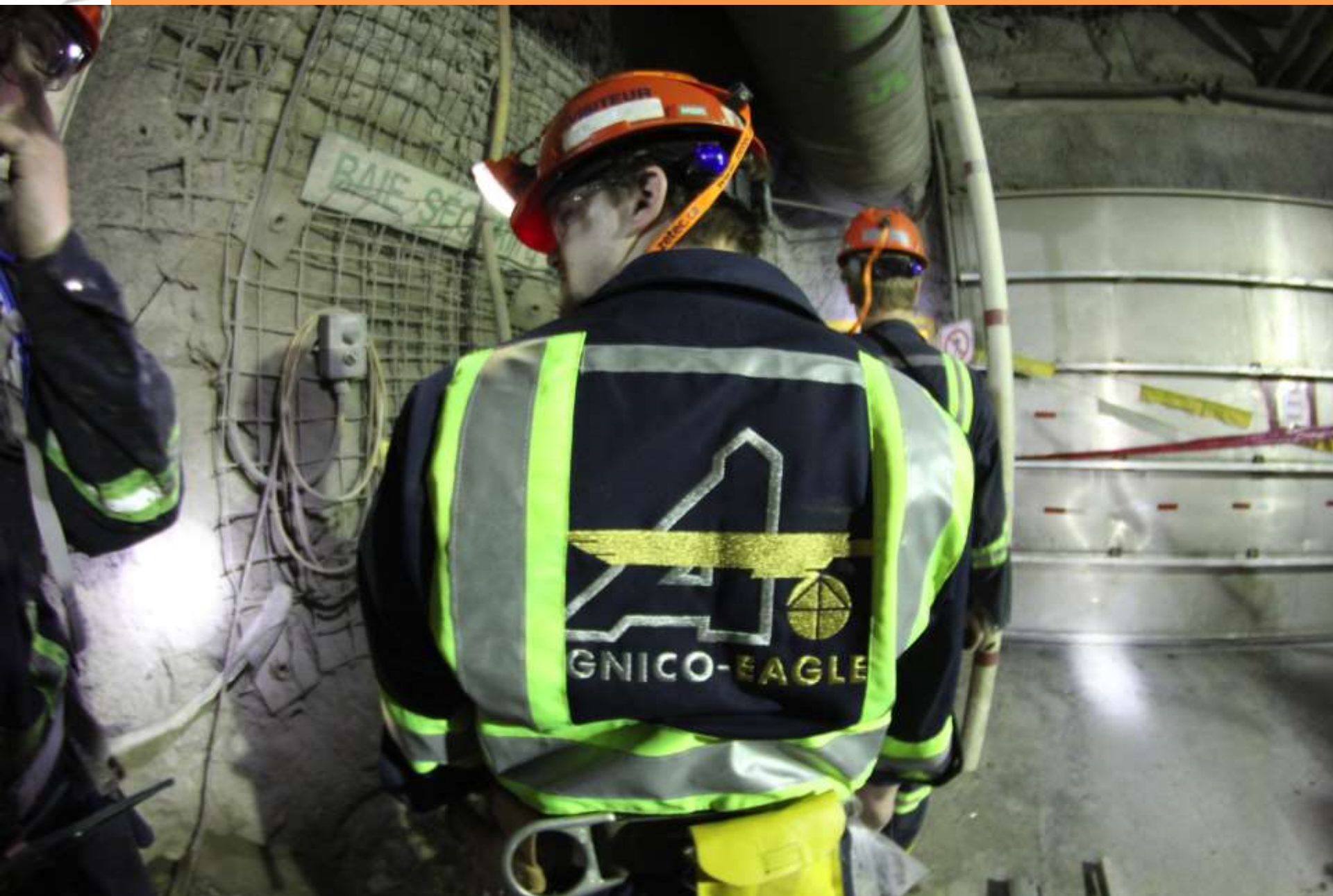




LaRonde mine - 1700 meters underground!



The wall rock temperatures reach 35°C at the deepest parts of the mine, but it is still pretty hot 1700 meters down!



Gold embroidered coveralls!



A convenient park bench 1.7 km underground to rest on while waiting for the cage to return to surface



Coveralls can be a great place to store samples while underground.



Group photo 1700 m underground in the LaRonde mine with the Penna Shaft as a backdrop



Agnico Eagle mine geologists/engineers thanked by S-IMEW students after a fantastic underground tour



Lianna Vice (Carleton University) and Joseph Vrzovski (University of Toronto) looking at production core from the LaRonde Mine



Bacteria are used at the biological water treatment facility at the LaRonde mine, and are capable of degrading toxic cyanide into ammonia, and further processing ammonia into nitrite and nitrate



When water treatment is successful



Guy Gosselin (Vice President, Exploration, Agnico Eagle) presents his evening talk about the Amaruq gold discovery in Nunavut, and is thanked by Mackenzie McConnell (NAIT)



Field trip leaders Gérald Riverin (Yorbeau Resources) and David Comba are speaking to the S-IMEW participants before heading to the first outcrop of the day in the Noranda Camp



Gérald Riverin (Yorbeau Resources) and Linette MacInnis standing on what used to be the discordant alteration pipe to a VMS deposit, which subsequently was contact metamorphosed to a peculiar rock called dalmatianite because of cordierite porphyroblasts (center top)



Carlos Bazan (BCIT) holds a piece of breccia formed during steam generation when cold seawater comes into contact with hot solidified rock – an example of syn-volcanic fluid pathways that are important to VMS exploration



Marc-Antoine Vanier (Laval University) with his finger on the same horizon that hosts VMS deposits along strike



Columnar joint couch



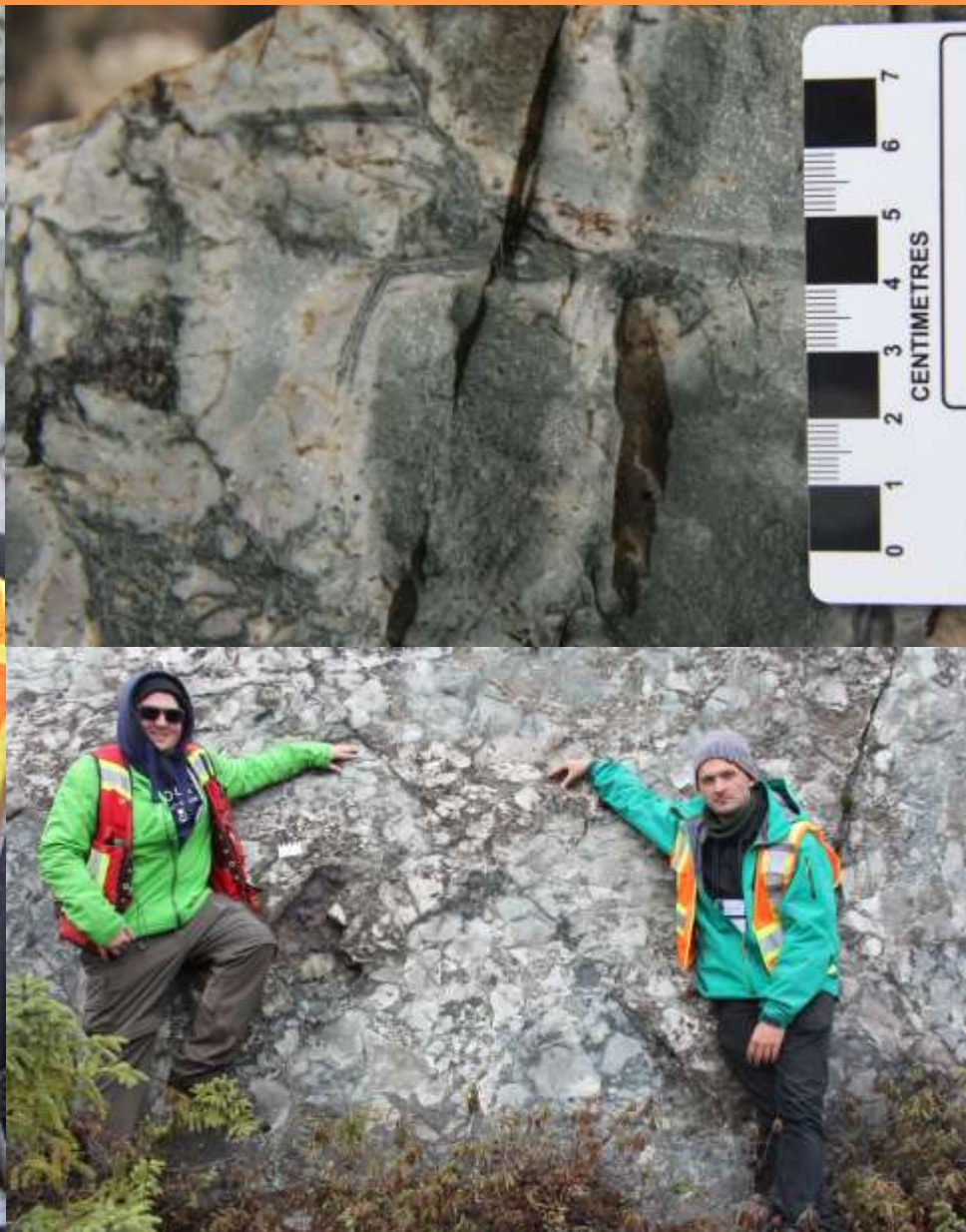
S-IMEW students delineating a syn-volcanic fault



The infrastructure in Noranda is accommodating



Gerald and David finally enjoy a little break from the eager S-IMEW students during lunch



Subaqueous phreatomagmatic explosion breccias at Buttercup Hill that contains highly silicified andersite fragments, initially thought to be rhyolite



Gerald Riverin (Yorbeau Resources) is giving an evening talk about the Noranda Camp



Field trip leaders David Comba (middle left) and Gerald Riverin (middle right) are thanked on behalf of the S-IMEW students by Lyanna Vice (Carleton University) and Derek Drayson (University of Manitoba)



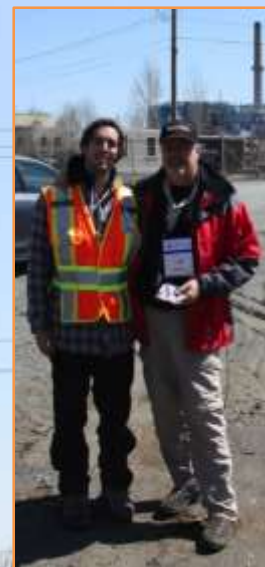
It's a cold but beautiful morning as the S-IMEW convoy rolls up at a well-exposed stratigraphic sequence of ancient volcanic rocks that are to be mapped under Dr. Harold Gibson's supervision



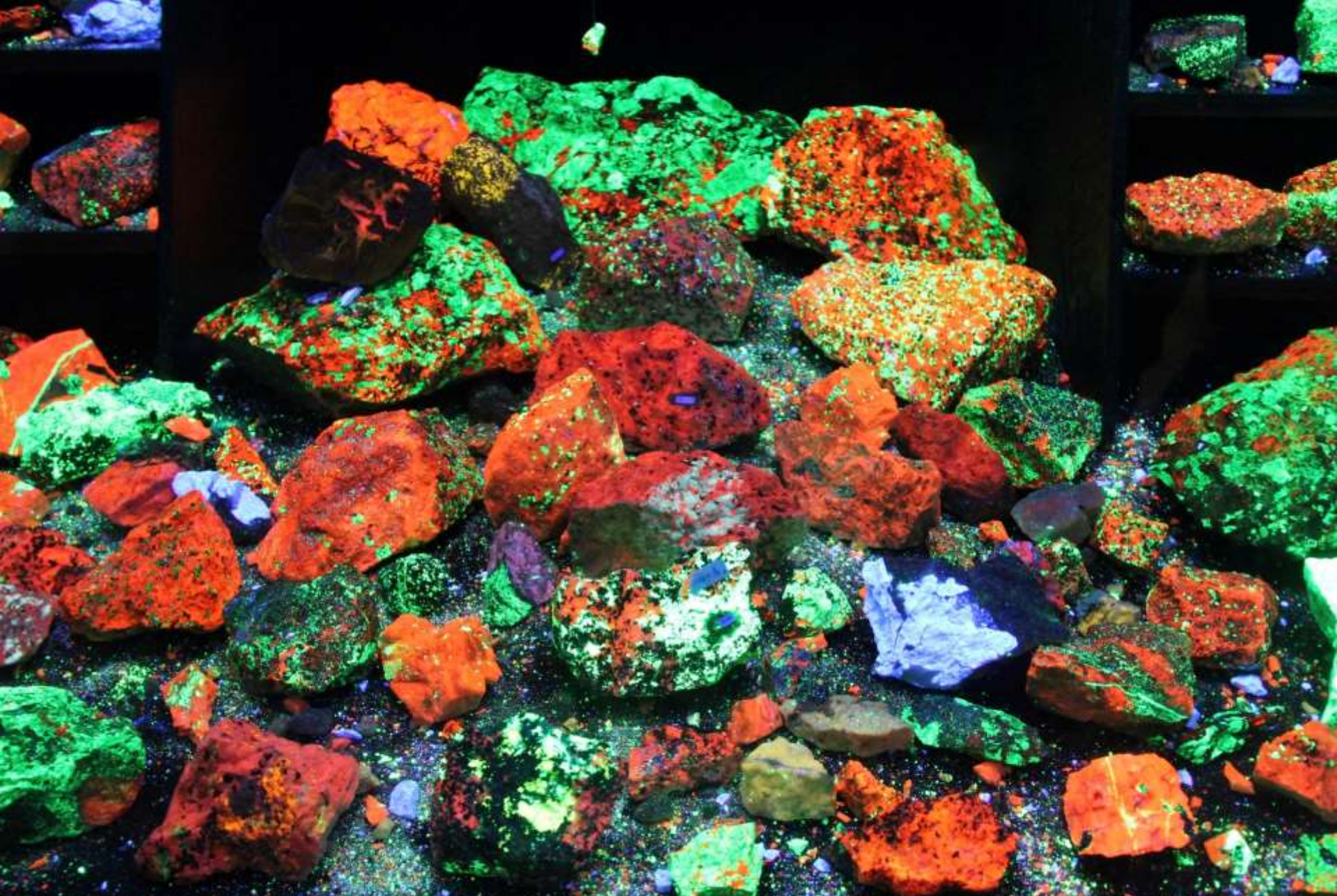
S-IMEW participants spends a day with Dr. Harold Gibson (Laurentian University & MERC) mapping volcanic stratigraphy in the Noranda camp



Lisa Cote (UQAC) and Allan Lion (UO) are enjoying the morning mapping exercise exposing the S-IMEW students to a variety of volcanic features



Dr. Harold Gibson (Laurentian University – MERC) is thanked by Chis Voisey (Memorial University), before joining the rest of the delegation for a group photo



Spectacular fluorescent minerals at the Cobalt Mining Museum



From left, Lianna Vice (Carleton University) and Mackenzie McConnell (NAIT) are looking for silver ore in Cobalt with the downtown as a backdrop



Old mine workings in Cobalt following a narrow silver vein



A refreshing dive into the cold waters at Temiskaming Shores was inevitable



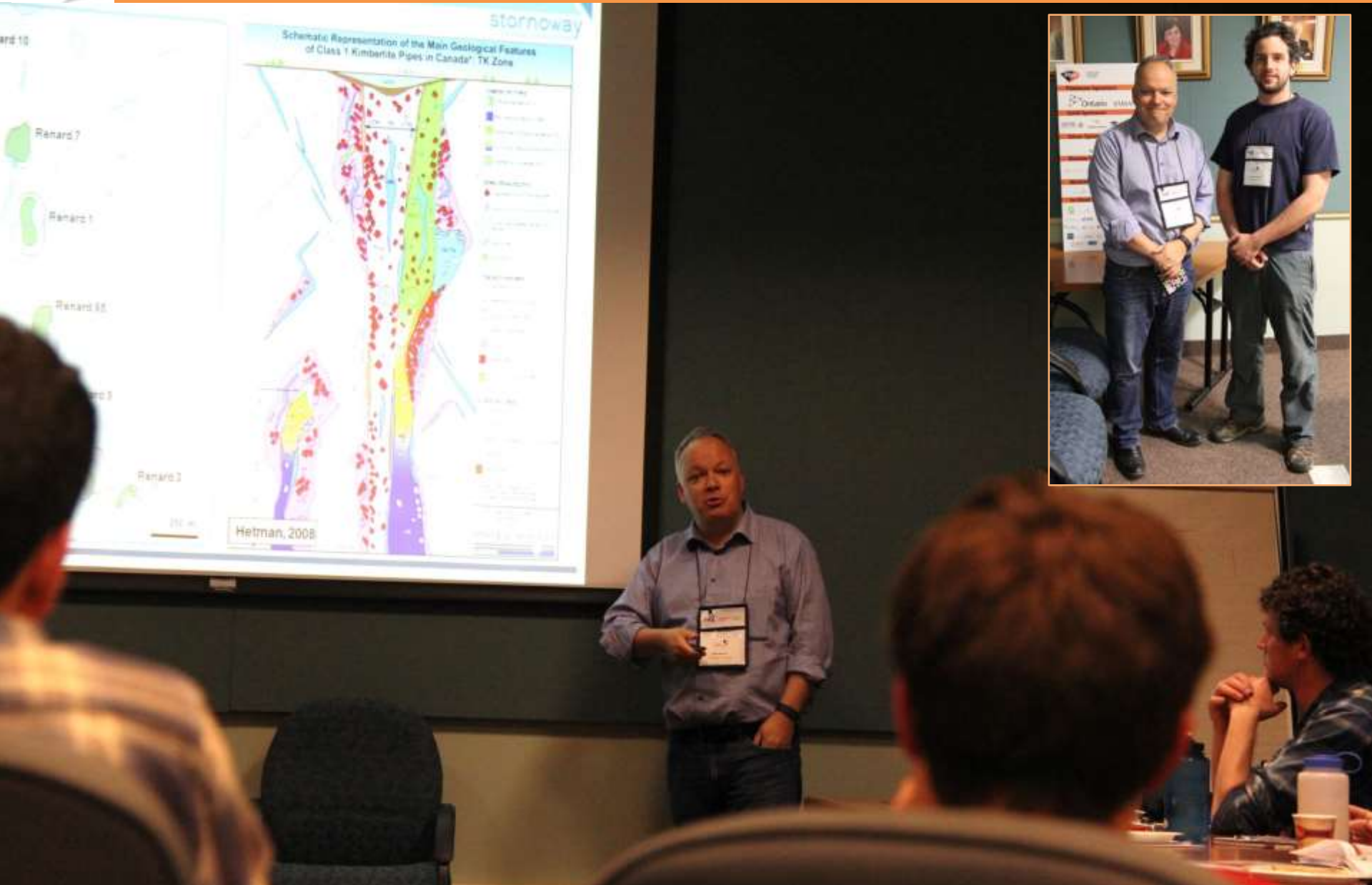
The smile of a successful prospector – Colin Padget (UNB) shows off his silver ore samples collected in



Dan Leroux (ACA Howe International Ltd.) talks to the students during the first Diamond Day in S-IMEW history, and is thanked on behalf of S-IMEW by Christopher Beckett-Brown (Laurentian University)



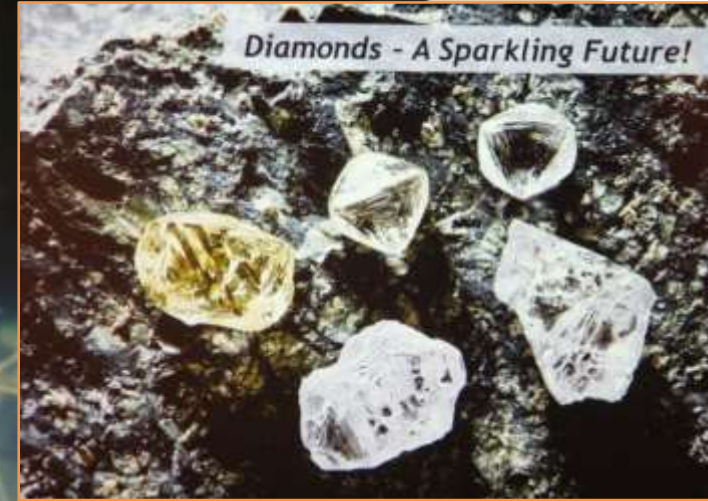
Nicole Januszczak (De Beers) talks about exploration approaches and techniques for primary diamond deposits, and is thanked on behalf of S-IMEW by Thomas Bagley (Acadia University)



Matt Manson (Stornoway Diamonds) talks about evaluation of diamond deposits, and is thanked on behalf of S-IMEW by Aidan Ditchburn-Trout (McGill University)



Diamond and kimberlite samples are investigated



George Read (Shore Gold Inc.) delivers his evening talk about the diamond industry and its sparkling future, and is thanked on behalf of S-IMEW by Billy Garrison (Dalhousie University)



Ian Trinder (ACA Howe International Ltd.) explains the ABC's of core logging, and is thanked on behalf of S-IMEW by Tyler Glubrecht (University of Calgary)



Students log core provided by IAMGOLD with Ian Trinder (ACA Howe International Ltd.) guiding them through the process

Analytical Labs

- Most Canadian labs have ISO 9000
 - Few have ISO 17025
 - All analytical labs have internal QC samples inserted within each assay batch
 - All assays are signed and stamped by a certified assayer
- Shocking truth....no lab is perfect

The World, Our Language, Our Country



Julie Selway (Caracle Creek International Consulting) share her insights on quality assurance and quality control, and is thanked on behalf of the S-IMEW participants by Percy Clark (Fleming College)



Elisabeth Ronacher (Ronacher Mckenzie Geoscience) talks about resource and 3D modelling, and is thanked on behalf of the S-IMEW participants by Derek Drayson (University of Manitoba)





Scott Jobin-Bevans and Felix Lee with the successful S-IMEW class of 2015 – Congratulations!