ASH FALL

Newsletter of the Volcanology and Igneous Petrology Division
Geological Association of Canada

No. 80 December 1, 2017

The Volcanology and Igneous Petrology Division of GAC has had a number of projects underway over the past six months. Dr. Jarda Dostal has been working to assemble a Geoscience Canada reprint book on Igneous environments and associated rocks. That initiative is expected to move ahead to GAC publications over the next few months.

There are reminders in this issue of Ashfall of the upcoming deadlines in early 2018 for our Léopold Gélinas Gold, Silver and Bronze (Ph.D., M.Sc. and B.Sc.) best-thesis awards, and the deadline for nominations for our Career Achievement Award.

Related to this we have put together a Canadian Geological Foundation application to help finance the purchase of 5 new gold and 5 new silver Gélinas medals because our stock of these medals is completely depleted.

Finally, I want to remind everyone about the upcoming Resources for Future Generations (RFG = the annual GAC-MAC) Conference in Vancouver BC on June 16-21, 2018. The VIP is sponsoring several sessions at the conference including ***Igneous Processes and Climate Change Over All of Earth History***. Other VIP supported sessions appear in this issue of Ashfall. We will have our annual general meeting of the VIP during the conference but the exact, time, date and location have yet to be determined so stay tuned.

John Greenough (2016-2017 VIP Chair)

Perspectives on lithospheric evolution through tectonomagmatic processes: a volume in honour of Jaroslav Dostal International Journal of Earth Sciences

Jaroslav Dostal in Halifax, NS (July, 2017)

In honour of our friend and colleague, Jaroslav (Jarda) Dostal, we have organized an upcoming special issue of International Journal of Earth Sciences (Geologische Rundschau). The focus of the special issue is to commemorate Jarda's contributions to the Canadian and Global geosciences community with a collection of manuscripts that link geochemistry, geology and tectonics. The special issue is an outcome of a symposium we convened during the Joint Assembly of the AGU-CGU-GAC-MAC in Montréal (May 3rd–7th, 2015) entitled “Secular Variations in the Tectonomagmatic Evolution of the Continental Crust”.

Jarda is well respected throughout Canada and around the world as a leader in lithogeochemistry and its application to paleotectonic processes. He completed his undergraduate degree at Charles University (Prague) in 1964 and Ph.D. at McMaster University in 1974 after which he became a professor in the Geology Department of Saint Mary's University (1975). During his tenure at Saint Mary's he established the Regional Geochemical Centre, served as Department Chair for 12 years and supervised dozens of undergraduate and graduate students. Moreover, he has diligently served Saint Mary's University as a member of the University Senate and Board of Governors and the Canadian geosciences community by serving as Chair of the Volcanology and Igneous Petrology Division of the Geological Association of Canada, Director of NAFTA (North American Free Trade Agreement) project; North American mobility in higher education in Geology; Chair of Earth Sciences committee of Science Atlantic; and spearheaded an international development project in Mongolia through the Canadian International Development Agency. Because of his efforts Jarda has received recognition from his peers (Hawley Medal, Gesner Medal, Career Achievement Award, Volcanology and Igneous Petrology Division- GAC), students (Excellence in Teaching) and university (SMU President's Award in Excellence in Research). His community service continues to this day as he manages the Igneous Rock Associations series of Geoscience Canada.

Jarda's career is now into its fifth decade and his publication record is a testament to his impressive achievements (314 refereed papers and 8650 citations). For much of his career, Jarda has focused on the mineralogy, geochemistry, mineral deposits, tectonics and petrology of igneous rocks. He has investigated nearly every petrological process from mantle evolution and crustal recycling to magma mixing and liquid immiscibility in rocks ranging from Archean to present and consistently provided novel and plausible insights into these fundamental processes.

The special issue is a collection of 19 manuscripts submitted by friends and colleagues that cover a broad range of subjects related to lithospheric evolution including: development of oceanic crust and ophiolites, the formation of large igneous provinces, granite petrogenesis, porphyry-Cu deposits and new views on the tectonomagmatic evolution of Gondwana, Avalonia, Northern Appalachians, Mexico and Central Europe. The special issue is a fitting tribute to Jarda's outstanding career as the articles encapsulate the breadth and depth of his contributions that spans some of the most fundamental concepts in the field of mineralogy, geochemistry, igneous petrology and their relationship to tectonics. We invite you to explore the special issue and learn about the subjects that inspire a wonderful geoscientist.

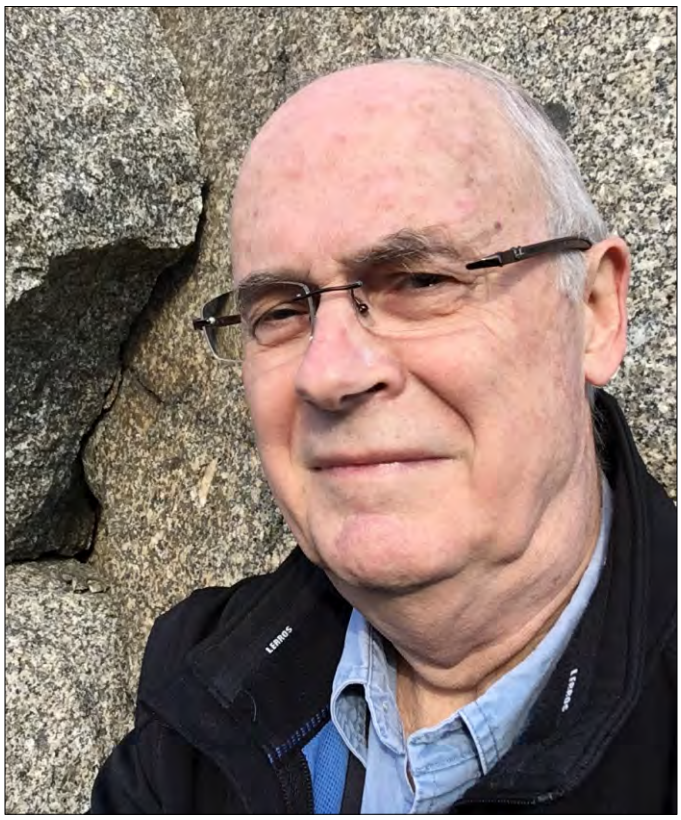
J. Gregory Shellnutt, J. Brendan Murphy, John D. Greenough, J. Duncan Keppie (Guest Editors)

p.s. The last manuscript is currently going through final editing and the special issue will be published in early 2018.

Career Achievement Award

The Volcanology and Igneous Petrology Division of the Geological Association of Canada in recognition of career achievements in the field of volcanology and/or igneous petrology present the Career Achievement Award. Candidates are judged on their lifetime scientific contributions.

Dr. Barrie Clarke for his lifetime scientific contribution to the fields of Volcanology and Igneous Petrology



Nomination Letter

We wish to nominate Dr. D. Barrie Clarke for the Career Achievement Award of the Volcanology and Igneous Petrology Division. We both have known Barrie for more than 40 years and had the chance to witness his excellent contributions to igneous petrology and volcanological science both in Canada and abroad.

His ground-breaking research on the Tertiary basalts of Baffin Bay and their counterparts in Greenland, on which he started publishing in 1967, made a significant impact on the then burgeoning theory of Plate Tectonics and the evolution of the North Atlantic, and continues to be cited in the literature. Although with a strong background and interest in experimental mineralogy and basalt petrology, his research took an important turn when he realized the monumental size and complexity of the South Mountain Batholith (Nova Scotia) in his backyard, the largest granitoid batholith in the Appalachians.

His supervision of student theses starting with the MSc by Colin B. McKenzie (respected geoscientist in government and industry) and the BSc Honours thesis by Rebecca Jamieson (Professor, Department of Earth Sciences, Dalhousie), both completed in 1974, initiated an almost continuous chain of SMB studies involving students, which continued to his retirement. In 1980 he published an examination of plutonic rocks in Nova Scotia (in Virginia Polytechnic Institute Memoir) and in 1981 Barrie felt he had learned sufficiently to publish a review of peraluminous granites in the Canadian Mineralogist. Although he continued to do research and publish profusely on the mineralogy and petrogenesis of mafic and ultramafic rocks (for instance on the occurrence of a potassium – iron – nickel sulphide in nodules in kimberlite), he started to write numerous refereed journal publications on Nova Scotia granitoids. In fact, Barrie has brought these rocks from pink blobs on maps to arguably some of the best studied igneous rocks on the planet.

This legacy of work on peraluminous granites has made the South Mountain Batholith a familiar name throughout the world, and attracted countless geoscientists to Nova Scotia, including international participants in various field excursions and workshops led by Barrie. Beyond the plutonic rocks themselves, he has added fundamental knowledge about the makeup of the Meguma Zone.

Peraluminous granites pose particularly difficult petrogenetic puzzles, because of the need to consider both mantle and crustal

melting processes and the difficulty of separating the petrological signature of the magma from that of its source and/or host rocks. Barrie has demonstrated that it is possible to work systematically through the intricacies of the problem to arrive at robust answers that offer general insight into the underlying processes. Barrie is not only an acknowledged expert on the igneous petrology of Nova Scotia but is unquestionably among the world leaders in granite petrology particularly of aluminous ("S-type") granites.

Barrie has been first and foremost an inspired and inspiring teacher. He was one of the most demanding teachers we have known, not tolerating anything less than a superior and timely performance, yet this stand has won him the indisputable respect and admiration from generations of students. We value in particular Barrie's "multiplier effect": he has shared his knowledge with enthusiasm and dedication, motivating hundreds of Atlantic Canada's students to wanting to know more about igneous rocks in general and Nova Scotia's igneous rocks in particular, and many of his former students continue to spread his legacy. And there is no indication that he is slowing down, as shown by his recent forensic study on the source of Titanic victims' headstones.

It is therefore with the greatest confidence that we nominate D. Barrie Clarke for the Career Achievement Award.

Nomination letter written by:
Marcos Zentilli and Jaroslav Dostal

Barrie's Response

I am exceedingly grateful to the Volcanology and Igneous Petrology (VIP) division of GAC for its recognition of my petrological work. That work began 53 years ago when the incomparable Tuzo Wilson and I went to Baffin Island to investigate a possible link between its early Tertiary basalts and those of West Greenland, with a view to making a case for (pre-plate tectonics) "continental drift". With Tuzo Wilson as my tectonics mentor, and with Wils Moorhouse and Jeff Fawcett in Toronto, plus Brian Upton, Keith Cox, and Mike O'Hara in Edinburgh, as my petrological mentors, I could not have had a more inspiring, and firmly grounded, start to my scientific career.

I was so incredibly fortunate that my career spanned the heyday of modern igneous petrology, which began with the epic basalt paper by Hatten S. Yoder and Cecil E. Tilley in Journal of Petrology, published in 1962 while I was still an undergraduate student. Following in the footsteps of Canada's (and Kingston's) own Norman L. Bowen, Yoder and Tilley set the new gold standard for integrating field, petrological, geochemical, and experimental evidence to solve petrogenetic problems. To varying degrees, the next generation of igneous petrologists tried to emulate what Yoder and Tilley had done, and in the following half century, our discipline made exponential gains in the understanding of the origin and evolution of magmatic systems.

Personally, it's been an exciting journey, and I am most grateful to Mike Keen who provided an opportunity for me to ply my trade at Dalhousie University. My petrological work began with those "terrestrial MORBs" in Baffin Island and West Greenland, then logically moved on to more conventional MORBs from Davis Strait, Labrador Sea, and Mid-Atlantic Ridge, through kimberlites in Canada and southern Africa, and eventually culminating in peraluminous granites primarily in Nova Scotia. The stimulation from the petrogenetic challenges that this wide variety of igneous rocks presented, and the enormous sense of satisfaction derived from doing research with so many talented graduate and undergraduate students, have been the mainstays of my career. Now this Career Achievement Award is the ultimate highlight.

Also, much gratitude to my longstanding and esteemed colleagues, Jarda Dostal and Marcos Zentilli, who kindly took the time and trouble to nominate me for this award.

Many thanks,
Barrie Clarke

GAC-VIP on Social Media

During the last annual meeting of the VIP Division at the GAC-MAC conference, it was decided that we needed to increase our public outreach and recruit new members. Therefore, as of May 2017, the GAC-VIP launched it's social media pages on Facebook and Twitter!

GAC VIP Division @vipgac:
https://www.facebook.com/vipgac/

GAC VIP Division @gacvip:
https://twitter.com/gacvip

Importantly, these pages aim to:
(1) increase public awareness of the GAC-VIP
(2) network and exchang ideas with the global volcanology community
(3) improve organizational communication

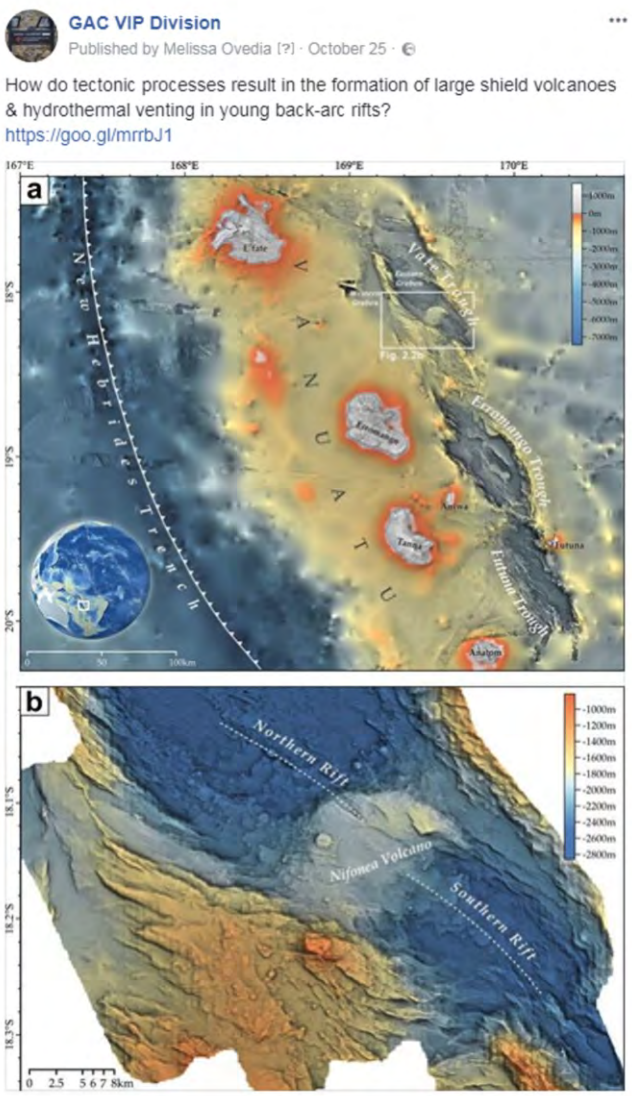
Based on our experience so far, we have found that Facebook and Twitter each serve a unique purpose. With more than 110 followers, the GAC-VIP Facebook page primarily reaches the Canadian geological community, although most of these followers do not have VIP memberships. Facebook provides comprehensive data on page views, likes, and post engagements, in addition to showing the audience reach for each post. This provides insights into which posts have the highest impacts.

The most popular posts on Facebook include photos/videos with informative captions.

Other popular Facebook posts include expedition summaries.

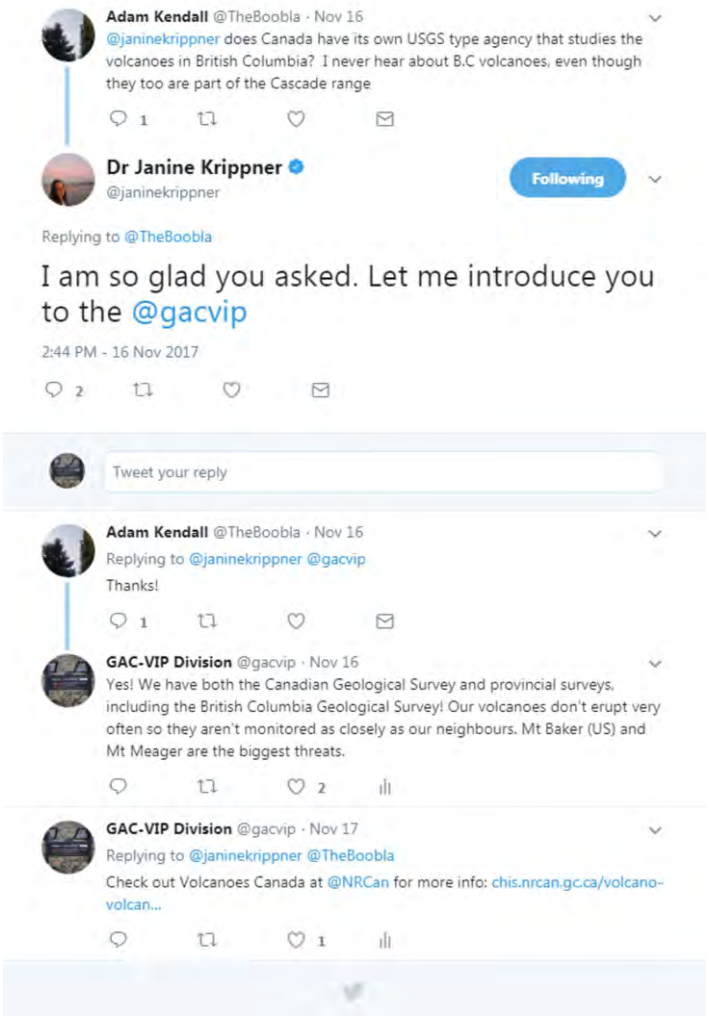
In contrast, the GAC-VIP Twitter page has more than 230 followers, consisting primarily of the international volcanological community. There are far more interactions with posts on Twitter in the form of re-tweets, replies, and likes, although it is more difficult to track which posts gain the most popularity. Through Twitter, the GAC-VIP is establishing itself as the go-to source of information for volcanism in Canada. Popular tweets include photos of thin sections for *#ThinSectionThursday* and facts about volcanism.

Both of these pages are run by GAC-VIP executive members, with content primarily contributed by Student Councilor Melissa Anderson. The pages are updated daily, requiring only a few minutes to check out recent posts and re-tweet information. In the future, we aim to increase the number of original posts and emphasize research done by Canadians on volcanology and igneous petrology.



Other popular Facebook posts include links to recent publications.

Popular tweets include photos of thin-sections for #ThinSectionThursday



Through Twitter, the GAC-VIP is establishing itself as the go-to source of information for volcanism in Canada.

Through trial and error, we have adapted standards for the tone and style of communication, opting for informal personal writing style. The audience is mainly geologists, so the language used is often technical. In the future, if the GAC-VIP chooses to extend these social media pages to public outreach, communication will have to limit jargon and broaden its scope. This past year has established the GAC-VIP as a presence in the geological community, providing a platform for increasing membership. We hope that current GAC-VIP members will utilize this platform for sharing their research and increasing visibility of the excellent work done by Canadian geoscientists!

To showcase your work, send us a message on one of our pages or email Melissa with the subject line "VIP Contribution":

Melissa Anderson
Anderson.geology@gmail.com

GAC-MAC 2017 Session GS1: A LIP Session "Outside the Box"

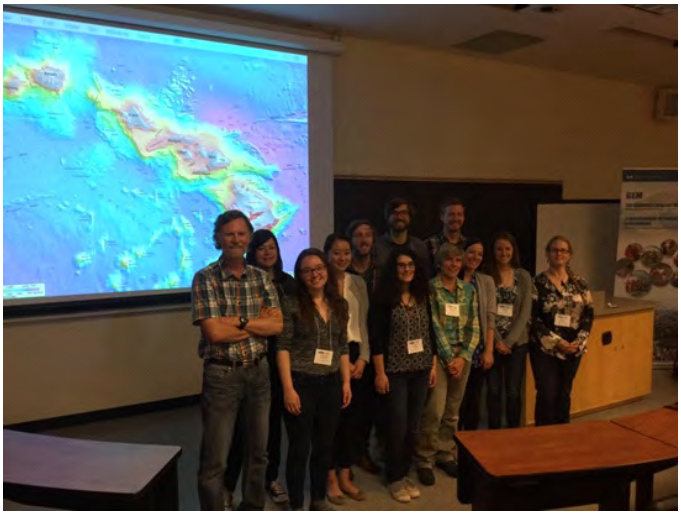
Large Igneous Provinces (LIPs) are characterized by massive outpourings of predominantly mafic magma in the continental and oceanic domains. Over the past century, geoscientists have studied the stratigraphy, volcanology, petrology and geochemistry of continental flood basalts emplaced in LIPs, with spectacular results. We now have a better grasp of the links between magmatic processes in LIPs and the formation of rifted margins and new ocean basins. Detailed studies of continental LIPs also led to the discovery of a wide range of mineral deposits, particularly Ni-Cu-PGE deposits. However, many aspects of LIPs are still poorly understood. In the continental domain, the petrogenesis of low-volume alkali basalts and ferropicritic magmas is still poorly understood. In the oceanic domain, the classic model of catastrophic emplacement over a geologically short period of time does not explain the formation of many ocean island chains or plateaus. Finally, LIPs cover a wide range of scales from vast outpourings of basaltic flows in the Deccan Traps or along volcanic margins to the emplacement of smaller volumes of basaltic and rhyolitic flows in the Columbia River Basalt Group. Does size matter when it comes to the mineral prospectivity of LIPs?

Session GS1 of the annual meeting of the Geological Association of Canada explored some of these questions by sending out a call for contributions that linked magmatic processes to ore deposit genesis in LIPs. Our invitation for abstracts on both oceanic and continental LIPs led to a two-day program that included twenty-eight oral presentations and nineteen posters. Ultimately, we reached our objective of presenting state-of-the-art research from the continental and oceanic domains that broaden our understanding of tectonostratigraphic, structural, and geochemical controls on magmatism and mineralization associated with LIPs.

This short report highlights some of the speakers who presented their results at Session GS1 (Figures 1-5). An exhaustive review could not be presented here so we wish to express our gratitude to all GS1 participants who made this session an event to remember, with a special mention to students and early-career scientists, many of whom presented their results at the poster sessions.

Session GS1 kicked off on Day 1 with a presentation by Barrie Clarke (Dalhousie University) on picritic magmas associated with the Davis Strait (Baby) LIP. Simon Jowitt [A] (University of Nevada, Las Vegas) gave a Keynote presentation on the Ni-Cu-PGE prospectivity of LIPS and the use of lithogeochemistry in mineral exploration. On Day 2, Derek Wilton [B] (Memorial University) gave a Keynote presentation on the SEM-MLA technique applied to mineralogical studies of gossans in the High Arctic Large Igneous Province (HALIP).

GAC-MAC 2017 Session GS1: A LIP Session "Outside the Box"

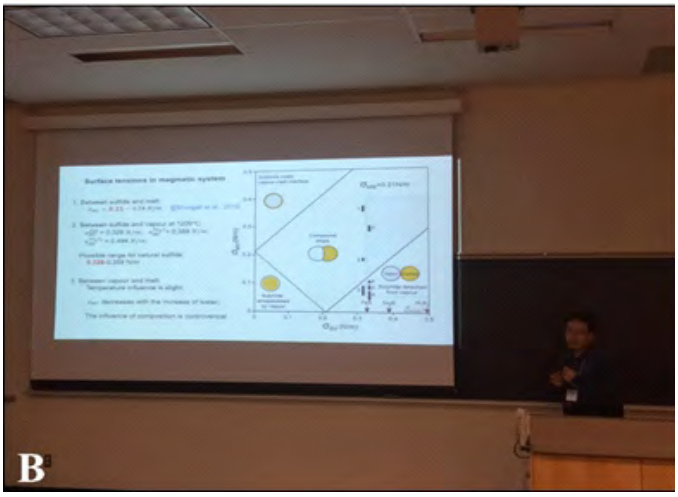


Faculty and graduate students from the Department of Earth and Atmospheric Sciences at the University of British Columbia presented a wide range of talks and posters on terrestrial and oceanic LIPs. New field, geochemical and isotopic data were presented for the Hawaiian Island Chain, the Stillwater and Bushveld Complexes, and the Muskox, Skaergaard and Kiglapait intrusions. From left to right: James Scoates, Nicole Williamson, Catherine Armstrong, June Cho, Anaïs Fourny, Dominique Weis, Laura Bilenker, Lauren Harrison, and Nichole Moerhuis. Back row, left to right: Tom Ver Hoeve, Rhy McMillan, and Matthew Manor.

Acknowledgements

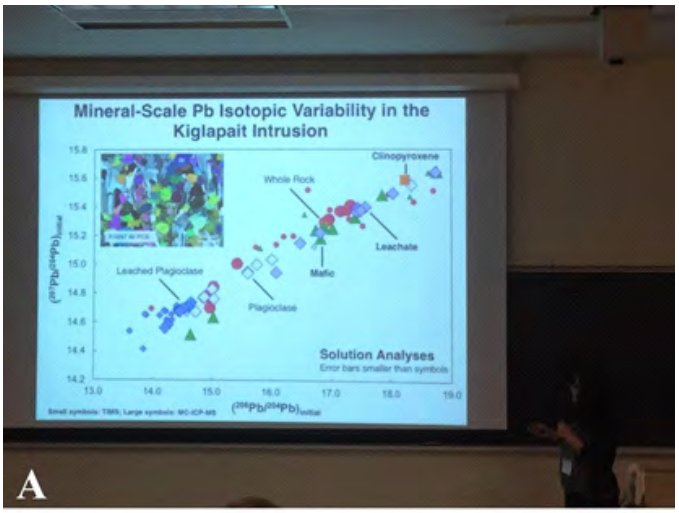
The 2017 Annual meeting of the GAC-MAC in Kingston coincided with the 175th anniversary of the founding of the Geological Survey of Canada (GSC) and Queen's University in Kingston, Ontario. The authors are grateful to Rob Rainbird and David Corrigan (GSC) for endorsing the topics and scope covered by Session GS1. Special thanks to Bob Dalrymple, Technical Program Chair, for guidance and support of a LIP Networking Session at the start of Days 1 and 2 of the session. Dan Layton-Matthews, Queen's University, is thanked for securing student travel grants from the Mineral Deposits Division of the GAC.

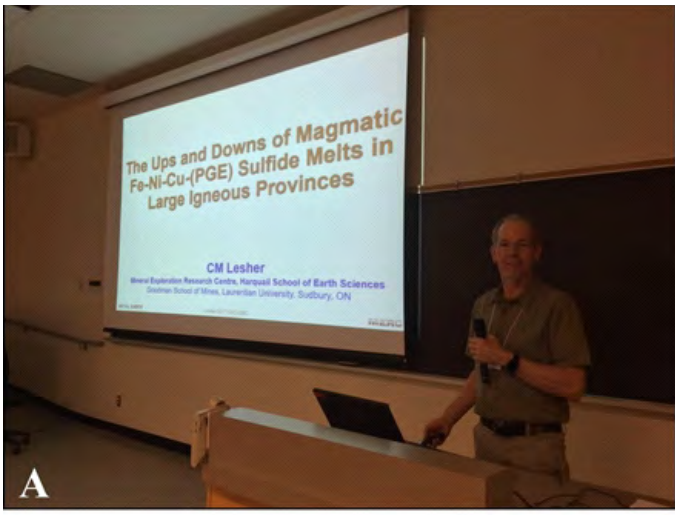
Session GS1 was sponsored by the GAC's Volcanology and Igneous Petrology (VIP) Division and the International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI). A selection of papers presented at session GS1 will be published in a Special Volume of the Canadian Journal of Earth Sciences.

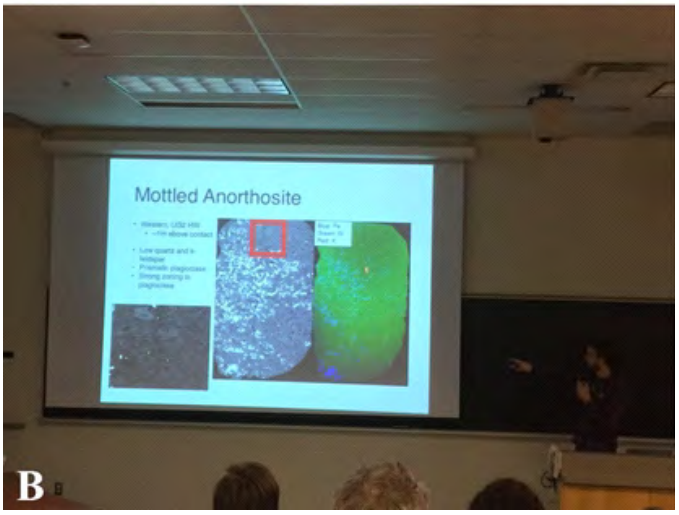


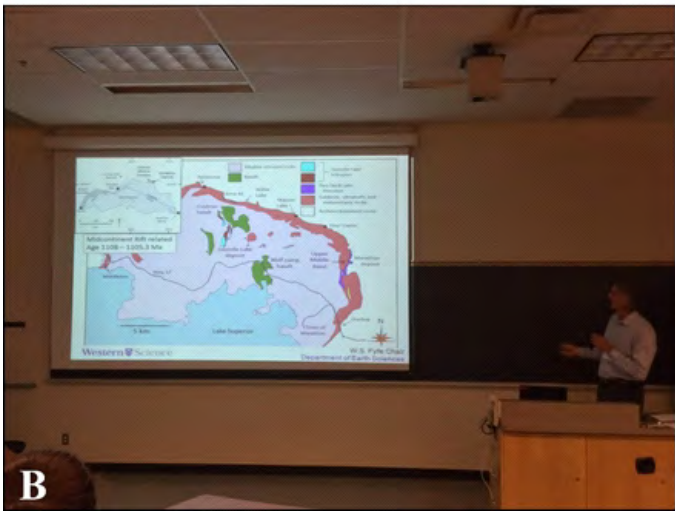
Session GS1 also included presentations on modelling studies of LIPs. On Day 1, Jennifer Blanchard [A] (Carleton University) proposed new guidelines for identifying and modelling LIP-related layered intrusions using geophysical data. On Day 2, Zhuosen Yao [B] (University of Toronto) presented a model for the flotation of sulphide melt in crystal mush.

GAC-MAC 2017 Session GS1: A LIP Session "Outside the Box"









Day 2 kicked off with an overview of past and current research on the Muskox Intrusion presented by James Scoates (University of British Columbia). Anaïs Fourny [A](University of British Columbia) presented the results of lead isotope studies on plagioclase and clinopyroxene minerals from the Kiglapait intrusion. Samuel Robb [B](University of Toronto) presented new data on the thermal evolution of the UG2 reef of the Bushveld Complex.

On Day 2, the focus shifted from continental flood basalts and layered magmatic complexes to the metallogeny of LIPs. Michael Lesher [A] (Laurentian University) presented an overview of ore-localizing features in magmatic Fe-Ni-Cu-(PGE) deposits associated with large igneous complexes. David Good [B] (Western University) presented a comparison between early mafic magmatism in the Coldwell Alkaline Complex and Midcontinent Rift.

Contributed by:

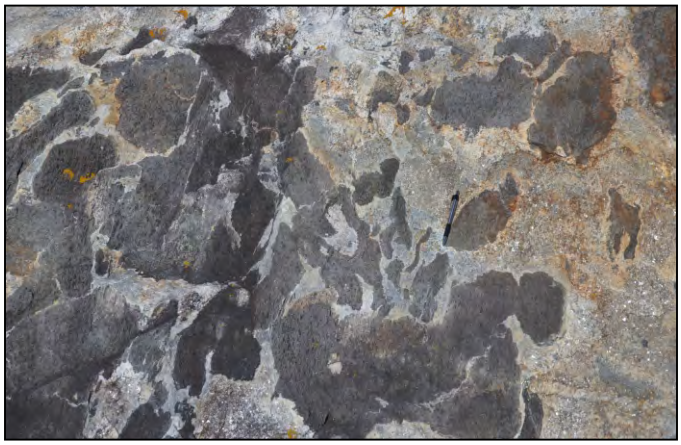
Marie-Claude Williamson and Christopher Lawley
Geological Survey of Canada, 601 Booth Street, Ottawa, Ontario, K1A 0E8

Field Trip Reports

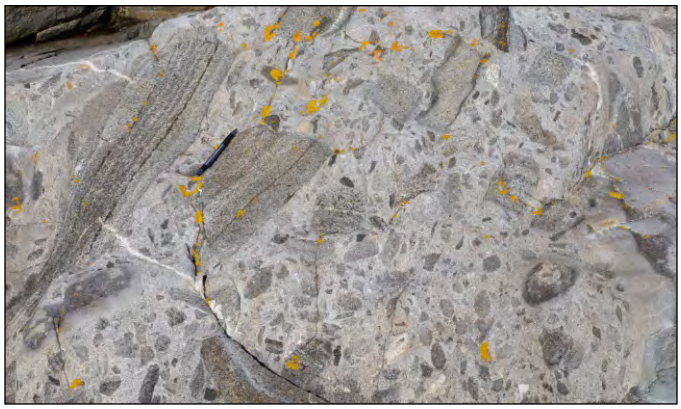
St. Francis Xavier University Igneous Petrology Field Trip

The 3rd and 4th year Igneous Petrology class at StFX embarked on a 2-day field trip to the South Shore of Nova Scotia from September 29-30, 2017. The field trip included 6 students and was led by Dr. Alan Anderson and Dr. Donnelly Archibald.

The first stop on the trip was the Kejimkujik Seaside National Park to vist the Port Mouton Pluton that crops out along the coastline. A trek along the coastline at Port Joli Head traverses the wide contact zone of the Port Mouton Pluton with the Meguma Supergroup metasedimentary rocks. The Port Mouton Pluton shows strong evidence for interaction with Late Devonian mafic magmatism and Meguma Supergroup country rocks.



Magma mixing textures near the contact of the Port Mouton Pluton



Xenoliths of the Meguma Supergroup meta-sedimentary rocks in the Port Mouton Pluton

After spending the night in Yarmouth, we took a short drive north to visit the Brazil Lake pegmatite. Prospector John Wightman was kind enough to provide access to the pegmatite and give us a guided tour of the deposit.

The Brazil Lake pegmatite deposit is a rare-element pegmatite. This type of pegmatite (LCT) is a potentially important resource of rare elements (e.g. Li, Ta, Rb, Cs, etc...). The abundance of high-quality industrial minerals (e.g. muscovite, feldspar, quartz), and gem minerals (e.g. tourmaline, beryl) make this style of mineralization economically important. These pegmatites are often petrogenetically related to fertile, progenitor granites. The pegmatites near Brazil Lake are hosted by Silurian sedimentary and volcanic rocks of the Rockville Notch Group that were deformed and metamorphosed during the Acadian Orogeny.

Brazil Lake is an active exploration site. Approximately 30,000 kg of ore were shipped to China for testing in the fall of 2015, and there are drilling and soil sampling exploration projects ongoing in the area. The precise age of the pegmatites is unknown but a U-Pb (tantalite) minimum age of ca. 395 Ma is the best age constraint (Kontak, 2006; *Canadian Mineralogist*). The pegmatite is dominated by spodumene and alkali-feldspar megacrysts (<2m), with smaller crystals of spodumene, quartz, alkali-feldspar, muscovite, and albite. Crystals of beryl, Ta-Nb oxides, apatite, and tourmaline were also observed.

Alan Anderson and prospector John Wightman explaining pegmatite textures and mineralogy to the StFX Igneous Petrology class.

Large spodumene crystal in the Brazil Lake pegmatite in southern Nova Scotia

StFX Igneous Petrology class with Dr. Alan Anderson at the Brazil Lake pegmatite

The final stop on the trip was the famous Peggy's Cove lighthouse near Halifax. The lighthouse is constructed on the Halifax pluton, a satellite pluton to the South Mountain batholith. Devonian magmatism is widespread in the Meguma Terrane.

At Peggy's Cove, the granitoid rocks contain abundant metasedimentary xenoliths of the Meguma Group, and layered aplite and pegmatite units. The class discussed the formation of the aplite and pegmatite due to the interaction of the evolving melt with volatiles released from the adjacent Meguma Group.

Layered pegmatite in contact with the Halifax pluton (top) to the east of the Peggy's Cove Lighthouse

Spectacular view of the Peggy's Cove Lighthouse and the remarkable granite on which the lighthouse was built.

The students had an excellent trip and learned a lot about granite magmatism in Nova Scotia. We would like to acknowledge financial support for the trip provided by the StFX Department of Earth Sciences. We thank Barrie Clarke for directing us towards the spectacular geology of the Port Mouton Pluton and for a copy of his field guide. We would also like to thank John Wightman for providing access to the Brazil Lake pegmatite and for discussions with students about the deposit.

The photographs and report were contributed by Alan Anderson and Donnelly Archibald.

Leopold Gélinas Medals

Every year, the Volcanology and Igneous Petrology Division of the Geological Association of Canada presents three medals for the most outstanding theses, written by Canadians or submitted to Canadian universities, which comprise material at least 50% related to volcanology and igneous petrology. A gold medal is awarded for the best Ph.D. thesis, a silver medal for the best M.Sc. thesis and an antique copper medal for the best B.Sc. thesis. Nominated theses are evaluated on the basis of originality, validity of concepts, organization and presentation of data, understanding of volcanology and petrology, and depth of research.

Gold Medal
Dr. Donnelly B. Archibald
The University of Adelaide

This year's winner of the Volcanology and Igneous Petrology (VIP) Gelinas Gold Medal award for the best Ph.D. thesis goes to Donnelly Brian Archibald for his remarkable thesis entitled: “The Stenian-Cambrian Tectonic Evolution of Central Madagascar”, supervised by Professor Alan Collins and Emeritus Professor John Foden at the University of Adelaide, Australia.

The thesis examines the composition of five magmatic suites emplaced between ca. 1100 and 500 Ma at a critical location in the East African Orogen for constraining the assembly of Gondwana. The project involved two field seasons in Madagascar, U-Pb geochronology, collection of oxygen and hafnium isotopic data and whole-rock major and trace element analysis of hundreds of rock samples. Together, this massive data set revealed a previously un-recognized active continental margin that lasted for ca. 500 Myr and resembled the present-day Pacific Ocean margin.

A remarkable seven papers (published, submitted or in prep) came out of the project and the VIP is pleased to acknowledge this major scientific accomplishment by awarding Dr. Archibald the Léopold Gélinas Gold Medal for 2017.

Citation by John Greenough

Donnelly’s Response

I am honored to be named the 2017 recipient of the Léopold Gélinas Gold Medal for my PhD research project. Firstly, I would like to thank the Volcanology and Igneous Petrology Division of the Geological Association of Canada for selecting my thesis for this prestigious award.

I would like to extend my gratitude to Professor Alan Collins (University of Adelaide) for his guidance and encouragement during the course of my PhD. Most of all, I would like to thank him for the opportunities to experience exotic cultures while completing my project. These opportunities helped me develop as a geoscientist by providing me with the opportunity to travel throughout Australia and the world. I would also like to thank my co-supervisor Emeritus Prof John Foden (University of Adelaide) for his guidance and support. This project would not have been possible if not for Theodore Razakamanana (University of Toliara, Madagascar). His upbeat personality, knowledge of the Madagascan geology and te-

-chnical assistance made for two perfect field seasons. I would also like to thank those who assisted with the multitude of data collected in this project including Dr. Justin Payne (University of South Australia), David Bruce (University of Adelaide), Dr. Peter Holden (Australian National University), Dr. Richard Taylor (Curtin University), Dr. Diana Plavsa (Curtin University) and Dr. Chris Clark (Curtin University). Finally, I would like to acknowledge the staff at Adelaide Microscopy, in particular, Dr. Ben Wade, Ms. Aoife McFadden, and Mr. Angus Netting.

I was extremely fortunate to have been given the opportunity to study in Australia at the University of Adelaide for three years and to visit Madagascar twice. Madagascar is a beautiful country with wonderful, friendly people and exceptional geology. This fantastic experience has prepared me for what I hope to be a long and successful career in geosciences. Again, thank you to the GAC-VIP Division for selecting my thesis as the winner of the 2017 Léopold Gélinas Gold Medal.

Many thanks,
Donnelly Archibald

Silver Medal
Michael Reid
St. Francis Xavier University

The 2017 Léopold Gélinas Silver Medal was awarded to Michael Reid for his thesis entitled "Direct observation of crystallization in the system $LiAlSi_4O_{10}$-H_2O: Implications for late stage crystal growth in lithium-rich pegmatites".

The research project was supervised by Alan Anderson at St. Francis Xavier University. The thesis was extremely well-written, organized and cutting edge academically. The results of the hydrothermal diamond anvil cell (HDAC) experimental study challenges current models for the formation of Li-bearing pegmatites. The role of aqueous fluids in pegmatite genesis is controversial with some authors suggesting they do not play a role at all. The HDAC experiments conducted by Mike demonstrated that lithium aluminosilicate minerals, commonly found in the interior zones of pegmatites, can, in fact, crystallize from a hydrous silicate melt in the presence of a separate, co-existing aqueous fluid. The aqueous fluid acts as a transport medium; supplying nutrients from the silicate melt to growing crystals. This study opens the door for future HDAC studies into other mineral systems and their behavior in the presence of aqueous fluids in pegmatite systems.

On behalf of the GAC-VIP Division, I would like to congratulate Mike on receiving the 2017 Léopold Gélinas Silver medal.

Citation by Dave Lentz

Mike's Response

I am very grateful to receive the 2017 Léopold Gélinas Silver Medal. First and foremost, I would like to thank the Volcanology and Igneous Petrology Division of the Geological Association of Canada for recognizing my graduate research by awarding me this medal. I am grateful to Dr. Alan Anderson (St. FX University) for his guidance throughout this research project. I would also like to acknowledge Dr. Jacob Hanley (St. Mary's University) and Dr. Chris McFarlane (UNB) for their assistance with analyses that proved to be essential to this study.

I am extremely fortunate to have conducted this research with Dr. Anderson, gaining invaluable experimental petrology experience. This medal not only serves as a reminder of the hard work and perseverance that went into this study, but highlights the importance of experimental research in the field of igneous petrology. I am truly honored to receive this award.

Mike Reid

Bronze Medal
Amy Cleaver
Lakehead University

The 2017 winner of the Léopold Gélinas Bronze Medal is Amy Cleaver (Lakehead University) for her thesis entitled: “Mineralogy and Petrology of the Good Hope Carbonatite Occurrence, Marathon, Ontario”. She was supervised by Dr. Shannon Zurevinski and Dr. Roger Mitchell. This was an excellent thesis examining unusual rocks in Ontario. Amy did an excellent job with her research project. On behalf of the GAC-VIP Division, I would like to congratulate Amy on receiving the 2017 Léopold Gélinas Bronze medal.

Citation by Dave Lentz

Amy’s Response

I am very honoured to have received the 2017 Leopold Gelinas Bronze Medal and would like to thank the Volacanology and Petrology division of the Geological Assciation of Canada for this recognition. I am very thankful for my experience and I'm glad fellow researchers see the signifance of this research and enjoyed reading my thesis.

I would like to thank Dr. Shannon Zurevinski for her endless support and encouragement. She is a great mentor, scientist and professor. Thanks to Dr. Roger Mitchell for his expertise and guidance. Dr. Mitchell is a wealth of knowledge and it was an honour to learn from him. I would also like to thank Rudy Wahl for allowing me to work on this project. Lastly, I would like to thank the Geology department of Lakehead University. It is a strong department in a small school and I could not be happier with my education.

Thank you again to the GAC-VIP Division. It is a honour to receive this award

Amy Cleaver

GAC Howard Street Robinson Lecture Tour

Dr. Peter Hollings (Lakehead University)

The Howard Street Robinson Medal recognizes a respected and well-spoken geoscientist who will further the scientific study of Precambrian Geology and/or Metal Mining through a presentation of distinguished lectures across Canada. Although the award is jointly presented by the Mineral Deposits and Precambrian Divisions of the GAC, Peter is the past-chair of the VIP Division. In addition, the title’s of his lectures are very relevant to igneous petrologists.

1. “Using igneous petrology to unravel the tectonic triggers for porphyry mineralization”

2. “Metallogeny and magmatism of the 1.1 Ga Midcontinent Rift”

Consult the GAC website for more information.
(https://www.gac.ca/wp/?page_id=3046)

Meeting Announcements

Resources for Future Generations (RFG 2018) Vancouver, BC June 16-21

(http://www.rfg2018.com/en/RFG/2018/Technical-Program/Submit-an-abstract).

EA36: Igneous Processes and Climate Change Over All of Earth History

Volcanism and igneous activity have led to weather and climate change on time scales ranging from billions of years to hours. With recent climate change impacting the destiny of our planet, petrologists have important contributions to make in understanding how Earth's climate is evolving. This session welcomes presentations on how igneous activity created Earth's earliest environments through to how historical eruptions impacted weather and climate.

Session Chair: John D. Greenough,
john.greenough@ubc.ca

EA12: Recent advances in the study of ultramafic rocks: anticipating future challenges

We wish to bring your attention to Session EA12, entitled “Recent advances in the study of ultramafic rocks: anticipating future challenges”, to be held June 16-21, 2018, in Vancouver, BC. The session is included in the Earth theme of the Resources for Future Generation (RFG) 2018 conference, co-hosted by the International Union of Geological Sciences (IUGS), Geological Association of Canada (GAC) and Mineralogical Association of Canada (MAC). The goal of the session is to present advances in the study of terrestrial and extra-terrestrial mantle-derived rocks including: orthomagmatic and low-T processes, elemental and isotopic geochemistry, planetary evolution, experimental petrology, thermodynamic modelling, mineralization, and petrochronology. The abstract submission deadline for the conference is Jan. 15th, 2018.

As a follow-up to the session, a 3-day field trip of the Tulameen Alaskan-type ultramafic-mafic intrusion will take place June-21-24. The trip, based out of Princeton, BC, will focus on the emplacement of the Tulameen intrusion and Cr-Cu-PGE mineralization in convergent margin settings.

We hope that you will consider attending RFG2018, presenting your recent work in “this session and participating the post-conference field trip. We kindly ask that you forward this announcement to your graduate students and/or post-docs and look forward to seeing you in Vancouver next summer!

Session Co-chairs,
Dejan Milidragovic and Graham Nixon
Dejan.Milidragovic@gov.bc.ca

EA38: Current Concepts in Igneous and Metamorphic Petrology

Petrology is the underpinning of earth science, and the application of current sophisticated technology to the study of igneous and metamorphic rocks has transformed our understanding of earth systems. This session welcomes contributions on any aspect of igneous and/or metamorphic petrology and their role in modern interpretations of local, regional, or global geology.

Session Co-chairs,
Sandra Barr and Deanne van Rooyen
sandra.barr@acadiau.ca

EA37: Minerals as archives of P-T-X and Time

This session brings together researchers working on the full breadth of methods used to reconstruct chemical and physical conditions from minerals and their timing, in nature, as well as in anthropogenic settings.

PhD position available at the University of Alberta

On behalf of Dr. Britta Jensen,

I would like to announce an opening for a PhD student for an interdisciplinary project on the ash fall from the 1980 eruption of Mount St. Helens. I am looking for a highly motivated student with an academic background in physical sciences (volcanology, tephrochronology, igneous petrology) and social sciences (human geography or related fields).

This research will examine the connection between the physical characteristics of the ash fall, how it is deposited and preserved on the landscape today, and the impact of the event on the people who experienced it. This is an interdisciplinary project and the successful applicant will be working closely with myself, a Quaternary geologist with a specialty in tephrochronology, and Dr. Tara McGee, a human geographer who specializes in the human dimensions of natural hazards. For more information on this project, or if you are interested in applying, please contact myself, Dr. Britta Jensen (bjjensen@ualberta.ca). Applications are due by **January 20th 2018** and should include: 1) CV describing education, work history, and publications, 2) names and contact information for three references, 3) cover letter with statement of interest and description of relevant experience. Applicants should be prepared for a paid field position in summer 2018 and a program start date of September 2018.

Recently ranked as number 5 in the world by the Center for World University Rankings (Geology), the Department of Earth and Atmospheric Sciences at the University of Alberta is exceptionally well placed in terms of faculty and facilities. This multidisciplinary department hosts environmental science, geology, palaeontology, human geography and planning programs. See details of the graduate program (https://www.ualberta.ca/earth-atmospheric-sciences/graduate-studies). Edmonton is the capital city of Alberta, with an economy built in health, education, government and the resource sector. It is the fifth largest, and literally the youngest, city in Canada with vibrant festival and arts scene. Explore a bit about what is going on in the city (https://www.edmonton.com/).

VIP Awards Reminders

The Career Achievement Award - the deadline is **31 January 2018**. Please send nominations to John (john.greenough@ubc.ca)

The Gold Gélinas medal for an outstanding PhD thesis in the fields of volcanology and igneous petrology - the deadline is **28 February 2018**. Please send nominations to John (john.greenough@ubc.ca).

The Silver Gélinas medal for an outstanding MSc thesis in the fields of volcanology and igneous petrology - the deadline is **28 February 2018**. Please send nominations to Donnelly (darchiba@stfx.ca).

The Bronze Gelinas medal for an outstanding Honours thesis in the fields of volcanology and igneous petrology - the deadline is **15 April 2018**. Please send nominations to David (dlentz@unb.ca).

2016-2017 VIP Executive

Chair:	John Greenough	john.greenough@ubc.ca
Vice-Chair:	David Lentz	dlentz@unb.ca
Secretary/ Ashfall Editor:	Donnelly Archibald	darchiba@stfx.ca
Treasurer:	James Braid	jbraid@stfx.ca
Past Chair:	Peter Hollings	pnhollin@lakeheadu.ca
Councilor West:	Kevin Cameron	kjc@sfu.ca
Councilor Central:	Pierre-Simon Ross	pierre-simon.ross@ete.inrs.ca
Councilor East:	David Lentz	dlentz@unb.ca
Student Councilor:	Melissa Anderson	mande082@uottawa.ca

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