Message from the chair….

Hi All;

I hope that you enjoy the March 2013 Geocetera from the Department of Earth Sciences, which outlines our recent activities. You'll be pleased to know, I am sure, that EASC remains a well-respected member of the Faculty of Science. Our faculty members continue to develop well-funded, dynamic research programs, raising our profile both nationally and internationally. Our staff continues to provide excellent technical and clerical support to students and the faculty. EASC is a balanced, collegial university body of which I think that you can continue to be very proud.

At present, EASC trains 83 EASC majors (plus an additional 20 or so who, I am told by Tarja, have yet to declare their major - let's move it along, folks!). In the upcoming convocation, we have 17 students registered to graduate - our largest contingent to date. In the graduate program, we mentor 49 research students: 28 in the MSc program and 21 in the PhD program. Through the efforts of Derek Thorkelson and the Undergraduate Curriculum Committee, the Joint Major program with Chemistry has been realized and approved by Senate. Coupled with the Water Science Program spearheaded by Diana Allen (in conjunction with Faculty of Environment), these advancements signal the department's move towards greater integration with other academic units at SFU.

The departmental seven-year external review in March 2011 has led to several important advancements in the department. You may remember that the Dean of Science, Dr. Claire Cupples, authorized the purchase of 10 new Nikon petrographic microscopes for the department in early 2012. This year, she approved the purchase of an additional 15 petrographic 'scopes. These have now arrived and we hope to put them into service soon. This new fleet of petrographic 'scopes allows us to offer laboratory sections for the petrology courses at full capacity. The new microscopes will allow us to begin phasing out the aging fleet, but will also guarantee less overlap on the demand for their usage. With increasing numbers of lab sections in our second and third year courses, this should help to alleviate some of the inevitable time conflicts between students seeking to become the best petrographers they can be!

An additional positive outcome of the review is that the Dean has also approved the purchase of a new field trip bus. After extensive evaluation of possible bus configurations, followed by wading through the paperwork associated with an external bid process, Matt Plotnikoff, Derek Thorkelson, Brent Ward and I have put the order through for its construction. This is a brand new (from the factory), 24-passenger bus with dedicated cargo areas, overhead storage for day packs, air-ride suspension, plenty of horsepower from a 6.7L, low-emission diesel power plant, and much improved seating and seat spacing (dare we say "generous") compared to our existing bus. We anticipate the new bus to be built and put into departmental service sometime towards the end of June 2013. We have also determined that it will NOT be yellow - stay tuned in the Summer of 2013 for the new colour unveiling!

In September 2011, we began investigating various aspects of the program and with the aim of aligning ourselves to the national syllabus while continuing to deliver a solid, broad-based geoscience program to our
undergraduate population. We believe that we have achieved that. These program amendments were shepherded through the system by Glyn Williams-Jones and have been approved by Senate. With her usual unbridled energy, Robbie Dunlop has redesigned EASC 206 in its entirety, moving the course to field sites around Merritt on two weekends and introducing the students to a dynamic field experience through a series of excellently conceived assignments. Another outcome of the program redesign is the replacement of the 4th year survey-style field course (EASC 406) with a new, more environmental geosciences-oriented, assignment-based field school (EASC 308). Its inaugural offering will be in the summer semester of 2014. We are excited to offer the student body early exposure to the various disciplines in environmental geoscience. This course, coupled with the excellent field course training students already receive in EASC 206 and EASC 306 will ensure that our graduates are well acquainted with the natural laboratory we call the Earth.

As you are no doubt aware, the department continues to be squeezed for space, particularly for laboratory teaching in the undergraduate and graduate programs. Following our failed attempt to acquire the desirable lab space at the west end of TASC1 7000 level, the dean has authorized us to pursue renovation of the SCK suite of 3 labs into a more useable teaching space. I’ve struck an ad hoc committee consisting of Matt Plotnikoff, Doug Stead, Diana Allen and Shahin Dashtgard to determine the most desirable floor plan for delivering a range of laboratory courses.

Finally, I’d like to encourage all of our alumni (and those of you soon to achieve that status) to keep in contact with the department. All of you are important to us - as you progress throughout your careers, keep us apprised - we’d love to hear how you’re doing, know what your achievements have been, and gain your input as to how we can better serve our current students. Robbie Dunlop has created an Alumni Profiles document that allows you to showcase your careers, how you undertake your work, what you felt to be most useful in your EASC training at SFU, and the advice you would offer the current students in the program. We would be keen to profile you and to make these important revelations available to our present student body. I invite you to contact Robbie (rdunlop@sfu.ca) to request this profile document. Although our department is comparatively young, we are building a reputation as a program for producing excellent geoscientists. You are our ambassadors to the “real world” - help us help your future colleagues by getting involved in guiding the future generation of geoscientists. I would like to take this opportunity to wish all of you every success in your endeavours.
### AWARDS & HONORS

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<thead>
<tr>
<th>Award</th>
<th>Recipients</th>
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<tr>
<td><strong>President's Research Stipend</strong></td>
<td>Yarning Zhang won the President's Research Stipend for Summer 2012. Congratulations Yarning!</td>
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<td><strong>Graduate International Research Travel Award</strong></td>
<td>Isabelle Larocque has been awarded a Pacific Institute for Climate Solutions (PICS) Fellowship for Fall 2012. Congratulations Isabelle.</td>
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<td><strong>University Women's Club Scholarship</strong></td>
<td>Jolene Hermanson won the University Women's Club Trust Fund Graduate Scholarship in Earth Sciences Award for Fall 2012. Jolene was also the winner of the CGS Masters Scholarship NSERC Award for Fall 2012. Congratulations Jolene!</td>
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<tr>
<td><strong>Graduate Fellowship</strong></td>
<td>Congratulations to the following students who received Graduate Fellowships:</td>
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<td></td>
<td>Ann Clayton</td>
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<td>John Mayer</td>
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<td></td>
<td>Ryan Preston</td>
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<td>Spring 2013</td>
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<td>Mohsen Havaei</td>
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<td>Marty Zaleski</td>
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<td>Jeff Zurek</td>
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<td>Summer 2013</td>
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<td></td>
<td>Luke Bickerton</td>
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<td></td>
<td>Nancy Calhoun</td>
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<td>Joanna Czarnecki</td>
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<td>Shannon Holding</td>
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<td>Liam Ricci</td>
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<td>Vincent Twomey</td>
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AWARDS & HONORS

Nick Roberts received an Outstanding Paper Award at the 2012 AGU Fall Meeting in San Francisco for his poster "Landslide-generated tsunami geomorphology, Chehalis Lake, British Columbia". (Robin McKillop, Martin Lawrence, John Clague co-authors)

Korhan Ayranci received best poster award at Ichnia 2012, The Third International Congress on Ichnology, which was held at the Memorial University of Newfoundland, St. John's in August 2012. The poster was entitled: "Infaunal holothurians in the Fraser River delta: Their traces and distributions". (Shahin Dashtgard co-author)

Graduate Marc-Andre Brideau received the Best Paper Award for Landslides Journal, 2012 for his paper entitled: “Three-dimensional slope stability analysis of South Peak, Crowsnest Pass, Alberta, Canada”. (A. Pedrazzini, D. Stead, C. Froese, M. Jaboyedoff, D. van Zeyl co-authors)

Quinn Harper was the SFU Attendee at the Student-Industry Mineral Exploration Workshop (S-IMEW) 2012. Jeremy Hanson will be the 2013 representative taking part in the S-IMEW on May 4-17, 2013 in Sudbury Ontario.

Mary Ann Middleton participated in the 3MT Competition under the PICS “Climate Solutions Heat” on February 20th. She won the heat and advanced to the finals on March 6.
AWARDS & HONORS

Travel & Minor Research Award

The purpose of the Travel and Minor Research Award is to support the travel component of the scholarly activity of a graduate student related to their research. Congratulations to the following:

Mohsen Havaej Fall 2012
Mary Ann Middleton Fall 2012
Nat Wilson Fall 2012
Corinne Griffing Spring 2013

Hazel Wong won the APEGBC Scholarship in Earth Sciences. Hazel also won the Greater Vancouver Mining Women's Association Award. Well done Hazel!

Earth Sciences Undergraduate Scholarship

Congratulations to Robert Greene for receiving the Earth Sciences Undergraduate Scholarship.

Geological Association of Canada Association géologique du Canada

Leah Brulotte won the Geological Association of Canada's (GAC) Student Prize for SFU in 2012. The GAC will announce the 2013 winner in April this year.

Provost Prize of Distinction

Congratulations to Jeff Crompton for receiving the Provost Prize of Distinction Award for Summer 2012. Jeff was also the winner of the CGS Masters Scholarship NSERC Award for Fall 2012.

Natural Resources Canada www.nrcan.gc.ca

Sarah Hashmi won the Natural Resources Bursary from the Geological Survey of Canada. Congratulations Sarah!

~ 5 ~
AWARDS & HONORS

**SFU**

Allan Dakin Award

Shannon Holding won the Allan Dakin Graduate Award for Fall 2012. Shannon was also the winner of the Contaminated Site Approved Professionals (CSAP) of BC Award for Summer 2012.

**SFU**

Petro Canada Scholarship

Brittan Jones won the Petro Canada Graduate Scholarship in Earth Sciences for Fall 2012. Congratulations Brittan!

**CANADIAN INSTITUTE OF MINING & METALLURGY**

Congratulations to Leah Brulotte and Matt Krukowski for winning Student Book Prizes.

Quinn Harper was asked to present a talk at the CIM Student Night on November 15, 2012.
Jared Fath presented his Colloquium on March 12, 2012. Title: "Response of Squamish River to activity on the Cheekye Fan".

Shannon Holding presented her Colloquium on "Impact of Storm Surge on Island Groundwater Resources: A Case Study in the Bahamas" on March 14, 2012.

Marty Zaleski presented his Colloquium March 14, 2012. Title: "Seismic Hazard and Risk Associated with Shallow Crustal Faulting near Greater Victoria, British Columbia".

Adam Montgomery presented his Colloquium on "Facies and facies architecture of allmembers D to F, lower Horseshoe Canyon Formation, Drumheller, Alberta" on March 20, 2012.

Justine Cullen presented her Colloquium on "The Optical Dating of Sand Wedges in Southern Patagonia" on March 26, 2012.

Joanna Czarnciki presented her Colloquium on "The palynology and geochemistry of inclined heterolithic stratification (HIS) developed in the lower Fraser River, British Columbia" on March 30, 2012.

Jolene Hermmansen presented her Colloquium on March 30, 2012. Title: "Simulating impacts of physical and chemical reservoir heterogeneity on Cox geological storage mechanisms using numerical reactive transport modelling".

Luke Bickerton presented his Colloquium on "Mapping geochronology, and petrology of rocks at the northern termination of the Cache Creek terrance, Mash Lake area, southern Yukon" on April 4, 2012.

Lara Loughrey presented her Colloquium on April 22, 2012. Title: "Geology, petrogenesis, and characterization of the Byrud emerald deposit, Eidsvoll, Norway".

Liam Ricci presented his Colloquium on "Facies Analysis and Subsurface Architecture of the Lower Cretaceous Horseshoe Canyon Fm, Allomember A, C, C and F" on April 11, 2012.

Nancy Calhoune presented her Colloquium April 12, 2012. Title: "Rockslide-induced mobilization of valley-fill materials, Upper Rhine Valley, Graubunden, Switzerland".

Vincent Twomey presented his Colloquium on "The Geology of the Okanagan Valley Shear Zone from Penticton to Kelowna, BC" on April 18, 2012.

Patricia McQueen presented her Colloquium on "Geophysical Investigations of Subsurface Structure at Cerro Negro Volcano, Nicaragua" on April 20, 2012.

Jeff Zurek presented his PhD Oral Exam on "Investigating magma reservoir growth through geophysics, geochemistry, and structural analysis" on October 24, 2012.

Mohsen Havaej presented his PhD Oral Exam on "Characterization of high rock slopes using integrated remote sensing-numerical modelling" on December 3, 2012.

Pooya Hamdi presented his PhD Oral Exam on "Characterization of Brittle Damage in Rock from the Micro-Macro Scale" on December 3, 2012.

Flavien Beaud presented his PhD Oral Exam on December 14, 2012. Title: "Influences of hydrology on rates and patterns of glacial erosion".

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### STUDENTS

#### GRADUATE DEGREES

<table>
<thead>
<tr>
<th>Student</th>
<th>Thesis Title</th>
<th>Defended</th>
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<tbody>
<tr>
<td>Mark Nelson (MSc)</td>
<td>The impact of landslides on sediment yield, South Westland, New Zealand.</td>
<td>April 12, 2012</td>
</tr>
<tr>
<td>Dave Sacco (MSc)</td>
<td>Quaternary geology in part of the McLeod Lake map-area(NTS 093J), central British Columbia.</td>
<td>November 2, 2012</td>
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<tr>
<td>Stacy Johnson (MSc)</td>
<td>The Nature of Inclined Heterolithic Stratification in a Mixed Tidal-Fluvial Setting: Depositional Processes, Sedimentology and Ichnology, Middle Arm, Fraser River, Canada</td>
<td>November 14, 2012</td>
</tr>
<tr>
<td>Laurie Welch (PhD)</td>
<td>Modelling Topographically-Driven Groundwater Flow in Mountains.</td>
<td>November 19, 2012</td>
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<tr>
<td>Zack Tuckey (MSc)</td>
<td>An Integrated Field Mapping-Numerical Modelling Approach to Characterising Discontinuity Persistence and Intact Rock Bridges in Large Open Pit Slopes</td>
<td>December 4, 2012</td>
</tr>
<tr>
<td>Meghan Hewton (MSc)</td>
<td>Investigation of the Mountain River Beryl (Emerald Variety) Occurrence, Mackenzie Mountains, Northwest Territories</td>
<td>December 17, 2012</td>
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The following students completed in Fall 2012 (Undergraduates):

- Leah Brulotte
- Gavin Clarkson
- Amy Hsieh
- Mateusz Krukowski
- Michelle Linton
- Vanessa MacLean
- Ryal Pallard
- Max Ryan
- Leandre Tan
- Benjamin Vatour
- Derek Walsh
The Future of Fresh Water

Listener Thomas Delahooke from Vancouver’s prediction of the future is not of a technological utopia. He’s concerned about one of our fundamental needs, and worries that climate change and over-extraction will mean that, in the next fifty years, we may run out of fresh water. **Dr. Diana Allen**, who studies water issues in the Department of Earth Sciences at Simon Fraser University, shares his concern. Dr. Allen points out that climate change will lead to the loss of glacial melt that feeds many rivers, and that shifts in weather patterns are expected to leave some areas around the world drier. She’s also studied groundwater supplies - water that feeds wells - and notes that in many parts of the world groundwater is being removed far more quickly than it can be replenished. However, she thinks local water shortages are more likely than running out altogether, and thinks improved management of water resources could make a huge difference.

We are pleased to inform you that **Dr. Shahin Dashtgard** and **Dr. Dirk Kirste** both have been awarded tenure and promotion to Associate Professor. **Dr. John Clague** was awarded the Ambrose Medal in May 2012 by the Geological Association of Canada, in recognition of his sustained, dedicated service to the Canadian Earth Sciences community. **Dr. Doug Stead** was inducted as a Fellow of the Engineering Institute of Canada in June 2012 in recognition of his excellence in engineering and service to the profession and to society. **Dr. James MacEachern** became co-Editor of Journal of Sedimentary Research in May 2012, one of the premiere sedimentological journals. (So far as we know, this makes him the first Canadian to ever serve as the journal’s editor, which is a 4-year sentence).

**Dr. Shahin Dashtgard** has coordinated the largest software donation ever received in SFU ($31.7 million), in the form of 25 licenses of full Petrel from Schlumberger. Combined with licenses for geoLOGIC (nearly $500K) and IHS Accumap/Acculog ($300K), such a donation allows our undergraduate and graduate students to undertake cutting-edge subsurface mapping and geophysical modeling.

**Dr. Dashtgard** served as moderator for the Philosopher's Café earlier this semester discussing the Carbon Tax. He also moderated a second discussion on the pros and cons of The Northern Gateway Pipeline at the Coquitlam Library City Center Branch on Feb 26th.
6TH ANNUAL EARTH SCIENCES HOCKEY GAME

Faculty, staff, alumni, graduate and undergraduate students from the Department participated in the 6th Annual Earth Sciences Hockey game on February 26th, 2013. Team Dark versus Team Light hit the ice at Burnaby 8 Rinks - a well-balanced mix between veteran players and new players. The game ended in a 3-3 tie. So, we decided to have a shoot-out, just for fun. A thank you to everyone who participated.

NEW FACES IN THE DEPARTMENT.....

Kevin Gillen joins the department as a Limited Term Lecturer for the 2013/14 academic year. He brings his experience from the petroleum industry where he consults on issues involving fractured reservoirs and caprock integrity.

Dr Séverine Moune, from the Laboratoire Magma et Volcan, Observatoire de Physique du Globe de Clermont-Ferrand (France), joined the department in September as a Visiting Scholar. Séverine is working with Glyn Williams-Jones and his students on a number of projects related to quantification of the volatile budgets of active volcanoes; Séverine brings a wealth of expertise in the study of melt inclusions (inclusions of glass trapped within crystals). Séverine and her husband David are also expecting a Canadian addition to the family in mid-April.

Xiu Wen - visiting scholar (Doug) arriving in April.

Dr. Rolf Sidler will be joining the Glaciology Group in June 2013 as a Postdoctoral Fellow. Rolf received his PhD from ETH-Zurich in 2008 and is currently a Postdoctoral Research Assistant at the University of Lausanne. He has received funding from the Swiss National Science Foundation (SNF) to undertake a project entitled "Using a Biot-type porous model to estimate snow water equivalent with seismic methods". While at SFU, Rolf will be collaborating with researchers at the Coldwater Laboratory in Kanakaskis, AB. Rolf is also a mountain guide and will be accompanied to Vancouver by his partner and two children.
Facing the elephant

Sometimes you are faced with an elephant. At least it seems like an elephant. Its big and powerful. It can crush you, ignore you and make a loud noise. The Centre for Natural Hazard Research is seeking out its elephants and coming up with ways to face them (sort of). The Centre is searching for the elephant herd matriarch, the elephant of elephants - the perception of being a centre. During the expedition it has found the elephant of communication and is building a temporary enclosure to examine the elephant of relevance.

A few years ago the centre started a quarterly newsletter, Risky Ground. The Newsletter shares submitted stories about activities to understand and deal with hazards and their risks. The Fall 2012 edition reached a milestone in attracting 5 articles about research on the October 27, 2012 Haida Gwaii magnitude 7.7 earthquake and its aftereffects. The newsletter is distributed by email as a pdf. It is posted for download on the CNHR website.

The Centre website after its revamp 3 years ago, has new sections for the newsletter and the Centre workshops. Relevant publications in hazards and risk listed in the site bibliography have recently been updated. Affiliated members are encouraged to add their citations to that bibliography, particularly if it can be linked to its published article for download. See http://www.sfu.ca/cnhr

Mapping Unstable Ground was the theme of the Centre’s April 2011 workshop. This year the Centre will host a workshop about what it can do to tackle the critical issues of our times (the elephant of relevance). The workshop will be held in the SFU Burnaby campus’ Halpern Centre, Friday April 26, 2013. The workshop is looking for speakers on the subject. Through recent workshops and decision simulation exercises, the Centre supports development of a local risk-based land-use guide. The multi-partnered activity has brought together a wide range of stakeholders in urban risk and disaster management.

Through its international connections, the Centre supports the geoNatHaz summer field course, with a focus on the plethora of natural hazards in the European Alps and the Canadian Cordillera. Two field courses have been offered each year for 15 to 25 students from Europe and North America.

CNHR is always seeking new elephants to face. Our experience is that there are many out there!

Bert Struik and John Clague