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From the President

Geoscience education, like everything else these days, is subject to economic stress from the recession—stress that is testing what will stand up and what will crumble when fewer education dollars are available. Thus, this is a good time to examine what is important about geoscience education. Why does society need geoscience knowledge, now more than ever?

First, let's consider a little background to set the stage. In the US, a perfect storm of factors stirred up interest in geology and earth science in the 1960s and 1970s. These factors included more public access to college, increased public fascination with earth science during the space race, the plate tectonic revolution of the 1960s, a boom in oil exploration jobs, and an increasing awareness of pollution and the need to preserve the environment. A wave of students entered the earth sciences, or at least took a course or two on the subject. Since the end of the 1970s, however, with a few ups and downs along the way, cutbacks in oil and mineral exploration, boom-and-bust cycles in state budgets, increasing interest in business and finance-related jobs, and diminishing interest in physical sciences, led to a decline in geoscience majors.

But geoscience has changed its costume and is a star in the next act. In its new form, geology has morphed into earth science and earth system science and has become more interdisciplinary. All major science education groups in the United States have recognized earth science as a foundational science since the 1990s. This has had a strong influence on most state's K-12 education standards. Another stimulus for geoscience and geoscience education has been the increasing application of satellite and geospatial technologies to earth science. The popularization of technology that relates to the earth, for example GPS and Google Earth, offers new ways to pique people's interest and curiosity.

Geoscience education prepares people to deal with the biggest problems that our planet and its inhabitants are now facing. Human impacts on earth systems are now known to operate at geologic scales, growing human populations are testing the limits of earth resources, and as human populations grow, earth hazards are catching more people unaware.

Geoscientists are studying climate change and providing a scientific basis for policy decisions, which may help prevent, or at least ameliorate, a global environmental crisis. Practitioners trained in geoscience can identify limitations on earth resources and sustainable ways to use them, helping to reduce turmoil over control of agriculture, water, petroleum, and mineral resources. Geoscientists provide essential knowledge to prepare society, infrastructure, and response systems properly for the types of earth hazards exemplified recently by the Indian Ocean tsunami, Hurricane Katrina, and the Sichuan earthquake in China.

In summary, at this point early in the 21st century, geoscience—earth awareness—is required for humans to have a healthy, sustainable future on planet earth. Add to that the fact that there are many jobs and career tracks available in earth sciences, and basic training in earth science is good basic training for science in general, and the spotlight shines brightly on earth science education.

----Ralph

Make Your Vancouver Plans Now

Ron Metzger, Southwestern Oregon Community College

Boy, now that we're rolling into the end of week four in Spring term 2009, I'm starting to wonder where the year has gone. I'm glad that I've made all of the arrangements and registered for the Vancouver meeting...Oh, what's that Brett, I haven't...hmm. Guess after hosting a few years back and the concern over throwing a party and not having anyone show, we should all get registered if we're going (I promise, I'll do it later today...okay, by the end of the week at the latest.) To all of you, if you haven't registered for the June meeting and are planning to, go---get registered as soon as possible---and let Brett know that you're going to be there.

On another note, we're a few months ahead of where we've been the past few years. We've been trying to get a host on the east side for a while, and Shawn Willsey at the College of Southern Idaho in Twin Falls has graciously accepted to host the meeting in 2010. It is not too early to start thinking about 2011, so if you might be interested, drop me a line at rmetzger@socc.edu. Interestingly, my wife Kathy hasn't mentioned about hosting again down on the south coast recently, but at some point down the road when people are interested and willing to make the trek to the edge of the known world (or center of the universe) I'll be glad to answer my own request for hosts and have you back in Coos County.

Looking forward to seeing you in Vancouver, BC in few months!

Outstanding Earth Science Teacher Winners 2009

Deron Carter, Linn-Benton CC

This year's OEST winners are in! Our Pacific Northwest Section winner (and Oregon State winner) is **Roger Groom** of Mt. Tabor Middle School, in Portland, Oregon. Roger has over 16 years teaching experience in the Earth Sciences. He has developed in-depth curriculum that has his students investigate plate tectonics in Cascadia using GPS, among many other projects. He has served as a master teacher with UNAVCO and a master teacher with the NSF-funded Teachers on the Leading Edge K-12 professional development program.

The Washington State winner is **Herb Bergamini** of the Northwest School, in Seattle, WA. Herb has over 23 years teaching experience in the Earth Sciences. Herb has been a participant in the NOAA Teacher-at-Sea Program.

Washington State's Honorable Mention is **Kelly Martin-Carter**, of Roosevelt Elementary School, in Granger, WA. Kelly prepares the next generation of geoscientists by getting them experience early on: in the second grade!

Our Alaska State winner is **Victor Trautman** of Peterburg High School, in Peterburg, AK. Victor has over 35 years teaching experience. Victor actively involves his students in a variety of hands-on projects including an annual survey of the LeConte Glacier's terminus, and has been involved with Princeton Earth Physics Project (PEPP)-Seismometers in the Schools, and THEMIS (NASA Space Weather project).

Congratulations to all of our state winners! Winners of the Outstanding Earth Science Teacher Award win a variety of great prizes, including a complimentary registration to our annual sectional conference meeting. Awards will be presented at the Vancouver meeting in BC, June 16-20th, 2009.

Ron Kahle Professional Development Travel Grants for PNW NAGT K-12 Members Apply Now

Thanks to a generous donation awarded to our section by **Mr. Ron Kahle** we will be awarding three grants up to \$195.00 each for K-12 science teachers to attend the **2009 Annual Pacific NW NAGT Section Conference**. This year's conference will be held in Vancouver, British Columbia. (See details, this newsletter.) The meeting web site (including the registration information) is online at www.eos.ubc.ca/hosted/nagt/index.htm

Each grant will cover the cost of meeting registration, including the conference day, banquet and field trips. To apply, follow this simple five-step application process:

1. List the conference events costs (conference day, banquet, and any field trips) for which you intend to register.
2. State whether you are a NAGT member (membership is not required, but existing members will be given first preference during consideration.)
3. Indicate where and what your job in K-12 earth science education is.
4. List some of the professional development benefits you hope to gain from attending the conference.
5. Email to **Ralph Dawes**, Section President, at rdawes@wvc.edu or send by mail to Ralph Dawes, Wenatchee Valley College, 1300 Fifth Street, Wenatchee, WA 98801

And that's not all! -- If a person is not an NAGT member, but due to a small number of applicants (which is quite possible) wins a Ron Kahle grant, we will also award him or her with a one-year NAGT membership, gratis (that is, we will pay for it from the Ron Kahle fund)! This annual membership includes, of course, a one-year subscription to the Journal of Geoscience Teaching, a peer-reviewed journal, along with our own section newsletter.

The section officers together will decide the winners. Please apply soon; the conference is June 16-20th!

Online Resources: Alaska Geoscience

Michael Collins, Alaska State Councilor

Here are a few great links to information about geoscience in AK.

- Information and predictions about the aurora from UAF: www.gedds.alaska.edu/AuroraForecast
- Information about earthquakes in Alaska, including recent earthquakes: www.aeic.alaska.edu/Seis
- Volcano information from the Alaska Volcano Observatory, including recent eruptions: www.avo.alaska.edu
- Alaska Science Forum. Articles about science phenomenon in Alaska: www.gi.alaska.edu/ScienceForum



Vancouver, BC. Image courtesy of Vancouver Tourism

Pacific Northwest Section, NAGT Annual Summer Conference Vancouver, British Columbia June 16-20, 2009

This year's NAGT-PNW Annual Meeting will be held at the **University of British Columbia**, in beautiful **Vancouver, British Columbia**. To get to Vancouver you have the usual choices of planes, trains and automobiles (and ferries), depending on your point of origin. The University of British Columbia is located relatively close to the airport, train station and bus station, accommodations are available on campus, and it is very easy to get around on local transit (www.translink.ca.)

Vancouver is currently gearing up to host the 2010 Winter Olympic Games and in the Vancouver region there is something for everyone, from excellent hiking in our (close) local mountains to shopping on Robson Street downtown. You may want to take a day (or two) on either side of the meeting to see some of the sights. Highlights include Stanley Park (in the image above), the Vancouver Aquarium, Granville Island, the Grouse Mountain Skyride, whale watching tours, an endless supply of excellent restaurants, and much more. Visit Tourism Vancouver for more ideas: <http://www.tourismvancouver.com/visitors/>

Travel Documents!

US citizens should ensure they have the appropriate travel documents to enter Canada. Passports are recommended for all travelers (apply now!) and as of June 1st will be required to reenter the US:

"Travelers to and from Canada will be required to have a passport or other secure, accepted document to enter or re-enter the United States. This is a change from prior travel requirements and will affect all United States citizens entering the United States from countries within the Western Hemisphere who do not currently possess valid passports." – US Embassy

http://www.consular.canada.usembassy.gov/travel_to_canada.asp

Schedule

Trip 1 – June 16th – Beauty, Disaster and Development on the Sea-to-Sky Highway

Conference Day – June 17th – UBC campus

Trip 2 – June 18th – The Huntingdon Fm.: Vancouver's Roots

Trip 3 – June 19th and 20th – Effusive to explosive volcanism in the Canadian Cascades: Insights into landscape-controlled volcanic processes

See below for details on the trips. The Conference Day will include a keynote presentation by **Dr. John Clague**, invited talks, submitted posters and talks, and an afternoon workshop.

Call for submissions - Posters and Talks

If you are interested in presenting a Geoscience Education or Geoscience poster or talk on the conference day, please contact **Brett Gilley** (bgilley@eos.ubc.ca). If there is still room in the day's schedule, he will accommodate your presentation. Talks should be 15 minutes in length and posters should be smaller than 48" (vertical) by 74" (horizontal).

For more information please visit the meeting website: www.eos.ubc.ca/hosted/nagt/

Conference Field Trips in Detail

Trip 1: Beauty, Development and Disaster on the Sea-to-Sky Highway. Leaders: **Brett Gilley** and **Joel Finnis**.

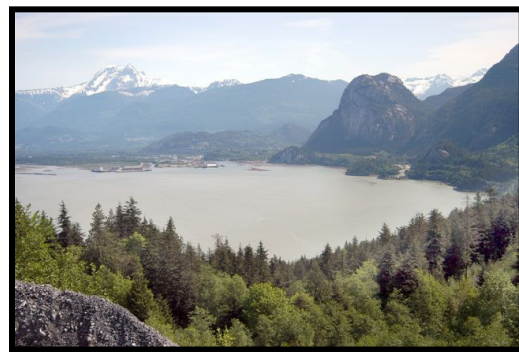
The sea-to-sky highway (HWY 99) winds along the picturesque Howe Sound fjord between Metro Vancouver and Whistler. The steep, glacially carved slopes increase the risk of a variety of natural hazards, especially from landslides and related events. This trip is based on a student-oriented fieldtrip for our highly successful EOSC 114: The Catastrophic Earth – Natural Disasters course. This first year course focuses on six disasters: earthquakes, volcanoes, landslides, storms, waves and impacts. We make several stops between Vancouver and Whistler to discuss each of these hazards and how they relate to our region.

We will complete and discuss the same activities and exercises students perform and also make a few extra stops to observe some of the amazing geology and scenery of the Howe Sound Fjord.

Our stops will include:

- A visit to the renowned Stanley Park to observe storm damage.
- The "world class" magma chamber and metamorphic pendant at Caulfeild (*sic*) Cove .
- Overview of the Vancouver region at Cypress Mountain Lookout.
- Discussion of landslide risk along the major Olympic travel corridor at the Lions Bay Debris Retention Structure.
- Earthquake & tsunami hazards related to the Squamish River Delta
- A wrap up at the Porteau Cove marine park.

This trip will involve several easy-going hikes from the vehicles; hiking boots or strong shoes are recommended. The Vancouver region is usually very pleasant in summer; however, we are on the coast, rain is always a possibility, and rain gear is recommended. Water, snacks, and lunch will be provided.



Continued...

Trip 2: The Huntingdon Formation: Vancouver's Roots

Leaders: **Dr. Peter Mustard** and **Brett Gilley**

The Paleogene Huntingdon Formation is the northern extension of Washington State's Chuckanut Formation. Both formations exist within the present-day Georgia Basin, a northwest-oriented structural and topographic depression in southwestern British Columbia and northwestern Washington State. The basin includes the Strait of Georgia, eastern Vancouver Island, the modern Fraser River Delta, the mainland of northwest Washington State, and associated watersheds.



This trip visits the proposed type section of Paleogene Huntingdon formation exposed in outcrop at Sumas Mountain in Abbotsford, British Columbia. These outcrops of claystone, mudstone, siltstone, sandstone and conglomerate are interpreted to form in a fluvial environment (with minor paludal sediments). Common plant fossils and the occasional trace fossil are observed throughout the Huntingdon Formation, but as yet no vertebrates have been discovered.

Since the early 1900s claystone has been mined at Sumas Mountain to provide material for a variety of local brick making plants, making this one of the few economic fireclay operations in western North America. Conglomerate, sandstone and siltstone are now mined to produce aggregate for local cement production downriver in Vancouver. The history of this area has been strongly influenced and shaped by these local resources. Economy permitting, in the second half of the trip we will tour the Clayburn Industries brick making plant (which is much more interesting than it sounds.) This trip will involve several easy-going hikes and ascent up a moderate slope within the aggregate pits, therefore hiking boots or steel toed boots are recommended. Water, snacks, and lunch will be provided.

Trip 3: Effusive to explosive volcanism in the Canadian Cascades: Insights into landscape-controlled volcanic processes. Leader: **Kelly Russell**

We are offering a two-day (one night) field trip to examine Quaternary volcanism in the Canadian portion of the Cascade arc: the Garibaldi Volcanic Belt (GVB.) The volcanic centers of the GVB have developed on top of the southern margin of the Coast Plutonic Complex, and significant rates of tectonic and isostatic uplift have created a visually stunning landscape dominated by deep fjords and rugged peaks. Many of the traits of the deposits seen on this two day trip are a reflection of both the style of eruption and the nature of the surrounding landscape. In this regard, the trip provides a spectacular and uniquely easily-accessible window into the nature and hazards of effusive and explosive volcanism occurring in mountainous terrains and the crucial role of surface water and ice.

Day 1 of the trip proceeds along the Sea-to-Sky Highway from Vancouver to Pemberton via Whistler (site of the 2010 Winter Olympics) and focuses on Quaternary glaciovolcanic lavas and associated deposits. Interactions between volcanoes and ice in the GVB have been common during the past two million years and this has resulted in a diverse array of landforms including subglacial domes, tuyas, impounded lava masses and sinuous lavas that exploited within-ice drainage systems.

Following a night in Pemberton, the trip heads northwest along logging roads to see deposits from the 2360 BP eruption of the Mount Meager volcanic complex. This eruption began Plinian-style, generating pyroclastic fall deposits and a pumiceous ignimbrite. The eruption intensity waned gradually, producing a series of block and ash flow deposits, one of which is unusually strongly-welded, and a small lava flow. As well as primary volcanic deposits and lavas, we will examine lahar deposits that record the rapid erosion and removal of volcanic rocks from the flanks of the edifice.

This trip will involve several short, easy-going hikes from the vehicles, and occasional descents down moderate slopes to examine sections in river terraces. The BC Coast Mountains are usually very pleasant in summer; however, heavy showers are possible. Because this trip will be returning on Saturday evening, you may want to plan to leave Vancouver on Sunday, especially if you are leaving by plane.



EWU Summer Field Trip Opportunity: Battle of Lava and Life, July 25-31st

Jenny Thomson, Eastern Washington University

This summer **Eastern Washington University** is offering a field trip opportunity, the Battle of Lava and Life, led by instructors **Drs. Buchanan, O'Quinn and Thomson**. The goal of this class is to explore the natural history of the southern part of the Cascade Range in Oregon. We will discuss the complex geologic setting of the range and will focus primarily on volcanic features, geologic history and landscape evolution. Adaptation of organisms to desert, alpine and forest habitats will be investigated, as well as the spatial and temporal factors that influence plant species distribution. We will spend most of our time exploring Crater Lake National Park and Newberry Volcano National Monument during this immersive field experience. July 25 – 31, 2009. For information and contact information please visit www.ewu.edu/x58597.xml

Alaska Math Science Conference Inquiry—The Bridge to Understanding.”

Michael Collins, AK State Councilor

The Alaska Math & Science Conference will be held October 14-17, 2009, in Juneau, Alaska, at the Juneau Douglas High School. The cost is \$100.00 for early registration. The conference includes keynote speakers, workshops, field trips, vendor exhibits, networking opportunities, ASTA and ACTM membership benefits and credit options. The website, for information and registration details, is www.regonline.com/AKMathScience. If you would like to volunteer or present, please email **Linda Frame** at linda_frame@jsd.k12.ak.us.

Teacher Trainings: Active Education in Alaska's National Parks, Forests, & Refuges

Betsy Smith, Alaska Geographic; Michael Collins, AK State Councilor

Alaska Geographic Institute, the Murie Science and Learning Center (MSLC), and their partners invite lifelong learners, educators, and families to explore Alaska's wild places through 7 teacher trainings and 23 field seminars. Visit www.alaskageographic.org for a complete list of 2009 course offerings or to register.



Teacher trainings are designed specifically for teachers, while field seminars are open to the public. Professional development credit is available for all courses through the University of Alaska.

The 3-8 day award-winning courses explore Alaska's legendary national parks, forests, and refuges – offered in partnership with the National Park Service,

U.S. Fish and Wildlife Service, and the U.S. Forest Service. Courses in Denali National Park and Preserve are offered through the MSLC. Some upcoming courses include Geology of the Nenana Canyon, June 6-7, Land of Constant Change: Climate Change and the Kenai Peninsula, July 25-28, and the Geology of Denali, August 10-12.

For more information, contact Alaska Geographic (institute@alaskageographic.org or 907-733-2896) or the MSLC (courses@murieslc.org or 907-683-1269).

Teachers on the Leading Edge Workshop: Summer 2009, 5-9th grade, July 26-31, 2009

Teachers on the Leading Edge (TOTLE) is a professional development program for K-12 teachers of Earth Science in the Pacific Northwest. Through a grant from EarthScope, TOTLE will offer a five-day workshop for middle level teachers of Earth Science **July 26-31 2009 at the Pacific Lutheran University, Tacoma**. EarthScope is an Earth Science program funded by the National Science Foundation (NSF) to explore the structure and evolution of the North American continent. EarthScope seismic stations and global positioning system (GPS) receivers are monitoring seismicity and deformation of the active continental margin to advance our understanding of the earthquake, tsunami, and volcanic hazards in the Pacific Northwest.

Through a problem-solving approach to active continental margin geology, teachers will learn how geoscientists developed our current understanding of Pacific Northwest plate tectonics, earthquakes, and volcanoes and how EarthScope research is advancing frontiers of knowledge. Three days of classroom and computer-based studies of active continental margin geology and EarthScope science will be reinforced by two field days investigating Cascadia great earthquakes and tsunamis and Cascade volcanic hazards.

Go to <http://orgs.up.edu/TOTLE> for a link to the application or contact **Jill Whitman** at Pacific Lutheran University (whitmaj@plu.edu) or **Robert Butler** at University of Portland (butler@up.edu) for more information. **Application deadline is April 1, 2009.**

Teachers on the Leading Edge Workshop: October, 2009, Portland GSA Meeting

Bob Butler, University of Portland

Teachers on the Leading Edge (TOTLE) will offer a one-day workshop for thirty K-12 (aimed at middle school) earth science teachers connected with the Geological Society of America (GSA) national meeting in Portland, October 2009. Registration for this short course will be through the Geological Society of America (NOT through TOTLE). GSA will open registration for short courses some time in June (they have not given me the exact date.) Registration is on a first-come first-served basis. We want to bring this opportunity to the attention of Washington and Oregon science teachers, however, so we can load this workshop with Earth science teachers from the Pacific Northwest, our primary audience. The GSA web site for the Portland National Meeting is www.geosociety.org/meetings/2009/. A link to short courses will appear on that page later this spring.

Cordilleran Section/AAPG Joint Meeting May 27-29th, 2010 Anaheim, CA

The 2010 GSA Cordilleran Section/AAPG joint meeting will be held Thursday May 27th through Saturday May 29th, 2010, in Anaheim, California. The meeting is hosted by Cal State Fullerton Geological Sciences and the Pacific Section of AAPG. If you have an idea and would like to chair a theme session or a symposium contact **Jeff Knott** at jknot@fullerton.edu.

NOAA Teacher at Sea Program, 2010

Michael Collins, AK State Councilor

The NOAA Teacher at Sea program is a unique opportunity for teachers to learn aboard NOAA research and survey ships. This program is for full-time educators at all levels, including K-12, community college, university, museum, aquariums and adult education. Participants can expect to be at sea anywhere from one week to one month, with the average cruise lasting 12-14 days. Most participants try to sail on cruises offered during the summer vacation, but cruises take place throughout most of the year on a space-available basis. All necessary travel costs are paid for by the NOAA Teacher at Sea Program. Application materials for the 2010 season will become available beginning October 1, 2009. For more information go to: <http://teacheratsea.noaa.gov/>

Check out the PNW NAGT website

<http://nagt.org/nagt/organization/northwest/index.html>

Browse the site, look at pictures from previous annual conferences, download news, purchase guidebooks and find upcoming meeting information.

National Association of Geoscience Teachers

Pacific Northwest Section Annual Conference - Registration

Name _____ Email address _____ Mailing address _____ _____ _____ _____	Phone _____ Name (as you would like it to appear on your Name Tag) _____ Line 1 _____ Line 2 _____ Line 3 _____
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Events:

Tuesday Field Trip – Sea to Sky Highway

\$35USD or \$45CAN, (students \$20 USD or \$25CAN) \$ _____

Wednesday - Conference Day Registration

\$35USD or \$45CAN, (students \$20 USD or \$25CAN) \$ _____

Wednesday Evening – Conference Dinner

\$40USD or \$50CAN \$ _____

Thursday Field Trip – Huntingdon Formation

\$35USD or \$40CAN, (students \$20 USD or \$25CAN) \$ _____

Friday and Saturday Field Trip - Cascade Volcanism (Includes Accommodation Friday Night)

Quad+ Occupancy \$120USD or \$135 CAN

Double Occupancy \$140USD or \$160 CAN

Students Quad+ Occupancy \$90 USD or 105 CAN \$ _____

USD or CAN Total \$ _____

Payment:

<input type="checkbox"/> Cheque (enclosed) (Make cheques payable to the University of British Columbia)
--

<input type="checkbox"/> Visa Name (as it appears on Card) _____ Number _____ Expiration Date _____ / _____

Mail form and payment to:

Brett Gilley
Earth and Ocean Sciences Department
6339 Stores Road
Vancouver, British Columbia, Canada
V6T 1Z4

For more information email: bgilley@eos.ubc.ca or visit www.eos.ubc.ca/hosted/nagt/