National Association of Geoscience Teachers

Pacific Northwest Section

WINTER 2009

In this Issue:

From the President

Since Cheryl and I visited the Big Island last September and I wrote my last message, the economy has gone into freefall. This has shifted most everybody's perspective. Does it make going to Hawaii a luxury, like junkets to Las Vegas by bank executives, best left off the table for now? I don't think so. Hawaii provides lessons on how our planet works in ways that are unique, spectacular, and memorable for a lifetime. What is learned in Hawaii does not stay in Hawaii. Hawaii is a beautiful example of how the world works as a set of interacting systems, beginning with the rock cycle.

Besides so obviously manifesting the igneous stages of the rock cycle, Hawaii displays the transition to the second stage of the rock cycle: weathering, erosion, and sedimentation. On the Big Island, only Kohala, the oldest volcano, has developed deep stream valleys, and only on its wet, windward side. Mauna Loa, except along its divide with next-older Mauna Kea, is too young to have developed drainage systems other than a few shallow, first-order channels that flow during heavy rains.

Following the erosion and sedimentation process to the edge of the sea, trips to Hawaiian beaches, which can include snorkeling, are full of possibilities for lessons in natural history. There is little in the way of coral on the Puna coast where Kilauea is erupting, but on some older parts of the Big Island, coral reefs have grown to the point that they help break the surf and attract snorkelers and divers.

In those parts of the Big Island coast that have beaches, each beach consists of one of the three Hawaiian types of sand: either black sand from recent basaltic material, white sand from coral and other calcium carbonate fragments, or green sand from olivine eroded preferentially from rare picrite flows. Because there is no quartz in any of the rocks of Hawaii's volcanoes, there is no quartz sand on any of the beaches. The somewhat difficult trek to a rare green sand beach is nothing like sitting on the sand in a beach chair at a resort. No drinks with little umbrellas are served, but few things can compare with the wonder of scooping up a handful of pure olivine grains.

Besides its geological appeal, Hawaii is a natural biological laboratory, a world-class example of evolution in action. Hawaii is richer in examples of speciation by evolution than the Galapagos Islands, the hot-spot archipelago made famous by Charles Darwin's discoveries.

continued on page 2…

continued from page 1..

The Hawaiian Islands have appeared in the middle of the world's largest ocean in the last few million years, thousands of miles from any continent. Each island forms initially over the hot spot, rises to a volcanic peak of one or several giant shield volcanoes, and then moves way from the hot spot and subsides and erodes below wave level. No fossils of any species prior to the Neogene occur in Hawaii, in accord with the measured ages of the volcanic rocks.

The physical evolution of the islands in the archipelago over the course of time provides many insights into how evolution occurs. Plants and animals of Hawaii originated from wanderers that came from distant islands or continents. A particular type may have arrived on more than one island in some cases, or made the journey from island to island in other cases. Some species remained on only one island, and sometimes in only one valley or one sector of an island. Hawaiian examples of island biogeography and evolution of isolated populations are type cases in the study of evolution.

I could go on, but I won't, about Hawaii as an ideal field laboratory for studying meteorology, climatology, hydrology, oceanography, anthropology, human history and cultural diversity. I must, however, mention the ongoing extinctions of endemic species, and continuing stresses to island ecosystems, caused by the arrival and habitat-altering activities of humans, and the unnatural selection of species of plants and animals that people have brought to the islands. Prior to human arrival on Hawaii, the only vertebrates on the islands were those that could fly—birds and two types of bats. No amphibians, reptiles, or other mammals. Imagine that. You could teach a whole science curriculum that explored Hawaii as its field area, including evolutionary biology, ecology, and environmental science. In doing so, you would explore in detail the intimate linkages between geoscience and bioscience.

It is in those interdisciplinary and multidisciplinary realms that geosciences will continue to expand its importance and utility in the coming years. When students express interest in earth science these days, rarely do they want to study migration of melt in the mantle (though that's an interesting topic that will continue to be researched.) Instead, from what I have heard, most students who want to study geoscience want to be able to apply their geoscience knowledge to problems such as biodiversity conservation, climate change, sustainable resource use, place-based community building and sustainability. Or they want to identify and plan for natural hazards such as floods, earthquakes and storm surges, for the safety and security of communities. Or – and I hear this often – they want to teach geoscience. It would help any geoscience teacher's professional development to study Hawaii in person. Students can gain geosciences learning outcomes that will last a lifetime by making a study trip to Hawaii. The world needs such outcomes.

--Ralph

State by State

British Columbia, Yukon, Alaska, Idaho, Oregon & Washington

British Columbia

State Councilors: Mary Lou Bevier, Brett Gilley

PNW NAGT Annual Conference, June 2009. The annual summer conference of the Pacific NW Section of the National Association of Science Teachers will be held June 16- 20, 2009, in Vancouver, British Columbia, at UBC. General information, including field trips, can be found in the 'meetings' section of this newsletter, or you can email Brett Giley at **bgilley@eos.ubc.ca** or visit: **www.eos.ubc.ca/hosted/nagt** *(website will be operative mid-February.)*

Idaho

State Councilor: Shawn Willsey

EarthScope 2009, Boise. The 2009 EarthScope National Meeting will be held in Boise, Idaho on May 13-15, 2009. Mini-workshops and field trips will be held on May 12. A longer field trip may be held May 15-17. More information can be found at: **www.earthscope.org/meetings/national_meeting_09**

Washington

State Councilors: Joe Hull & Jeff Tepper

WSTA, March 19-21, 2009. The spring conference of the Washington Science Teachers Association (WSTA) will take place March 19-21, 2009, in Moses Lake, WA. For more information: **www.wsta.net**

Hydrogeology Symposium, April 28-30th, 2009. The 7th Annual Washington Hydrogeology Symposium will be held at the Greater Tacoma Convention and Trade Center, April 28-30th. The registration deadline is March 27th. For more information go to: **www.ecy.wa.gov/events/hg**

Outstanding Earth Science Teacher

Deron Carter, Linn-Benton CC

The **Outstanding Earth Science Teachers** (OEST) **2009 award** deadline is soon---please consider a nominating a teacher from your area. The OEST award recognizes K-12 Earth Science teachers. The Pacific NW Section of NAGT recognizes hard-working teachers from Alaska, the Yukon, British Columbia, Oregon, Washington and Idaho. State winners receive a Journal of Geoscience Education (JGE) subscription and educational materials. The sectional winner receives a complimentary membership to the Geological Society of America (GSA), subscriptions to numerous scientific journals and magazines, a $500 travel stipend to attend GSA, and $500 for classroom improvement. Please take time to recognize these valuable members of the geoscience education community! Online nomination forms, which are easy and quick to fill out can be found at: **http://serc.carleton.edu/nagt/programs/oest.html**

You can also fill out the mail-in form at the end of this newsletter. For more information, please contact **Deron Carter**, Pacific NW section OEST coordinator at **carterd@linnbenton.edu**.

Help Keep Your Section Strong!

Ron Metzger, Southwestern Oregon Community College

Here we are, already over a month into 2009. In what seems like a few more hours, many of us will be convening in Vancouver, BC, thanks to **Brett Gilley**. Following last newsletter's request for hosts in 2010, the sour economy, and other factors, I awoke about 3:00 am this morning and started thinking about a conversation theme at several past NAGT sectional meetings: maybe as a section we shouldn't meet every year for a conference. At the time, I didn't see any logic in this. Since the Pacific Northwest section resurrection with the meeting in Spokane in 1999, we have been extremely successful with two major things: the annual conference and the section newsletter.

Thanks to Cassie, the section newsletter continues to be a well-oiled, quality publication. For the last 10 years, the section conference has provided numerous opportunities for dissemination of knowledge, teaching techniques, field trips for collection of teaching samples and images, plus an opportunity to forge collegial relationships with peers from throughout the northwest. Each year the arm-twisting and cajoling become increasingly more difficult, and frequently push later into the calendar year. If as a section we wish to continue with the annual meeting, **NOW IS THE TIME TO STEP FORWARD**. If you are willing to host in 2010 or consider 2011, 2012 or beyond, now's the time to respond. I would like to hear from future hosts, and also from the membership regarding whether the annual meeting is still important to them. We are happy to have an offer from Suzanne Burd to provide a location and assistance in The Dalles for 2010-but I would still like to hear from all of you regarding your interest in the annual conference.

Thanks for your time. I know that as we all do more with less and get stretched thinner and thinner it becomes easier to be complacent. I'm asking you to take a minute and chime in (and preferably to tell me you're willing to host in 2010 if you're in a geographic area away from where we've been recently). Looking forward to hearing from you at **rmetzger@socc.edu**. And more importantly**, looking forward to seeing you in Vancouver**!

Comings, Goings, Worth Noting…

Dave Knoblach has joined the faculty at South Puget Sound Community College, serving the greater Olympia, Washington metropolis. Dave is a University of Washington graduate and is an experienced teacher, with a long stint at Bellevue CC.

George "Pinky" Nelson, Director of the Science, Math and Technology Education program at Western Washington University, will be inducted in the Astronaut Hall of Fame at the Kennedy Space Center on May 2. His NASA career included 411 hours in space where he orbited the Earth 274 times

NAGT Field Scholarships- Apply NOW

The deadline for applying for the NAGT Field Scholarships program is fast approaching (**February 16, 2009**.) If you know of students who are interested in field camp or a field experience class, please encourage them to apply soon!

http://nagt.org/nagt/programs/field-schol_app.html

Ron Kahle Professional Development Grants

Thanks to a generous donation awarded to our section by **Mr. Ron Kahle** (see our Fall 2008 newsletter for the original announcement), we will be awarding three grants up to $195.00 each for K-12 science teachers to attend the **2009 Annual Pacific Northwest NAGT Section Conference**. This year's conference will be held in Vancouver, British Columbia. Each grant will be applied to the cost of the conference day and any other meeting functions (conference dinner, field trips) for which the applicant chooses to register. In addition, the winners will receive $50.00 checks in person at the meeting conference.

Application instructions will be announced in our Spring 2009 newsletter, and on our section website. Although you do not have to be a NAGT member to apply, preference will be given to (a) K-12 teachers who are NAGT members, (b) K-12 teachers who have attended previous meetings, and (c) those who applied earliest for the grant.

Position Statement on Climate Change

Andy Buddington, Spokane CC

NAGT is now in the final stages of adopting a position statement on climate change. The drafting committee proposed the initial draft last winter and the NAGT Executive Committee evaluated this draft at their mid-year meeting. A revised draft was submitted and then discussed at the annual executive meeting in Houston (October, 2008) and was approved for membership review and comments. The draft was posted on-line for membership review and a final draft was recently submitted for Executive Committee approval at the March 2009 meeting.

The main emphasis of the statement focuses on the multidisciplinary nature of climate change science and that teaching climate change is a fundamental and integral part of earth science education. By issuing this position statement, NAGT recognizes the critical role geoscience teachers need to take in regards to educating students and society on this issue.

The drafting committee consisted of **Andy Buddington** (chair, Spokane Community College), **George Stone** (Milwaukee Area Technical College), **Mark Chandler** (Center for Climate Systems Research, Columbia University, NASA/GISS) and **Scott Linneman** (Western Washington University.) The final draft is as follows:

National Association of Geoscience Teachers
Position Statement on Teaching Climate Change

PREAMBLE

In 2007, the United Nations Intergovernmental Panel on Climate Change (IPCC) issued its fourth and most comprehensive assessment of Earth's changing climate. Compiled by some 2000 scientists representing 150 countries, the report presents the physical science basis for the assessment of climate change and its impacts, strategies for mitigation and adaptation to vulnerability, and a synthesis review. Many prestigious organizations of scientists, including the National Academies of Science (2005), the American Geophysical Union (2003, 2007), the American Chemical Society (2004), the Geological Society of America (2006), and the International Union for Quaternary Research (2008) have affirmed the IPCC conclusions (2001 and

2007) in position statements on climate change that call for intensive public education, increased awareness, and action on this important issue.

STATEMENT

The National Association of Geoscience Teachers (NAGT) recognizes: that: (1) human activities, such as deforestation, agriculture, and the combustion of fossil fuels, have added new variables and forcings to Earth's climate system, (2) although climate change is well documented in Earth's geologic record, the rapidity of current global warming is extraordinary if not unprecedented; (3) present warming trends are largely the result of human activities, and (4) teaching climate change science is a fundamental and integral part of earth science education. The core mission of NAGT is to "*foster improvement in the teaching of the earth sciences at all levels of formal and informal instruction, to emphasize the cultural significance of the earth sciences and to disseminate knowledge in this field to the general public*." The National Science Education Standards seek to achieve general understanding of how scientific knowledge is generated and verified, and how complex interactions between human activities and the environment can impact the Earth system. Climate is clearly an integral part of the Earth system connecting physical, chemical and biological components and playing an essential role in how the Earth's environment interacts with human culture and societal development. Thus, climate change science is an essential part of Earth Science education and is fundamental to the mission set forth by NAGT. In recognition of these imperatives, NAGT strongly supports and will work to promote education in the science of climate change, the causes and effects of current global warming, and the immediate need for policies and actions that reduce the emission of greenhouse gases.

NAGT further recognizes that climate, climate systems and climate change are best taught in an interdisciplinary manner, integrating the many relevant sciences into a holistic curriculum approach; that climate-change topics provide exceptional opportunities for students to learn how geoscientists study past, present, and future climate systems, including the essential role of computer models in the assessment of global climate change scenarios; and that a current and comprehensive level of understanding of the science and teaching of climate change is essential to effective education. In support of these goals, NAGT sponsors professional development programs for geoscience educators, including workshops, seminars, and teacher-scientist cooperatives, and disseminates "best teaching" practices for climate change in the Journal of Geoscience Education.

Vancouver, BC. Image courtesy of Vancouver Tourism

Pacific Northwest Section, NAGT Annual Summer Conference

Vancouver, British Columbia, June 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 the next page 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.

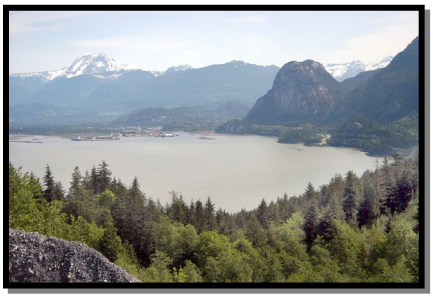
Call for submissions - Posters and Talks

If you are interested in presenting a Geoscience Education or Geoscience poster or talk on the conference day, please send a title and 250 word abstract to **Brett Gilley** (**bgilley@eos.ubc.ca**). Talks should be 15 minutes in length and posters should be smaller than 48" (vertical) by 74" (horizontal).
Deadline for submissions: May 15th, 2009.

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

PNW NAGT Annual Summer Conference
Vancouver, BC, June 16-20, 2009

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 corrider 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.

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.

81st Annual Meeting of the Northwest Scientific Association, Seattle, WA
March 25-28th, 2009

The **81st Annual Meeting of the Northwest Scientific Association** will be held at the **University of Washington** in **Seattle**, **March 25–28, 2009**. Exciting keynote speakers planned include **Dr. Brian Fagan**, author and Professor Emeritus in Anthropology of the University of California at Santa Barbara. Symposia and presentations will address a broad range of topics and issues in natural and applied sciences, including climate change, geology, forestry, ecology, botany, restoration, sustainability and lichenology. Investigate the Society's web page for more details.

We enthusiastically encourage you to present a paper or poster at the meeting and to register for the conference to learn about scientific research in the Pacific Northwest and/or share the results of your ongoing work. There are special rates for students.

You can find registration, call for abstracts and other information in pdf format at the Northwest Scientific Association web page at:

www.vetmed.wsu.edu/org_NWS/NWSci_Home.htm

We will try to respond to questions sent to **nsa2009info@gmail.com**. The abstract and early registration deadlines (reduced rates) are February 16, 2009.

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**

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

Betsy Smith, Alaska Geographic

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.

For more information, contact Alaska Geographic (**institute@alaskageographic.org** or 907-733-2896) or the MSLC (**courses@muries lc.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**.

GSA Cordilleran Section Meeting 2009
May 7-9th, Kelowna, British Columbia

The Cordilleran Section of the Geological Society of America will hold its annual meeting May 7-9th in Kelowna, British Columbia. Kelowna is situated along the eastern shore of Okanagan Lake, in the Okanagan Valley. The early registration deadline is April 6th. Applications for student travel grants are also due April 6th. To register, visit:

www.geosociety.org/sectdiv/cord/09mtg/registration.htm

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 **jknott@fullerton.edu**.

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 _____

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:

☐ Cheque (enclosed)
(Make cheques payable to the University of British Columbia)

☐ 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/**

OUTSTANDING EARTH SCIENCE TEACHER AWARD

Nomination / Application Form

Name ______________________________ Years Teaching __________

Street Address ______________________________ Telephone ______________

City, State & Zip ______________________________ e-mail ______________________________

College/University attended ______________________ Degree(s) ________ Major ______________

Annual percentage class time devoted to teaching earth science ____________ Grade level(s) __________

Name of School ______________________________ Telephone ____________ Fax ______________

School Address ____

Name and Address of School District Superintendent ______________________________

____

Name and Address of Local Newspaper ______________________________

____

Respond to the following, using *no more than one typewritten page* per item. Include supporting documentation in the form of letters, products, or publications as appropriate.

1. Teaching ability: What techniques does the nominee/applicant employ? What is his/her teaching philosophy? Are his/her courses challenging and comprehensive? Do students enjoy his/her classes?
2. Inventiveness: What new ideas, materials, software, instructional strategies, or techniques has the nominee/applicant developed?
3. Initiative: How does the nominee/applicant handle new situations and accommodate students of various abilities? Be specific.
4. Cooperativeness: How does the nominee/applicant cooperate in the total school program and in other academic areas?
5. Strengths: What are the principal strengths of the nominee/applicant?
6. Community involvement: How is the nominee/applicant involved in community and/or youth activities?
7. Other activities: List other professional activities and noteworthy accomplishments.

Name of Nominator ______________________________ Telephone ______________

Address ______________________________ E-mail ______________________________

Signature of Nominator (or Applicant) ______________________________

- -

Send all forms, materials, and supporting documentation in one package to:

Executive Director

NAGT c/o Carleton College B-SERC or The OEST Chair of your local

1 N. College St. NAGT Section

Northfield, MN 55057

This form can be filled out online at: www.nagt.org/nagt/programs/oest-nom.html

Please feel free to copy this form for nomination purposes.