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From the President

In my first message as president, I want to thank my predecessors, **Andy Buddington** and **Jenny Thomson**, for the tremendous job they did organizing, sustaining, and stimulating the Pacific Northwest Section of NAGT. I am excited to play a part in this organization because I get energized every time we meet. It makes me feel that I am not alone in the trenches but instead am working with many kindred spirits toward shared goals, driven by a common belief in the importance of geoscience education. As president, I want to make sure all members feel such a sense of *camaraderie*.

A good example of an energizing meeting was Bellingham this past June (more on page 6). I found the field trips and presentations informative and open to discussion and debate, as they should be. In the field, we learned how much has been pinned down in the tectonically mobile San Juan Islands and western North Cascade, and which geological questions have yet to be resolved. These places are crucial to the tectonic history of the PNW. Knowing about such geology in greater depth and from personal experience enables all who went on the field trips to teach it better. The fact that we got to spend two brilliantly sunny summer days on the shores of beautiful islands and in the forested lap of craggy mountains is the type of perk that we all enjoy, a benefit of being a member of NAGT PNW.



Tark Hamilton demonstrates the value of a kilt in the field to Ned Brown, co-leader of the trip to Lopez Island, 2006 annual Section conference in Bellingham, WA. Oh, and they looked at 'world class' pillow basalts, too. Photo by R. Dawes.

Continued on Page 2

Although the value of our profession may seem obvious to us, we have to keep making the case that what we do as geoscience teachers is important, without doubt. In my home state of Washington, the graduation requirements for high school students are planned to include standardized tests on science, including earth science (page 4, this issue). Although not everyone supports standardized tests, I find it encouraging that earth science is in there along with chemistry, physics, and biology. In a world that reels from news of events like Hurricane Katrina, the 2004 Indian Ocean tsunami, spiking oil and gasoline prices, and evidence of global warming correlated with the combustion of fossil fuels, I am hopeful that there is an increasing public awareness of the need for earth science knowledge. I think that each of you who has geoscience knowledge, and who teaches earth science, possess rare skills and exceptional value, regardless of what it may say on your pay stub.

As we look ahead to our future meetings and development as professionals, I expect to be involved in lively discussion on many exciting and challenging fronts, including:

- Keeping geoscience on equal footing with the other basic sciences in times of tight education budgets and well-funded sophistries such as “intelligent design.”
- Managing the erosion of barriers between geography and geology, as GIS and GPS technologies keep expanding (how many computer-using kids have *not* used Google Earth recently?)
- Making best use of technology to advance our students abilities and opportunities.
- Linking global (“satellite views”) of earth systems with detailed and verifiable data gathered up close and in person (“ground truth”).
- Getting out from behind the lectern more. Research makes it clear lectures alone are not the best use of class time. To enable students to comprehend and apply concepts, lectures should be a limited part of a mixture that also includes _____ what? You fill in the blank.

I am interested in what you think the NAGT PNW section can do for you, and what you want to do for the section. Serendipitously enough, one of the best things that you can do for the section and one of the best things it can do for you centers on the same event—the annual section meeting. Giving a talk or leading a field trip at the annual meeting helps improve geoscience education in the Pacific Northwest,

advances your professional development, and gives you the opportunity to more fully explore, refine, and share your own innovative approaches. Those of us who have helped host one of our annual meetings can tell you that the scale is small enough that it is a manageable amount of work.



Portland, Oregon, site of the upcoming 2007 annual Section conference.

As I have experienced it, helping to put on one of our annual meetings is richly rewarding.

Our next meeting as the PNW section of NAGT will be in **Portland, June 19-22, 2007**. Wine-lovers among us need not worry; Scott Burns is involved and will have some more to teach us about the relationship between the vine and the earth. There will be other great field trips and activities as well, so start penciling in your calendars and look for the details (page 5, this issue).

As for what else the NAGT PNW can do for you, let me know. I look forward to hearing how you fill in the blank, and what the rest of us can do to help you.

*Dr. Ralph Dawes,
Wenatchee Valley College
Wenatchee, Washington*

Outstanding Earth Science Teacher 2006 Winner

Ron Metzger, Southwestern Oregon Community College



The Pacific Northwest Section OEST award this year goes to **Jodie Harnden** of **Sunridge Middle School** in Pendleton, Oregon. Ms. Harnden is an experienced middle school educator with over two decades of classroom experience. Jodie has had a number of publications in the National Science

Teachers Association (NSTA) journal *Science Scope*, Oregon Science Teacher Association's (OSTA) *The Science Teacher* and the National Middle Level Science Teachers Association's (NMLSTA) *Leveline*. Jodie has been an active participant in each of these organizations, having served as president of NMLSTA, an Affiliate Director of NSTA and an OSTA Board Director. Currently Jodie serves as secretary for OSTA and is running for an NSTA Director position. She is involved in numerous state level groups and projects including Science Content and Assessment Panel, Hydromania Teacher Program, S'COOL Project (NASA), Oregon-Online instructor (Southern Oregon ESD) and is an adjunct geology faculty member at Blue Mountain C.C. Jodie has recently received National Board Certification in Early Adolescence: Science. She is also a past winner of an NAGT Dorothy L. Stout Professional Development Grant. The PNW section is fortunate to have educators like Jodie Harnden that bring their passion for earth science and teaching our youth to their classrooms. Maybe her most significant contribution appears in the comments from students and family, including “It’s time to go already?” and “My child talks about science all the time.” It is with great pleasure that the Pacific Northwest section of NAGT recognizes Jodie Harnden as an outstanding teacher.

2006 Section Election Results

For those of you unlucky enough to miss hearing the results at the June PNW NAGT conference in Bellingham, you have probably been eagerly, perhaps even ANXIOUSLY awaiting the May 2006 voting results for our Section's officers. After tallying a record number of votes, the officers are:

- President- **Ralph Dawes**, Wenatchee Valley College
- Vice-President- **Ron Metzger**, Southwestern OR C.C.
- Secretary/Treasurer- **Bob Christman**, WWU
- Newsletter Ed.- **Cassie Strickland**, Yakima Valley C.C.
- OEST Coordinator- **Davene Meehan**, Oak Harbor, WA
- State/Province Councilors-
 - Alaska- **Cathy Connor**, Univ. Alaska Southeast, Juneau
 - Michael Collins**, Anchorage
 - British Columbia- **Mary Lou Bevier**, Univ. of BC
 - Brett Gilley**, Douglas College
 - Idaho- **Shawn Willsey**, College of Southern ID
 - Oregon- **Joe Graf**, Southern Oregon University
 - Tom Lindsay**, Portland State University
 - Washington- **Joe Hull**, Seattle Central C.C.
 - Jeff Tepper**, Univ. Puget Sound

Congratulations to all of the new/returning officers, and thank you for voting!

Coming, Going, Shuffling

Kathryn Hoppe has joined the geoscience faculty at **Green River Community College**, teaching geology, oceanography and interdisciplinary science. Kathryn has degrees from Washington University, the University of Washington and UC Santa Cruz, and has taught at Bellevue C.C., North Seattle C.C. and the UW. Her research interests include isotopes, paleontology and ecology. You can send her a welcoming email at khoppe@greenriver.edu.

The **University of British Columbia** hired **Dr Sara Harris** in fall 2005 as an additional faculty member specializing in earth science teaching within the Department of Earth and Ocean Sciences. Sara's background is in geology and geological oceanography, and in addition to her course duties in EOS, which include coordinating (and teaching parts of) five sections of a large 1st year Natural Disasters course, she will be involved in the Environmental Sciences program and the Carl Weiman Science Education Initiative (more on CWSEI below).

State by State

British Columbia, Yukon, Idaho, Oregon & Washington

British Columbia

State Councilors: *Mary Lou Bevier & Brett Gilley*

- **Carl Weiman Science Education Initiative (CWSEI)**. Nobel Prize winner **Dr. Carl Weiman** is coming to the University of British Columbia (UBC) in **January 2007** to begin the CWSEI, a program that he has already started at University of Colorado. All science departments at UBC

will be competing for funds to upgrade science education, and the Department of Earth and Ocean Sciences (EOS) at UBC has a committee chaired by **Dr. Sara Harris** that will be submitting a proposal shortly. This proposal will be a department-wide effort to improve science teaching via increasing use of educational technology and student-centered learning.

- **Teachers' Resource Centre, Vancouver**. The Teachers' Resource Centre is now active within the **Pacific Museum of the Earth** in the Department of Earth and Ocean Sciences at UBC; it provides materials and curricula for K-12 earth science teachers. Contact Curator **Mackenzie Parker** <mparker@eos.ubc.ca> for details.
- **BC Colleges and Universities Earth Science Articulation Committee Meeting, May 2007**. Hosted by UBC-EOS, the Committee meets once-a-year as mandated by provincial legislation. Representatives from all of the colleges and universities in BC meet to discuss issues related to the smooth transfer of credit for students who change institutions within the province. This process has been very successful. If anyone from the Pacific NW Section of NAGT would like to attend this meeting to see how the process works, please contact **Mary Lou Bevier** <mbevier@eos.ubc.ca> this fall.

Idaho

State Councilor: *Shawn Willsey*

- **Scholarship Opportunity**. Applications for field scholarships through the Tobacco Root Geological Society are due by February 1, 2007. For more info, go to: <http://trgs.org/scholar.htm>
- **32nd Annual Tobacco Root Geological Society Field Conference**. The TRGS field conference will be in Dillon, Montana, August 2-5, 2007. For more info, contact **Rob Thomas** r_thomas@umwestern.edu, or go online to <http://trgs.org/>

Washington

State Councilors: *Joe Hull & Jeff Tepper*

- **Global Warming Symposium, February 28th, 2007**. Yakima Valley Community College in Yakima, WA will host a symposium entitled: *YVCC Student Symposium on Global Warming: An Investigation of the Science, Sociology and Politics of Global Warming*. This student-hosted symposium will take place in the Parker Room at the Deccio Higher Education Center, on the Yakima Campus at 12th and Arlington Avenues. Using an interdisciplinary approach, students from both the Grandview and Yakima campuses will explore not only the science and history of atmospheric warming, but also the effects this trend may have on society, especially Eastern Washington's agriculturally-based, irrigation-dependant economy. Students will also examine how humans have created the current problem, and discuss the political nature of a global solution. This event is free and open to the public. For more information, please call **Claire Carpenter** at 509.574.4866 or email ccarpenter@yvcc.edu

State of Earth Science: Is the WASL a sound metric for assessing geological comprehension?

Joe Hull, Seattle Central Community College

The flip side to the Essential Academic Learning Requirements (EALR) is the Washington Assessment of Student Learning or WASL. How is geology tested by the WASL? For sample questions, go to:

<http://www.k12.wa.us/assessment/WASL/testquestions.aspx>

Here's one for grade 10 on continental collision: "What would be the result when two continental plates collide?"

- A. The plates would stop moving where the continents collided.
- B. After the collision, the continental plates would immediately start to move apart.
- C. The crust would fold, creating a mountain range where the continental plates collided.
- D. Volcanic activity associated with hot spot would appear where the continental plates collided.

Most of us would probably choose C as the safest answer; 45% of kids did so. But if you picked A (16%), thinking that buoyant continents don't subduct into the mantle, and therefore plate convergence would be slowed and eventually stopped, you're wrong! If you picked B (24%), because you know something about the Wilson Cycle, you're wrong too! If you shunned C, reasoning that colliding continents form a "crustal sandwich," not an accordion-like train wreck, then think again, because C is Correct. 13% of kids chose the ringer D, whereas 2% would not or could not fill in any circle with their number 2.

Many WASL questions require explanation of the student's choice of answer, with partial credit given for good reasoning. Unfortunately, the collision question was treated as a right-or-wrong multiple choice problem ("selected response"), whereas an explanation-based approach ("short constructed response") might have been better. The collision question is problematic in part because answers A and B were not appropriately vetted, there's too much "right" in those wrongs. And, the students are still marked down, even if their answers are well-reasoned.

Can anything be done about problems with WASL science questions? Not under the current system. The Cosmodemonic Testing Company of Bayonne, New Jersey, is safely out of reach.

K-12's New Science Curriculum, B.C.

Mary Lou Bevier, University of British Columbia

Information on the teaching of earth science in K-12 schools in British Columbia (summarized below) was relayed by **Sheila Stenzel**, Mineral Resources Education Program Director for the B.C. Mining Association. As of fall 2006, new science curricula in B.C. emphasize earth science (geology, rock cycle, plate tectonics) in grade 7 science.

There is some earth science in primary grades, also (soils and earth science can be taught as an option in part of primary science curriculum). Natural resources extraction is taught in grade 5. There are earth science threads throughout grade 8-10 science courses, but topics vary yearly. No standardized testing exists except as part of the grade 10 science provincial exam, which has an earth science component. The Geology 12 course, taught in relatively few schools, does have a standardized provincial exam which can be used for university entrance. See http://www.bced.gov.bc.ca/irp/irp_sci.htm for complete details.

NSF-EDGE: Alaska Teachers & Students Put Field Experience to Work in Classrooms

Cathy Connor, University of Alaska Southeast, Juneau

The Experimental Discoveries in Geoscience Education Project (EDGE) project offers the opportunity for in-service Alaska teachers to interact with university research faculty, science educators and university undergraduate science majors to participate in earth science field training. Teachers increase their respective Earth science content knowledge through field experiences, gain computer mapping technology skill sets in the ARCGIS environment, and acquire technology that they can transfer directly into their classrooms.

The first cohort of 15 high school and middle school teachers attended a ten day June workshop at the University Alaska Southeast in Juneau to participate in active studies of a dynamic glacier watershed. In between cramponing over the ice, chest-wading across streams with flow meters, and rafting down rivers, the teachers learned the rudiments of ArcGIS and created mapping projects that displayed their field data.

In August, 27 middle school and high school students recommended by teachers from the June session attended a five day workshop to gain experiences similar to their teachers.



EDGE students, August 2006

This fall the EDGE teachers are enrolled in a three credit online geology and science project mentoring course using Eluminate software to create a live web-based classroom. They will mentor their EDGE students through semester scale, science fair projects and return to Juneau in March to present their work at an EDGE symposium and at the Southeast Alaska Regional Science Fair. We will be recruiting a second cohort of Alaskan EDGE teachers in Spring 2007.

Online, access EDGE at <http://gina.uas.alaska.edu/joomla> Select 'EDGE' from the left-hand menu.

STILL CAN MAKE IT

**GSA Annual Meeting, Philadelphia, PA
October 22-25th, 2006**

The annual Geological Society of America meeting is almost upon us. As a reminder, please make note in your programs of the NAGT-sponsored education sessions, which can also be found online at:

<http://www.nagt.org/nagt/programs/GSA06.html>

On Saturday, October 21st, from 5:00 to 7:00 p.m., a Geoscience Educator's Social Reception will be held at the Marriott Grand Ballroom. We hope to see you there! For more information on the reception, go to:

<http://www.nagt.org/files/nagt/programs/receptioninvite2006.pdf>

**NAGT Pacific NW Section
Annual Conference, Portland, OR
June 19 – 22, 2007**

Time has come to mark your calendar for the 2007 NAGT PNW Section annual conference, which will be hosted by Portland State University, Portland, Oregon. Scheduled for mid-June, the 2007 meeting is sure to be memorable. Portland is within short driving distance of several world-famous scenic locales, including the Columbia Gorge National Scenic Area, Mt. Hood, Mt. St. Helens and one of the most scenic stretches along the Pacific Coast. Field trip itineraries include:

- Elliot Glacier, Mt. Hood
- Geology of the Portland (Bedrock and Quaternary history)
- Terrior of the Oregon Wine Country- a field trip to study and taste the relationship between geology, soils and wine

Also planned is a full day of conference, including talks and posters (PNW Geology, amongst other topics). Immediately following the conference, PSU will host a banquet and wine tasting event at the Simon Benson House, a beautiful Queen-Anne style home moved to the PSU campus in 2000. Housing for the conference will be reserved at the University Place Hotel for \$69.00/night. If you would like to present a talk or poster, or simply have further questions, please contact **Dr. Scott Burns** at (503) 725-3389 or email burnss@pdx.edu. More information will be provided in the winter and spring newsletters, including registration packets.

On a side note, this is the third year the Section conference will have been held on the "West Side" of the lower 48. As much as we love the coastal field trips, it is time to move **EAST**. Idaho? Eastern Washington? Eastern Oregon? Please consider volunteering to host the 2008 conference. Contact **Ron Metzger** at rmetzger@socc.edu if you may be interested.

MISSED YOUR CHANCE

**Catch up—Anchorage, AK, May 2006
The GSA Cordilleran Section Meeting**

Cathy Connor, University of Alaska Southeast, Juneau

The **Geological Society of America's Cordilleran Section** annual meeting was held May 8-10, 2006, in Anchorage in with the **Pac Section American Association Petroleum Geologists** and **Western region Society of Petroleum Engineers**. The meeting was well attended by scientists from both the United States and Canada, and petroleum geologists. There were interesting geologic sessions on the origin and evolution of Northern Cordilleran pericratonic terranes that comprise much of the Alaskan Interior, the Yukon and interior British Columbia. These repeatedly metamorphosed rocks are revealing their origins through U-PB dates on zircon minerals at the Stanford USGS SHRIMP ion microprobe. A Brooks Range Geology session honored **Gil Mull**, and other sessions about Alaska Volcanoes featured Mt. Augustine and other heavily instrumented volcanoes wired up and under analysis. USGS geologist **Charlie Bacon** was able to date a very young granite (18 ka) on Mount Veniaminof volcano using SHRIMP. Other sessions featuring Alaska's glaciers and their ongoing disappearance, accreted terranes and Cordilleran reconstruction were interwoven with sessions of interest to petroleum geologists. A field trip to Prudhoe Bay revealed the ongoing leak to participants learning about the Trans Alaska Pipeline and Arctic Oil fields. Field trips to Denali National Park, Prince William Sound, the Kenai Peninsula, the Talkeetna Mountains and a walking tour around Anchorage's earthquake Park were all well-attended.

Geoscience education sessions featured Alaska's MAPTEACH and EDGE projects, both aimed at getting rural secondary science students and their teachers to incorporate the use of geospatial data in their classes through the use of GPS receivers and GIS. University of Alaska Fairbanks Professor **Catherin Hanks** Chaired a Geoscience Education and Public outreach session that reviewed challenges and successes in drawing Alaska Natives into university geoscience programs.

Following GSA, seismologists, geodesicists, structural geologists and educators drove east of Anchorage along Turnagin Arm to the **American Geophysical Union CHAPMAN Conference** held at Alyeska, May 11-14, 2006, on the Active Tectonics and Seismic Potential of Alaska. Many interesting talks and posters were presented about the partitioning of stress and strain across Alaska, especially as a result on the ongoing collision of the Yakutat Block. The high school students of Cordova are involved with the St. Elias Erosion/Tectonics Project (STEEP) project that is looking at the active uplift in the St. Elias Orogen in southern Alaska. They have been identifying land features created by uplift following the great Alaska Earthquake of 1964. Senior USGS scientist **George Plafker** reviewed the post-1964 earthquake on the ground research and brought attendees up to date on progress in understanding great subduction zone earthquakes, especially the recent Sumatra 2004 event. A field trip to

Seward to view 1964 tsunami setting ending with an exploration of the salt marsh record near Portage, AK, provided a rich environment for discussions and understanding of the mammoth tasks yet to be completed in gaining understanding of the active tectonics in the United States' largest state.

Catch up—Bellingham, WA, June 2006 NAGT Pacific Northwest Section Meeting

*Davene Meehan, OEST Coordinator, and
Ralph Dawes, Wenatchee Valley College*

The 2006 Pacific Northwest Section conference was hosted by Western Washington University (WWU) in Bellingham, Washington. The conference kicked off with a social gathering the evening of June 21st. On their deck overlooking Bellingham Bay, **Bob Christman** and his wife **Bess** generously served homemade wine and hors d'oeuvres. The next day, 30 eager participants boarded vans for the first field trip, a tour led by **Scott Babcock** (WWU) across the western North Cascades and up the Skagit River to its gorge above the town of Newhalem.

At each stop, we examined the deformed and metamorphosed rocks and discussed exotic terranes, faulting, strain features, and metamorphism. At one such stop, we examined a talc-rich schist surrounded by a "black wall" of biotite and other concentric layers of minerals. This mineralized pod was metamorphosed from ultramafic rock that has a probable mantle origin of pre-Late Cretaceous age. We also heard some recent economic history of the talc deposit. It provided a source of income for a local commune, who used it for grinding rice, among other things. Then concerns about possible asbestos content stopped the use of talc in food processing.



Tark Hamilton and Scott Babcock discuss Cascade River Schist. Photo by R.Dawes.

After lunch, we continued along the spectacular North Cascades Highway, examining both bedrock geology and Quaternary geology. The Skagit Gorge itself is part of the evidence of drainage reversal and stream capture of the Skagit River during the Pleistocene Epoch. The steep-sided, narrow, rock-walled gorge has been part of the main stem of the Skagit River only since stream capture occurred as a result of the Cordilleran Ice Sheet advance, which reversed the drainage upstream. Between Newhalem and Marblemount we stopped to look at a volcanoclastic lacustrine deposit. Apparently, these deposits record a temporary lake on the Skagit River when it was dammed by a landslide. During that time the cataclysmic eruption of Mt. Mazama in Oregon blanketed the slopes above the Skagit with ash, which then

washed down into the lake. This provides an age for the lake and shows that the eruption and erosion of the Mazama ash was not a simple process. The trip concluded with a look at glacial drift near the town of Concrete, and a view of an extensive andesite flow from Mt. Baker. The geology and mountain vistas were spectacular, and Scott Babcock was a superb guide.

On Friday, June 23rd, participants boarded the vans and headed for the ferryboat dock for the second excursion, a trip to Lopez and Fidalgo Islands in the San Juan archipelago, led by **Liz Schermer** and **Ned Brown** (WWU). On this tour, we examined ocean floor rocks that were tectonically juxtaposed along the continental margin, 125 to 84 Ma. Stops included the "world's best pillow basalts," which were scoured and polished by the Vashon Lobe ice sheet, at Richardson on Lopez Island. On Fidalgo Island, we were allowed into a quarry to look at some well-exposed examples of accreted terrane. There we examined folding, localized shear zones, and mineral veins in sedimentary and volcanic rocks of ocean-floor origin, trying to see through the veil of metamorphism and deformation to understand the history of the rocks. The interpretation of these rocks and structures in the San Juan Islands, especially what they mean in terms of tectonic and accretionary processes, has met with controversy. Ned and Liz were models of scientific behavior in carefully showing and discussing the evidence with the field trip participants. Their expertise was impressive.



Liz Schermer, Fidalgo Island. Photo by R. Dawes.

Saturday was the day for talks. Invigorated after the field trips, participants engaged in presentations concerning teaching methodologies, diversity integration in Earth Sciences, volcanic activity on Mt. Baker and Mt. St. Helens, and groundwater quality in dairy farm country that is gradually turning into housing developments. Presentations were followed by a barbeque by the shore of Lake Whatcom, where a valiant attempt was made to eat all the food and drink all the beverages. This was a chance to socialize, review the two main field trips, and conspire to arrange the next PNW NAGT annual meeting, realizing, once again, that there would be no point in trying to match this year's meeting. Each meeting breaks its own new ground.

Sunday was the final day of the conference. **Maury Schwartz** led a field trip exploring the coastal geology of the Bellingham area, showing how shoreline processes affect not only the rocks and sediments, but the people who live near the shore.

All told, section members had a great time at our annual conference. We met, schmoozed, ate, learned geology in the field and in the lecture hall, debated, relaxed, and had an all-around outstanding time!