New Waves of the Department

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- A message from chair, Dr. Martin Streck
- Great Oregon Shakeout
- Student Awards
- Imperial Barrel Award
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- Faculty Updates

It has been a dynamic year in the department. We are now up to our full complement of faculty with the arrival this year of Dr. Ashley Streig this fall term.

Nancy Eriksson, our long time office coordinator retired late last spring after over 20 years at Portland State, most of which was in the Department of Geology. We miss her exuberance, care for the students, and catering skills that we all enjoyed over the years.

Alisa Humphrey has come on board in late summer as our new office coordinator. Originally from Napa, California she lived in Portland for 10 years before moving to Bend, Oregon where she worked for the Cascade Campus of Oregon State University for 6 years. Now back in Portland she joined our department. When you stop by please take the time to say hello and introduce yourself to Alisa.

We started out the Fall Quarter with the wonderful news from Dr. Mike Cummings (retired) that he is donating over $100,000 to the department for scholarships for undergraduate students—the Michael Cummings’ Family, Alumni and Friends Endowed Scholarship. It is a profound commitment to the department that after 30+ years of hard dedicated work and many hours at night and on weekends in the office that he finds the generosity to make such a large gift to the department. Many thanks, Mike!

As we settle into the Fall Quarter and the rhythm of our daily classes and student meetings takes hold, we continue to plan for the future. We have a faculty retreat planned for a day in December to discuss new directions the department might want to take. And next winter we will have an external program review of the department. I hope they provide new insights for us to consider.

Just a note from last academic year, we’ve had 21 B.S. graduates and 8 M.S. degrees awarded. Our classes have never been larger and the rooms are not big enough for all the students. The office lobby has been reconfigured to make more room and the storage room in the sub-basement, affectionately known as the ‘tomb’ is being cleaned out to make room for the equipment of the new faculty. And the cycle continues.

We’re excited about the new academic year and the new things on the horizon. The department is full of energy of new research topics and new ways of teaching. It is a good time to be in the Department of Geology. Please come and visit us during PSU’s Alumni event, “Portland State of Mind. Lastly, we are very grateful for your support that benefits ours students and our academic activities—THANK YOU.
Assistant Professor of Geology Ashley Streig spoke with KGW about earthquakes and how to practice preparedness. Streig lead the PSU Geology Department’s participation in "The Great Oregon Shakeout" drill on Thursday, October 15 at 10:15am. 
Watch the full video KGW

Join the PSU in this world wide earthquake drill.

Protect yourself during an Earthquake !!

1. DROP!
2. COVER!
3. HOLD ON!

October 15, 10:15 a.m.

For more information contact the Geology Dept., streig@pdx.edu

www.ShakeOut.org
Student Awards and Honors

Scott Burns Legacy Endowment:
Cody Holly
Annika Horlings
Brita Horlings

Paul Howell Endowment (MS research):
Max Bordal
Matthew Cruz
Teresa Hanna
Donnel Malkemus
Hillarie Sales

Field Camp Scholarships:
Tessa Carlson
Jiamei Yang
Justin McCarley

Best Poster at AEG student poster night
Megan Masterson

Imperial Barrel Award
Portland State University geology students presented to oil and gas industry experts in Bakersfield, California this year as part of the Imperial Barrel Competition (IBA). The IBA is a yearly competition sponsored by the American Association of Petroleum Geologists (AAPG) that gives students experience working with seismic and well log data to tell a story of oil and gas prospectivity. The work mirrors what exploration geologists do in industry and provides an opportunity to learn new geology, practice presentation skills, and network.

This is the first time PSU has ever participated in this competition and we were the only school from the Pacific Northwest. The team consisted of: Megan Masterson, Katherine DeLoach, Jeff Taylor, Travis Christensen, Jon Ingram. Guess which one is the faculty advisor, John Bershaw.
Geothermal Resources Council Student Chapter
Portland State’s Geology department is now home to the world’s first Geothermal Resources Council (GRC) student chapter. PSU MS student Don Malkemus is the club’s founding president and he and the club have organized a number of activities including a 2-day geothermal short course and a tour of AltaRock Energy’s engineered geothermal system study site at Newberry Volcano. PSU alum Al Waibel (Columbia Geoscience) is the club’s industry sponsor, and Ben Perkins, Max Rudolph, and Erick Burns (USGS OR Water Science Center) advise the club.

Google Summer of Code
PSU has been participating in Google’s open source programming grant since the beginning in 2005. They fund big projects like Apache and Linux, and small stuff that you’ve never heard of. Percy from our department has been representing the GIS side of open source in the program since 2008. This Summer he mentored Jon Barnes’ (BS ‘15, now MS student) project on developing python tools for analyzing thin section and electron microscopy data for patterns to detect mineral boundaries. Basically treating an SEM image as if it was GIS data. Jon did an exemplary job, and his code is available here on github: https://github.com/gisforsem/gsoc2015.
John Bershaw
Coming from industry, this first year teaching at PSU has been a new and welcome experience for me. I’ve enjoyed getting to know the other faculty and diverse student body. I’ve come to realize that PSU Geology fills a positive niche in the city of Portland and am excited to contribute! This past year, I assisted students in organizing a team for the Imperial Barrel Competition in Bakersfield, CA and AAPG Student Chapter, a first for PSU. I hope these will prove useful resources for students interested in pursuing energy-related careers. In terms of research, I’m working with an undergraduate student to test whether a new geochemical tracer, "O, in precipitation preserves the chemistry of its oceanic source. I also have three graduate students in the early stages of defining their research projects. I’ve had the pleasure of teaching Sedimentology and Stratigraphy, Basin Analysis, and a seminar course, Paleoenvironments. In fact, I’m writing this blurb on a Sed/Strat field trip on the Southern Oregon Coast! As one of five new faculty, I’m excited to be part of PSU’s dynamic Geology Department.
Adam Booth
My students and I have been using our new terrestrial laser scanner to measure rates of landslide movement in the Cascade foothills and to measure erosion rates in channels of urbanizing areas in southwest Portland. I’ve also been working to determine the timing of prehistoric landslides in the vicinity of the deadly Oso, WA landslide using radiocarbon dating, airborne lidar surface roughness analysis, and a numerical landscape evolution model. This fall, I’m currently teaching an enthusiastic group of Geology and Earth Science majors in Processes in the Surface Environment, who will be experimenting with a new “Augmented Reality Sandbox” (http://idav.ucdavis.edu/~okreylos/ResDev/SARndbox/) built by a PSU undergraduate. This winter, I’ll be teaching a new upper level course in Tectonic Geomorphology.

Matt Brunengo
I’m still splitting time among three or four “jobs”. At PSU, last winter I taught G301, introductory geology for civil/environmental engineering majors – one of the largest enrollments (>100 students) in the department’s schedule. (And we got everyone to agree to move it from 8 to 9 am next year!) This quarter I picked up environmental geology (G461/561), one of Scott Burns’ old courses, taught by Ben Perkins last year – first time for me, so I’m bugging both of them constantly for “advice”.

Besides that, I continue occasional consulting work: on the Oso landslide case; and in other small jobs in regional geology, slope instability, and geomorphology. I remain involved with the Association of Environment & Engineering Geologists: attended the AEG national meeting in Pittsburgh in September – not as great a junket as last year, to Italy for the IAEG, but a nice trip to a good meeting. After three years, I’m trying to retire as director of communications (no one follows my grammatical advice anyway). But I somehow got volunteered (is that a transitive verb?) to help with the Western Snow Conference in Seattle next April. (I should change my phone number…)

Scott Burns
The year has been an incredible transition — still trying to figure out this “retirement” thing. I started the year with 10 grad students needing to defend their theses/dissertations. Five have successfully defended and another four will defend in November! Yeaa! Mike Marshall, Heather Hurtado, Kassie Lindsey, Shana Kendall, and Hilary Whitney have defended their MS theses. In November Kat Barnard, Scott Waibel (Christina Hulbe’s student), Matt Poole, and Kim Yazzie will defend! One of them will be my 50th graduate student to complete a degree under my supervision.

I am still very involved with the profession. I am president of IAEG (first American to hold this position in 50 years of history) so have had keynotes in China, Brazil and India as a result. We will be having the first IAEG congress in the US in 2018 and so I am a wee bit involved in that planning. I continue to be involved in AEG and presented a paper in Pittsburgh this year and won a national award, the Terzaghi Mentorship Award, for the society (12 of my past students nominated me for the award). I continue to be involved in GSA and will present a paper in Baltimore in two weeks and will also receive a national award from AGI (American Geological Institute) for geological outreach to the public at the meeting. Research continues in terroir of wines in southern Oregon and radon regionally and nationally plus landslides all over the world. Be sure to drop by PSU and see me in my new cubby hole in the sub-basement!
Ken Cruikshank
I was on sabbatical over the last year, Diana also took a year leave of absence so we could travel together, which we did. It was a fun and relaxing time. I managed to complete a couple of papers with Curt Peterson (now living in Corvallis) on strain distribution in the Cascadia margin. I also updated my website (http://geomechanics.geology.pdx.edu/) to make my pages more accessible (especially on mobile devices). I have started working with MS student Jon Barnes on a project to create a wireless networked set of field-deployable sensors, and am continuing my analysis of strain in the Cascadia margin. The distribution of strain should help better constrain how the margin is deforming, and more importantly, where strain-energy is being accumulated. Later this year I will move the Earthquakes and Volcanos class to an online offering.

Andrew G. Fountain
I’m on sabbatical this year and hope to get much done. I have a backlog of papers that need to be written from projects that have been completed. In the meantime, I’m trying to collect more glacier data. It has been a spectacularly low snow year and warm summer, perfect for satellite remote sensing. We’ve acquired stereo satellite data (0.5m resolution from which we’ll make topographic maps (DEM) of glacier surfaces. They’ll be compared to older USGS maps to provide volume change and water runoff. I can’t wait. Our Antarctic projects are going well too. I have a new one that will help us define human impact in the Dry Valleys of Antarctica, an otherwise pristine environment.
For sabbatical I’ll be at PSU for the fall quarter, at the University of Arizona (Tucson) for the winter, and for the spring and summer at Bristol University in England. I work with several colleagues there. I will not be going to Antarctica, it’s a year off. Last year I left on Thanksgiving Day and returned a couple of days after Christmas and I’ve paid my dues, and for the spring and summer at Bristol University in England. I work with several colleagues there.

Frank Granshaw
Though hardly new to the department I am in the midst of a new adventure that involves the department. After teaching earth and environmental science at Portland Community College for over a quarter of a century, I retired from teaching there and am spending more time working on projects of interest here at PSU and teaching university studies related courses for the department. Not to mention having more time with family and getting to hike, garden, tend bees, and travel more often. Having a strong interest in geoscience education, I’m currently working on developing online educational resources related to glacier monitoring in the national parks of Washington State and student research work on the Juneau Icefield. I’m also involved in efforts to develop a network of sites for service-oriented fieldwork, where students can learn earth science in their own “backyard” and do citizen science type work that contributes to the stewardship mission of public agencies and non-profit community groups.

David Percy
My daughter Opal is now eleven, which gives you all a relevant time marker. I continue to represent the US in the geospatial standards for geology committee of the IUGS, with a trip to Italy this year. Our Christmas band has started its yearly practice schedule and will be performing in late Nov/early Dec. Opal is in the band now. Our rock band, Lazy Champions, continues its lackadaisical schedule of 2 to 3 gigs per year at Mississippi Pizza, but we have started mixing down the recordings from the 2013 Glaciology conference, and those should be available in early 2016... I really look forward to seeing each of you at any of our departmental events, please come by and say “hi”!
Ben Perkins
I am happy to report that I obtained tenure and a promotion as of this year! I am also happy to be working with some wonderful graduate students on a variety of projects. Megan Masterson is studying the groundwater chemistry of the Picance Basin in NW Colorado, using a published USGS database. Gabriella Ferreira is investigating mechanisms that control the release of arsenic from tuffaceous rocks collected in Lane County, an area long known to have elevated groundwater arsenic levels. Michelle Sanders, with no small help from Curt Peterson (even though retired!) is using ground-penetrating radar and electrical resistivity techniques to map out aquifer boundaries and groundwater levels in a pumice aquifer northeast of Crater Lake. And, most recently, I have been working with Donnel Malkemus testing out newly developed geothermometry methods, comparing results with past assessments at some key areas in the Cascades. The Trace Element Analytical Lab (TEAL) continues to support student and faculty research from a number of departments. Martin and I have a proposal out now that we hope will fund a new ICP-MS instrument for the lab next year. Finally, I am continuing collaborative research on black shale units in the Appalachian Basin. We are excited by recent geochemical and organic petrography results that call into question some long-held views about paleo-environmental conditions during deposition of the younger shale units.

Nancy Price
I'm starting year two at PSU. Last year was a busy year! I taught two "Earth Science for Educators" courses (elementary & middle/high school). These are two of only a limited number of classes at PSU that incorporate into the course content the Science & Engineering Practices and Crosscutting Concepts of the newly adopted Next Generation Science Standards. Throughout the year, I have been gathering data on teacher perceptions of and confidence on those components of the standards and am using it to guide plans for research on teacher preparation on the “Practices”. I have a MST student (Jessica Bostick) working on this project through the Center for Science Ed. Over the summer, undergraduate student, Eleanor Lahart, and I traveled to Massachusetts for field work and sample collection on what promises to be a new high/ultra-high pressure locality, rocks that may have survived exhumation from within a subduction zone. Eleanor is working on these samples for her honors thesis. There are many things to learn from this locality, and we are just getting started! Chock full of large purple garnet and baby blue kyanite, samples collected this summer will also make great teaching samples when I teach Mineralogy this year.

Max Rudolph
My second full year at PSU is off to a great start. Over the past year, it has been fun to be involved with the initiation of a Geothermal Resources Council chapter at PSU. We had a successful field trip to Newberry Caldera over the summer to see the AltaRock EGS demonstration site. This fall, I’m teaching a new course, Planets of the Solar System, and it’s been a lot of fun exploring the solar system with a group of curious students. My first MS student, Jiaming Yang (PSU ‘15) started a few weeks ago and is delving into the dynamics of the mantle and lithosphere. Over the summer, I had the opportunity to present some recent results related to the mantle viscosity structure at the International Lithosphere and Mantle Dynamics workshop in Oléron, France and presented a paper about the Lusi mud eruption (Indonesia) at the IUGG/IAVCEI meeting in Prague. In the coming year, I’m hoping to make progress with students on a study of heat transport and groundwater flow in the Harney Basin (Eastern Oregon), new models of cryovolcanic processes on Jupiter’s moon Europa, and finish up a couple of papers about mantle convection and Large Igneous Provinces.
Alex Ruzicka
In the past year some students working with me graduated and advanced, including Karla Farley (B.S. with Honors 2014), Kristy Scheper (M.S. 2014), and Kat Armstrong (M.S. 2014). Kristy is now in the Ph.D. program and Karla is working on her M.S. New M.S. student Mike Ream arrived over the summer and spent much of his time working in the lab.

My research has been on 3 main tracks: 1) work on an externally funded project concerning shock deformation of olivine in chondritic meteorites (with faculty Rick Hugo), 2) work on a different externally funded project to study the origin of large igneous inclusions in chondrites (with students Kristy Scheper and Katherine Armstrong, and with international collaborators), and 3) ongoing classification work of newly-recognized meteorites in PSU’s collection (with students and faculty Melinda Hutson). The shock deformation project was enlarged part way through by acquisition of a state-of-the-art EBSD (electron backscatter diffraction) detector for PSU’s “Geology” SEM.

No newsletter blurb would be complete without mention of the Cascadia Meteorite Laboratory (CML). We gratefully appreciate public donations to the CML, which funds student projects and outreach activities by Dick Pugh, and which allow us to enhance and grow PSU’s meteorite collection and make scientific discoveries along the way. The collection started with one meteorite in 2003 and now numbers about 850 different meteorites, grown through grassroots support. Thanks to all for making this a success.

Michelle Stoklosa
This past year I have continued to teach introductory geology courses in the department, as well as sophomore inquiry classes for University Studies. I also teach those more fossil-focused courses such as Historical Geology and Life of the Past. I have been excited to have a few more students in our department show interest in researching fossils. One student, Erica McConkey, investigated the drivers in the fossil preservation through Research and Conference credits. Another student, Ryan Draughon, has decided to begin a Senior Thesis project studying Pennsylvanian rocks in southern New Mexico. I was pleased to be awarded a travel grant from the PSUFA so that I could travel there this past summer and measure stratigraphic sections with Ryan. This area could prove to be a great place for more students to investigate questions about past life and environments, and I look forward to spending more time there.

Martin Streck
Being new in the chair position for a little more than a year, I can certainly tell that juggling chair’s duties, teaching, graduate students, and own research is an art that is difficult to master or almost impossible. Good that I had just returned from a year long sabbatical in Germany prior to that. Despite these challenges, I have enjoyed my new role as chair particularly the part that allows me to meet faculty and administrators from across campus. Talking about graduate students and research, we are going strong in our efforts to understand mid-Miocene rhyolite volcanism of eastern Oregon and how it relates to mafic magmatism of the Columbia River Basalt province. The longer we study these rhyolites, the more temporal, spatial, and petrogenetic connections can be made between rhyolites and magmas of the Columbia River Basalt. My graduate students working on individual tuffs or silicic centers are a great help and I have enjoyed sharing my excitement for field work in a magnificent landscape – although with bad roads – and subsequent interpretation of geochemical and mineralogical data.

Ashley Steig
I am enjoying my first fall on the PSU campus. I am organizing a new field trip class, Hazards in the Portland Basin, and will be teaching Earthquake Geology and Field Methods this year. I look forward to the field component of these classes, and have exciting projects planned investigating active faults in Oregon. I had the great pleasure to meet incoming undergraduate students during a Viking Week Geology hike, and organized PSU’s participation in a world-wide earthquake drill known as the “Great ShakeOut” on 10/15. My research focuses on answering questions about the study of active faults and folds, earthquakes and associated hazards, earthquake recurrence, estimating paleo-earthquake magnitude by relating observed deformation and earthquake timing between paleoseismic sites along a fault, and earthquake triggering. I am currently interested in whether recurrence intervals for forearc faults in the Pacific Northwest are intrinsically linked with the long recurrence of Cascadia subduction zone events. I am also working on paleoseismic projects in California and Oklahoma. New graduate student Kris Hornsby will be working with me on a related project for his MS thesis. I am presenting an invited talk on my research at the GSA Annual Meeting this fall. This will be my first trip to Baltimore, Maryland!