March, 2013

Humboldt Geology News

Happy Spring!

Greetings from the Chair

Brandon Schwab is now the Chair of the Department of Geology.

I am pleased to lead off the latest installment of our newsletter. This has been an eventful year for the department and promises to end eventfully with our first ever Centennial Alumni reunion on May 25th. SAVE THE DATE and join us in Arcata. More details later in the newsletter.

We’ve had some real ups and downs in the last several months. The lowest was the loss of John Longshore who passed away in October. John was a tremendously positive influence on innumerable geology students over the years. He was an inspiration to me and I am glad to have known and worked with him. We miss him dearly. In more optimistic developments, we are looking forward to hiring a new full-time temporary lecturer in the coming months and will be presenting our best arguments for a new tenure track hire (or two) in the next month. Keep your fingers crossed!

I am proud to say that our geology students have been the dominant users of the college’s new SEM. Our enrollment is growing and we are looking forward to a robust future. Higher education is undergoing an incredible amount of change at an incredibly rapid pace and we are doing all we can to ride that wave. I am positive about our future and thank you all for your incredible support. Keep it up—and please consider us in your charitable giving!

Since our last update, we have been fortunate enough to bring Laurie Marx into the department as Coordinator. I cannot convey how great it is to have her here. She (and Steve and Colin) make my life SO much easier than it could be.

News from HSU Geology Department:

- Faculty & Staff Updates
- Burke Award
- Alumni Reunion – May 25, 2013
- Passing of John Longshore
- Program Support
Administrative duties seem to take up a larger and larger part of my day, but I still look forward to teaching our ‘hard rock’ courses and am excited about our spring break trip across the Great Basin and sharing field camp with Mark this summer. The ExPet lab is humming away with undergraduate and graduate students’ projects. One of those students (Erin Quinn) presented his Senior Thesis work at AGU in December.


Send us a note (geology@humboldt.edu) and let us know what you are up to. We would love to hear from you!

Faculty & Staff Updates

Bud Burke

We are pleased to have the first-ever named scholarship in the department, the Bud Burke Geology Scholarship! This well-deserved honor supports one student a year who is working on a geomorphology- or Quaternary geology-related project. The generous donors have committed to funding the scholarship for five years at $5,000 per year! This is currently the largest scholarship on campus. We are looking to build this fund so that we can offer the scholarship long into the future.

The first Burke Awardee is Jason Padgett, a MS student working with Harvey. Jay graduated with an Oceanography degree from HSU and has also completed the coursework for a Geology BA. His Master’s thesis is on deformation of marine terraces in coastal Humboldt using GIS-based analysis of LiDAR imagery. He presented the first part of this work at AGU in December. That’s Jay to the right in his ubiquitous white tee shirt.
Hello Laurie!

Laurie Marx (aka L6) Our AWESOME Department Academic Support Coordinator.

Hi,
The time has gone so quickly since I joined the Geology department last March--there must be a lot of fun going on in the basement of Founders Hall. I feel very fortunate to have landed in a department where I am excited about the subject, and feel very comfortable with the exceptional faculty, staff, and students. My husband and I moved to the area in October of 2011. We’re both native Michiganders, but have been visiting the Humboldt area since 1997. I have worked as a bookkeeper, legal secretary, financial analyst, buyer, engineering and project coordinator for Ford Motor Co., and a Graduate Program Manager at University of Michigan (Anthropology). I love working in the academic setting, and being part of the Geology department is a great, big BONUS! So very, very happy to be here 😊

Lori Dengler (aka L4)

It’s been wonderful to fully pass off the chair duties to Brandon this year. I’m having no chair withdrawal pangs. It does mean teaching a bit more, which is harder but far more rewarding. In Fall 2012, I revisited my earliest years at Humboldt by teaching a Scanning Electron Microscopy course. As a new faculty member over 30 years ago, I teamed up with biologist Bill Allen to acquire Humboldt’s first SEM. For a couple of years we taught an SEM class for geologists using it and I like to think it assisted Janet Slate’s and Eileen Hemphill-Haley’s careers (and a few others of you?). But the instrument was not terribly useful for earth science applications and a real clunker to use. Thanks to another collaboration of biology and geology – this time lead by Brandon and biologists John Reiss and Casey Liu, we’ve got a beautiful new instrument. It’s easy to use (digital – no film), pumps down oh so quickly (turbo pumps are so much nicer than diffusion pumps), and has an EDS (Energy Dispersive analysis System) that makes it actually useful for geology. I had 16 students in the inaugural class using the new instrument. We were all learning it together. The group developed a student-operating manual. Each student also completed an independent research project. The topics were diverse, ranging from microfossil and sand grain morphology to extremophiles, clay mineralogy, and the chemistry of lab-tested samples. If you visit in May, you will get to see the final posters on the Founders basement hallway.

I’m still busy with tsunamis, although thankfully there have been no catastrophic tsunami events since Japan in 2011. I revisited Japan in January 2012 (World Bank trip) and again in February for a UNESCO one-year Lessons Learned retrospective and field trip. It was impressive to see how much clean-up had occurred since my visit the previous April. But almost no rebuilding had commenced and the areas hit by the tsunami are now deserted barren wastelands. The Tohoku tsunami is unusual in that it destroyed most structures within the inundation zone, opening a debate as to how to rebuild – whether to implement new zoning restrictions, build artificial high ground, rebuild the sea wall and dikes (and how high). It is a staggering process.
Our tsunami current monitoring project is going well. My grad student Amanda Admire has nearly completed her thesis on tsunamis caught by the Fairhaven dock current meter and her velocity estimates from video analysis. She should be presenting her thesis at the end of the term. Four additional current meters have now been installed in the Humboldt Bay region as part of NOAA's PORTS installation (http://tidesandcurrents.noaa.gov/ports/index.shtml?port=hb) and the current meter for Crescent City should be hitting the water in the next few weeks. We will get lots of data when the next tsunami hits – I'm looking for another solid grad student to continue Amanda's work. She will be a hard act to follow.

I'm very pleased that our participation in California's Earthquake Country Alliance (the folks that bring you the ShakeOut) paid dividends this year. The Redwood Coast Tsunami Work Group was awarded two $7,000 internships to support students on earthquake/tsunami risk reduction projects. The first two internships went to graduate student Dawn Albrecht who is working on reducing risk in vulnerable populations as part of her Masters project for the Environment and Community program and the second to geology undergrad Claudia Velasco who is developing GIS layers of the tsunami effects in Crescent City from 1964. Claudia is also busy translating much of our outreach materials into Spanish.

Recent publications:

Eileen Hemphill-Haley (EHH) - micropaleontologist

Eileen has been working up and down the coast looking for evidence of paleotsunamis. Three current projects include:

1. Paleotsunami Evaluation field project

HSU Geology is under contract with the USGS to look for field evidence for past inundation by tsunamis at localities along the length of California. Since 2011, HSU Geology researchers (EHH, Harvey Kelsey) and students (Nick Graehl, Dylan Caldwell, Casey Loofbourrow, and Michelle Robinson) have collaborated with California Geological Survey and USGS scientists to evaluate 16 locations between Crescent City and the Santa Barbara coast. This is the first concerted effort to search for tsunami deposits along the California coast south of Humboldt Bay. Although tsunami hazards for Northern California, associated with earthquakes in the Cascadia subduction zone, have been known for some time, relatively recent computer modeling shows that the entire California coast is at risk from tsunamis – but from distant sources across the Pacific, particularly the central Aleutians subduction zone region. Finding evidence for past tsunamis is challenging enough in areas in undisturbed, natural settings, and where the land level subsides during an earthquake to provide accommodation space for tsunami deposits to be captured and preserved. It is all the greater of a challenge to find tsunami deposits in localities that not only have been impacted by past land
use, as is typical for most of coastal California, but are also located on a stable coast – not affected by the
distant earthquake that triggered the tsunami – where preservation of deposits is much less likely. The field
efforts for the project include coring wetland localities (FIGURE above – Harvey et al in marsh), creating high-
resolution GIS maps, and sampling for radiocarbon, radionuclides, microfossils, and sedimentological analyses.
Even the HSU Student Health Center radiology lab has pitched in by providing X-rays for discerning important
changes in core lithologies. There are a number of interesting results of the project to date, to include
identifying the 1946 tsunami deposit at Half Moon Bay (FIGURE of diatoms below). This event, which caused
extensive damage to what was then a small fishing village at Half Moon Bay, was an effect of a (relatively
small!) M 7.8 earthquake in the central Aleutians region.

2. Tsunami Deposits Database for California
Amanda Admire and EHH are near completing a detailed database of tsunami deposits in California. The work
has taken more than a year, and is the first such database of its kind for California, unique in its level of detail as
needed for research. It includes complete information for every documented record of paleotsunami deposits
in the State. The majority of the information in the database to date consists of past research by HSU faculty
and students!

3. Another HSU Geology / USGS collaboration: grad student Casey Loofbourrow is pursuing an interesting
climate-related research project, using diatoms to document changes in climatic conditions and land-sea
interactions in a fjord in southeastern Alaska. Casey’s work will be part of a multivariate study of climate
variability on a range of time scales, incorporating a number of geochemical parameters to compare with the
fossil record.

Mark Hemphill-Haley (MHH)
I have now been teaching at HSU for 12 years. It is amazing
how much younger the students are getting each year, at least
it seems that way...

In the past couple of years I’ve tried to bring the focus of my
students’ senior and master’s thesis research back to the North
Coast. I have one master’s thesis student, Paul Sundberg, who
is wrapping up his work mapping, in detail, the area between
Fieldbrook Valley and McKinleyville. He is using LiDAR high-
resolution topographic data to assess the deformation of
marine terraces between the McKinleyville and Trinidad faults. 
Another graduate student, Melanie Stevens, is using InSAR
imagery to analyze slope movement in northern California. Sylvia Nicovich is just getting started with her MS research to map the southern Little Salmon fault near Root Creek and the Van Duzen river.

Of course, undergraduate senior thesis research at HSU remains strong. I have the pleasure of working with several great students. Bobby Voeks, is using LiDAR data, aerial imagery and is collecting RTK GPS data to map the migration of the mouth of the Mad River and analyzing tidal, surf and discharge data to assess the causes of rapid migration of the river mouth. Jessica Vermeer is using LiDAR data to map the northwestern extent of splays of the Fickle Hill fault and is creating a geologic map of the Arcata Bottoms. Ian Pierce is in the early stages of using aerial imagery and RTK mapping to document changes to Thompson Glacier in the Trinity Alps.

I continue work on an extended project with former alumni Jay Patton, Tom Leroy, Todd Williams and Jay Stallman and their non-profit research group Cascadia GeoSciences. Along with graduate and undergraduate students from HSU and University of Oregon we conducted a 1st order leveling survey around southern Humboldt Bay. We have been loaned scanning level equipment from Ray Weldon at UO to continue leveling in the Humboldt Bay and Trinidad area to tie into tide gauges and evaluate relative sea level change.

As I mentioned in the last letter, I had the opportunity to work with emeritus professor Gary Carver for 2 summers in the Yukon characterizing faults along a transect from Alaska to Alberta. It was a great experience working with Gary again. We spent many hours in helicopters and on the ground. Yes, the man can still climb a mountain like a goat!

I hope to get a chance to see many of you at the reunion in May. It will be great to swap stories from field camps and field trips from the past!

Sue Cashman

One of my activities in the past several years has been helping to plan and implement HSU’s new Geosciences major. That planning has included guiding the first two “Geosciences senior project” classes, and the capstone experience for this degree. Geoscience senior project students have now completed two service-learning projects, applying their academic training while working with non-profit and government agencies in the community. The fall 2011 class collaborated with the director and academic director of the Humboldt State University Natural History Museum to develop activities linked to required earth science curriculum topics for California elementary school students. Their projects got a real-world test at the first-ever “Earth Science Day” open house at the museum. Materials developed for Earth Science Day are stored at the museum and are available for use by area teachers. The fall 2012 geoscience capstone class worked with geologists, interpretive staff, and GIS specialists at Redwood National and State Parks (notably, with HSU geology alumna Vicki Ozaki) to do several geology-related projects for the parks. Projects ranged from preparing geology brochures for hiking trails to analysis of stream crossings using LiDAR-derived GIS data and creating a digital geologic map of Redwood National and State Parks.

I’m continuing my research interests in convergent margin tectonics; recently that has entailed collaboration with geochronologist and geodynamicist colleagues at University of Waikato and Penn State University. We’re combining observations from the geology (e.g. the La Grange fault) with low-temperature geothermometry from plutons in the footwall and hanging wall of the La Grange fault and with thermal modeling to develop a picture of the Neogene evolution of the Klamath Mountains Province.

Sue was also honored as a 2012 Lithosphere Exceptional Reviewer by GSA. This is deserved recognition by the editors of an important journal.
William Miller III

William continues to teach the department’s paleontology and sedimentary geology courses. He will be offering a paleoecology course in the fall.

William was an invited speaker at the national GSA meeting in Charlotte, NC last fall. When not teaching, he continues to pursue those “weird trace fossils” in the Paleozoic succession of the Valley and Ridge Province, primarily in southwestern Virginia.

Daniel O’Shea

I am having a great time teaching a section of the Earthquake Country course this Spring ’13 semester. It has been a really interesting semester so far, with plenty of earthquakes, a spatter of volcanic eruptions, landslides, floods, tsunami and an occasional bolide or deadly sinkhole. It’s a great way to let the next generation learn about the planet they are about to inherit, and think about getting a degree in Geology. Many thanks to Brandon, Laurie, Steve, and Colin who have the department running like a “well-oiled machine”. I look forward to seeing everyone at the HSU Geology reunion at the end of May.

Steve Tillinghast

Steve (left image with Mark “working” in the background) continues to keep everything running in the department and will be heading back to the Roberts Mountains for another stint as head Field Camp TA this summer.

Colin Wingfield

Colin (right image in the study tent) continues to be our fearless field camp and stockroom manager.
Other staff news.

Andre Lehre is in his second year of the Faculty Early Retirement Program (FERP) and is teaching spring semester. Ken Aalto recently gave a talk in the department on the Great Charleston earthquake of 1886. Don Garlick frequents the colloquium series and student thesis presentations. Harvey Kelsey and his students continue to be very active in neotectonics research in the Pacific Northwest and beyond. Bob McPherson has retired from teaching, but is still working with students and will be helping us with reunion festivities.

John Longshore

Dr. John Longshore, HSU Emeritus Professor of Geology; 1936-2012

John Longshore, beloved professor, husband, father, and grandfather, passed away at his home on October 23, 2012 after an extended battle with cancer.

John came to HSU in 1965 and together with John Young and Frank Kilmer founded the Geology Department at Humboldt State College in 1966. John led the early grant writing efforts to secure the first analytical tools (petrographic microscopes; atomic absorption, x-ray diffraction & x-ray fluorescence spectrometers) in the department.

In 1984, John was awarded the HSU Outstanding Professor Award in recognition of his exceptional teaching and commitment to his students.

Throughout his career, John completed a long list of field mapping and geology consulting projects throughout the western US and inspired countless students in their development and pursuit of their passion for geology.

John entered the Faculty Early Retirement Program in 2000 and taught half time until 2005. He continued to serve as a Senior Thesis advisor throughout his retirement and returned to teach in the department in spring 2007 to cover for a sabbatical leave.

John’s kindness, patience, high expectations, and love for field geology are paramount in the minds and hearts of all that knew him.

The Geology Department and geology alumni are establishing the “Longshore Field Geology Endowment” to honor John’s dedication to fieldwork and undergraduate geology education at HSU. The fund will support field and capstone experiences for students within the Geology programs at HSU. Contact Brandon or Laurie to learn more about supporting this endowment to honor John’s legacy. Also consider attending the reunion where we can all celebrate John and all things HSU Geology.
Alumni News

REUNION!

Join us for the first-ever “Centennial” reunion of the HSU Geology Department.

We are putting together what we think will be a great event on Saturday, May 25th at the Bayside Grange. Please contact Laurie at geology@humboldt.edu to get on the mailing list, reserve your dinner tickets, and learn more. We hope to see you there!

Want your update included next year? Send us a note! We’d love to hear from you and whether you are willing to share your news in the next installment of the HSU Geology Newsletter.

Final Note
The greatest part of working in our department continues to be our students and alumni. Thanks for being part of our lives. Keep in touch! Without your support, we could not do what we do. Thanks for everything!

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