

GEO-TIDINGS

Distinguished Alumna Heather Renyck Brings Geoscience Research into the Classroom

Teaching high school science and doing cutting-edge research at the same time might sound impossible, but Heather Renyck (IUP '99) has managed to do it numerous times over the past decade. Heather was invited back to IUP as our 2009 Distinguished Alumna to discuss how she has managed to stay so active in research during her teaching career. She spent the day mentoring future high school science teachers and presenting a public lecture entitled, "Motivating your students and keeping yourself inspired at the same time: professional development strategies for science teachers."

Heather Renyck has taught in a variety of school settings since graduating from IUP, from the glacial plains of Indiana to the granitic mountains of New Hampshire. Her most recent experience came as a member of the NSF-funded "School of Rock" program which allowed her to work as a scientist on the Integrated Ocean Drilling Expedition 321T to the Juan de Fuca mid-ocean ridge.



Heather explained to current IUP students how they can use the internet to discover research opportunities and make connections with other professional earth scientists. She showed us how she incorporated her professional development experiences back into her high school science classroom in order to inspire her students with an interest in the earth sciences.



Heather also shared many of the photographs she has had published as Earth Science Pictures of the Day on a website sponsored by NASA's Earth Science Division and USRA (Universities Space Research Association). Several of her photographs from that site were featured in a book by Dr. John Adam, entitled "A Mathematical Nature Walk" (Princeton University Press, 2009). Congratulations, Heather, on your accomplishments!

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The IUP Geoscience Department Needs You



Every five years, the Geoscience Department conducts a self-study of our academic programs and student outcomes. We like to make sure we're still doing the best possible job of educating future geoscience majors for education, industry and government work. Our last review was in 2005 and some of you may recall getting an emailed questionnaire to help us figure out what we were doing well and what needed to be improved. Based partly on your responses, we just finished remodeling the geoscience curriculum to make it more flexible and to emphasize field work even more than it did before. We'll be sending another questionnaire out soon, but this time it will be automated and filled out online using the Qualtrics survey system, so it should be much easier for you to complete. Look for it to arrive in your email in late January.

... To Provide Feedback for our Five-Year Review!

New Scholarship Fund Established to Honor Dr. Joseph C. Clark

The Joseph C. Clark Scholarship Fund (IUP Foundation Code 0545) was established in Fall 2008 to recognize and honor Dr. Joe Clark's distinguished career and his dedication to the Geoscience Department and its students. This fund will be used to provide annual scholarship awards and support for student-faculty research projects.

As an IUP faculty member from 1972 to 2004, Dr. Clark taught courses in Sedimentary Petrology, Stratigraphy, Subsurface Geology, and Environmental Geology. Many of his students were guided through his mentorship into graduate programs and productive careers as professional geologists. His meticulous stratigraphic research and detailed geologic mapping in the San Andrea Fault Zone in California, in collaboration with colleagues from the U.S. Geological Survey, have contributed greatly to our knowledge of the geology of that region.

Earth & Space Science Education Program Receives Accreditation

The Earth and Space Science Education program, along with all of the other science education programs at IUP, received "Full National Recognition" from the National Science Teacher Association (NSTA). NSTA accreditation proves that our program meets the highest national standards of procedure, pedagogy and earth science content. Graduates of this program are certified to teach Earth and Space Science in grades seven through twelve and go on to teach in schools in Pennsylvania and many other states. NSTA certification is fully accepted by NCATE as part of its larger review of teacher education and training at IUP.

Congratulations and many thanks go to **Dr. Ken Coles** for spearheading the effort over several years to gather evidence and put together the application for NSTA review. His work has created a strong foundation of assessment that we can build on for our five-year review and our new geoscience curriculum.

FIND US ON FACEBOOK!

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We've been having a hard time lately getting our alumni list emails through company firewalls and spam filters, making it harder to publish alumni news in a timely fashion. To cope with the change to Web 2.0, we've recently created a Facebook page for GeoTidings. Alumni news items recently submitted for publication have been posted in discussions organized by your decade of graduation. These updates can be read by anyone with web access: browse to tinyurl.com/GeoTidings

The screenshot shows the Facebook interface for the "GeoTidings: IUP Geoscience Alumni Newsletter" page. At the top, there's a sign-up button and a message encouraging users to connect with the page. Below this, the page cover photo features two white vans parked in a desert landscape. The main content area includes a "Wall" tab with a post from "GeoTidings" about the newsletter being on Facebook. It also shows a "2005 Southwest Field Trip" section with three photos of people in a desert setting. On the left sidebar, there's an "Information" section with details about the club's location (302 E Walk, Indiana, PA, 15705) and a note about cross-posting news from their website.

In addition to GeoTidings, the IUP Geoscience Club has also created a Facebook page to communicate with its student members at IUP. Alumni are welcome to join to keep up with club news and fund-raising activities.

If you become a fan of the IUP Geoscience Club page, you'll get occasional announcements about club and department events as well as notices when new Geoscience clothing and calendars featuring alumni geology photos are sold.

We hope you enjoy our ventures into new social media!

(be sure to use the caps!) and you'll be able to catch up on alumni news, department events and download photos from many past field trips .

Alumni who do have their own Facebook accounts can post their own news and photos by becoming 'fans' of the page. (Otherwise, just email your news to kcercone@iup.edu and I'll post it for you.) We hope this will allow your news to get out more quickly and also allow you to connect with old friends and network with other IUP Geoscience alumni.

The screenshot shows the Facebook interface for the "IUP Geoscience Club" page. The cover photo features a shovel and a pickaxe crossed over each other. The main content area includes a "Wall" tab with several posts from the club. One post from December 16 at 3:15pm encourages members to attend the next club meeting. Another from December 11 at 8:18pm announces a mineral sale. A post from November 15 at 11:57am promotes T-shirts and hoodies. A post from November 9 at 11:36am announces calendars available for \$12.00. The sidebar on the left shows a list of fans and favorite pages.

FACULTY UPDATES

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Jon Lewis

Dr. Jon Lewis continues research on great earthquakes following his participation late in 2007 on Expedition 315 of the Nankai Trough Seismogenic Zone Experiment (Google 'Nantroseize' for more information). He is a coauthor on a new research article in Geophysical Research Letters that describes a surprising result of their onboard research, horizontal extension of the accretionary wedge.



Jon also has two students, Surinder Tara ('10) and Matt Harding ('12), currently working with core samples and data collected during Expedition 315. Surinder is working with core-scale fault data to evaluate variations in strain geometry with depth, and Matt is working to characterize dewatering 'vein structures' that may preferentially become reactivated as normal faults.

Jon also participated in a multinational planning workshop on the future of ocean drilling in Bremen, Germany. This multidisciplinary, international community meeting defined the scientific research goals of a new ocean drilling program that is expected to replace the current Integrated Ocean Drilling Program (IODP) in late 2013. Two drilling ships and a multipurpose drilling platform are currently used by scientists from more than two dozen countries. Following this meeting, Jon was elected by his peers to serve a three-year term as one of 12 members on the U.S. Advisory Committee for Scientific Ocean Drilling (USAC) to help plan U.S. participation in the Integrated Ocean Drilling Program. (Editor's note: this would explain why Steve Hovan has been particularly nice to Jon lately!)

Jon has supported several undergraduate student research projects through grants over the past years. Currently, Ellen Lamont ('10) has been working with him on an NSF-funded study of earthquake-related deformation in the rocks of central Taiwan. Dr. Lewis presented the results of their research at the national meeting of the American Geophysical Union (AGU) in San Francisco on December 18, 2009. Lamont's inverse models of earthquake data reveal that the southern termination of the Hseuhshan Range is experiencing active horizontal stretching parallel to the mountain belt. This stretching

appears to be accommodated by faults that allow the mountain belt to collapse in response to gravity and to shear horizontally in response to tectonic forces. These findings shed light on what happens when the lower plate in a tectonic collision has an irregular shape inherited from when the oceanic rocks adjacent to the Chinese coast were initially formed. The new year will find Jon and Ellen conducting two weeks of field work in the Hseuhshan Range with collaborators from the University of Connecticut.

Katie Farnsworth

Our newest department member, Katie Farnsworth won the IUP Research Institute New Investigator Award for 2009 and was the featured speaker at Sigma Xi this past fall as well. Katie co-authored two chapters in *Earth Science in the Urban Ocean: The Southern California Continental Borderland*,



a special edition of GSA Bulletin. The two chapters, written with her USGS colleague Jon Warrick, address the sources of sediment and how that sediment is then dispersed along and across the continental shelf in that region. Katie also coauthored a manuscript, "Climatic and Anthropogenic Factors Affecting River Discharge to the Global Ocean 1951–2000," which was recently published in *Global and Planetary Change*.

Along with Jon Lewis and Michael Poage, Katie participated in a national workshop on Building Strong Geoscience Departments held at the College of William and Mary. Geology professors from across the country created plans to strengthen their own departments as well as the field of Geosciences as a whole. This workshop was funded by the National Science Foundation and sponsored by the National Association of Geoscience Teachers, American Geological Institute, Geological Society of America, and the American Geophysical Union.

Yvonne Branan

This past summer, Dr. Yvonne Branan joined the board of the Evergreen Conservancy, a local nonprofit organization working to advance the preservation of natural, cultural, and historical resources in Indiana County. Yvonne has taken an active role, serving as secretary of the board, as well as attending the Pennsylvania Land Trust Association Conference in State College, Pa.

FACULTY UPDATES

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John Taylor

John Taylor enjoyed a less hectic Fall 2009 semester than in 2008, when he wondered daily whether he would survive his service as co-curator of the Lost Worlds exhibit

in the University Museum and co-coordinator of the department's 40th Anniversary celebration. The rest of the 2008-2009 academic year disappeared in a blur after the magical reunion weekend in early October, as all his time outside the classroom was consumed by grant proposals, five different manuscripts and departmental committee work. Aside from two days in the Shenandoah Valley with John Repetski (B.S. '69) in October, and a week in New Mexico with Jim Loch (B.S. '83) in March, he's been unable to break loose for any fieldwork (or to find any giant mutant sopapillas to eat, as shown above.)

John did sneak off with brother Wil Taylor (B.S. '82) for an extraordinary birding adventure (and geologic pilgrimage to the Himalayan suture) in Bhutan and northern India in late May 2009, where his infamous powers as a rain-maker were put to the ultimate test. Could even he bring rain to India weeks before the monsoons were due to arrive as they always do, perfectly on schedule in early June? Well, you can ask the folks in Bhutan, provided they've recovered from the arrival of the remnants of Typhoon Aila, and the worst flooding the country has suffered since 1968. Or you can ask the residents of Delhi, if they've gotten over the shock of the "freakish" occurrence of clouds and rain two weeks before the end of the dry season.

This past summer, John managed to squeeze in a talk at the North American Paleontological Convention (NAPC) in Cincinnati as well as an NSF-sponsored workshop at Cornell University on teaching Paleontology. August fell prey to other manuscripts, but also allowed a pleasant family vacation to southern Virginia. He is optimistic that his sentence in "manuscript hell" is nearly over and he will be able to return to the field in the Valley and Ridge sometime in 2010. The spring semester is looking a little less cluttered (at the moment) than last, when he contributed an evening presentation to the Lecture Series that accompanied the museum exhibit, "A Walk Through Time: Pennsylvania Coal Culture, Featuring the Rochester & Pittsburgh Coal Company Collection", as one of five talks (all different) he agreed to give over six weeks last fall.



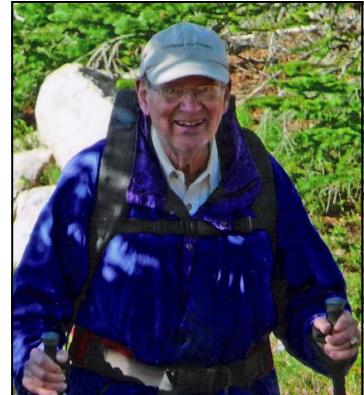
Steve Hovan

Dr. Steve Hovan took a well-deserved sabbatical in 2009 and joined the crew of the Joides Resolution. He reports that, "Our expedition (Exp321) was the last of 4 expeditions (I've been on 3 of them) to recover a complete Cenozoic record of equatorial sedimentation. This last expedition occurred during May and June where we recovered highly expanded Pliocene and Miocene sections. At our last site, U1338C, we also set the new world record for deepest continuous piston coring 414.4 meters below seafloor! This fall I'll be heading to the core repository to subsample the cores and return to IUP with about 1000 samples. Together with colleagues in Korea and Japan, we'll work to identify eolian dust sources and patterns of deposition to gain a clearer picture of how equatorial wind systems have influenced climates." In other news, Steve and Amy McCunn were married this past summer at a lovely outdoor ceremony held at the Rustic Lodge in Indiana. After a honeymoon in Italy, Steve and Amy somehow managed to merge two house's worth of worldly goods into one actual house. We're still not quite sure how they managed that!



Joe Clark

Together with his colleagues from Stanford and the USGS, Joe presented a paper, "Significance of U-Pb zircon ages from the Pescadero and Cambria Felsites, west-central California Coast Ranges" at the recent Annual Meeting of the Geological Society of America that was held in Portland, Oregon. Joe also recently attended the 74th Annual Field Conference of Pennsylvania Geologists, joining former IUP students John Harper, who was editor of the outstanding guidebook, Gary Ball, John Berry, and Doug Stewart. This two day field conference was concerned with the history and geology of the oil regions of northwestern Pennsylvania.



FACULTY UPDATES

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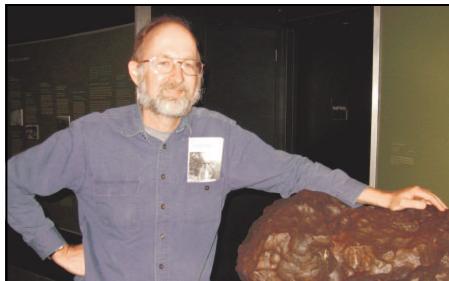
Michael Poage

Dr. Michael Poage continues his research in the Dry Valleys of Antarctica but took a year off from traveling there to work on a manuscript summarizing the distribution of soil geochemistry in Taylor Valley and its relationship with soil biology. In addition, he is collaborating with a faculty member in the IUP Biology Department to study Cenozoic climate change in Mongolia using the stable isotopes of fossil tooth enamel as a climate proxy. Michael has overseen the acquisition and implementation of an Inductively Couple Plasma Optical Emission Spectrometer for department use. In Spring 2009, three IUP students (two Geoscience, one Anthropology) ran their senior project samples on the ICP-OES, and we look forward to incorporating its analytical capabilities into future student research as well as majors-level geoscience classes. Over the summer, Michael traveled with Jon Lewis to the San Juan Mountains of southwestern Colorado to develop a new regional field course near Durango and Silverton. Having overseen the successful restructuring of the department curriculum over the past several years, he is currently teaching the very first offering of our new introductory course for majors, GEOS 201 Foundations of Geology.



Ken Coles

Dr. Ken Coles has taken advantage of conquering accreditation, tenure, and promotion to Associate Professor by renewing his research efforts. He attended the annual meeting of the International Occultation Timing Association in Florida in November, 2009. While there, he participated in successful measurements of the asteroid (234) Barbara as it passed in front of a magnitude-eight star. Not only was this his first successful asteroid measurement in three years of attempts; he did it with a "mini" telescope assembled from a pair of twenty-dollar binoculars, several plastic plumbing parts, and lots of electrical tape!



Ken is also continuing a collaboration with astronomers in Australia and the U.S. to convert old lunar occultation reports from the 1960s and 1970s to digital form. These reports, which fill a filing cabinet, document events where mountains along the Moon's edge briefly blocked the light from a star. Data archiving is not often in the headlines, but this effort will help confirm measurements of the elevations on the Moon and the proper motions of stars over time.

Teaching presents several exciting new opportunities. Ken will join Karen Rose Cercone in teaching SCI 103, Fundamentals of Earth and Space Science for elementary teaching majors. Ken did stints teaching First Grade and Third Grade some years ago, so he will contribute some of his favorite science activities. Ken is also pleased that his offer of assistance helped persuade John Taylor to offer the Newfoundland trip in 2010 after several years out of the trip rotation. This three-week trip visits the outstanding geology seen by many alumni in past years, and will be the first summer trip linked to a Spring-semester seminar course as part of the Department's new curriculum. Ken and John practiced their trip skills on a brief visit to the American Museum of Natural History in New York City in May, 2009, where John Taylor (who knew the name of every single dinosaur specimen) consented to a short detour to look at the meteorites. Ken is shown standing next to a piece of Canyon Diablo, the meteorite that created Meteor Crater in northern Arizona.

Since Ken is education coordinator for the Department, he gets less contact time with the geology majors than the other faculty, but in Spring of 2010 he will work with geology major Jason Ames on a senior research project to classify crater rays on the Moon. Can an IUP field trip to the Moon be far behind?

Karen Rose Cercone

In addition to launching GeoTidings on Facebook and learning how to design surveys with Qualtrics software, Dr. Karen Rose Cercone maintained her department reputation as a geek by streaming lectures over the internet on Wimba Live Classroom this fall. Open-ended questions were assigned via computer upload and individual students could type in their answers, even when they were joining in from locations as distant as the Grand Canyon and Florida. Karen Rose plans to use this technology for her next offering of Hydrogeology in Fall 2009. Anyone who'd like to take the class over lunch from their office desk is welcome!

UPCOMING EVENTS & INFORMATION

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MARCH 14 - 16, 2010: REGIONAL GSA (BALTIMORE)

Several IUP faculty and many current students will be attending this joint meeting of the Northeastern and South-eastern GSA sections. Plans for an informal alumni dinner will be posted on Facebook.

APRIL 30, 2010: GEOSCIENCE DAY

Senior research presentations will be held in the planetarium in the morning, with a featured alumni talk by **Dr. Dorothy Merritts** of Franklin & Marshall College. The Geoscience Banquet will be held the same evening at the Rustic Lodge in Indiana. Alumni are always welcome! Check our department website and the Facebook portal for information.

AUGUST 1 - 15, 2010: THE GEOLOGY OF NEWFOUNDLAND

John Taylor and Ken Coles will lead a group of intrepid undergraduates north of the border on this year's summer field course. Updates will be posted to our department website as the group travels.

FALL 2010: HYDROGEOLOGY ONLINE COURSE

This coming fall, Karen Rose Cercone will offer GEOS 312 Hydrogeology with Wimba Live Classroom technology. This allows students to enroll and participate in real time wherever they are, as long as they have a high-speed internet connection. Email kcercone@iup.edu for days and times if you're interested.

MARCH, 2011: REGIONAL GSA (PITTSBURGH)

Mark your calendar for the joint meeting of the Northeastern and North-central GSA sections right in our very own neighborhood. An IUP alumni gathering will again be part of the fun!

Our Alumni Supporters Make All The Difference!

Contributions from generous alumni like **Tom Moore**, **Dan Markey**, **Tom 'PV' Watkins** and **Wendy Straatman** have made it possible for our current Geoscience majors to attend field camps and GSA conferences despite the economic downturn. To make your donation to the general-purpose Geoscience Fund, please put code 4530 on your check and cover letter. To support undergraduate research in specific areas, you can donate to the special funds below:

- **Joseph C. Clark Research Scholarship** (code: 0545): This fund was established in 2008 to recognize and honor Dr. Clark's distinguished career and his dedication to the Geoscience Department and its students.
- **Paul Prince Memorial Scholarship for Research in Oceanography** (code: 0362): The scholarship honoring Professor Paul Prince is used to support students conducting research in Oceanography and related fields.
- **Walt Granata Memorial Scholarship for Research in Geology** (code: 0361): The scholarship honoring Walt Granata is used to support students conducting research in all fields of Geology.

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