



New Faculty Hires for Fall 2018

Dr. Jessica Meyer, currently a Senior Research Scientist with the G360 Institute for Groundwater Research at the University of Guelph, has recently accepted a position as an Assistant Professor in Hydrogeology with the Earth and Environmental Sciences Department. Her research interests are focused on subsurface characterization reaching beyond the classical aquifer/aquitard template to create geologically realistic and hydraulically meaningful models of the subsurface. She is particularly focused on fractured sedimentary rock environments.



Dr. Meyer earned degrees in environmental geology (B.Sc., University of Montana, 2002) and hydrogeology (M.Sc., University of Waterloo, 2005 and Ph.D., University of Guelph 2013). In addition to her research experience, she has 14 years of experience managing large multifaceted field based research projects at industrial sites. She worked as a research project manager for Dr. Beth Parker and Dr. John Cherry at the University of Waterloo (2005-2008) and the University of Guelph (2012-2013) where she helped to advance high resolution field characterization methods, co-developed a relational database system designed to facilitate the collection and management of high resolution field data sets, and managed research activities at a contaminated sedimentary rock field site.



Dr. Meyer will be joined by her husband, Dr. Ben Swanson, who has accepted a three year Visiting Assistant Professor position with the department to teach Introductory Earth and environmental courses. Dr. Swanson earned degrees in geosciences (B.Sc. and M.Sc., University of Montana, 1996 and 2002) and geomorphology (Ph.D., University of New Mexico, 2012). Dr. Swanson has been working at Inter-Fluve, Inc. in

Madison, Wisconsin, since 2013 as a fluvial geomorphologist conducting river and stream analysis and design. Prior to that he worked as a geomorphologist at Parish Geomorphic in Mississauga, Ontario assessing stream geomorphology for managing, restoring, and protecting urban channels.

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Faculty Profiles

David Peate, Professor

As a geochemist, my research involves chemical data, focusing primarily on igneous petrogenesis – understanding the origins of volcanic rocks. Most of the data are obtained using instrumentation based in the Department of Earth & Environmental Sciences (ICP-MS, electron microprobe). My latest NSF-funded research project "Evaluating mantle and crustal processes in off-axis volcanism on Iceland" aims to understand why there are active volcanoes along the Snæfellsnes Peninsula in western Iceland, more than 150 km from the plate boundary [Snæfellsjökull, the largest volcano there, is the entrance to the "Center of the Earth", at least according to Jules Verne!]. Last summer, I took my two graduate students (Jacob Siebach and Alex Maruszczak) for three weeks of field work to collect samples for their projects. Last spring, I joined IODP Expedition 368 and spent two months at sea in the South China Sea, drilling into the rifted margin to determine how this marginal sea formed. As director of the ICP-MS trace element analysis facility, I get involved in diverse projects with scientists from other disciplines. Recently this has included projects on issues with nanoparticles in the environment with researchers from the College of Public Health, Chemistry, and Environmental Engineering, and analysis of glass samples for CSAFE, a Forensic Statistics group at Iowa State University.



I teach a variety of classes that include Elements of Geochemistry, Geochronology, and Analytical Methods, and I also teach Igneous & Metamorphic Petrology with Tom Foster. Together with colleagues in Astronomy and Biology, I helped to develop an interdisciplinary general education 'Big Ideas' course targeted at freshman non-science majors called "Origins of Life in the Universe". This is a "flipped" class that focuses on collaborative active learning strategies in the classroom together with demonstrations, rather than just lecturing, and it has proven to be a successful approach and a fun class to teach. I also regularly teach a First-year seminar class on "Rocks from the Sky: Meteorites and Impact Craters" – a great opportunity to get Ray Anderson to talk about Iowa's Manson impact crater. For Fall 2018, the theme of my Tectonics & Petrology graduate seminar will be "The geological evolution of the South China Sea region", a place that is just as complicated geologically as it is politically.



Jonathan Adrain, Professor

My research interests focus on the evolutionary history of fossil trilobites of all ages. I presently have active field projects on Cambrian and Ordovician faunas of the Great Basin (Utah, Nevada, California, Idaho), the Canadian Rocky Mountains (Jasper and Banff National Parks, Alberta), and western Newfoundland, Canada. I spent seven field seasons in the Canadian High Arctic (Nunavut) with work on Ordovician through Devonian faunas on Cornwallis, Baillie-Hamilton, Bathurst, Somerset, Devon, and Ellesmere Island. In addition to developing basic data by finding and documenting new trilobite faunas and working out their ecological contexts and evolutionary relationships, I study diversity at global levels. Over the past twenty years I've compiled a relational taxonomic database of all known trilobite species (there are about 22,000

of them) and am using these data and other approaches to address a range of large scale questions in paleobiology. Of particular interest are mass extinctions, and the current focus of my lab group is the period of time between the Cambrian Explosion, when all major groups of skeletonized life appeared fairly abruptly, and the Great Ordovician Biodiversification Event, when global diversity roughly quadrupled. It appears that the "lag" between these events was caused by a series of five global, cyclical mass extinctions, proportionally among the most severe of all time. On the editorial side of things, I'm the Trilobita section editor for *Zootaxa*, the "mega-journal" of animal taxonomy and Coordinating Author of the revision of the trilobite volumes of the *Treatise on Invertebrate Paleontology*.

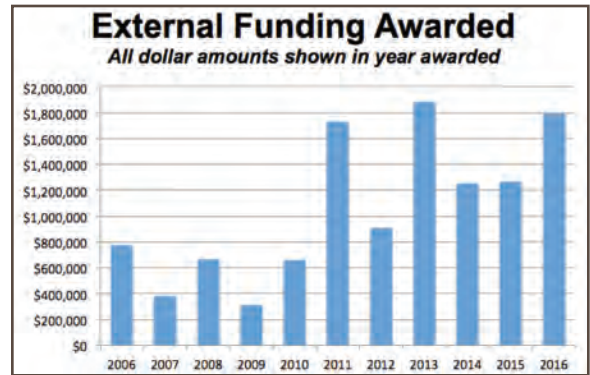
I team teach Introduction to Earth Science (with Ingrid Ukstins) and the new Historical Geology (with Brad Cramer), and teach both face to face and online versions of Evolution and the History of Life. All are required courses for the Geoscience B.S. degree. I teach the graduate level Paleontology Seminar during Fall semester. Beginning Fall 2018 I'll be offering a first year seminar with the topic "The Sixth Mass Extinction: Biodiversity Crises Past and Present". I currently have two M.S. students, Sarah Losso (who as of this writing has been offered and plans to accept admission to a PhD program at Harvard) and Reuben Ng. Both are working on naming and describing sets of new Early Ordovician trilobite species from the Great Basin.

Looking ahead to grow our Department

Recent progress and accomplishments

The EES faculty conduct nationally and internationally recognized research in three broad areas of excellence: global environmental and climatic change, biological evolution, and the geology and resources of the solid Earth. Despite currently being at our lowest number of tenured/tenure-track faculty in over a decade, the Department is on an upward trajectory in every measurable category. Research productivity, national and international visibility, grant and alumni funding, teaching evaluations, student credit hours, graduation rates, time to degree, and student employment/matriculation outcomes are all on a positive course.

External funding for the Department over the period 2006-2016 totals \$11,638,701. This amount includes but is not limited to: \$1,365,793 awarded for instrumentation; \$481,475 for enhancing the Paleontology Repository; \$969,571 for NSF CAREER / NASA Early Career awards to junior faculty; and a \$458,252 NSF grant for Improving Undergraduate STEM education. Faculty have also successfully obtained funding for research and teaching activities from a variety of internal University of Iowa sources, and between 2006 and 2016 this amounted to \$1.2 million. Of this, a total of \$402,991 was for research projects that were funded through the Office of the Vice President for Research – Internal Funding Initiative major grant program (5 awards + a Van Allen Natural Sciences Fellowship), the CGRER (Center for Global & Regional Environmental Research) and CHEEC (Center for the Health Effects of Environmental Contamination) interdisciplinary programs (5 seed grants), and the Obermann Center for Advanced Studies interdisciplinary research grants (3 awards). An additional \$579,065 was cost-share for the NSF-MRI grants for the LA-ICP-MS and electron microprobe instruments. The remaining \$216,332 came from CLAS, ITS, and International Programs, and funded a variety of curriculum improvements, including new pedagogical approaches (e.g. ‘flipping’ a large enrollment class, developing virtual field trips), specific equipment for classes (e.g. GigaPan camera, dinosaur skeleton replicas, portable XRF), and support for field classes in Montana, China, and the Dominican Republic.



The reputation and visibility of the EES Department both within the university and the broader profession can be seen from the numerous awards and honors given to faculty for their research, teaching, and service activities. During the last decade, faculty were awarded various professional society awards, including the SEPM Moore medal for “Excellence in Paleontology” from the Society for Sedimentary Geology (Dr. Budd) and the Rip Rap Archeological Geology award from the Geological Society of America (Dr. Bettis). One faculty member served as the President of the American Quaternary Association (Dr. Bettis), one served as a Distinguished Lecturer for the Mineralogical Society of America (Dr. Gilotti), and one served as a Distinguished Lecturer for the International Ocean Discovery Program (Dr. Reagan). Four of our current faculty are Fellows of the Geological Society of America (Drs. Bettis, Foster, Gilotti, McClelland). Within the college, three faculty have won the Dean’s Scholar award (Dr. Adrain in 2004, Dr. Brochu in 2006, Dr. Peate in 2009) and four faculty hold Collegiate Teaching awards (Dr. Brochu in 2005, Dr. Gilotti in 2010, Dr. Ukstins in 2011, Dr. Peate in 2013). One of our faculty members, who recently retired (Dr. Budd), received the Regents Award for Faculty Excellence (2011) and held a named chair position.

Hiring objectives

Our hiring plan focuses on positioning ourselves at the forefront of 21st-Century Earth and environmental science research. To do this, we plan to prioritize hiring in disciplines that complement our current strengths while expanding towards emerging and future trends in research identified by the National Research Council in reports such as “New Research Opportunities in the Earth Sciences” and similar resources.

The Department intends to ask to hire four assistant professors in four broad areas of our discipline over the next few years: one in geomorphology, one in paleontology, one in solid Earth geophysics, and one in hydrogeology. The biggest challenge with securing new positions and successfully hiring strong candidates is being able to offer competitive start-up packages to new recruits. Average start-up packages in Earth and environmental science disciplines range from \$100k-\$300k. The Department typically is required to contribute up to 1/3 for each hire, therefore fund-raising is a critical component of our strategic plan.

Alumni Perspective

by Bonnie Milne, MS Geology, 1979

What made you competitive in your field?

I chose to follow the path of oil and gas exploration; a very wise choice in the end!

I received an excellent geological education at Iowa, focusing on carbonate depositional systems and stratigraphy; these are foundational learnings that one needs to have under their belt to compete in the world of oil and gas exploration. As such, when I first went to work for Amoco in late 1979, I was assigned to a carbonate rock project in the massive Permian Basin of West Texas. My educational focus helped me work through those first years and I was able to shine in my work which covered the gamut of exploration to operations to development and enhanced recovery projects.



Alongside the technical skills, I have always been a ‘people person’; perhaps that was something looked down upon by more ‘academic’ types but my ability to reach out, question, talk to people and establish lifelong relationships helped me more than I would have initially guessed. I left my work in the Permian Basin to work carbonate projects in Russia with a Canadian team; that involved extensive travel and working with local technical specialists. A facility for language helped me navigate the social and technical world of Russia, the Middle East, South America and West Africa in ensuing years and new assignments were always accompanied by foreign language classes. Being able to technically ‘work’ in another language is critical as much of the data one works with is vintage and specific to the country you are working with. I have always sensed that my ability to communicate to non-Americans gave me an edge on others working in the same area.

At one point in my career, I attended Rice University Business School for much-needed business and analytical training, which further enhanced my ability to compete in the oil and gas world. At that point, the oil and gas industry had veered away from traditional exploration, focusing more on ‘Acquisitions and Divestiture’ work (cheaper to buy it and optimize it than discover it!). This was a very good move for me as the traditional role of a geologist is a ‘scientist’ who works very distant from the world of opportunity identification, business development and financial decision-making. The skills and ensuing project work that I undertook melding **‘technical science and business’** has kept me well paid, and I remain very busy 37 years after earning my MS degree at Iowa.

Along the same line... **What type of preparation would have made your career path easier?**

Clearly, it would have been very valuable to have entered the workplace with good exposure to economic modeling, the market and financial machinations of the investment community and Wall Street. Companies want people who are well versed in not only the ‘hard sciences’, but have a solid understanding of the “business side of things”.

After all, being competitive and making money is why companies are in business!

Bonnie Milne-Andrews resides in Houston, Texas and has been involved in the practice of exploration geology and upstream A&D for 35 years. Bonnie, (a native New Englander) focused on the study of carbonate rock depositional systems at the University of Iowa, where she received a Master of Science degree in geology in 1979. In 2000, she graduated from the Business Management program at Rice University. Bonnie’s professional career began with Amoco Production Company where she worked exploration and development in the Permian Basin, Arabian Basin, Senegal Basin, Sub-Andean Foldbelt, Siberian, Temir and Timan-Pechora Basins of the Former Soviet Union. Bonnie continued her international new ventures work with Swift Energy in 2004, where she worked projects in Australia and New Zealand. Following that, she managed the Geoscience exploration and development for Swift Energy’s Eagle Ford Shale Project at Swift Energy.

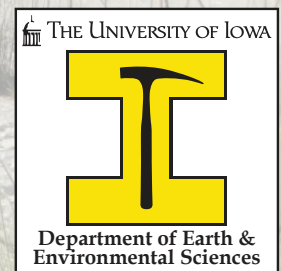
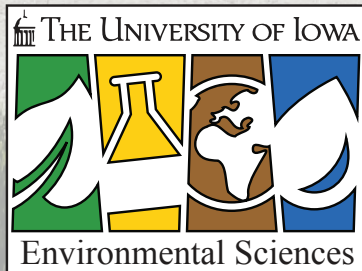
In 2011, Bonnie joined the Hyperdynamics Corporation as Manager of Geological Operations, Deepwater Republic of Guinea, West Africa. Upon the conclusion of that project, she joined Repsol Services USA and worked in North American Business Development. Bonnie joined Accumyn Consulting in late 2015 in the oil and gas practice area of Accumyn Consulting LLC, an independent, Houston-based consulting firm providing authoritative studies, strategic advisory services, and independent testimony for private and public sector industries, government agencies and law firms. She is also currently involved in a domestic U.S. startup project and two enhanced oil recovery technology initiatives. Through the years, she has volunteered with Houston Geological Society, the American Association of Petroleum chairing several committees and acting as Foreman and Delegate to AAPG’s Houston House of Delegates. Bonnie enjoys ‘giving back’ by performing with the International Voices of Houston Choir.

Summer Internship Opportunity

Sanibel-Captive Conservation Foundation

The Environmental Sciences Program, which is administered by the Earth & Environmental Sciences Department, and the Iowa Center for Research by Undergraduates (ICRU) have teamed up with the Sanibel-Captive Conservation Foundation (SCCF) Marine Laboratory to provide paid summer internship opportunities for two students this summer.

The selected interns will spend up to 10 weeks on Sanibel Island, Florida,. They will engage in on-going research by SCCF staff, learn about marine ecology, ocean science, and conservation, and conduct their own research project designed in co-ordination with University faculty and the SCCF. Students will present their research at either the Fall or Spring Undergraduate Research Forum (FURF or SURF).



Graduate Student Profile

Alex Maruszczak - MS student

Advisor: David Peate

Research: My research is focused on off-axis volcanism on the Snaefellsnes Peninsula in Iceland. In the past, Snaefellsnes was once the location of the Mid-Atlantic Ridge, but the ridge-system has migrated eastward into present day position. However, in the past few million years up to around 15,000, the Snaefellsnes Peninsula has experienced renewed activity. The goal is to understand the processes that drive melt generation beneath the peninsula and to understand any spatial

variability seen in the region using volcanic glasses. I aim to understand the depths of crystallization to infer the depths of likely magma storage zones within the crust as well as any systematic spatial variation in composition which may be related to differences in melt generation processes. The use of multiple approaches allows different views on the same dataset and a more complete understanding of the data and what is occurring underneath the peninsula. Over the summer, I spent 4 weeks in Iceland collecting samples. This journey helped me better understand my field area and get a grasp as to what it is that I'm studying.

Experience I value at UI: I found that the faculty and staff in the department are extremely helpful and approachable. Whether it has to do with a class, research, or general advice, none of my questions have gone un-answered. I also appreciate the quality of analytical equipment available within the department. I came from an undergraduate institute where all the equipment either had to be used through remote access or the samples shipped away, so the accessibility is highly valued. The research opportunities here have allowed me to explore new areas of the world I would not have otherwise been able to. In addition, I enjoy the graduate student community. I have a support group and made some friends here that I will never forget.

Future Plans: I will finish my master's in Spring 2018 and I plan on continuing to pursue a PhD. My career goal involves staying in academics, but I am open to industry as well.

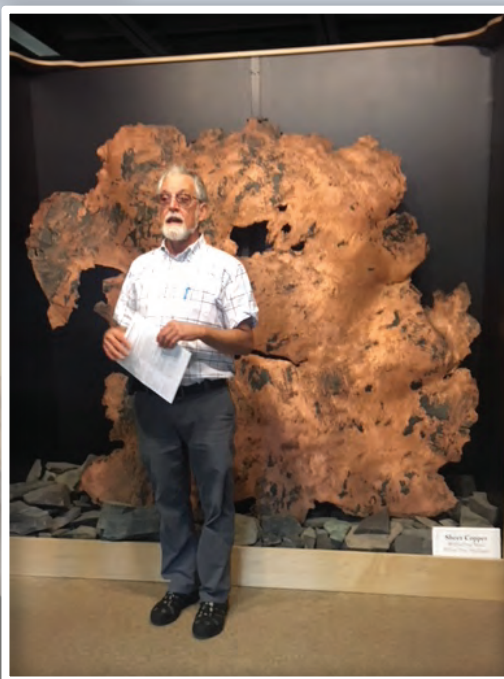
AAPG Field Trip - Upper Peninsula of Michigan

Every fall semester the University of Iowa AAPG Student Chapter takes a fieldtrip to engage upper level students in a professional activity that integrates various aspects of applied geology with their basic geological training. This year, the group traveled to the Keweenaw Peninsula to learn about the depositional environments and tectonic setting of sedimentary and volcanic rocks of the Keweenaw Rift and associated copper mineralization of the Upper Peninsula of Michigan. The trip was geared toward gaining a better understanding and appreciation for the rarity of Keweenaw associated copper mineralization.

(Right) Students pose for a photo on rift strata. (Below) The Copper Pavilion contains the Guinness world record holding 19-ton Lake Copper which was recovered from Great Sand Bay in Lake Superior.



The group made many stops along the way, highlighted by a trip to the A.E. Seaman Mineral Museum in Houghton, Michigan. Led by director Ted Bornhorst, the museum is home to over 50,000 mineral specimens and contains many world-famous native copper specimens from the Keweenaw Peninsula and surrounding area. Other stops included amygdaloidal basalt flows at Razorback Center in Houghton; laminated, rippled siltstones of the Nonesuch Formation at the mouth of the Presque Isle River and glacially striated basalt flows at the Lake of the Clouds overlook. The group camped at beautiful Union Bay Campground on the shores of Lake Gitche Gumee (Lake Superior).



(Left) A large partially cleaned specimen exposing native copper at the top on display at the Thomas D. Shaffner Exhibit Hall. The specimen is from the Franklin Mine, Keweenaw Peninsula, Michigan.

(Right) Geologist and museum curator Ted Bornhorst talks to students in front of a large sheet of native copper from the White Pine Mine, Michigan.



Graduate Student Profile

Clayton Brengman - PhD student

Advisor: Bill Barnhart

Research: My doctoral research is focused on the active tectonics, specifically in Iran and Pakistan. In general, in areas such as California where instrumentation is prolific (e.g. seismometers, GPS), earthquake locations are very well known in terms of both latitude and longitude as well as depth. In remote regions such as Iran and Pakistan however, deployment of instrumentation is difficult, leading to high errors in earthquake latitude and longitude (as much as 40 km) and virtually no constraints on depth. My current research focuses on developing a methodology to constrain locations of earthquakes where traditional seismological locations have a high error. This is done through coupling seismological data and remote sensing data.

Interferometric Synthetic Aperture Radar (InSAR) is a remote sensing technique in which a satellite observes the same location on the Earth's surface at multiple times using a Radar. By differencing the phase of the returning Radar, we can interpret how the Earth surface moved between the two times the satellite

was overhead. InSAR is a powerful tool in the study of active tectonics because it allows researchers the opportunity to analyze data from remote regions without the difficulties involved with ground deployment of instrumentation. Using InSAR, I can generate an image showing surface deformation as seen by the satellite of large ($\sim M_w > 5$) earthquakes, and use that information to generate accurate locations for the observed earthquakes. This location information can then be fed into a Bayesian relocation algorithm as a priori information, providing updated, more accurate earthquake locations for all earthquakes in the region.

Essentially, the relocation algorithm takes a catalog of earthquakes and relocates them relative to each other based on information such as locations of seismic stations which recorded phase arrivals from the earthquakes, and the travel time for those phases. By incorporating the InSAR locations as a priori information, the algorithm is told that for a specific suite of earthquakes (those constrained by InSAR), the location is at a specific latitude and longitude within some standard deviation. It then uses this information to update the locations of other, non-constrained earthquakes ideally improving the relocation from one without the InSAR constraints. This will produce a catalog of high fidelity earthquake locations scientists can use to begin answering first order questions in the region.

As InSAR is a rapidly advancing remote sensing technique, methods for the analysis of the data products is also advancing to keep up. Methods involving machine learning and analysis of large datasets of current and future SAR missions is an ideal area of future doctoral research.

Experience I value at UI: The University of Iowa has provided me with many resources within the department and university as a whole with which to enhance my both my research experience as well as my personal growth. The eagerness with which faculty are available to answer any questions that I may have is instrumental in my growth as both a geoscientist and a researcher. Facilities on campus such as the NEON and ARGON high performance computing clusters provide invaluable processing power I can utilize to process InSAR imagery. Courses outside the department in both the Engineering and Computer Science departments have provided me with necessary knowledge with which to expand my research using complex and intricate techniques such as finite element modeling and deep learning. I am currently in my second year as a PhD student and hope to find more within the department, university and city with which to enjoy my remaining time here.

Future Plans: I am currently on track to complete my doctorate in the spring of 2020. I am thinking of a future career in either academia, or a research position within a government organization (e.g., NASA, USGS).

International Ocean Discovery Program (IODP) Expedition 352

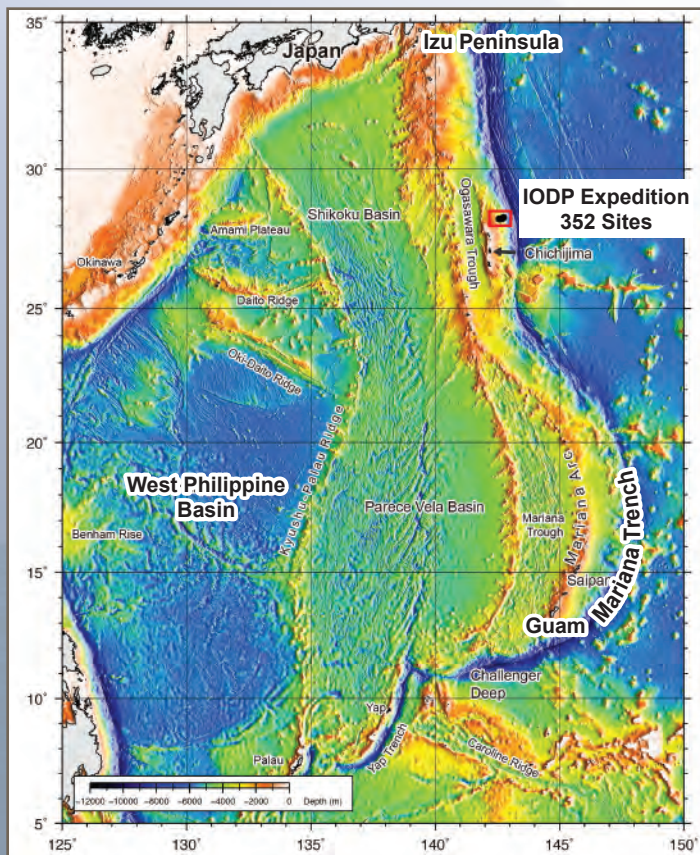
Izu-Bonin-Mariana Forearc: Testing subduction initiation and ophiolite models by drilling the outer Izu-Bonin-Mariana fore-arc

Reproduced in part from the International Ocean Discovery Program Expedition 352 Preliminary Report



In 2014, Dr. Mark Reagan served as a co-chief scientist on IODP Expedition 352. He was recently selected to be an Ocean Discovery Lecturer for the 2017-2018 academic year.

The Izu-Bonin-Mariana (IBM) system is the type locality for studying oceanic crustal accretion immediately following subduction initiation. It is sufficiently old that it carries a full record of the evolution of crustal accretion from the start of subduction to the start of normal arc volcanism and sufficiently young that the key features have not been excessively disturbed by subsequent erosion or deformation. Intraoceanic arcs are built on oceanic crust and are sites of formation of juvenile continental crust. Most active intraoceanic arcs are located in the western Pacific. Among these, the IBM system stands out as a natural scientific target. This predominantly submarine convergent plate boundary is the result of ~52 My of subduction of the Pacific plate beneath the eastern margin of the Philippine Sea plate. Stretching from the Izu Peninsula, Japan, to Guam, USA, and from the Mariana Trench to the West Philippine Basin (below left), the IBM system has been extensively surveyed and has become an important natural laboratory for IODP expeditions aimed at understanding subduction initiation, arc evolution, and continental crust formation.



Regional map of the Izu-Bonin-Mariana system showing the location of sites from Expedition 352. The expedition started on 30 July in Yokohama, Japan and ended on 29 September in Keelung, Taiwan.

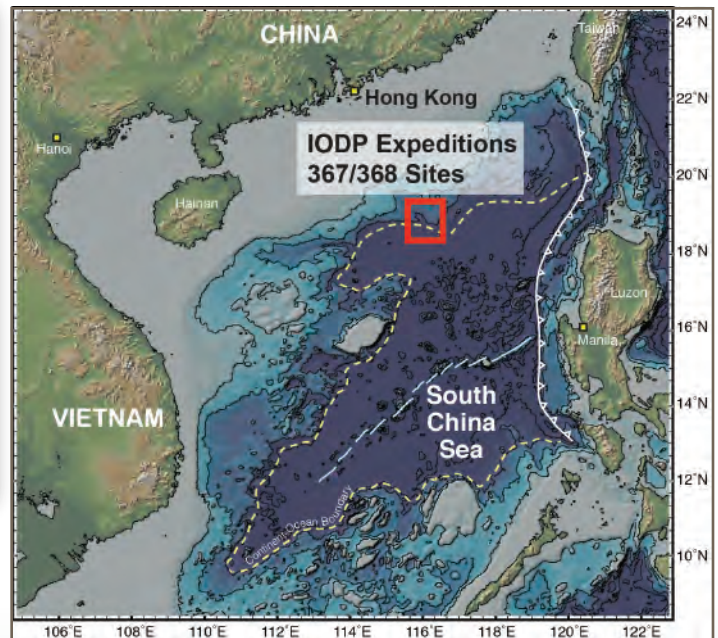


The JOIDES Resolution is a research vessel that drills into the ocean floor to collect and study core samples. It is funded by the National Science Foundation and an international consortium.

International Ocean Discovery Program (IODP) Expedition 368

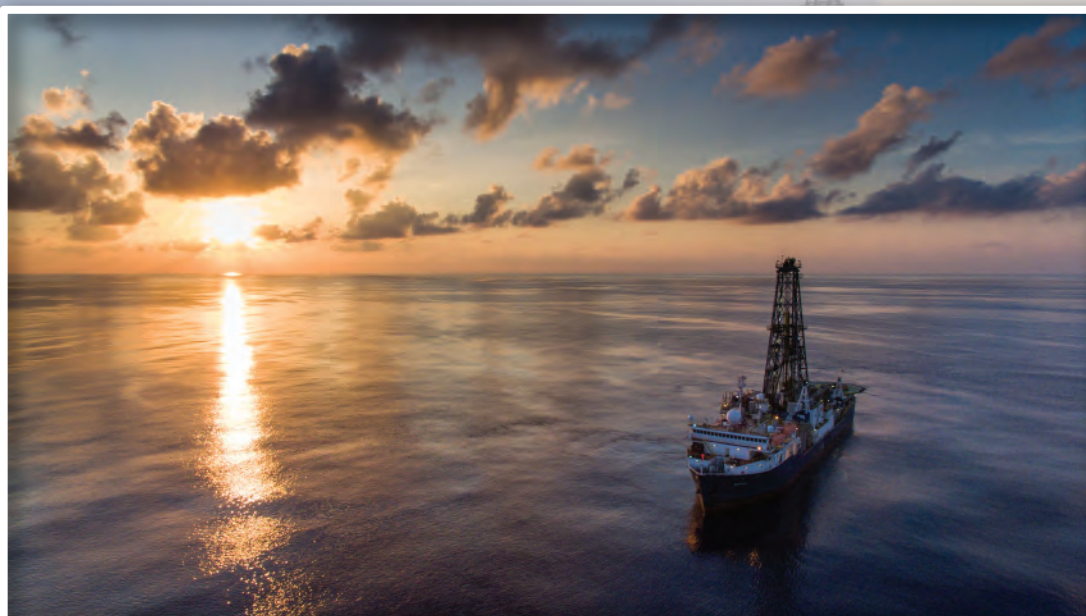
South China Rifted Margin: Investigating mechanisms of lithosphere extension during continental breakup at a non-volcanic rifted margin

Reproduced in part from the International Ocean Discovery Program website



In 2017, Dr. David Peate joined the IODP Expedition 368 to the South China Sea. The two South China Sea (SCS) Rifted Margin Expeditions aim to understand the mechanisms of lithosphere extension during continental breakup at a non-volcanic rifted margin.

The SCS margin shows similarities to the hyper-extended Iberia-Newfoundland margins, possibly including exhumed and serpentinized mantle within the Continent-Ocean-Transition (COT). However, modeling studies suggest that there can be mechanisms of plate weakening other than serpentinization of sub-continental lithospheric mantle. Two competing models for plate rupture (in the absence of excessively hot asthenospheric mantle) have widely different predictions for development of the SCS margin. To discriminate between these models, a series of deep-penetration sites will be drilled across a 150–200 km wide zone of highly extended seaward-thinning crust with a well-imaged COT zone. Coring and logging deep/basal sediments and the underlying basement is the primary objective. The proposed drill sites determine the nature of crust within the COT and constrain (a) post-breakup crustal subsidence, (b) how soon after breakup igneous crust started to form, (c) timing of rifting, and (d) rate of extension.



(Above right) Regional map of the South China Sea showing the location of sites from Expedition 368. The expedition started on 9 April in Hong Kong and ended on 11 June in Shanghai.

(Left) The JOIDES Resolution at sunset as seen from a drone (Photo by the IODP photographer, Tim Fulton).



Alumni Profile

Stan Harris, PhD 1947

Contributed by his son David Harris

Dr. Stanley E. Harris, Jr. turned 100 on March 5 of this year. He is a proud alum of the University of Iowa, having received his Doctorate in Geology there in 1947. Stan still lives at home (with some help) in Carbondale, Illinois, where he retired from teaching at Southern Illinois University.

Stan has fond memories of his time at the University of Iowa and the way it prepared him for a professional career. When working on his degree, he spent much of his time “in the field.” After graduating, he continued to work in the same way. His children remember many trips with dad “into the field” which included exploring the limestone caves of Southern Illinois. His memory book from 1982, when he retired as Professor of Geology from Southern Illinois University is filled with fond student stories of adventures and misadventures on field trips. In fact, the chance to work in the field is why he chose Iowa. He was looking at various graduate geology programs while finishing up his undergraduate work

at Princeton. “There was a

tri-state course each fall with students from Iowa, Michigan and Illinois. It was designed to show what working in the field was like,” remembered Stan. “I loved working outside.”

His experience at the University actually guided his future career and connected him with the people who would hire him. At Iowa, he was put in charge of the storage shed which belonged to the Iowa Geologic Survey but was connected to the Geology Department. It stored well cuttings being collected from around the state. Stan was given a job, his first job ever, organizing and categorizing well cuttings donated by private well drillers. Stan prepped samples, cleaned and organized sacks of mud and chips and categorized the rock. He used a system of shapes and colors for the strip log. Later, he plotted the results. Actually, you might say this helped him reach his 100th birthday. While using a microscope prepping samples, his cigarette smoke would get in his eyes so he quit smoking!



His work with the Iowa Geologic Survey as a graduate student gave him his dissertation project and data. At Iowa, he was also given a Teaching Assistantship. He found he really enjoyed teaching. The tri-state field course, besides being a great learning experience, introduced him to the people in Missouri and Illinois who ended up offering him employment. The “good words” those contacts had about him led to his appointment at Southern Illinois University.

Stan enjoyed students and students enjoyed him. Although many were quick learners he always took the time to help those who struggled. He encouraged students to ask questions of him and about their own work. A student told a story at

Stan's retirement party which the student said guided his life. "We were on a field trip and I was pointing to a place on a road cut. Right below that black cow, I told Stan. To which he replied, 'Well, we know this side of the cow is black anyway.'"

What Stan enjoyed about geology was putting the whole picture together. He was interested in how different locations connected and what had happened over the eons. At the University of Iowa he was fascinated by the set of maps which showed how formations changed across the state. Over time at Southern Illinois University his focus grew bigger. He taught Earth Science and focused on student learning and student success. As a professor, he always advised students to learn the basics. Be able to identify the different kinds of rock you see in the field. And to be a thinker. Ask why and how. That is what the University of Iowa did for him and it served him well in his career and in life.



Alumni News

Lee Falkena (MS 2009) has recently started a position as Coordinator of Undergraduate Labs in the Department of Earth & Environmental Sciences at the University of Illinois at Chicago. Lee's career goal is to create accessible, authentic, community-focused and science-skill oriented experiences for all students, leading to an informed, constructive, and scientific-minded community. Congratulations Lee!



Undergraduate Profile

Noah Lebsack – BA anticipated 2018

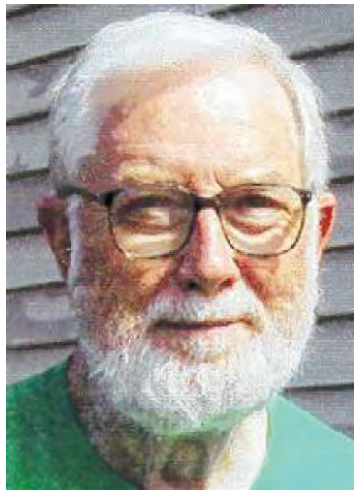
I currently work as a Pathways Hydrologic Technician with the USGS Iowa Water Science Center, where I perform routine measurements of stage and discharge of rivers and creeks under a variety of field conditions. I also execute Water Quality tests, perform Groundwater water-level tests, and discharge measurements from wells and springs. Recently, I have begun helping out on an annual Ecology study of the Iowa river in order to assess water quality conditions. The information I collect is analyzed and approved by my peers and is packaged and used by the public, National Weather Service, and the Army Core of Engineers.

Experiences I value at UI: I have learned many things at the University of Iowa that have helped me succeed in my internship, and eventually my full-time job. Attending Field Methods in Montana last summer opened my eyes to the possibilities for Geoscience, while studying abroad in New Zealand

gave me possibility to gain connections around the world. On the Field Methods trip, I became interested in field mapping and I enjoy using the skills I learned at the UI outside of the classroom environment. Classes I have taken with the professors in the Earth and Environmental Sciences Department have given me vital knowledge that has helped me at work, with structured labs and informative lectures. During my time at the University I have been trained on the SEM and the EMP, as well as in heavy mineral separation, all of which make me a more valuable employee.

Future plans: I plan to graduate in Fall 2018 and begin working full-time with the USGS Iowa Water Science Center, leading my own field trips and independent projects related to hydrogeology.

In Remembrance



Eugene (Gene) Hinman, of Cedar Rapids and formerly of Mount Vernon, passed away Dec. 29, 2017, at Cottage Grove Place. Gene, son of Archie and Cora Hinman, was born in Dubuque, Iowa, in 1930. He graduated from Elgin, Ill., High School, and then went to Cornell College, intending to major in journalism. Gene began sneaking into geology field trips with his roommate and changed his major to geology. He also met his future wife, Dot, in chemistry class, and they were married the day after he graduated. Gene received his master's degree from Washington State and completed his Ph.D. at the University of Iowa.

After deferments to complete his M.S., Gene was drafted into the U.S. Army and spent two years in Japan, working in a supply warehouse. As discharge neared, Cornell offered him a position in the geology department. Gene loved teaching, in and outside the classroom, and Cornell was a perfect fit. He thoroughly enjoyed his contacts with students. He retired after 38 years of teaching but continued to follow his students' careers, enjoying visits from former students throughout his life. Off-campus teaching provided wonderful summers and Januarys for the whole family. Four summers in the

Boundary Waters Canoe Area Wilderness Field Station allowed him to teach geology by canoe and teach his boys to paddle. Januarys on San Salvador in the Bahamas were spent teaching marine geology to his students, and gave Dot and the boys a chance to snorkel along with them.

Gene is survived by Dorothy, his wife of 50 years; his dearly loved sons and their partners, Dave (Lisa) and Jim (Chris); grandchild, Chandra Roth; sister-in-law, Barbara Boden; and treasured friends, Barbara Christiansen and Charles Connell.

Conference presentations

Geological Society of America North-Central Section Meeting

Brooke Byars (BS) - A petrographic and compositional study of plagioclase in the alkaline off-rift Búðahraun lava flow, Snæfellsness, Iceland

Sophia Gunnink (BS) - Using macrofossils from Clear Creek to reconstruct landscapes in Iowa

Clint Henning (BS) - Using detrital zircon U-Pb ages and ImageJ software to develop a procedure to quantify the shape of grains to analyze for potential patterns

Brittany Stolfus (BS) - Revised conodont biostratigraphy of the Devonian-Carboniferous boundary interval in southeast Iowa

Matthew Trembath (BS) - Searching for geochemical signatures of step-wise extinction levels during the Ireviken and Mulde (Silurian) extinction events

Dean Hester (MS) - A review of the Paleogene eusuchian crocodyliform *Borealosuchus Wilsoni* Brochu 1997 from western North America

Phil Kerr (MS) - Timing of two middle Wisconsin glacial advances into north central Iowa

Alex Maruszczak (MS) - Geobarometry of off-axis basaltic glasses from the Snaefellsnes Peninsula, Iceland

Stephan Oborny (PhD) - Improving chronostratigraphic correlation of Wenlock-Pridoli (Silurian) strata of the Appalachian foreland basin (Virginia, West Virginia, Ohio) through the use of high-resolution event stratigraphy (HIRES)

Justin Rosenblume (PhD) - Chemostratigraphy and sedimentology of Lower-Middle Pennsylvanian strata in the Forest City basin, southern Iowa

Snowy Owls like Iowa winters

Bird-watching: Irruption brings birds to fields, poles
Reproduced from the Cedar Rapids Gazette

By Brandon Caswell, correspondent

Brandon Caswell has been fascinated in natural history since he was 5 years old. He has undergraduate degrees in biology, anthropology and geology from UI. He enjoys bird-watching and nature photography. His current studies as an M.S. student in EES center on Precambrian and Archean rocks from Ellesmere Island, Canada. He also helps instruct introductory and advanced courses in environmental science and geoscience at the University of Iowa.



One of nature's great spectacles is the irruption of Snowy Owls from the far northern reaches of North America to Iowa and the Midwest.

Scientists studying these magnificent birds believe both the shortage and surplus of their staple prey item — the lemming — is responsible for sending hundreds of them far south out of the Arctic and subarctic in search for food.

This winter is one of those occasional irruption years and appears largely due to the abundance of prey resulting in a spike in reproductive success during the breeding season.

The Iowa Ornithologists' Union, the state bird-watching organization, has a map on their website (www.iowabirds.org/) showing reported Snowy Owl sightings in Iowa so far this winter season.

The Snowy Owl is large, similar in size to the Great Horned Owl, and comes in a variety of color patterns. Many are not the prototypical all-white Hedwig of Harry Potter fiction, but are heavily marked with



dark barring. Many of the Snowy Owls noted across Iowa this winter are heavily barred juveniles representing both sexes. Adult females are less barred than juveniles, while adult males can be nearly pure white.

The vast agricultural lands of Iowa offer Snowy Owls a similar habitat to their treeless Arctic tundra. In fact, Snowy Owls are unfamiliar with trees and prefer to sit atop poles or other human structures. They also tend to sit in plowed fields, making them incredibly hard to see if snow is on the ground.



Conference presentations

Geological Society of America North-Central Section Meeting

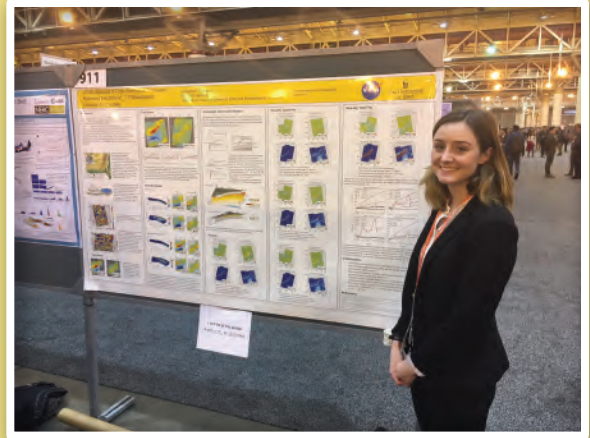
Jacob Siebach (PhD) - Estimating magmatic temperatures and source lithologies for off-axis alkaline magmas – in Snaefellsnes, western Iceland

Maija Sipola (PhD) - Fluvial deposition of the Ngandong Homo Erectus site in central Java, Indonesia

Dr. Bradley Cramer - Conodont biostratigraphy of the Schlamer #1 core and revisions to the Silurian conodont zonation for the Geologic Time Scale 2020

Dr. Jeff Dorale - A high-resolution record of flooding from Crevice Cave, Missouri during the time of marine isotope stage 5

Dr. David Peate - Textural and compositional characteristics of metallic spherules in impact melt from Monturaqui crater, Chile



Katherine Peterson (MS) presents her poster InSAR Analysis of Post-Seismic Deformation Following the 2013 Mw7.7 Balochistan, Pakistan Earthquake at the 2017 American Geophysical Union Fall Meeting



Iowa City Darwin Day

February 23rd - 24th, 2018

Iowa City Darwin Day, Inc was founded in 2007 exclusively for charitable, scientific and education purposes. The purpose of this nonprofit organization is to recognize and show our appreciation for the enormous benefits that scientific knowledge, acquired through human curiosity and ingenuity, has contributed to the advancement of humanity by organizing educational and social activities in and around Iowa City, annually on or about the anniversary of Charles Darwin's birth, February 12.

Each year there is a design competition for the logo that will be used on promotional items for the event. This year, EES M.S. graduate student Dean Hester won with his clever combination of dodo bird and dinosaur!

Featured Presenters this year included:

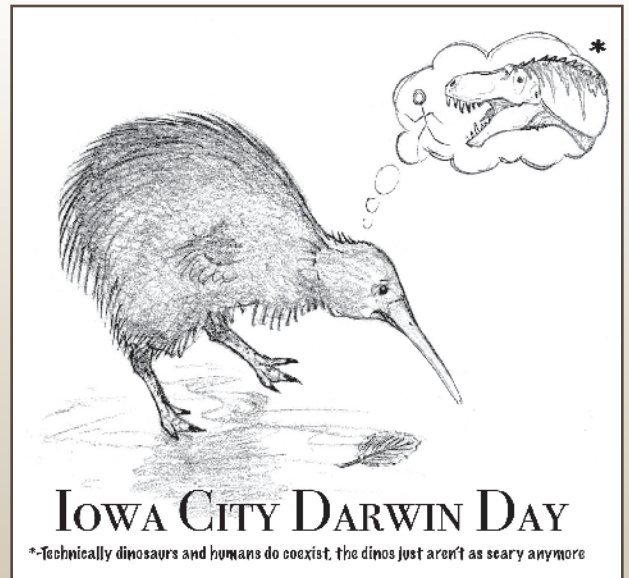
James Hansen - Climate Science, Awareness and Solutions Program, Earth Institute, Columbia University

Asheley Landrum - Assistant Professor of Strategic Science Communication at Texas Tech University

Julie Meachen - Assistant Professor of Anatomy, Des Moines University

Paul Strode - Fairview High School, Boulder, Colorado and "Mr. Dr. Science Teacher" blogger

Pete Akers - Visiting Assistant Professor, Department of Geographical and Sustainability Sciences, University of Iowa



Community Outreach and Interactions

Science Booster Club



Maurine Neiman and Andrew Forbes (both of the Environmental Sciences Program and Biology Department), along with Emily Schoerring at the National Center for Science Education, have been granted a Carver Trust grant called the Science Booster Club Expansion to initiate a project in the Quad Cities and Muscatine. The broad goal of the Science Booster Club is to improve community science literacy using informal science education with a particular focus on climate change and evolution. Most of the funding will go to support graduate students who lead many aspects of the programs.



UI Scientists in the Classroom

UI Scientists in the Classroom is a new program that started in Fall 2016. The basic expectation is that scientists visit an elementary school classroom twice during the academic year. The first is a “get-to-know-you” visit, whereas during the second visit the scientist works with the teacher to “do science” with the students. More than a dozen faculty members between EES, Chemistry, and Physics have been recruited to participate, initially with just two pilot schools: Garner Elementary and Lucas Elementary.





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EARTH & ENVIRONMENTAL SCIENCES

FALL 2017

Share your perspective

Please share the wisdom you've accrued throughout your career with our students by answering one or more of the questions below, or dispensing any other advice you may have. Your responses will be included in the Alumni Perspectives in the next newsletter. Send them to geology@uiowa.edu and indicate whether you would like it to be anonymous or attributed to you. Thanks for sharing!

What made you competitive in your field?

What were your lucky breaks?

What type of preparation would have made your career path easier?