

Morton K. Blaustein Department of Earth & Planetary Sciences



Thomas W. N. Haine

Letter from the Morton K. Blaustein Chair

Welcome to the summer 2014 edition of the Earth and Planetary Sciences Newsletter. This summer the E&PS faculty experienced a major transition with the retirements of Professors **Bruce Marsh, David Veblen, and John Ferry**. Their departure marks a milestone in the history of our department.

Bruce, with the longest Hopkins record, arrived in Baltimore in 1974, just a few years after the department was founded, and eight years before Olin Hall was ready for use. He developed a distinguished and penetrating school of thought, scholarship, and research on magmatic processes. He has been described as "a central figure in magma dynamics, a field of which he is the principal architect." Bruce's 40 years of service to E&PS, the Krieger School, and the University are also exemplary. He served as a member of the Homewood Academic Council for 5 years. And he served as the inaugural Morton K. Blaustein Chair of his beloved E&PS.



Bruce Marsh

microscopy (TEM) in geology. Using TEM, he probed the structure of many complex minerals, including pyroboles, obsidian, and clays. A colleague recalls David's wisdom: "One day nothing happened, another day nothing happened, and then one day, something important happened. That is TEM." He was recently honored by the International Mineralogical Association with the naming of veblenite, a mineral found in Newfoundland and Labrador. For a mineralogist, that's a big deal.

John was recruited in 1984 and is also a former E&PS Chair. He is a world-renowned authority on metamorphic geology and fluid-mediated processes in Earth's crust. His most significant and sustained research has been on infiltration-driven metamorphism: John devotes much of his research to documenting fluid flow in rocks; developing field, laboratory, and mathematical tools for extracting quantitative information about fossil fluid flow systems from rocks; and explicating the central role that reactive fluid flow plays in metamorphism. John was honored in 2011 by the Geological Society



John Ferry

of America Mineralogy, Geochemistry, Petrology, and Volcanology Division with a Distinguished Geologic Career Award.

Collectively, the careers of Bruce, David, and John at Hopkins span nearly a century. They are known to almost all of the E&PS family. They will assume Emeritus Professorships and I wish them happy retirements, but their departure is keenly felt. It's not possible to replace them. Instead, inspired by their example, E&PS will seek talented, creative scholars to carefully rebuild the faculty in solid-earth geoscience. That process is beginning now, with a search for an assistant professor in geology. On behalf of everyone at E&PS, past and present, thank you Bruce, David and John.

With best wishes,
Thomas W. N. Haine



David Veblen

David joined E&PS in 1981, and rapidly became full professor of mineralogy and crystallography. Subsequently, he served as Chair, for two periods. David is one of the foremost authorities on transmission electron

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Henry L. Bolley Academic Achievement Award for 2014

On May 1, 2014, Professor **Darrell Strobel's** alma mater, North Dakota State University, awarded him the Henry L. Bolley Academic Achievement Award for 2014. The Award honors an individual who has attained noted achievements in education as teachers, researchers, and/or administrators.

www.ndsualumni.com/awards-darrell-strobel.

Effective July 1, 2014, Professor Strobel will be on half-time teaching for the next four years in order to conduct research. He will only offer classes during the spring term. Strobel hopes to acquire another three years of data with the Cassini spacecraft before burning up the spacecraft in Saturn's atmosphere in September 2017. The New Horizons spacecraft flies by Pluto on Bastille Day (July 14) next summer, and next spring, the activity level will quickly increase.

Strobel's planned date of retirement is June 30, 2018, once the Cassini and New Horizon missions are over.



Darrell Strobel

Eric Ryberg given the Lawrence Alexander Hardie Undergraduate Research Award

Eric Ryberg '15 has been honored with the Lawrence Alexander Hardie Undergraduate Research Award in Earth and Planetary Sciences. Working with Assistant Professor Naomi Levin, Ryberg, a chemistry major, studies the use of ^{17}O Isotope in Ethiopian rainwater to develop a new paleoclimate proxy. His project description is as follows:

^{17}O is an isotope of oxygen, indicating it has a different mass than normal oxygen. Mass differences cause isotope fractionation in water during phase changes (evaporation, condensation, etc.). The more common ^{18}O -isotope and hydrogen isotope in water have been thoroughly studied. However, ^{17}O has not been deeply explored. Using rainwater from four collection stations in Ethiopia, the ^{17}O -composition of rainwater will be analyzed to determine ^{17}O -variation as a function of rain amount and moisture source and then compared to ^{18}O and hydrogen isotopes in the same samples. Observations will be used to develop ^{17}O -records as tools for reconstructing past climate.

Congratulations, Eric!

krieger.jhu.edu/dura/profiles/eric-ryberg

Research Professor Richard Stolarski Honored by GRL

E&PS Research Professor **Richard Stolarski** has been honored by the prestigious journal Geophysical Research Letters (GRL) of the American Geophysical Union. His 1991 paper, "Total Ozone trends deduced from Nimbus 7 Toms data," is part of the Anniversary Special Collection, which comprises the 40 top GRL papers published since the journal began 40 years ago. Since inception, more than 31,000 papers have been published by GRL.

onlinelibrary.wiley.com/journal/10.1002/%28ISSN%291944-8007/specialsection/GRL40



Richard Stolarski

GECS Student Justin Falcone Awarded Truman Scholarship

Senior **Justin Falcone**, who has dedicated his personal and academic pursuits to studying and addressing the global implications of climate change, was recently named one of 59 recipients of the prestigious Harry S. Truman Scholarship. The awards are given annually to U.S. college undergraduates with demonstrated leadership potential and a commitment to public service.

The winners, who represent 52 colleges and universities, were chosen from a group of 655 nominees. Recipients are awarded up to \$30,000 for graduate study.

Falcone, who is studying environmental archaeology and minoring in global environmental change and sustainability, is the first winner from Johns Hopkins since 2010. He plans to pursue graduate studies in environmental science, management, and policy.

"The Truman Scholarship is more than a bridge that connects scholars to the places, both literal and academic, that they want to go," says Falcone. "Although it serves that purpose, it is also a diverse community of leaders and change agents united by a passion for making a difference. I'm humbled to be a part of that community."

Johns Hopkins University President **Ronald J. Daniels** called Falcone to let him know he had been selected for the award.

Falcone, a native of Cinnaminson, N.J., spent the summer of 2012 in the shadow of Sicily's Mount Etna, Europe's most active volcano, where, he wrote, he "began to realize how environmental forces impact the cultural fabric of island communities in unique ways."

Using funding from Johns Hopkins' Woodrow Wilson Undergraduate Research Fellowship Program, Falcone sailed from Tahiti to Hawaii during the spring of 2013 and documented the impact climate change is having on the island communities most vulnerable to rising sea levels. He visited the Society, Marquesas, and Tuamotu islands, as well as the Phoenix islands, which are among the 32 atolls that make up the island nation of Kiribati. In Hawaii, Falcone worked on an organic farm in an area of the rain forest that has recovered from volcanic activity.

Photographs from his travels documenting the effects of climate change are scheduled to be displayed at the Milton S. Eisenhower Library on the university's Homewood campus during the 2014-15 academic year.

"I have always been a person of multiple interests that pivot around human-environment interactions," Falcone says. "While I intended to study how past Pacific communities have experienced climate change so that data could be applied to future models, I realized I could insert myself into the present equation."

Falcone took a particular interest in Kiribati during his excursion and, once home, launched Project Kiribati, the first international initiative designed to support a sustainable clean water infrastructure for the low-lying South Pacific island nation. The group has partnered with Johns Hopkins Hospital—via its Supporting Hospitals Abroad with Resources and Equipment (SHARE) group—and others to supply medical equipment, vitamins, and water purification tablets to individuals living in Kiribati.

The effort is an offshoot of the Alliance for Clean Water (ACWa), a Johns Hopkins student group founded by Falcone that is dedicated to the protection of clean water in natural and urban environments. The group, which is associated with the university's Center for Social Concern, conducts service trips, including "canoe and clean" outings to remove plastic waste from local estuaries, research trips to test the water quality of aquifers, and education trips designed to instill an appreciation of the watersheds that supply Baltimore's water.

Falcone is also the inventor of patent-pending environmental technologies developed with the help of the university's Office of Technology Transfer. He is a Bloomberg Scholar, a Woodrow Wilson Fellow, and a former participant on the Apolline Project's archaeological expedition at the north slope of Mount Vesuvius. Last summer he was a member of an NSF REU team at USC's Wrigley Institute on Catalina Island, where he utilized geospatial technologies in the study of coastal climate change.

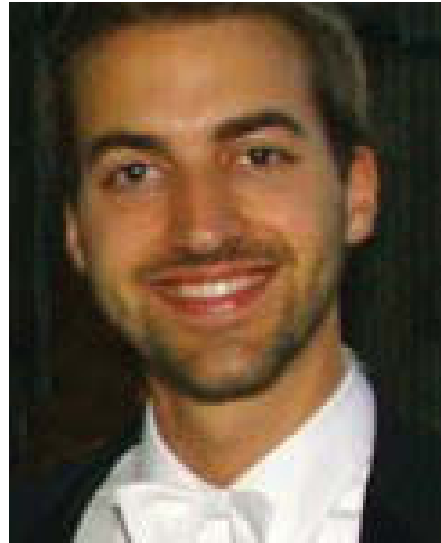
"I will devote my career to environmental policy because I wish to help those communities most endangered by climate change today," Falcone wrote in his Truman scholarship application. "I believe in using every tool at my disposal—tech innovation, service, policy, art—to act as an agent of change who considers both where we came from and where we are going."



Justin Falcone

"I will devote my career to environmental policy because I wish to help those communities most endangered by climate change today."

—Justin Falcone



Alexis Monopolis

Faculty Spotlight: Alexis Monopolis

E&PS Lecturer **Alexis Monopolis** was interviewed by the Johns Hopkins Center for Education Resources: cer.jhu.edu/e-news/enews04-14.html#2

We say goodbye and wish well

To GECS major **Jacob Rode**, who worked in our lab for several years. Jacob was an excellent help both in the field and in the lab. His strong time-management skills allowed him to balance schoolwork, lab work, volleyball club, and RA responsibilities without conflict. We nominated him for the "Student Employee of the Year" award; he was awarded first runner-up, and he certainly deserved the recognition. In September, Jacob started graduate school at UC Irvine, where he will pursue a PhD in psychology. Best of luck and surf!

To assistant research scholar and statistics extraordinaire, **Mike Bernard**. Mike was instrumental in many of our field and laboratory projects, and a great mentor to our undergraduates. Mike kept the labs in order and the data organized. In August, Mike will start a new job as field technician at the Harvard Forest LTER site. By moving back to Massachusetts Mike and Jess will reunite with their families. We wish them all the best.

Congratulations to EPS major **Adam Dec** for receiving an NSF REU (Research Experience for Undergraduates) Award. The REU is provided by the Baltimore Ecosystem Study LTER (Long Term Ecological Research) site. Adam is summarizing long term data on urban soil invertebrate fauna and conducting his own independent field study on the spatial distribution on invasive earthworms. Adam plans to develop this project into a Senior Thesis.



Mike Bernard, Jacob Rode, Chih-Han Chang and Kathy Szlavecz



Adam in the field with a perfect soil core



Haoyuan walking through tufa deposits along the western shore of Pyramid Lake, NV.



Haoyuan collecting a water sample using a fishing wire at the bank of the Bear River, UT.



Shuning on Antelope Island, Great Salt Lake, UT.

Summer Field Work

Using Palmer Field funds, graduate students **Haoyuan Ji** and **Shuning Li** went on a road trip across the western U.S. last June collecting lacustrine carbonates and waters from evaporative lakes for triple oxygen isotope studies.

Open Earth Systems

The Open Earth Systems group hosted our 2nd annual Summer Course for Maryland Teachers' Professional Development. Twenty three teachers from Baltimore City and County participated this year, hearing from EPS faculty, researchers, and postdocs on topics ranging from Earth structure to the rock-carbon cycle, to Earth history, climate change, and natural disasters. Hands-on activities were held each day. The teachers participated in a weekend activity in which they deployed sensors to record urban July temperatures in Baltimore, part of an on-going research project to document and monitor our city's notorious summertime heat island. For two weeks, Olin Hall was the scene of many lively slideshows, discussions, laboratory exercises, and lesson plan development sessions.

Earth's Hottest June Follows Hottest May. The New Normal?

Assistant Professor **Ben Zaitchik** discusses global warming trends in the July 22, 2014 issue of the *Christian Science Monitor*. <http://www.csmonitor.com/Environment/2014/0722/Earth-s-hottest-June-follows-hottest-May.-The-new-normal-video>



Ben Zaitchik

Ozone Thinning Has Changed Ocean Circulation

In a paper published in an issue of the journal *Science*, **Darryn Waugh** and his team show that subtropical intermediate waters in the southern oceans have become "younger" as the upwelling, circumpolar waters have gotten "older"—changes that are consistent with the fact that surface winds have strengthened as the ozone layer has thinned.

<http://hub.jhu.edu/2013/01/31/ozone-thinning-and-ocean-circulation>



Darryn Waugh

Graduate Student Field Course

In August, Assistant Professor Ben Zaitchik led a graduate student field course on Water, Climate, and Health in Ethiopia. Student participants included E&PS PhD candidates **Jose Molina**, **Alexi Russell**, and **Anna Scott**, along with five other JHU students, one Howard University student, five University of Wisconsin students, and eight students from Addis Ababa University. The group traveled to the Blue Nile headwaters, where they observed and participated in ongoing efforts to study climate resilience strategies in subsistence agricultural communities. This research includes soils and geological mapping, climate monitoring, crop modeling, household surveys, and participatory design of development projects in communities of the Blue Nile Highlands.



Florence Bascom's Birthday

Dr. Bascom was the first woman to receive a PhD from Johns Hopkins (in 1893), and the first woman to work for the U.S. Geological Survey (USGS), as a geologist. USGS profiles Dr. Bascom and her work in a feature on the agency's blog. http://www.usgs.gov/blogs/features/usgs_top_story/florence-bascom-pioneer-geologist/

Congratulations to Our Graduates

The department had three students graduate from our PhD program this past year: Chang Lang, Jerry Burgess and Erin Urquhart.

In addition, Master's Degrees were awarded to Dana Brenner, Grace Kim, Jordan Thomas, Kirby Runyon, Nathan Towles, Eshwan Ramudu, Jenna Fleck, Fang Huang, Jihua Hao, José Molina Tabares.

The department awarded Bachelor's Degrees to the following students:

Earth and Planetary Sciences: Mackenzie Fischer, Edward Kardish, Hyun Tae Kim, Zoe Longenecker-Wright, Stephanie Spetka, Matthew Stankiewicz, Kely Baker, Tyler Barnum, Vincenzo Bonaddio, Andrew Giannascoli, Mike He, Marie Hepfer, and Jessica Noviello.

Global Environmental Change and Sustainability: Allysa Dittmar, Yael Fishbein, Zoe Kaiser, Margaret Keener, Michelle Lampart, Hannah Lindsell, Emily Nink, Guillermo Ortiz, Thalia Patrinos, Garrick Prokos, Jacob Rode, Sarah Saltz, Henry Stauber, Erica Tan, Patrick Traczykiewicz, Mary Treinen, Nicholas Tyson, Andrea Van Wyk, Cheong Wai Wong, Amanda Yaccarino, Ruth Burrows, Raychel Santo, and Rachel Witkin.

This year, the faculty decided to recognize graduating seniors for their distinguished academic achievements in and service to the Earth and Planetary Sciences program and the Global Environmental Change and Sustainability Program. This year's winners are Tyler Barnum and Jessica Noviello (E&PS) and Ruth Burrows, Margaret Keener, and Raychel Santo (GECS).

Thanks to Our Donors

We are grateful to the following alumni, friends, and organizations for contributing to the department from January 1 through August 31, 2014.

Gilles O. Allard, PhD
Michael A. Aurelia III
James Gerald Brophy, PhD
Roger D. Congdo, PhD
ExxonMobil Foundation
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Peter J. Heaney, PhD

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Haydee Salmun, PhD
Richard A. Sheppard Revocable Trust
David A. Vanko, PhD
Sutart A. Weinstein, PhD
William J. Wiseman, Jr., PhD
Huifang Xu, PhD

We apologize if we missed your name. Please let us know if we did, and we will acknowledge your gift in our next newsletter. Your gifts mean so much to us and enable us to admit more graduate students, pay for student summer field and laboratory work, maintain Singewald Field Camp, and purchase equipment. Your generous gifts make a significant difference to the Department of Earth and Planetary Sciences, and we thank you.

Fall Seminars

September 11, 2014 - Dr. Mark Holzer

September 18, 2014 - Dr. Vikram Mehta

October 2, 2014 - Dr. Lorraine Remer

October 9, 2014 - Dr. Nikole Lewis

October 16, 2014 - Dr. Andrew Ingersoll

October 30, 2014 - Dr. Ben Black

November 6, 2014 - Dr. Aomawa Shields

November 20, 2014 - Dr. Connor Nixon

December 4, 2014 - Dr. Mark Harrison



Reminder to join/visit our LinkedIn group to instant updates and share news. You can find our page by searching The Morton K. Blaustein Department of Earth and Planetary Sciences at Johns Hopkins University.

Alumni Corner

If you have something you would like to share in the next edition, please provide us information by email to ktrent2@jhu.edu.

if you would like to receive your newsletter electronically please email your email address to ktrent2@jhu.edu.



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