Chair’s Message

THIS HAS BEEN A YEAR OF TREMENDOUS CHANGE FOR THE DEPARTMENT OF EARTH & ENVIRONMENTAL SCIENCE. Barton Hall is coming down; the new Science Education and Research Center (SERC) is up and running. Professor George Myer retired, and sadly, Gene Ulmer, professor emeritus, passed away. Both men profoundly influenced the lives of thousands of students.

This year, however, we have also welcomed two new faculty members: Steven Chemtob, and Atsuhiro Muto. The unprecedented growth — seven new hires in as many years — brings the department total to a record 11 presidential faculty. This has allowed us to launch our geoscience doctoral program and to welcome, this fall, our first three doctoral students.

The launch of the PhD program has not lessened our commitment to undergraduate education. Rather, we hope it will provide further opportunities to involve undergraduates in exciting new research. This November at the annual meeting of the Geological Society of America in Baltimore we are proud to have eight undergraduate students presenting talks and posters.

New faculty, new labs, new equipment, new grants, our first PhD students, 136 majors — this is a truly an exciting time to be a geoscientist and a Temple Owl!

Sincerely,
Jonathan Nyquist
Professor and Chair, Department of EES

EES Department welcomes two new professors

Steven Chemtob
ASSISTANT PROFESSOR

Steven Chemtob studies the mineralogical, geochemical and stable isotope signatures of water-rock interaction. In 2012 he completed his PhD in geochemistry at Caltech, and then completed an NSF postdoctoral fellowship at Washington University in St. Louis. Chemtob’s research involves field studies of chemical weathering in near-surface environments, laboratory experiments and materials characterization utilizing both conventional and synchrotron-based techniques. His current research interests include the mechanisms involved in the deposition of Precambrian banded iron-formations and the mineral record of ancient aqueous alteration on Mars.

His work has been published in the American Mineralogist, Journal of Geophysical Research and Journal of Volcanology and Geothermal Research.

Atsuhiro Muto
ASSISTANT PROFESSOR

Atsuhiro Muto is a glaciologist/polar geophysicist whose major research goal is to understand past, present and future changes of polar ice sheets and glaciers—and what drives these changes. His current research includes using remotely sensed and surface geophysical data to discern subglacial conditions beneath Antarctic and Greenland ice sheets, as well as using borehole thermometry to study past surface-temperature changes in Antarctica.

He has spent six field seasons in Antarctica’s challenging environment, including a 65-day traverse to the South Pole. In 2011 he was awarded the Antarctica Service Medal by the U.S. Department of Defense.

He has more than a dozen articles published in journals such as Journal of Geophysical Research and Earth and Planetary Science Letters. Muto received his PhD from the University of Colorado. Prior to coming to Temple, he was a research scientist at the Pennsylvania State University.

SUPPORT THE GENE C. ULMER STUDENT FUND

The Gene C. Ulmer Student Fund was created by our recently deceased emeritus professor to help students pay for their field camp experiences. To learn how you can honor his tremendous legacy and support the next generation of geologists, see page 4.
Christopher Conwell: GSA Outstanding Undergraduate Poster Award

Chris Conwell, a senior who recently transferred to EES from the Chemistry Department, was awarded an Outstanding Undergraduate Student Poster Award by the Geological Society of America (GSA) at its 2015 Northeast Section meeting in March in Bretton Woods, New Hampshire. His research focuses on the origin of geochemical anomalies and coloration in relict Atlantic oyster shells. Chris participated in the recent Undergraduate Research Symposium at Temple and will present new findings at the upcoming national GSA conference.

Other outstanding students include:

- **Olivia Wells, MS '15**, geology, who won an American Association of Petroleum Geologists’ Student Award, and $500, at the AAPG’s annual conference last spring in Denver, Colorado. Her poster presentation on the evolution of fracture surface roughness was judged the fourth best among 120 student abstracts.

- **Ashley Newman, '15**, a geology degree graduate who won an Undergraduate Research Program Award for her investigation of the effects on groundwater of infiltration from the SERC stormwater basin.

- **Kevin Carpenter, '15**, an environmental science degree graduate who won a Temple Library Sustainability Prize for his senior seminar topic, “Rethinking Conservation Goals for North America’s Gray Wolves.”

Geoscience PhD program launched

The EES Department is pleased to announce the launch of the new PhD in geosciences program. This fall we have welcomed three PhD candidates and five master’s degree students. Our first PhD students include:

**Katrina Korman** is working on an NSF-funded project with Associate Professor Alexandra Krull Davatzes, studying the climatic effects of large impacts in the Precambrian Period. She spent her first field season this past summer in western Australia.

Before coming to Temple, she graduated cum laude from the University of St. Thomas with a triple major in geology, environmental science and philosophy, and continues to teach its field camp every winter. She also plays the oboe in the Temple Night Owls Campus Community Band and is working on learning the guitar.

**Jim Berglund** is working with Professor Laura Toran, the Weeks Chair in Environmental Geology, on an NSF-funded project to find geochemical signatures that better classify karst springs. He earned a BS in geology from Winona State University in Minnesota and an MS in geology from Missouri State University. His master’s thesis resulted in two papers on karst dye tracing and geophysics.

Before returning to school at Temple to earn his doctorate, Berglund was a groundwater protection hydrologist for the Minnesota Department of Health.

In his spare time, he enjoys flying small aircraft, reading satire, and exploring Philadelphia by bike.

**Boyoung Song** is a PhD student working with Assistant Professor Bojeong Kim to investigate the environmental applications of metal oxide nanoparticles and clay minerals. She received her BS in geology from Chungnam National University in Daejeon, South Korea, and also worked at the Korea National Oil Corporation. She earned her MS degree in geoscience from Stony Brook University on Long Island, New York, where she studied sorption behavior of an emerging contaminant, antimony—Sb (V)—on hydroxyapatite, a known sorbent that is a naturally occurring mineral form of calcium apatite.

During her free time, Song’s favorite activity is running. She also enjoys listening to music and reading books.

EES Chair Jonathan Nyquist, and two recent graduates, Lacey Pitman, MS ’14, and Derek Lichtner, BS ’13, conduct subsurface georadar surveys on the Main Campus with a big assist from Hooter.
TEACHING AWARDS:
EES faculty receive two distinguished teaching awards

Professor David Grandstaff and Associate Professor Ilya Buynevich each won 2014 Dean’s Distinguished Teaching Awards.

Grandstaff joined Temple University as an instructor in 1973, earned the rank of professor in 1987 and twice served as chair of the department. He teaches introductory geology, geochemistry and two graduate geochemistry courses. He often uses the Socratic method, continually questioning his students.

His research includes using rare earth elements and other geochemical tools to better understand the depositional and diagenetic environment of fossilization and taphonomy of vertebrate remains.

Buynevich teaches physical geology, process geomorphology and coastal processes. He works closely with undergraduates as both a mentor of students in the Undergraduate Research Program and as the department representative to CST’s Science Scholar Program. Since joining Temple in 2009, he has supervised five master’s students, three of whom are pursuing doctoral degrees in the field of geosciences.

His research focuses on geological records of extreme events and animal-substrate interaction using geomorphological, sedimentological, geophysical and geoarchaeological methods.

Two Faculty Members Earn Tenure

During the past year two faculty members, Associate Professors Ilya Buynevich and Alexandra Krull Davatzes, achieved tenure (see above story regarding Buynevich).

Davatzes joined Temple University in 2008. Her research focuses on building temporal and scale constraints of geologic processes on Mars; early Earth atmosphere, crust and oceans; and meteorite impact plume formation and evolution. Her courses include “Sedimentary Petrology” and “Planetary Geology.” She also serves as a faculty member at Temple’s Spatial Intelligence and Learning Center.

Strong Showing at 2015 GSA Conference

EES faculty and students presented and co-authored more than 30 talks and posters at the Geological Society of America National Conference in Baltimore Nov. 1-4.

ASSOCIATE PROFESSOR DENNIS TERRY

co-authored The White River Badlands: Geology and Paleontology, which Indiana University Press published earlier this year. Between 1987 and 1990 Terry worked each summer at Badlands National Park in South Dakota as a National Park Service interpreter and researcher. He has returned every summer since then to continue his research.

IN MEMORIAM

We mourn the passing of Emeritus Professor Gene Ulmer, who died Sept. 18, 2015. Gene was a driving force in our department for decades, both during his 39 years as a faculty member and more recently as emeritus faculty. An accomplished researcher and teacher, Gene cared intensely about students and established the Gene C. Ulmer Student Fund to help undergraduates pay for their field camps. Donations can be made to the fund in his memory. Please see details on the following page.

EES FUNDED RESEARCH

New External Grants
July 1, 2014 to June 30, 2015

Ilya Buynevich
• Geophysical Characterization of Biogenic Structures in Siliciclastic and Carbonate Media, American Chemical Society Petroleum Research Fund

Alexandra Krull Davatzes
• Field Studies of Precambrian Impacts and Implications for the Early Crust and Environment, NSF CAREER award

Nicholas Davatzes
• Geothermal Play-Fairway Analysis of Washington State Prospects, Washington State Department of Natural Resources, Geology, DOE
• Poroelastic Tomography by Adjoint Inverse Modeling of Data from Seismology, Geodesy, and Hydrology, University of Wisconsin, DOE

Nicholas Davatzes and Roselyne C. Laboso
• Influence of Fault Slip Mechanical Interaction on the Evolution of Permeability at Brady’s Geothermal Field, University of California

Sujith Ravi
• Resource-Use Impacts and Potential for Electricity and Agriculture Co-Production From Large-Scale Solar Development, NSF

Laura Toran
• A New Classification System for Karst Springs Using Storm Hysteresis, NSF
Field camp crowd-sourcing reaches fundraising target

This year the Department of Earth and Environmental Science successfully completed a crowd-sourcing fundraising campaign—which involved a deadline for submitting online donations—to support seniors attending their capstone geology field camps. Those funds, combined with the proceeds of a jewelry sale, raised more than $4,000 to provide critically needed support this summer for students attending their capstone geology field camps.

The funds were disbursed via the Gene C. Ulmer Student Fund, which was established by the recently deceased emeritus professor to specifically support our students’ field camps.

Returning students always remember their field camps as one of the best (and hardest) experiences in their training as geoscientists.

To support the next generation of geologists, please consider contributing to the Gene C. Ulmer Student Fund. Donations to the fund can be sent to the dean's office or the EES with the name of the fund and code S3055 on your check.

Or you may donated online by going to http://cst.temple.edu/giving/how-give.

Thank you.

ALUMNI SPOTLIGHT:
Gagliano ’04, ’10, senior geologist with NJ Geological Survey

Mike Gagliano, ’04 BS mathematics, ’10 MS geology, has been a senior geologist with the New Jersey Geological Survey (NJGS) for the past two years. His master’s degree focused on geophysics, which he has been utilizing since he started working part-time for the NJGS in 2012.

His primary responsibilities involve conducting marine seismic surveys to identify offshore sand resources for beach restoration in the wake of Hurricane Sandy. He also has conducted seismic surveys to: locate underground storage tanks; track contaminant plumes; detect salt water intrusion; delineate the boundaries of ancient cemeteries; and map a shipwreck off the coast of Mantoloking.

“With geophysics, we’re always trying different techniques and you never know what you are going to find,” says Gagliano, a Philadelphia native and resident. “When people follow up on your work and find an underground storage tank to dig up that is exactly where you said it would be, it’s quite satisfying.”

Gagliano says his education at Temple, including the skills he acquired in Matlab and ArcGIS, have made him something of an IT guru at the NJGS. “To find the offshore sand that the U.S. Army Corps of Engineers uses to replenish the beaches requires a lot of data processing,” he says, “I actually wrote some programs in Matlab to do some of that processing.”