Jim Berglund: 1st EES PhD Graduate

Four years after the EES Department admitted its first three geoscience doctoral candidates, this spring Jim Berglund became the department’s first PhD.

Berglund’s doctoral research explored the fluctuating hydrological characteristics of karst formations in central Pennsylvania through the thermal and geochemical monitoring and modeling of springs. “Rare earth elements act like fingerprints to let us know where the water has been and what interacted with it by the time it reaches the spring,” says Berglund, who at Temple authored or co-authored four research articles. Those indicators can vary widely following a storm as rainwater often flows into sinkholes that feed these springs.

In December, the popular teaching assistant received the Rick Valentino Outstanding TA Award, which is given only occasionally. His students appreciated his inclusive teaching style, carefully crafted lectures and puns. Berglund also co-founded TU’s Sigma Gamma Epsilon Honor Society, which provides career information to earth and environmental science students.

“I enjoy teaching because I have to learn the material more and get to relive, for example, the feeling of falling in love with geology,” says Berglund.

In mid-July, the Minnesota native—who previously worked as a drinking water protection hydrologist for that state—will become a non-teaching assistant professor of hydrology at Montana Tech in Butte. A licensed drone pilot, one of his research continued on page 4
Geomorphology students present at GSA conferences

Since the “Process Geomorphology” course became writing intensive in 2014, the course’s term project offered an opportunity for students to conduct original field research under the supervision of Associate Professor Ilya Buynevich and teaching assistants. The projects range from lichenometry of rockfalls to gravel bar dynamics, geophysical imaging of large animal burrows along stream banks and analysis of treefall resulting from Superstorm Sandy in 2012. Over the past five years, this research has culminated in 16 presentations at national and regional Geological Society of America conferences, with published abstracts first authored and co-authored by geomorphology students. For some of them, these projects have provided a unique undergraduate experience often valued in entry-level employment.

Department shines at conferences

Nicholas Davatzes, associate professor and chair, gave a featured talk at the Gordon Research Conference on Rock Deformation in Andover, New Hampshire. Students presented their research findings at a wide variety of local and national meetings this past academic year, including:

• The EES Department gave 12 presentations —3% of the meeting total—at the Geological Society of America Northeast Section conference in Portland, Maine, in mid-March. Nine of the presentations were by EES undergraduates.
• Seven students, as well as one current and one former postdoc gave presentations at the fall meeting of the American Geophysical Union last December in Washington, D.C. Also attending were Alyssa Finlay Griffin, BS ’10, MS ’12 and Bill Lukens, BS ’11, MS ’13, and Branimir Trifunovic, BS ’16.
• Four students gave presentations at the Goldschmidt 2018 geochemistry conference in Boston last August.
• Master’s student Drew Spake presented this February at the Stanford Geothermal Workshop.

Alumni News

Alyssa Finlay Griffin, BS ’10, MS ’12, is pursuing a doctoral degree at one of the world’s premier oceanographic institutions, the Scripps Institution of Oceanography. Her research on the impact of changing ocean chemistry on coral reefs was the subject of the recent Scripps Student Spotlight.

Karen Kopcznski, BS ’12, MS ’17, joined the New Jersey Department of Environmental Protection and will continue helping the department as an adjunct instructor, teaching general education classes and a variety of lab sections.

Bill Lukens, BS ’09, MS ’13, will begin a tenure-track position this fall at James Madison University. He just completed a postdoc at the University of Louisiana at Lafayette in Brian Schubert’s lab, where he examined terrestrial paleoclimate proxies. Bill and Star George, BS ’10, wed 2017, and Star continues to work for INTERA.

Christopher Seminack, MS ’11, now an assistant professor of geology at the University of North Georgia, was invited to share his research on coastal dynamics at the Friday EES seminar.

Logan Wiest, MS ’13, won the 2018 PALAIOS outstanding paper award from the Society for Sedimentary Geology (SEPM) and in the fall will be joining the faculty at his alma mater, Mansfield University of Pennsylvania.

Emily Morton, BS ’10, who this summer expects to defend her geophysics doctoral dissertation at New Mexico Tech, last year earned the top student award at the Seismology Society of America conference in Miami for her research into small earthquakes off the Pacific Northwest coast.

Sponsored by the CST office of student affairs, the travel grants and awards for academic and creative achievement are designed to enable students to attend and present their research at conferences, workshops, and seminars. These opportunities provide students with a chance to network, learn about potential future employers, and gain experience in their chosen fields.

Student News

Melissa Enyo Sherman, senior geology major
2019 Helen Leshock Molnar and Jeffrey G. Molnar, CST ’76, Award

Benjamin Burch, junior environmental science major
Will attend the NSF Research Experience for Undergraduates (REU) with the University of Southern California’s Department of Energy to research the biofuel potential of macro algae. The research will be conducted at the USC Wrigley Marine Science Center on the Catalina Island.

William Burger, MS ’19
National Science Foundation Long Term Ecological Research (LTER) summer fellowship from the Sevilleta LTER, New Mexico, program, for his project on the biophysical impacts of prescribed fires and their implications for grassland restoration.

Sarah Kurchan, BS ’19, an environmental science and political science major, won the Natan Luehrmann-Cowen Award.

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Postdoc **Sarah Beganskas** aims to enhance urban stream water quality

Postdoctoral researcher Sarah Beganskas joined Laura Toran’s lab in September 2018 after completing her PhD at the University of California, Santa Cruz. Her research is focused on improving water quality in urban streams. She is helping model the Wissahickon Creek to study how stormwater management impacts sediment and nutrients in the stream. To evaluate how land cover and stormwater management affect stream temperatures, she is working with local watershed agencies to organize citizen science volunteers to collect data at dozens of locations.

Along with collaborators from the Civil and Environmental Engineering Department, she also is testing the impact of woodchips and drainage patterns on nutrient removal in stormwater detention basins along the I-95 corridor in Philadelphia. In addition, she is helping graduate students Liz Cushman and Ashleigh Kirker sample stormwater runoff at field sites throughout lower Montgomery County.

**Jon Nyquist** heads general education at Temple

In January 2018, Professor Jon Nyquist, the former department chair, became the director of general education at Temple University. General education is the part of the undergraduate curriculum that cuts across all majors, and enrolls more than 17,000 Temple students per semester in the areas of first-year writing, intellectual heritage, the arts, U.S. society, world society, race and diversity, human behavior, science and technology, and quantitative literacy.

Nyquist’s initiatives during his first year included establishing course coordinators to ensure quality and consistency in large, multi-section courses; the ongoing development of data dashboards to monitor enrollment trends, grading practices, etc.; and establishing “Limited Edition” general education classes.

These innovative classes, which will begin either during the spring or, most likely, fall semester of next year, will address current issues and accommodate special topics, such as guest lecture series or classes involving community partnerships. They will only be available during three semesters over the course of three years.

**FACULTY AWARDS**

*Laura Toran*
- CST Dean’s Distinguished Excellence in Research Award

*Sujith Ravi*
- CST Dean’s Distinguished Excellence in Mentoring Award
- 2018 Internationalization Grant to Establish a Joint Research Partnership with Indonesia on Sustainable Renewable Energy Development in the Tropics (with Nicholas Davatzes)

**NEWLY FUNDED RESEARCH**

*Steven Chemtob*
- Microtextural controls on silica diagenesis in organic-rich siliceous shales: an experimental approach, Doctoral New Investigator, American Chemical Society Petroleum Research Fund

*Alexandra Davatzes*
- Integrating cognitive science and intelligent systems to enhance geoscience practice, NSF

*Nicholas Davatzes*
- Geothermal Play-Fairway Analysis of Washington State Prospects, Washington State Department of Natural Resources
- Geophysical Habitat of Subglacial Thwaites (GHOST), NSF
- Thwaites-Amundsen Regional Survey and Network (TARSAN) Integrating Atmosphere-Ice-Ocean Processes affecting the Sub-Ice-Shelf Environment, NSF

*Jonathan Nyquist*
- A geoscience pathway field experience in near-surface geophysics to promote recruitment and retention of transitional students in quantitative geosciences, NSF

*Dennis Terry*
- An Inter-disciplinary approach to Constraining Paleo-geomorphic Responses to the Eocene-Oligocene Hothouse to Icehouse Transition, NSF
- Document Significant Fossil Localities within the Sharps Formation, Badlands National Park, Natural Resource Preservation Program, Department of the Interior

*Laura Toran*
Intriguing new general education courses

SPOTTING EVIL PLOTS

Teaching students information literacy used to involve covering library databases and citation index searches. These days finding information is easy; evaluating information quality is the real challenge. One aspect of “fake news” that has received little attention is misleading charts and graphs. To teach students how to spot deceptive data visualizations, Professor Jon Nyquist created a new quantitative literacy class for non-science majors called, “Evil Plots.”

The course covers the three distinct ways a plot can break bad:

- The graph can be misleading—the axes might be reversed, the aspect ratio distorted or only selective data points are shown.
- The data may be suspect due, for example, to misleading polling questions or inadequate sample size.
- The interpretation can be wrong, for example, confusing correlation with causation.

Student presentations are one of the highlights of the class. Each team creates their own misleading plots to support some outrageous claim. The audience is challenged with exposing the evil magician’s sleight of hand. When taught for the first time in fall 2018, student presentation titles included: “Vegans are murderers” and “Aliens among us.”

DOES BUYING “GREEN” MATTER?

Environmental quality and sustainability involve social, economic and environmental factors. “Environmental Life Cycle Analysis,” a newly offered general education quantitative literacy course taught by Assistant Professor Bojeong Kim, provides a unique classroom setting for students to learn about and use commercially available Life Cycle Analysis (LCA) software. GaBi, the world’s leading LCA software, contains the most current life cycle inventory (LCI) data and impact methodologies.

Students enhance their quantitative thinking and decision-making processes for the choices that they make daily that involve potential local and global environmental impacts.

Symposium honors Gene Likens, acid rain pioneer

A symposium on science communication was held April 10 at Temple University in honor of Gene Likens, winner of the 2019 Franklin Medal in Earth and Environmental Science. Likens is known for his development of watershed scale science and his leadership in identifying the threat of acid rain in North America. Likens worked to educate the public and the U.S. Congress on the threat, which led to the Clean Air Act Amendment of 1990.

The symposium honored his efforts by providing advice to other scientists about how to advocate while still conducting rigorous science. The symposium was organized by Professor Laura Toran, who along with Professor Robert Sanders, Biology Department chair, nominated Likens for the medal.

Likens received his medal at a ceremony at the Franklin Institute.

Jim Berglund continued from page 1

projects will involve using heat-sensing drones to gauge groundwater movements in the Yellowstone Basin.

Referring to his advisor, Professor Laura Toran, Berglund says, “She was an amazing PI in terms of getting me more experience in developing research questions, writing, publishing, attending conferences, networking with potential future collaborators and teaching.

“My time here at Temple has been very valuable.”