



GLACIAL DEPOSITS

VOLUME 48 • FEBRUARY 2024

GEO ranks No. 1 in Birds Give Back gifts

Wow! What a success our 2023 Birds Give Back day was. For a second year, GEO Redbirds left their mark. On February 23, 2023, Illinois State University held its annual Birds Give Back day of philanthropy. While the University received over 4,500 gifts totaling \$1,061,000, the Department of Geography, Geology, and the

Environment received 379 gifts to our five funds. This is the highest number of donations received by any academic unit at Illinois State University! It was higher than Redbird Athletics. The gifts totaled nearly \$58,000. Thank you for your generous support. The gifts have been used to provide scholarships to students; fund class field trips to Chi-

cago, northern Michigan, Wisconsin, our West Texas Spring Break Trip, and Japan; defray graduate student research costs; and supplement travel funds for students to attend professional meetings. This year's Birds Give Back day will be February 22, 2024. Help us keep atop the leaderboard this year.



Chicago field trip: Lincoln Park Conservatory



Michigan field trip



Wisconsin field trip



Japan Explorations Study Abroad: Nokogiriyama mountain temple

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Message from the chair

Hello friends and colleagues! I hope this message finds you well. We've seen many positives in 2023.

Student enrollment grew to 249 across all programs, representing an increase of 12% over the 2022 enrollment. The large student body reflects the collective effort of the faculty, staff, and students to engage and connect, promoting a friendly, inviting academic home.



Dr. Tenley Banik returned from sabbatical, where she was researching Icelandic volcanism. She had the opportunity to sample an active flow, and she spent time sampling fish heads. This year, Dr. Wondy Seyoum and Dr. John Kostelnick are on sabbatical. Dr. Alec Foster was recognized as one of the 2022-23 Research Initiative Award winners. Dr. Robert Nelson was inducted into the College of Arts and Sciences Emeriti Hall of Fame in August.

During the Birds Give Back campaign in February, the Department received over \$58,000 from alumni and friends of the department. These generous gifts supported student scholarships, offset the costs of field courses and study abroad courses, supplemented travel funds for students to attend professional meetings, and provided students with research assistantships.

For those unaware, Dr. Dagmar Budikova accepted the position of dean of the College of Arts, Sciences, and Letters at the University of Michigan-Dearborn this summer. Dagmar left the Department in a strong position, and I thank her for the leadership and vision she provided the department for the last eight years. I am serving as interim chair for the 2023-24 year. I am honored to have the privilege and opportunity to serve in this position and to help transition the department as the next chair is hired. The search for the next chair has been initiated; the dean plans to announce the next chair in spring 2024.

The department remains on an admirable trajectory, excelling in research and teaching. This volume of *Glacial Deposits* highlights the many developments and accomplishments of our students and faculty. I encourage you to explore this volume of *Glacial Deposits*. I would also like to offer a grateful and heartfelt thank you for everyone's generous gifts to the Department of Geography, Geology, and the Environment. Your time, expertise, experiences, and monies support our programs, enhancing the success of our students, faculty, and staff. Our department is strong and well-poised to explore a variety of unique and exciting opportunities that will further enhance our academic standing, value, and relevance in years to come.



Dr. Eric Peterson

Student ambassador initiative launched

By MK Panek

In an exciting development last year, the Department of Geography, Geology, and the Environment at Illinois State University introduced a remarkable initiative: student ambassadors. Recognizing that our department can sometimes be overlooked in the academic landscape, we took a proactive step to highlight its significance. These dedicated student ambassadors are passionate leaders who play a pivotal role in promoting the department's offerings, engaging in outreach activities, and providing a greater sense of community among not only students, but faculty as well. With their commitment, these ambassadors

have been working to successfully place the department in the spotlight, and to showcase its valuable contributions to our university.

Student ambassadors are focused on recruiting students to the department and promoting interaction and collaboration between majors. Over the course of this year, they have talked with future students and families, hosted events for existing students, and launched an Instagram page for the department. They have also worked to improve the student lounge into a more inviting space through rearrangements and seasonal decorations. With the installation of a

new monitor display in the hallway, the ambassadors have worked to keep it up to date with upcoming events and information. For current students, they offer office hours for various courses that are not available through the Visor Center.

Each major program has at least one ambassador to assist in promoting the major/minor programs, and to support the current and future students in our department. Currently we have six department student ambassadors, and we hope to be able to continue this new program to support our programs and students in the future.



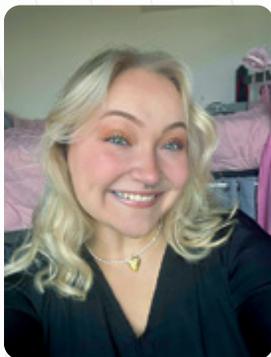
Blaire Krickl, senior geography major



Emily Laureano, sophomore ESSE major



Indira Robinson, junior ESSS major



Lauren May, sophomore geography ed major



MK Panek, senior geography ed major



Ruby Garey, junior geology major

CURRENT *faculty*



Dr. Tenley Banik
Associate Professor of
Geology; Petrology,
Volcanology, Geochemistry



Adam Bauer
Instructional Assistant
Professor of Geography;
Research Ecologist CERL/
ERDC



Dr. Amy Bloom
Instructional Assistant
Professor of Geography;
IGA Co-Coordinator



Dr. James Day
Professor of Geology;
Paleontology,
Paleoecology,
Paleogeography



Dr. Alec Foster
Assistant Professor
of Geography; Urban
Environmental Change,
Urban Sustainability,
Environmental Justice



Dr. Melissa Hail
Assistant Professor of
Geography; Human
Geography, Urban
Geography, Urban Planning



Dr. Matt Himley
Professor of Geography;
Nature-Society, Political
Ecology, Latin America



Dr. John Kostelnick
Professor of Geography;
GIScience, Cartography,
GEOMAP Director, IGA
Coordinator



Dr. Daniel Kpienbaareh
Assistant Professor of
Geography; GIS/Remote
Sensing Applications,
Natural Resource
Management, Sustainable
Agriculture, Sub-Saharan
Africa



Dr. David Malone
Distinguished Professor
of Geology; Structure,
Stratigraphy, 3-D Mapping



Dr. Catherine O'Reilly
Professor of Geology;
Biogeochemistry, Water
Quality, Hydrogeology



Dr. Reecia Orzeck
Associate Professor of
Geography; Political
Economy, Historical and
Social Geography,
Middle East



Dr. Eric Peterson
University Professor of
Geology and Interim
Chair; Hydrogeology, Karst
Hydrology



Dr. RJ Rowley
Professor of Geography;
Sense of Place, Cultural
Geography, Internship
Coordinator



Dr. Wondwosen Seyoum
Associate Professor of
Geology; Hydrogeology,
Remote Sensing,
Hydrologic Modeling



Dr. Galina Shinkareva
Postdoctoral Resident



Dr. Aondover Tarhule
Professor of Geography,
Interim President



Dr. Jonathan Thayn
Professor of Geography;
Landscape Ecosystem
Function Modeling, Remote
Sensing, Latin America



Dr. Lisa Tranel
Associate Professor of
Geology; Earth Surface
Processes; Tectonics and
GIS Applications



Dr. Dmitrii Vlasov
Instructional Assistant
Professor

CURRENT *staff*



Karen Dunton
Administrative Aide



Barbara Fiest
Civil Service Extra Help



Paul Meister
Coordinator of Academic
Services in Geology,
GEO 102 Instructor



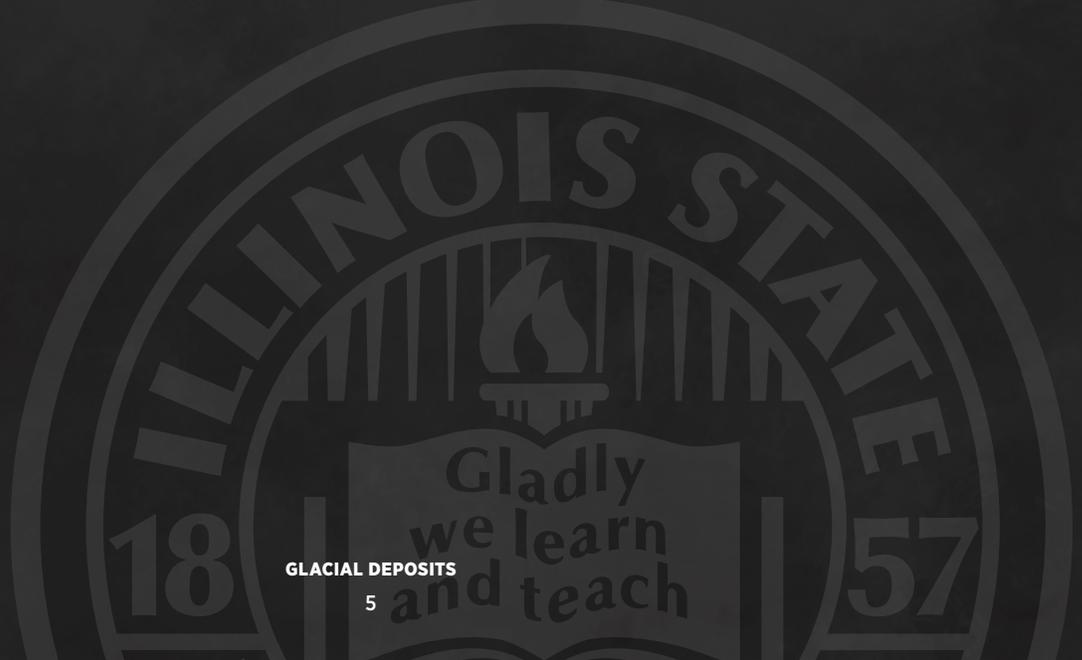
Russell Piontek
LEA Laboratory
Coordinator



Laura Roethle
Accounting Officer



Jill Thomas
Geography Advisor;
Teacher Education
Specialist; Geography
Lecturer



FACULTY SPOTLIGHT

DR. LISA TRANEL

Dr. Lisa Tranel is a geologist who studies how the Earth's surface evolves over time. Her research has focused on interactions between surface processes and tectonics in mountain landscapes in Wyoming, West Texas, and New Mexico as well as modern changes in landscapes driven by rivers, floods, and human interactions with rock surfaces in Illinois.



Dr. Lisa Tranel working with high school students from the Illinois Summer Research Academy in the FSA 429 computer lab in June 2023.

Tranel holds a Ph.D. in geosciences with a focus on tectonic geomorphology from Virginia Tech, a Master of Science in geology focused on structural geology from the University of Illinois at Urbana-Champaign, and a Bachelor of Arts in geology from Lawrence University.

Tranel's most recent research investigates how bedrock surfaces evolve over time as a result of

rock strength and various erosion mechanisms, including stream incision, slope failures, and human graffiti. Her research methods include field observations of outcrop rock strength properties, analyses of erosion rates on bedrock surfaces, microscopic investigations of thin sections, and repeated observations of changing bedrock surfaces. Tranel has engaged graduate and undergraduate students from ISU, as well as high school students from Illinois, to collect laboratory data, field data, and observations for various research projects. Undergraduate and graduate students recently engaged in research projects with Tranel in Starved Rock State Park and Guadalupe Mountains National Park.

Four high school students spent a week in June 2023 collecting field data along the Mackinaw River with Tranel as part of the Illinois Summer Research Academy. (For more about this program read the article published in *Redbird Scholar* on



Dr. Lisa Tranel inspecting an outcrop at Starved Rock State Park while working in the field with Savannah Thielbar.

July 5, 2023: [News.IllinoisState.edu/2023/07/school-is-out-research-is-in-isu-summer-program-offers-high-school-students-research-opportunities](https://news.illinoisstate.edu/2023/07/school-is-out-research-is-in-isu-summer-program-offers-high-school-students-research-opportunities).

Tranel teaches several courses, including Earth Surface Processes; Glacial and Quaternary Geology; Geotectonics; GIS Applications in Geoscience; Natural Disasters; Minerals, Rocks, Fossils and Maps; and Career Preparation in Environmental Systems, Science, and Sustainability. She also collaborates with the Illinois Association of Aggregate Producers to offer a summer workshop for K-12 teachers across Illinois focused on geology and mining in our state.



Dr. Lisa Tranel presenting at the Illinois Association of Aggregate Producers workshop for K-12 teachers in July 2023 at Chestnut Mountain Resort in Galena.

This year the workshop welcomed over 30 teachers participating at Chestnut Mountain Resort in Galena.

Tranel is this year's recipient of the Outstanding College Service Award in the Mathematics/Natural Sciences Division of the College or Arts and Sciences. The goals of Tranel's service are aimed at enhancing teaching and research environments at Illinois State University and beyond.

From 2019-21, Tranel served in the president role of the Association for Women Geoscientists. During that time, she collaborated with many geoscience organizations to understand inclusion,

equity, accessibility, diversity, and justice needs in the geoscience industry and academic communities. She has been able to bring knowledge and experience back to ISU and the Geography, Geology, and the Environment Department through her work with the STEM-DEI taskforce and through departmental discussions with faculty and students about the Unlearning Racism in Geoscience (URGE) curriculum.



Dr. Lisa Tranel at Chimney Rock State Park, North Carolina, for the Progressive Rock Failure Penrose Conference field trip in June 2022.

WELCOME TO THE DEPARTMENT!

Dr. Galina Shinkareva

Dr. Galina Shinkareva is a postdoctoral resident in the Department of Geography, Geology, and the Environment. Raised in Moscow, the Russian Federation, Galina earned a specialist's degree in geocology with focus on environmental geochemistry from Lomonosov Moscow State University (Moscow, Russia, 2012), followed by a Ph.D. in geography from the same university in 2018.

Her research interests encompass various fields of ecohydrology and water pollution, including the transport of heavy metals in freshwater systems and their accumulation in sediments and aquatic vegetation, as well as GIS applications for studying aquatic systems. Recently, Galina has been working with Dr. Catherine O'Reilly to explore diurnal and seasonal turbidity cycles in freshwater streams, the impact of lunar cycles on sediments bioturbation, ecoacoustics methods for sediment transport studies in freshwater systems, and the remote sensing of water quality changes due to the climate-driven rise in surface water temperature. In addition to her research, she will be teaching Aqueous Geochemistry courses this year.

Dr. Dmitrii Vlasov

Dr. Dmitrii Vlasov is an instructional assistant professor of Geology in the Department of Geography, Geology, and the Environment. He is originally from Kursk Oblast in the Southwestern part of the Russian Federation.

Vlasov holds a specialist's degree in geography (geocol-

ogy with specialization in environmental geochemistry) from the Lomonosov Moscow State University (LMSU), Russia (2012), and a Ph.D. in geography (focus on environmental geochemistry) from the same university (2015). Before joining Illinois State University, Vlasov taught various B.Sc. and M.Sc. courses on Soil Science, Environmental Geochemistry, Urban Geochemistry, Geochemistry of Atmospheric Depositions and Road Dust, Modern Problems of Ecology and Environmental Management, Medical Geochemistry at LMSU (Russia), Kazakhstan branch of LMSU (Astana, Kazakhstan), and Shenzhen MSU-BIT University (Shenzhen, China).

Vlasov currently teaches Planet Earth, Natural Disasters, Medical Geology, and Urban Geochemistry courses. He is an interdisciplinary researcher interested in applying geochemical methods to evaluate the contamination level of different environments (soils, road dust, aerosols, water, etc.) in anthropogenically altered ecosystems, and source apportionment of nonorganic and organic pollutants. Specific research themes include the geochemistry of aerosols, potentially toxic elements, polycyclic aromatic hydrocarbons, environmental health, public health risks, the impact of COVID-19 lockdowns on the environment, sustainable development, and geochemical consequences of global production of chemical elements. His research is primarily focused on urban areas, especially in megacities (with a population greater than 10 million), and he has plans to research anthropogenic impact in smaller cities in the U.S. He is a topic editor of the *Atmosphere* journal.

Congratulations, GRADUATES!

Earth Space Science Teacher Education

Rigo Anguas Sanchez
Laisha Cardenas
Rhiannon Seaborg

Environmental Systems Science and Sustainability

Lane Adamson
Jennifer Adcock
Kurtis Anderson
Michael Boyd
Sara Cygan
Lacey Fever

Ryan Krakowiak
Jarod Sparacio
Becca Taylor

Geography

Anthony Baumann
Axel Baumeister
Jake Brasen
Luke Brasen
Thomas Buwick
Josh Campion
Brad Carter
Tim Erskine
Katarina Eurydice
Matthew Genard
Jacob Holton

Lucas Roslewski
Jacob Sweeney
Terry Thompson

Geography Social Science Teacher Education

Jordan Dunn
Tim Evans
Jena Hassert
Delaney Houk
Ryan Mueller

Geology

Addie Bowen
Ben Bugno

Connor Chambers
Joe Hoberg
Matthew Huisman
Gabrielle Kaeb
Gavin Long
Dakota Spacek
Gracie Stevens

Hydrogeology

Okiemute Commander
Oghenevwede Efofo
Youmi Hong
Nnaemeka Nsude
Oladuji Olaoluwa
Jack Wassik

Internship experiences

Halley Burnett

Hi, everyone! My name is Hailey Burnett. I am currently a senior majoring in geography and biology with a minor in



Hailey Burnett at the beach in Hamburg, Germany.

water sustainability and a GIS Certificate. Over the course of 2023 and carrying into next year, I have had the privilege of taking on the role as a remote GIS technician intern at

Railinc, headquartered in Cary, North Carolina.

The main project that fellow interns and I have been working on in the last year is the production of a connected network of freight railroad throughout North America. A map service like this does not yet exist, and, once complete, will have huge benefits for Railinc as a company and for anyone working with or involved in the freight industry. This product will provide accurate information necessary for efficient and effective routing of freight nationwide and will be able to be purchased by freight and mapping companies, such as Google and Bing, that are looking to improve their maps.

My work for this project has been done using ArcGIS Pro, and for me this process has involved a lot of editing. When the project started, it seemed like there was an impossible amount of work for such a small team, given the extensive network of rails in North America. Now that this project is wrapping up, it feels extremely rewarding to be able to see how much has been accomplished in a year. Additionally, my experience allowed for the opportunity to communicate and connect with a diverse group of

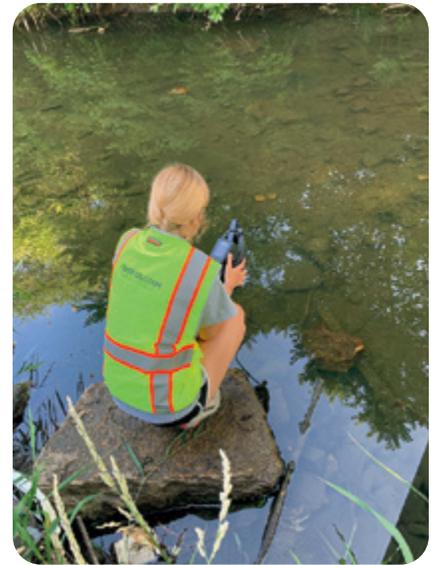
people that share a common interest for GIS. As this position was remote, there were interns that study at other universities, graduate students, and full-time employees that I had the pleasure of working with. Each team member had a unique skillset and background, and being able to bring all of their experiences to the table made for a connected, collaborative learning experience for everyone.

I am beyond grateful to the GEO department at Illinois State for helping me get to this point. With the help of department faculty and staff, I have been able to take a lot from my courses and learning experience as a geography major. I feel this program has allowed me to flourish and gain confidence in necessary personal and professional skills that will carry me forward in a GIS career. My internship experience has allowed me to apply these skills in a corporate setting for the first time, and I don't think it could have gone any better. I have gained so much from applying what I have learned at ISU and taking new experiences and skills from my time at Railinc. I would not be able to be as comfortable and confident in myself and my future in GIS without the combined efforts of the ISU Geography program and my internship with Railinc, and I will forever be thankful for both.

Kara Fowler

Over the summer, Kara Fowler, a sophomore undergraduate from the Geology program, had the opportunity to participate in an internship with Fehr Graham Engineering and Environmental. During the internship, Fowler performed multiple rounds of water quality testing on several sites of the Rock River to better understand sources of excess nutrients in the watershed. This testing was done for the Rock River Watershed Group as a part of their Nutrient Assessment Reduction Plan (NARP).

To obtain water quality data, Fowler assisted a group of Fehr Graham field technicians in deploying and main-



Kara Fowler collecting water data using a sonde on the Fox River.



Kara Fowler and a biologist with Fehr Graham counting and identifying different species of minnows for a biological survey of the Fox River.

taining sondes, which gathered continuous data for temperature, pH, dissolved oxygen, and conductivity of the water. They also collected samples of the water every two weeks, which tested for different nutrients. In addition to the Rock River project, Fowler also assisted Fehr Graham biologists in various biological surveys throughout the summer. By collecting fish, macroinvertebrates, and mussels along different watersheds, Fowler learned to identify different species and their biological impacts on water quality.

Geology students intern at ISGS

During the summer of 2023, four undergraduates and one graduate student from the Geology program participated in internships with the Illinois State Geological Survey.

The students—Carly Johnson, Matthew Huisman, Nicté Rivadeneyra-Braswell, Noah Klauss, and Preston Kietzman—received hands-on learning experience in the field utilizing geophys-



ISGS intern Carly Johnson getting firsthand experience extracting rock core.



Carly Johnson and Matthew Huisman using HVSr in Champaign County.

ical methods to get a better look at the subsurface to gather a greater understanding of the geometries of the Mahomet Aquifer in Champaign County. The geophysical methods the students used over the summer included Electrical Resistivity Tomography (ERT), Horizontal to Vertical Spectral Ratio (HVSr), Ground Penetrating Radar (GPR), and a seismic streamer line that used either p-wave or s-wave to give a better view of the subsurface geology of the area. The students also got to witness rock cores being drilled by a drill rig and learn the process of logging rock cores.

Later in the summer, the students split off into two groups. Huisman and Kietzman headed to Northern Illinois to improve the survey's understanding of the Troy Bedrock Valley in Boone



ISGS interns, Carly Johnson, Matthew Huisman, Nicté Rivadeneyra-Braswell, and Preston Kietzman checking out the depth of a water well.

County. Johnson, Rivadeneyra-Braswell and Klauss headed to Southern Illinois to use ERT to gather better data for the regional aquifers located there.

“I enjoyed doing work for the ISGS, and not only helping the ISGS gain data, but also helping define the boundary of the Mahomet aquifer,” Johnson said. “This made the experience very rewarding. I enjoyed describing the core on the drill rig for a week and creating a stratigraphic column. It was also beneficial to learn about glacial geology



Carly Johnson taking a GPS point at the ERT station while waiting on the terameter to record its measurements.

from our boss, Jason Thomason.”

After completing the internship Johnson, Rivadeneyra-Braswell, Klauss, and Kietzman were able to present the research they worked on over the summer at the Geological Society of America Conference in Pittsburgh. Their research was presented in the form of poster presentations for a day, with those interested being able to ask the presenters specific details about their research.

“This was a great way to gain valuable connections with people in the geophysics community and network with potential advisors,” said Johnson.

Bryce Heiniger

My name is Bryce Heiniger, and I am a junior geography major with minors in environmental studies and water sustainability. During the summer of 2023, I completed an internship at the Illinois State Water Survey located at the University of Illinois. I was fortunate to work with Dr. Trent Ford, the Illinois State climatologist, on a climatology project researching the May 2023 dust storm that occurred near Springfield. I applied my geography and GIS skills to study this event through research, analysis, and mapping, and developed a final comprehensive report on the conditions

that led up to the dust storm.

During my internship, I researched climatological conditions that cause dust storms in Illinois and events surrounding the May 2023 dust storm. I used multiple sources to download climate data (precipitation, daily temperatures, wind speeds, relative humidity, etc.) from weather stations in proximity to the dust storm location. To analyze this data, I used Excel and R Scripts to generate rolling totals, comparisons of output, rankings of climate values, and other calculations. Then, I used mapping skills from my Geography classes to generate bar charts, line charts, choropleth maps, and various maps in ArcMap and Climate Engine. I then col-

laborated with Ford to draft a comprehensive report of the May 2023 Dust Storm project, where we discussed initial results from the data and recommendations for future dust storm events.

I thoroughly enjoyed my internship at the Illinois State Water Survey and appreciated being exposed to various careers in climatology. In talking with Ford, I became more comfortable with the research process and learned about the current status of climatology research. I found value in being part of a project that may help mitigate future dust storms in Illinois. This internship allowed me to develop my physical geographic knowledge and apply it to real-life applications in climatology. My

internship was a rewarding and memorable experience that prepared me for a career in geography.



Bryce Heiniger at the Illinois State Water Survey

Drilling into Earth history: Geology major experiences core sampling science on Mediterranean voyage

By John Twork, March 17, 2023

Like time capsules buried deep beneath the ocean floor, ancient sediment and rock contain fossilized remains of plants and animals that lived tens of millions of years ago.

To extract this geological history, scientists use massive, oceangoing research vessels to drill core samples, providing a glimpse into the Earth's development.

Illinois State University sophomore geology major Ruby Garey was one of 15 undergraduate students from across the country selected to live, learn, and

work aboard such a vessel, the Joides Resolution (JR), on a 10-day voyage in February from Heraklion, Greece, to Tarragona, Spain. During her journey across the Mediterranean Sea as a member of the JR Academy, Garey was immersed in scientific ocean drilling and the geoscience careers it involves.

"It was an amazing experience," Garey said. Each morning she set an early alarm to watch the sun rise across the JR's stern. After breakfast, she and her academy colleagues engaged in classes presented by instructors from the International Ocean Discovery Program, NASA, Texas A&M University, Columbia University, and the University of California Museum of Paleontology.

Lectures about the Mediterranean were occasionally interrupted by sea life sightings—in the Mediterranean.

"You would look out the window and see a pod of dolphins," Garey said. "Then, everyone would rush over to see them. We got to see a lot of marine life—like dolphins, a bioluminescent jellyfish, a swordfish, and at one point, I even saw a sea gull on a sea turtle floating through the ocean."

Garey and her colleagues also worked in the JR's large onboard laboratory, alongside JR geoscientists and technicians. Wearing gloves and

safety glasses, they cut and analyzed core samples extracted by the vessel's 62-meter-tall derrick equipped with a drilling string capable of reaching six miles beneath the ocean's surface.

"That was the coolest thing—all of the hands-on stuff that I did in the lab, from looking at and sorting out these nano fossils through a microscope to just figuring out where I wanted to take a core sample and take some of the sediment from that sample and analyze it," Garey said. "That definitely solidified a career in geology for me."

Core samples from the Mediterranean provide evidence that the sea was once a desert, about 5.5 million years ago. By studying core samples, scientists observe what organisms lived on our planet—and what types of climates they lived in—at different times throughout the Earth's history.

"It's important for understanding how our world works," Garey said. "It's finding out, 'What was the environment and the climate like at the time of those samples?' It's understanding how our world is and how we got to this point in time."

In the evening, Garey and her colleagues pushed through a strong headwind to the front of the JR's deck where they watched the sun set across the



Sophomore geology major Ruby Garey spent 10 days aboard the Joides Resolution (JR), a seagoing research vessel that drills core samples and collects measurements from under the ocean floor.

vessel's bow into the glistening Mediterranean Sea ahead. At night, before bed, they watched the stars overhead.

"I like to say that Orion and the Little Dipper (constellations) were my friends the entire time," Garey said. "They were so crystal clear."

After disembarking the JR, Garey and her academy colleagues spent the remaining days of their trip exploring Spain.

"The food in Spain was delicious, and I really bonded with everybody on the trip," Garey said. "We were all on this experience together, and it was fun being able to experience a new country that we had all never been to."

Garey has since returned to campus where she has reunited with her com-

munity of Illinois State geology and earth sciences students who "feel like family."

"We get to have these great experiences and do a lot of field work," Garey said. She added that she is grateful to Dr. Tenley Banik, an associate professor in the Department of Geography, Geology, and the Environment, for encouraging her to apply for the National Science Foundation-funded JR Academy.

"As a sophomore, I never thought that I'd get that opportunity," Garey said. "But, I was able to go on the trip and get that experience."

Garey, who could see herself pursuing a career in hydrogeology, said she is eager to return to the field.

"Through our program, we get to



The Joides Resolution (JR) is a seagoing research vessel that drills core samples and collects measurements from under the ocean floor.

travel and get these experiences," Garey said. "It's what drew me into geology. It's my way to go. It's my future."

Hydrogeology graduate students receive research recognition



Benedicta Akrofi was one of five GSA Hydrogeology Division Research Grant awardees for 2023. Akrofi received the recognition for her research proposal "The influence of tile flow on water movement and the transport fate of nitrate in a saturated riparian buffer: A case study of the T3 site in central Illinois." She was recognized at the GSA Connects 2023 in Pittsburgh.

Savannah Thielbar represented the hydrogeology program and the College of Arts and Sciences at the Illinois State University Three Minute Thesis competition. Presenting her talk "Human Impacts on Erosion Rates in Starved Rock State Park, IL," Thielbar was one of 11 graduate students to compete at the university level.

Students' research creatively displayed for Image of Research competition

Undergrad Geology student Gracie Stevens received first place in the Image of Research competition for her image titled Measuring Mountains. University Galleries hosted the Office of Student



Research's reception and awards presentation on February 2, 2023, highlighting the 24 finalists (15 graduate and nine undergraduate students).

"Some scholarly works get the label of creative much more easily than others," said Dr. Craig McLauchlan, associate vice president for research and graduate studies. "But there's always creativity in the work."

Participants were charged with creating one compelling, static image of their research along with a brief

narrative. McLauchlan said the ability to communicate research succinctly and clearly is becoming more and more important in society.

"It's really hard for anybody to talk about their job or project and to say it succinctly with nontechnical language in 150 words," said Dr. Gina Hunter, director of the Office of Student Research. "And then to capture that one image and make it compelling is hard to do. So this is really a creative and intellectual exercise that engages students."

My geology research required me to spend several weeks in the Bighorn Mountains of Wyoming to make a geologic map of the Spanish Point quadrangle. This image fully encompasses the science and beauty of geologic mapping. In the picture, I'm using a Brunton to measure the direction of the fabric in the rock at over 10,000 feet of elevation. In the background, one can see boulders moved by glaciers, mountain peaks, open fields, lakes, and the single dirt road that provided our access to the area. From this elevation, *everything* is below you except the sky. —Gracie Stevens

2022-23 Award Winners

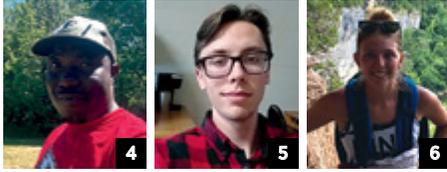
Every year, the department presents student awards that reflect the characteristics we value in our programs. These values include being engaged in department activities, helping each other, working hard, valuing teaching, and excelling in research.



Trilobite Award

1. Nichte Rivadeneyra-Braswell

To a first-year undergraduate student who has been trying hard and getting engaged in geology program activities.



Gold Star Award

2. Celeste Saul

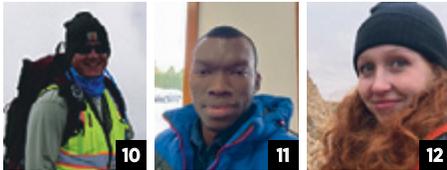
Given to an undergraduate student who has been involved in high-level research activities, including presenting at a national conference.



Granite UTA Award

3. Emily Gordon

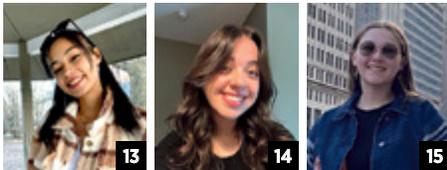
Given to an undergraduate student who excelled in teaching and mentoring students and supporting the mission of teaching at ISU.



Granite GTA Award

4. Okiemute "Coco" Commander

Given to a graduate student who excelled in teaching and mentoring students and supporting the mission of teaching at ISU.



Titanium Award

5. Dakota Spacek, 6. Savannah Thielbar

Given to an undergraduate student and a graduate student who have a solid work ethic, are fully committed, and just keep going.



Gneiss People (undergrad)

7. Logan Dooley, 8. Aaron Jacob

Given to undergraduate students who are engaged in department activities, help other students, and are overall nice and positive people.



Gneiss Person (grad)

9. Amina Abdulsalam

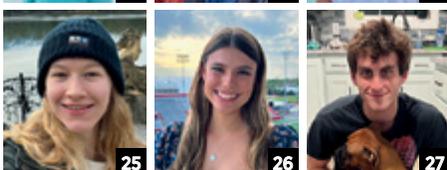
Given to a graduate student who is engaged in department activities, helps other students, and is overall a nice and positive person.



Research Initiative Award

10. Andrew Dooley

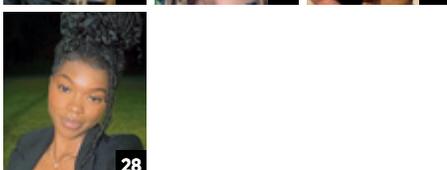
For a promising research direction after the first year of graduate work.



Research Achievement Award

11. Efobo Oghenevwe

Given to a graduating M.S. student with a demonstrated ability to conduct impactful, high-quality research.



Steve and Lori Nalefski Scholarship

12. Piper Thibeault

To support high-achieving geology majors.



Shields Memorial Scholarship

13. Amira Harris-Bommarito, *Devin Durica, *Grace Eyrich, 14. Alaina Glover, *Lani Klene, *Cassandra Luttrell, *Luke Matich, 15. Emily Olson, *Travist Tuttle

Support for students transitioning to ISU and/or geology and ESSE majors.

Brad and Amber King Field Camp Awards

16. Addie Bowen, 17. Nate Lee, 5. Dakota Spacek, 18. David Strubing

To help defray the cost of attending field camp for promising attendees.

Lincoln Laureate Award

19. Matthew Huisman

An outstanding senior honored for their leadership and service in the pursuit of the betterment of humanity and for overall excellence in curricular and extracurricular activities.

George Means Geography Scholarship

20. Lindsey Mullen

The George R. Means Geography Scholarship provides financial support and encouragement to students of high character with strong professional promise and potential to improve society.

Henry O. Lathrop and A. W. Watterson Award

21. MK Panek, 22. Lauren Driggs, 23. Ruby Garey

This memorial scholarship honors students who demonstrate academic achievement, good character, and leadership qualities.

Joseph Fluder Excellence in Environment Award

24. Emily Bogdanic, *America Rosales De Avila, *Keirsten Wells

Joseph Fluder Excellence in Geography Award

25. Julia Illy, *Lee Maru

The Fluder awards recognize student academic excellence and financial need in support of professional development activities, including the completion of an unpaid internship experience, participation in professional conferences and related travel, study abroad, and purchase of materials or technology that will enhance the professional growth of the candidate.

Louis Miglio Scholarship

21. MK Panek, 26. Lauren Christians, 27. Graham Radabaugh

The scholarship provides support to teacher education students while student teaching.

Margaret Means Geography Scholarship

28. Grace Durosinni, *Ethan Geisler, *Katarina Melulis, *Sean Roberts, *Jamie Twadell

This award is available to support geography students pursuing internships that are unpaid or that only carry a small stipend.

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Stream sounds: Grad student listens in on aquatic life to solve underwater mystery

By Kevin Bersett, March 13, 2023

One afternoon late last summer, Youmi Hong clambered over a bridge railing, waded through a patch of high grass, and carefully tread down a slippery path.



Youmi Hong checks on her equipment, hydrophone, a recording device, and turbidity sensors, which she stored in two tubes in Six Mile Creek.

Then she stepped into a slow-moving muddy mess known as Six Mile Creek.

“This is my workplace,” said Hong with a laugh.

The second-year master’s student in geology was checking on her equipment: an underwater microphone called a hydrophone; a recording device; and turbidity sensors, which she stored in two tubes in what at the time was a shallow pool of water. Hong employed those devices for six months last year to hear what was happening in a short stretch of the creek, which flows into Evergreen Lake from just north of Normal.

Hong was listening for different types of aquatic animals like crayfish and several species of fish. The latter make noise while swimming and mating, digging up the creek bed and creating sediment piles. She was trying to determine why the water was becoming more turbid, or murky, at roughly the same time overnight. Were fish or some other water organisms causing the cloudiness, or were humans or terrestrial wildlife stirring up the water?

To find out, Hong used an innova-

tive approach, referred to as passive acoustic monitoring, to keep track of the sounds in the creek and to analyze the sound data. She is compiling her findings for her master’s thesis due this spring while making a scientific contribution to a pioneering research area.

“This is a very novel field of work in freshwater systems,” said Hong, of Edmond, Oklahoma. “There has been a handful of studies done around the world using this approach in freshwater lakes, but in streams, I don’t think we’ve seen any papers.”

Hong got the idea for this research from her thesis mentor, Dr. Catherine O’Reilly, a professor of Geology. “We’re seeing this change in the water clarity and reduced water quality happening mostly very early in the morning,” O’Reilly said. “So how are you going to figure out what’s going on at 3 a.m. in the stream? You could do it in more traditional ways with nets and fishing poles, but as soon as you start mucking around, all those fish are going to go somewhere else. So what we are trying to do is figure out what might be happening in the stream without actually disturbing the stream.”

O’Reilly connected Hong with French researcher Dr. Camille Desjonquères, a postdoctoral fellow at Université Grenoble Alpes, who has conducted similar ecoacoustic research and provided some of the data coding. Hong has been analyzing hundreds of gigabytes of sounds in a programming language called R.

“I’ve been analyzing with different indices to try to find these different types of organisms and see these relationships in our stream,” Hong said. “Obviously, not all indices work for what our purpose is, but we have a couple, including a biodiversity index, and another one for acoustic complexity—so how complex the sounds are—and we can very easily distinguish things that are biotic in nature versus things that are human- or machine-induced.”

The researchers cannot distinguish which fish they may be hearing. “There’s a huge sound library for things that are terrestrial in nature like birds and other animals, but in terms of fish or insects inside the stream, there’s probably a library of less than 500 sounds,” Hong said. “And we’re finding that a lot more research has been coming out that if there is a lot of interference, especially with like human-induced sounds such as machines, fish will often change their pitch. So the sound library may not even be useful for our purposes.

“And in reality, what we’re wanting to look for is if there is organism activity at night, using those acoustic indices and using those findings that we have from our microphone that is underwater to see if we can put those two together.”

The researchers said understanding the source of turbidity in water is worth researching because it may impact our water supply.

“Turbidity is important because a lot of the sediments can either harbor microorganisms or bacteria that can be extremely harmful to human life, especially because we drink a lot of the water that comes from small agricultural streams like this that feed into larger rivers that we use for our water sources,” Hong said.



Youmi Hong, *right*, has been investigating the underwater life of Six Mile Creek for an innovative research project she is conducting under the mentorship of Dr. Catherine O’Reilly.

O'Reilly is an internationally renowned researcher focused on how human-induced climate change is endangering freshwater ecosystems. She sees how Hong's research could be applied to research farther afield.

"I've been wanting a student to test out this idea for a while, and Youmi has done a great job, especially working with the data," O'Reilly said. "I would love to be able to take some of these ideas and test them in other parts of the world."

Hong's research has been supported

by a BirdFEEDER grant from Illinois State's Office of Student Research and separate funding from the Geological Society of America (GSA). She presented on her research at the GSA annual meeting last fall and plans to share her findings at the Illinois State University Research Symposium this spring. She also hopes to add to the scientific literature in this understudied area by publishing her research in an academic journal.

The research experience is help-

ing to prepare Hong for her career. She wants to manage a municipal water supply or do related consulting after she graduates this May.

"Being able to conceive of and manage my own project, being able to analyze data in a way that makes sense overall in my project, and being able to keep a clear mind and discussing with my peers about how to do this sort of thing will help me."

Research Initiative Award-Dr. Alec Foster

The Department of Geography, Geology, and the Environment is proud to announce that Assistant Professor of Geography Dr. Alec Foster received a 2022-23 Research Initiative Award from Illinois State University. The Research Initiative Award recognizes faculty members who have initiated a promising research agenda early in their academic careers.

Foster's research investigates the social impacts of urban environmental change. He looks at urban greening from political ecology and environmental justice perspectives, asking who wins and who loses when cities implement sustainability plans, policies, and projects. Foster asks these questions using innovative mixed-methods research that combines advanced geospatial and geostatistical analyses with qualitative methods and social theory, with an empirical focus on postindustrial cities in the United States.

Postindustrial cities, like Detroit and Philadelphia, contain vast swathes of vacant land that some have argued provide opportunities for sustainability transformations not possible in cities where land is scarce and expensive.

However, others have found that revitalization efforts often further marginalize current residents and land use practices. One focus of Foster's research program has been to document productive informal uses of vacant land so that they can be incorporated into future land use planning. In Detroit, he investigated "desire lines" or informal, pedestrian created walking paths, and urban agriculture. Highlights from this work include the first citywide census of desire lines, and a time-series analysis of urban gardens in Detroit's Lower Eastside. In terms of policy contributions, this work ultimately argues, based upon interviews with Detroiters, that these informal practices provide environmental and social benefits and should be included in the many efforts to plan Detroit's future.

In Philadelphia, Foster has investigated changing access to greenspace and tree canopy. One aspect of this research looks at rapid socioecological change in the newly gentrifying neighborhood of South Kensington, furthering our understanding of how expanding residential and commercial construction impacts neighborhood greenspace access. The second aspect of this research

analyzes tree canopy change citywide. In one of the first citywide tree canopy change studies, Foster's research

documents that Philadelphia neighborhoods with higher proportions of racialized minorities had lower levels of tree canopy in 2018 and were less likely to gain tree canopy between 2008 and 2018.

Foster has involved undergraduate students from our Geography and Environmental Systems Science and Sustainability in all aspects of his research. In total, he has mentored seven students in research, who have conducted fieldwork, spatial analysis, and literature reviews. Four of his undergraduate research assistants presented their results at conferences, and two are coauthors on peer-reviewed publications. All of his mentees have succeeded in obtaining professional positions or admission to graduate school.



2023 Outstanding University Service Award

Professor of Geology Dr. Eric Peterson received the 2023 Outstanding Service Award. The Service Awards honor and recognize faculty members who have demonstrated excellence in service to Illinois State University. By honoring such individuals, the University demonstrates

its commitment to recognizing service as an activity essential to its mission and governance, provides incentive for faculty members to pursue activities that enhance the quality of their service, and emphasizes the importance of outstanding service.

Peterson oversees the department's graduate program, recruiting and advising graduate students. The hydrogeology division of the Geological Society of America recently honored him with the George Burke Maxey Distinguished Service Award.

Fluddles: Farmers, migratory birds find harmony in modern wetland conservation

By John Moody, February 7, 2023

Combine these two words, floods and puddles, and you get: fluddles. To some ears, it's a quaint-sounding word,

"We have 30 species of shorebirds around here, including sandpipers and plovers," he said. "Most will breed up



From left, Angelo Capparella, Bill Davison, RJ Rowley, and Brittany Menzel '22

rhymes with cuddles, could even be something a child might say. But in nature, fluddles are quite significant and are the key component of a local wetlands preservation project.

Illinois State University Geography Professor Dr. RJ Rowley offered a natural explanation of fluddles and how these temporary wetland areas came to exist here on the prairie.

"They're not an accident," Rowley said. "This part of Illinois was all under glaciers that would, in some places, carve a little deeper, and those depressions are still here. Crops won't always grow on them. Birds recognize them as places to stop and play and eat and rest."

"There's a ton of them out there, but a lot of farm drain tile helps prevent them. Farmers have gotten good at keeping those low areas from flooding."

Associate Professor Emeritus Dr. Angelo Capparella, who recently retired after 31 years as a biology professor at Illinois State, said such stopover points are crucial for the spring and fall shorebird migration.

north on the tundra and make a spring migration and then go south in the fall to the tropics to their wintering ground. They need to maintain their metabolism and fat stores and stay full of food to make their long journeys."

Capparella said temporary wetlands like fluddles don't develop without precipitation. There needs to be enough rain on those shallow spots to retain water. Birds will feed on soil organisms that are easier for them to find in water-filled fields.

Bill Davison is a biologist and avid outdoorsman who enjoys birdwatching, among many other pursuits that keep him close to nature. He is a volunteer and board member at the John Wesley Powell Audubon Society, the Central Illinois Audubon chapter in Bloomington. His day job at a nonprofit involves agri-forestry and wetlands issues and includes interaction with farmers, but he's had a fascination for birds since childhood.

"I have always studied birds and been interested in them since I was a

kid," Davison said. "They're bright, easy to see, and user friendly."

Originally, the local Audubon chapter was called the Cardinal Bird Club and was founded by Illinois State faculty. Its mission "is to engage and promote activities that foster an understanding and appreciation of our natural world and that encourage others to join in this cause."

Davison does his part by organizing bird walks in the spring and fall at Ewing Park, out into rural areas, and at ParkLands Foundation's preserves. He was aware that McLean County had once been a vast wetland. He also knew that despite miles of drainage tiles installed by farmers, birds still manage to find these wet spots on the land as they fly over.

"They show up—shorebirds, water birds, waterfowl—on their way to Alaska, heading up to Canada, and up to the Arctic, depending on the species," he said. "Many are flying thousands of miles, and we happen to be in the middle of their journey. They are on a tight energetic budget, and we are a refueling spot on their migration."

Davison said migratory birds eat insects and plants, but the region has a low diversity of food currently that is also not very high quality. He said fluddles have become especially important since there's been a sharp decline for many bird species—some reduced by almost half—over the past 20 years.

"These birds need to rest and try to gain some weight while they're here," Davison said. "They also use the time here to play. It's kind of amazing because they have to be really tired, but you see them splashing on the water. It's fun to watch."

Rowley is not a bird expert and didn't know a lot about fluddles, but he is a map expert. He teaches a computer mapping class, Introduction to Geographic Information Systems. His connection to fluddles came about through Davison and his wife, Mercy, the town planner for the Town of Normal who is

also active in the local Audubon group. The Davisons, along with Capparella, sought out Rowley.

An ornithologist, birds are Capparella's expertise, he and Rowley have known one another for years. Through pursuit of their birdwatching hobby, the Audubon group had discovered an overwhelming number of fluddles in the area—in the thousands—and Capparella thought Rowley could help the group pare that number down and map what was out there so that the project they had in mind would be more manageable.

"First and foremost, we needed to identify what areas are actually fluddles during wet times," Capparella said. "We needed to scout them out and see how predictive they could be as reference wetlands. RJ did that."

The more manageable the number of fluddles, the group could then go out and physically see them to determine if birds were stopping there. Once more was known about area fluddles, plans could be made to reach out to landowners.

"The goal is to work with farmers, educate them about programs that will pay them to leave fluddles in place," Davison said. "The barriers are cultural and psychological since wet spots don't yield crops, and farmers want to farm every square foot. But there are programs that would compensate for lost yield due to not planting on those low areas of their farms that are a challenge to cultivate but are so important for migratory birds."

Davison said the U.S. Department of Agriculture, Ducks Unlimited, Pheasants Forever, and the U.S. Fish and Wildlife Service all offer programs to help farmers restore wetlands and prairie. A farmer dedicating land to both wetlands and prairie could be eligible for more than one program to recoup lost revenue, some of which offer annual payments lasting from 10-15 years up to 30 years.

For his part, Rowley went to work on the digital mapping work with one of his students Brittany Menzel '22. A good student, Menzel grew up on a river in Northern Illinois, so she was interested in birds and waterfowl. They limited

their search to McLean County and compiled a "ton of data," Rowley said.

They started in early fall of 2021, did data processing through the fall and through the end of April, and handed over their data and maps to the Audubon volunteers about the time migrations would be kicking in, so they could do ground verification.

Rowley used LiDAR (light detection and ranging) technology to gather data that depicts elevation and identifies land depressions. Similar to radar detection, but rather than using radio waves, LiDAR uses a laser. Simply put, it can measure the shape of the Earth and the characteristics of its surface.

"Brittany and I were the map nerds," Rowley said. "We brought the mapping technology to the project. We developed an algorithm to identify depressions across the county that are lower than the surrounding areas."

They sorted what they found removing fluddles located too close to streams and keeping those in upland areas that are not inside stream-like drainage areas. They removed the ones in urbanized areas and kept the ones on soil that holds water (this type of soil is called hydric soil), and they removed any located in forests—which was only a small number in a place like McLean County. They also tossed out artificial depressions like those created near interstates where dirt has been moved around.

"We then sorted by size and kept only the largest ones," Rowley said. "That left us with 852 fluddles after all those processes, and that was too many for our manpower. We then narrowed those by satellite and aerial data to find perennial fluddles where for multiple years they are likely to flood. After going through all 852 to identify those subject to perennial flooding, that left 131 sites that we called our final candidate sites."

With their final list complete, the project was left to the whims of Mother Nature. Unfortunately, since migration season was too dry, local fluddles didn't flood and thus didn't have a chance to form.

"We weren't able to ground truth any of it by going out and seeing the fluddles, but we need a lot of rain for

that to happen, and we're in a semi-drought currently," Capparella said. "We're on hold until we get a wet spring or fall."

Capparella said fluddles serve birds and humans since they have the potential to attract more bird watchers to the area. He said there's a GroupMe app in use in McLean County that alerts birders when there's been a sighting of an unusual bird.

"People come from far away to see a rare bird when there's been a significant sighting," he said. "The birding is done roadside since fluddles are on private land, but people do come to town. It's a form of ecotourism."

Rowley said he's enjoyed participating in the project, especially since he was able to introduce one of his students to a new, real-world experience.

"I love getting out in the field and doing this kind of stuff, and it's fun any time I can get a student involved," Rowley said. "It's also fun when we can put our classroom work and technology toward conservation efforts."

When the group's outreach to farmers does begin in earnest, Davison hopes to have more support lined up, even some of it coming from the arts community.

"We've been working with Bob Dolgan, a filmmaker from Chicago," Davison said. "He's already been filming and interviewing landowners. He's been focused on Ford and Livingston counties, where there are some beautiful wetlands. But we hope that will have an effect on our county."

In the meantime, the project is well underway, and Davison knows that for the long-term good of birds, new revenue sources always need to be found. To that end, he's trying to bring like-minded groups together.

"Hunters and birders have a lot in common," he said. "Historically hunters and fishermen have bought the licenses that helped fund programs for birds, but their numbers are in decline. Birders can help with that."

"We're trying to build a bigger constituency. This is the modern conservation movement."

Ford, Nalefski recognized as Alumni Day honorees

The department was proud to welcome Dr. Trent Ford and Steve Nalefski as guests for Alumni Day in October.

Dr. Trent Ford

Dr. Trent Ford is the Illinois State climatologist at the Illinois State Water Survey and University of Illinois, Urbana-Champaign. Ford is an expert in climate



and climate change and its interactions and impacts, especially as they relate to water. Ford leads climate monitoring and data collection

and provision for the State of Illinois. He and his team provide information online, through traditional and social media, and by speaking to interested groups across the state. Ford also works with state agencies, Illinois communities, and special interest groups with climate adaptation, planning, and hazard mitigation. He has led or contributed to many planning reports including the state's Hazard Mitigation Plan and the State Water Plan.

A native of Roanoke, Ford earned a bachelors in geography from Illinois State University before completing his masters and Ph.D. at Texas A&M University. Before joining the Illinois State Water Survey, Ford was an assistant professor in the Department of Geography and Environmental Resources at Southern Illinois University Carbondale.

Steve Nalefski

Thanks to you: Nalefskis support geology students

Steve Nalefski '83 took a childhood passion for rocks and the natural environment and turned it into a nearly 40-year career supporting clients with permitting, compliance, and remediation services to address their environmental

issues. The first-generation college student flourished on campus, where he met his wife, Lori (Walenga) Nalefski '84; gained technical competence; and enjoyed Geology program field trips.

Nalefski is now the senior vice president and general manager for the environmental services group at Burns & McDonnell, an employee-owned engineering and construction firm. He relies on past years of practical field experiences in managing soil and groundwater remediation and environmental compliance programs to connect with the over 500 employee-owners he leads.

Nalefski credits Illinois State for the problem-solving skills he now uses to confront new environmental threats, including emerging contaminants known as polyfluoroalkyl substances (PFAS), prevalent compounds used to manufacture everyday items that have been found to pose risks to public health and the environment.

"Illinois State helped me to develop critical-thinking skills, especially in understanding the Earth's dynamic system, how sedimentary rocks were deposited, or modified by metamorphic events," said Nalefski, who since leaving campus has completed projects on every continent but Antarctica.

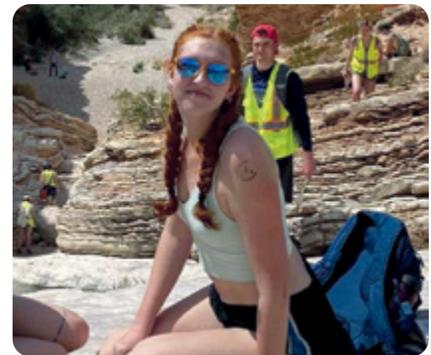
With optimism for future students and gratitude for past experiences, the Nalefskis have established the Steve and Lori Nalefski Endowed Scholarship for declared geology majors with demonstrated financial need. The couple hopes their gift—the largest for Geology—



Steve '83 and Lori (Walenga) Nalefski '84 visit Gornegrat, a glacier near Zermatt, Switzerland.



Steve and Lori Nalefski enjoying a meal with Geology students during their alumni day visit.



The first recipient of the Steve and Lori Nalefski Scholarship is Piper Thibeault. Thibeault is a senior earth and space science education major. She is a graduate of Glenbard North High School.

provides recipients time, opportunity, and financial support to cultivate future-focused geological expertise that will contribute to improving the environment in which we all live. The inaugural recipient will be selected this spring.

The Nalefskis' generosity is a continuation of Steve's professional emphasis on creating change through care of people and the environment. It's a sentiment echoed by Burns & McDonnell, which Nalefski said has played a role in his ability to give back. "Our company does a great job of promoting employee-ownership," he said. "It's all about your clients and your people. You take care of both of those, and you'll create amazing results."

In addition to being Geology's alumni day guest, Nalefski was elected to the College of Arts and Sciences Hall of Fame in April and was a colloquium presenter in October.

Nelson elected to the College of Arts and Sciences Emeriti Hall of Fame



Dr. Robert S. "Skip" Nelson at Oliver Lee State Park in New Mexico in March 2020.

Our own Dr. Robert S. "Skip" Nelson, associate professor emeritus of Geology, was elected to the College of Arts and Sciences Emeriti Hall of Fame. Nelson joins Dr. Michael D. Sublett, profes-

or emeritus of Geography, who received the same distinction last year. Honorees are selected because of their contributions to the College of Arts and Sciences before and after retirement. Nelson retired in 2013, after serving more than 40 years on the Geology faculty. He was one of the first members of the Geology B.S. program joining in 1970, a year after the program's founding in 1969. He was essential to the establishment of the hydrogeology M.S. program. Nelson taught a variety of classes, including

Field Camp, Structural Geology, Environmental Geology, Physical Geology, Glacial Geology, Geophysics, and Geomorphology. Since retirement, Nelson and wife, Lynne, have maintained their home in Towanda. Nelson has maintained a regular presence in the department by participating in field trips and delivering guest lectures. Congratulations Skipper!

P.S. Who remembers how Skip received his nickname?

Facing change in Felmley Annex 434

By Dr. Tenley Banik

Students started the fall semester by having Hydrogeology, Mineralogy, and Sedimentology in a newly renovated FSA 434 teaching lab. Gone are the grey tabletops, wooden build-in cabinetry, and heaps of stand-alone storage cases. Students now have a bright, newly painted space that is "not depressing anymore" with "nicer chairs" and "better organization and blinds" to call home

during their long hours of studying on the fourth floor of Felmley.

New sit-or-stand tables replaced the former workspaces and microscope lockers, and high-density storage units now occupy the side walls of the room, leading to a more streamlined classroom and walking space between and around the tables. In addition to classroom changes, the renovation also produced a

new Geology Student Lounge, housing a sink and kitchenette facilities, tables and chairs, and a loveseat. The lounge is still being configured—please contact the department if you'd like to sponsor wall art, a plant, or something else to make the space an inviting place to build community.



Pre-renovation FSA 434 looking from the front of the room.



Pre-renovation FSA 434 looking toward the front of the room.



Newly renovated FSA 434 looking from the front of the room.



The new lounge space.

Geographers return to Chicago

After a four-year pause due to the COVID-19 pandemic, the Geography of Chicago course taught by Dr. John Kostelnick returned in spring 2023. A highlight of the course was a five-day field trip to Chicago over spring break to visit several sites, museums,

and neighborhoods throughout the city to learn firsthand about important economic, environmental, and social issues from community leaders and local experts. Visits on the field trip included Berwyn, Bronzeville, Chinatown, Humboldt Park, Northerly Island, Oak Park,

Pilsen, Riverside, and Ukrainian Village. Students also completed field work for a class project that focused on the impacts of the COVID-19 pandemic on Chicago. The course field trip is supported in part through the James and Lucy Patterson Family Geography Endowment.

Returning to Japan with students

By Dr. RJ Rowley, Professor of Geography

Japan Explorations Study Abroad, summer 2023

The crowds press around us as we wait for the parade procession to begin. One after another, police officers clear a path down the center of the shopping arcade leading to the Sensoji Temple complex in the Asakusa neighborhood of Tokyo. There is almost no room to move, let alone walk freely. People are packed into this open-air market like a rush-hour train loading at Tokyo Station. Thousands of onlookers are anxious for what seems to only be minutes from beginning. The anticipation is thick.

But, why the pause? Where is the parade?

I'm not the only one who's asking this question. For many years, I have accompanied students to this same spot on this same avenue on the same Saturday in May to participate in the parade of *mikoshi* (portable shrines) at this climax of the Sanja Matsuri (festival), one of the largest religious festivals in



Mikoshi team in front of Sensoji Temple, Tokyo.



ISU Geography Japan Explorations at Sanja Matsuri. From left, RJ Rowley, Kadee Stroleny, Alex Wimmer, Jacob Sweeney, Aaron Englebretsen (back), Laurelin Rowley.



Making new friends as we explore Arima Hot Spring Town, Kobe. From left, RJ, Aaron (back), Alex, friendly Osaka-ites, Laurelin, Jacob. May 2023.



Getting to know other field groups from regional schools at Chusonji Temple Complex, Hiraizumi World Heritage Site. From left, Kadee (back), Alex, Aaron, RJ, Laurelin, and Jacob. May 2023.

Tokyo, and the whole of Japan. Watching teams of dozens of women and men, dressed in traditional festival attire, dancing and chanting as they carry the heavy load of their neighborhood's *mikoshi*, is a truly unique experience.

It is one of my favorite moments of the three-week study abroad course I have taught since 2015. Rarely would students have such a chance to be surrounded by so many people, and never have any been able to observe first-hand the spectacle that is a Japanese *matsuri*, and particularly the parade of *mikoshi*. Once again, I wait in anticipation for the first one to follow the path cleared by policemen, but they are nowhere to be seen.

Up ahead, closer to the temple complex, I see some movement. Unbeknownst to those of us waiting in anticipation along the predetermined route,

and apparently to the police officers as well, the route had changed. I and my student group make our way toward the movement and manage a few good views of the first set of *mikoshi* as their handlers present them to the temple and its priest before continuing along the procession. I have dozens of pictures and videos from previous Sanja Matsuri events, but I can't help but take more.

As I notice one news helicopter after another hover over the parade, no doubt doing their own filming of the event, I realize why this time feels different. The pandemic forced canceled or scaled-down versions of *matsuri* during the pandemic, but COVID restrictions had only recently begun to ease in Japan by the time we got there in May 2023.



Urban cultural landscapes and the iconic Takeshita Street in Harajuku, Tokyo. From left, Jacob, Aaron, Alex, Laurelin, KaDee. May 2023.



Nokogiriyama mountain temple, Chiba Prefecture, home of hundreds of stone Buddha sculptures. From left, Aaron, Alex, KaDee, Jacob, Laurelin, RJ. May 2023.



In transit to the small, sacred island of Miyajima and an encounter with a local island resident. *From left, Laurelin, Jacob, KaDee, Alex, Aaron, curious deer (front).* May 2023.



Himeji Castle. *From left, RJ, Alex, Laurelin, KaDee, Jacob, Aaron.* June 2023.

This year's festival was the first "normal" one since 2019. No wonder the anticipation was so great for the first *mikoshi*. No wonder there was confusion. The event went off without any major hitches, however, and, as I later saw on television news, it was a time celebrated beyond this corner of the biggest city in the world.

Constantly on my mind through-

out this year's excursion was the gap that followed the last time I was here with students in 2019 due to the COVID-19 pandemic. It was difficult to cancel and postpone the planned 2021 program and then again in 2022. I felt like I and my students missed out on so much. In fact, the anticipation with which we waited for the *mikoshi* to appear reflected the anticipation I felt in return-

ing to Japan after several years away.

But I had another realization that day at the Sanja Matsuri. The 2023 festival was the first normal one since 2019, which I also attended with a group of students that year. I really hadn't missed anything! How fortunate that I could be here to see the resurrection of this important tradition that had been put on hold due to a global pandemic! Perhaps it illustrates another instance of the way the pandemic seemed to compress time. It had felt like I had missed so much in that four-year gap, but I did so along with the rest of the world.

The Sanja Matsuri was just one of several amazing experiences and places that I and my students had the opportunity to participate in during summer 2023 as we toured the country and learned about Japanese cultural geography. I will share the stories of just a handful of such experiences through the photographs included here.

Notes from students...

Aaron Englebretsen
(geography major, attended Japan Explorations, summer 2023)

A favorite memory of mine while abroad in Japan this past spring was visiting Himeji Castle. It is one of the most iconic castles in all of Japan. It is also one of the 12 "original" castles left standing. Another "original" castle is Matsumoto Castle, which we also visited. Himeji castle is located at the center of the city of the same name.

When we arrived at the station and walked outside, there was a long main street that goes all the way to the castle grounds. When we looked down the street, we could see the castle at the end, sitting high above everything else. The walk down the street was longer than I initially thought because the castle is so large that from a distance it seemed closer than it appeared. Once I reached

the base of it, I was blown away by how large it was, especially compared to other castles we visited on the trip. Upon seeing it up close, not only do you notice its amazing architecture, but you can see that it is a defensive juggernaut. Its massive stone base is nearly half the height of the castle itself, making it impossible to climb. Its walls have slotted windows to launch projectiles out of and openings to drop objects on the enemy.

Upon entry we took our shoes off and began to climb to the top. Inside of the castle you can find the racks where samurai stored their weapons. It is spacious inside, especially compared to Matsumoto castle, which was far more cramped. When you reach the top, you can see the entire city on all sides. Visiting Himeji was a unique experience. It's not only a place of historical significance but also a spectacle that must be seen in person to fully appreciate.

KaDee Stroleny
(geography major, attended Japan Explorations, summer 2023)

Five souls ventured the vastness of Japan with me for nearly three weeks. The motto for this study abroad was "Embrace the experience." We definitely did this. Visiting holy sites gave such a tranquil feeling. Feeding deer from my hands as I was being bitten are moments I'll remember. Their teeth hurt! I appreciated the opportunity to push myself mentally and physically. Having lupus can be debilitating for some; I experienced a flare while in the country. There were days that I wanted to book a flight back home. I fought those intrusive thoughts and pushed through the pain. Thank you, ISU and Professor Rowley, for allowing me the opportunity to fulfill a bucket-list item.

GEO profs working on GIS broadband mapping project get boost of twins' power

By John Moody, April 21, 2023

When Drs. John Kostelnick and Jonathan Thayn, both professors of geography at Illinois State University, found themselves working on a detailed

rather than building a new tower.

“Water towers and grain silos are prime real estate,” Kostelnick said. “Our task is to help rural communities know

implement the mapping methods we have developed.”

Kostelnick said it's easy to overlook the need for increased broadband width in rural areas because of the shrinking population there. But this isn't just about Netflix and streaming services, there are benefits for agriculture that equates to millions of dollars, he said.

“We think about broadband in terms of economics and from the big picture of return on investment,” he said. “The rationale for rural expansion of broadband also involves farmers having the ability to do precision farming, using drones to map out how much fertilizer to use, and using smart tractors. Technology-based farming requires high-speed internet.

“This type of farming increases yields. In McLean County, we estimated in one growing season that the gain would be \$12 million—that's in one year.”

Kostelnick and Thayn aren't broadband experts, but they are map experts. For this project they are using existing LiDAR data to create new, customized maps for each of the counties involved.

LiDAR technology was first developed for the military. For this application, it gathers data that identifies several land characteristics, including the elevations of objects on the ground in small towns. Rather than using radio waves, like radar detection does, LiDAR uses a laser to measure the shape of the Earth and characteristics on its surface.

“It's (LiDAR) mounted on an airplane,” Thayn said. “And, as it passes over, it's shooting a laser every few inches—or whatever it's set for. It counts how long it takes for the laser to bounce back up to the plane to give you height. The faster it comes back, then the taller the structure.”

Which explains why the Brasens occasionally call out the heights of different structures they see on maps on their screens. LiDAR gives them the ability to determine if an object is a vertical asset or undesirable like trees or school buses.



Seniors Jake Brasen, *left*, and twin brother Luke at work as research assistants in the GEOMAP lab in Felmley Hall.

broadband-related mapping project that required assistance, they reached out to their students. They got a double dose of help when identical twin brothers, Luke and Jake Brasen, answered the call.

The Brasens are both geography majors and environmental studies minors. They have most of the same classes together. They live together, as they have all their lives. Since November, they've worked together as part-time research assistants in the GEOMAP Lab in Felmley Hall of Science. Both seniors, on May 12, they will graduate together.

The Brasens use LiDAR (light detection and ranging) data from the state's GIS clearinghouse website at the University of Illinois at Urbana-Champaign to find the tallest structures in a given rural area. If you're trying to improve the internet signal in a small town that's situated out on the prairie, knowing where the tallest structures are is crucial. It can save a community serious money and plenty of time to make use of something's that's already there

where to locate their internet connection, which needs to be line of sight. It's an expensive proposition, and making use of existing infrastructure is one way to save money.”

Tracking these options is where the Brasens come in.

“We continuously run processes to find vertical assets, tall points, in certain counties,” Luke said. “Right now, I'm running processes for McLean County, which typically means grain silos.”

About two years ago, as part of Project Broadband Breakthrough, Kostelnick and Thayn were asked if they could come up with geographic information systems (GIS) maps to help rural communities improve the internet connectivity challenges they face.

“The Illinois Soybean Association asked us to do some mapping related to rural broadband expansion,” Kostelnick said. “Since that time, we've been working closely with five counties in the state—McLean, Ogle, Edgar, Skyler, and Hancock counties—to test out and

“The 3D surface of the maps is very accurate,” Kostelnick said. “It picks up houses, trees, and light poles. We don’t want those, so we extract them and set it for everything that’s above a certain height. We create a map that has points indicating where these vertical assets are. We give the counties the maps, and they can use them in their planning.”

As their undergraduate years come to a close, the Brasen brothers are already moving toward their next steps. Luke is applying for environmental GIS jobs with an eye toward working for the National Park Service as his dream job someday. Jake has accepted a summer GIS internship with the City of Geneva. Both said this research experience has taught them something beyond the value of a college degree.

“The information we provide can help these communities, which is important,” Jake said. “And it shows that ISU is a college that helps out the surrounding areas.”

The efforts of both brothers in processing massive amounts of data are appreciated by their professors.



Professors Jonathan Thayn, *left*, and John Kostelnick observe their students/research assistants Luke, *left*, and Jake Brasen at work on Project Broadband Breakthrough.

“The methodology we’ve devised for identifying tall structures is really pretty straightforward, but the huge amount of data involved and the geospatial nature of the data means that implementing the process would likely be difficult for someone without a

geospatial background and a really good computer,” Thayn said. “In fact, Jake and Luke’s help has been so beneficial that we are proposing that students at ISU continue to work on the project until the whole state is finished.”

Three named 2022 ‘Researchers to Know’

By Deborah Fox

Three Illinois State University professors have been named 2022 “Researchers to Know” by the Illinois Science and Technology Coalition (ISTC). Professor of Sociology Joan Brehm, Professor of Chemistry Jun-Hyun Kim, and Professor of Geography John Kostelnick join the annual list that highlights researchers at Illinois universities who have made significant advances in their fields.

Dr. John Kostelnick is being honored for his work in the category of Climate Change. He holds a Ph.D. in geography from the University of Kansas. His primary research interests include crisis and hazard/risk mapping and GIS integration in science and society. He is frequently a member of interdisciplinary research teams and has co-published research with his colleagues in a range

of scientific journals related to geography, GIScience, conservation biology, environmental science, hydrogeology, and renewable energy. He serves as the director of the Institute for Geospatial Analysis and Mapping (GEOMAP) at Illinois State University.

Dean of the College of Arts and Sciences Heather Dillaway said, “I offer my congratulations to these three talented researchers. The Coalition’s recognition of Drs. Brehm, Kim, and Kostelnick reminds us that ISU faculty prioritize both teaching and research and achieve excellence in both arenas. These researchers are at the forefront of their fields of study, and they are shining examples of the first-class faculty we have in the College of Arts and Sciences at ISU.”



