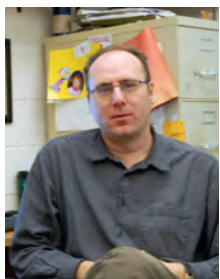


DEAS



NOTES FROM THE CHAIR

David Polly is away this year in Finland on a much-deserved research leave at the University of Helsinki. David has been skillfully directing our department through six rather tumultuous years involving a major building renovation and move, the pandemic, and significant restructuring on campus with the arrival of a new President and Provost. We hope he returns in July 2025 refreshed and ready to take on his final two years as Chair. In the meantime, I am trying to hold things together as the Acting Chair. Campus seems to have quieted relative to the previous academic year with the dramatic

events you may have read about in David's previous departmental newsletter and in the news. But as you will see in this newsletter, the EAS department has been far from quiet!

We continue to run a vibrant colloquium speaker series that brought in seven speakers from across the US to update us on a range of topics including formation of ooids, Holocene flood dynamics, lithium deposits, and Earth system and climate modeling. A highlight for many of us this fall was presentations by our own graduate students and postdocs during our iDEAS seminar series.

We have done a lot of celebrating in 2024. Doug Edmonds was promoted to Full Professor and Ben Kravitz was granted tenure and promoted to Associate Professor. We celebrated with Andrea Stevens Goddard for receiving a prestigious NSF CAREER grant which is selectively awarded to early-career faculty to support five-year research projects. Elizabeth Kenderes was awarded the David and Cheryl Morely ASURE Teacher-of-the-year Award from the College of Arts and Sciences for her outstanding efforts leading our ASURE (Arts + Sciences Undergraduate Research Experience) course that engages freshman students in science research in our department. We were thrilled to host a visit and a party for alumnus Mark Leonard (1979, geology) while he received the Distinguished Alumni Award from the College of Arts and Sciences. Mark has been a long-time contributor to our department as a member of our Advisory Board and former director of the Judson Mead Geologic

Field Station. We also got to celebrate with our undergraduate students, Jaxon Bennett and Stephen Shafer, for being elected to Phi Beta Kappa (Φ BK) this semester. Φ BK is the oldest and most prestigious academic honor society in the country and only a very select number of students at member institutions are elected annually.

We are very pleased to add five new members to our Advisory Board this year. We welcome alumni Ellen Reat Wersan (Chevron) and Emily Gercke (Elemental Excelsator). In recognition of our growing Atmospheric Science program, we have added scientists from this field to our board including Beth Hall (Indiana State Climatologist), Bill Collins (Lawrence Berkeley National Lab), and Ruby (Lai-yung) Lueng (Pacific Northwest National Lab).

We have also been very busy with strategic planning, and we will continue planning well into spring 2025. The department has changed tremendously in the last nine years with the departure of 8 faculty and the hiring of 10 new faculty. Our new department and Field Station strategic plans plan will allow this new department to shape its future over the next 5-10 years.

As you read through this newsletter, I think you will see evidence of a thriving department of faculty, students, and staff who enjoy or work together. I think you will also see evidence of the generosity and legacy of alumni and former faculty. In addition to providing emeriti and alumni news, we are particularly pleased in this newsletter to feature letters from two of our alumni, Emily Gercke and Michael Graham, as well as a message to donors from David Polly. After you are done reading this newsletter, I encourage you to listen to the *Earth on the Rocks* podcast by our very own Shelby Rader and learn more about some of our DEAS faculty!

A handwritten signature in black ink that reads "Kaj Johnson".

Kaj Johnson
Judson Mead Professor and Acting Chair

DEAS

NEWSLETTER of the
DEPARTMENT OF
EARTH AND ATMOSPHERIC SCIENCES

Chair: David Polly

Interim Chair: Kaj Johnson

Editor: Arndt Schimmelmann

Graphic Arts: Ruth Droppo

<https://earth.indiana.edu/>

College of **Arts + Sciences**

Executive Dean: Rick Van Kooten

Executive Director of Advancement: Jeff Stuckey

Director of Alumni Relations: Vanessa Cloe

<https://college.indiana.edu/>

this is
who we are

FACULTY

Simon Brassell	Professor	David Lilien	Assistant Professor
Doug Edmonds	Professor <i>Malcolm and Sylvia Boyce Chair in Geological Sciences</i>	Jackson Njau	Associate Professor
Erika Elswick	Senior Lecturer <i>Executive Director, IU Geologic Field Station</i>	Travis O'Brien	Assistant Professor
Paul Goddard	Assistant Research Scientist	David Polly	Professor <i>Department Chair</i>
Jianhua (Ginny) Gong	Assistant Professor	Shelby Rader	Assistant Professor <i>Director, Stable Isotope Research Facility (SIRF)</i>
Michael Hamburger	Professor	Peter Sauer	Assistant Scientist <i>Assistant Director, SIRF</i>
Ed Herrmann	Senior Research Scientist	Juergen Schieber	Professor <i>Haydn H. Murray Chair</i>
Claudia Johnson	Professor <i>Herman B. Wells Professor</i>	Arndt Schimmelmann	Senior Scientist
Kaj Johnson	Professor <i>Interim Chair, Judson Mead Professor of Geophysics</i>	Paul Staten	Associate Professor
Julia Kelson	Assistant Professor	Andrea Stevens Goddard	Assistant Professor <i>Lee J. Suttner Professor</i>
Elizabeth Kenderes	Lecturer	Brian Yanites	Associate Professor <i>Robert R. Shrock Professor</i>
Chanh Kieu	Associate Professor	Chen Zhu	Professor
Cody Kirkpatrick	Senior Lecturer		
Ben Kravitz	Associate Professor		
Chusi Li	Senior Scientist		

EMERITI FACULTY

Abhijit Basu, David Bish, Jim Brophy, David Dilcher,
Bruce Douglas, Jeremy Dunning, Enrique Merino,
Greg Olyphant, Gary Pavlis, Lisa Pratt, Ed Ripley,
Lee Suttner, Bob Wintsch

this is who we are

POST-DOCS + RESEARCH ASSOCIATES

Jake Dorsett	Post-Doctoral Research Associate
Alice Hardman	Post-Doctoral Research Associate
Timothy Ting-Yu Lee	Post-Doctoral Researcher
Yuan Li	Post-Doctoral Research Associate
Aleksandr Marfin	Post-Doctoral Researcher
Hue Nguyen	Post-Doctoral Researcher
Jovanka Nikolic	Post-Doctoral Research Associate
Elizabeth Sherrill	Post-Doctoral Researcher
Sinclair Zebaze	Post-Doctoral Research Associate
Alex Zimmerman	Post-Doctoral Research Associate



Back: Chris Canfield, Joel Degenstein, John Holbrook, Todd Thompson, Beth Hall, Stan Carpenter, Kaj Johnson

Front: Emily Gerke, Jim Farnsworth, Ellen Reat-Wersan, Sarah Pietraszke-Mattner, Tom Skirvin

STAFF

This summer, our department welcomed a new Graduate Services Coordinator, **Callaghan Maher**. Callaghan has a degree in History, and his knowledge of Irish history is especially impressive.

Ruth Droppo	Graphic Design Web Development
Dianne Dupree	Administrative Secretary, Chair's Assistant
Brandon Ettelt	Financial Administrative Coordinator
Nora Ferstead	Procurement (Purchasing + Travel)
Carol Glaze	Fiscal Officer
John Hettle	Facilities Administrator
Melissa Jackson	Undergraduate Advisor
Molly Karnes	SIRF Technical Manager
Callaghan Maher	Graduate Services Coordinator
Meagan Need	IUGFS Program and Financial Coordinator
Jennifer Simms	DEAS Librarian
Terry Stigall	Geophysics Technician
John Walker	IT Technical Specialist
Zalmai Yawar	Manager, Flume Laboratory

2024-25 ADVISORY BOARD

Chris Canfield	Colorado DNR
Stan Carpenter	Colonial Pipeline Company
William (Bill) Collins	Lawrence Berkeley National Lab
Pete DeCelles	University of Arizona
Joel Degenstein	EP Energy (retired)
Robert T. Duncan	One Atlas
Jim Farnsworth	Cobalt International Energy (retired)
Emily Gercke	Elemental Impact
Beth Hall	Indiana State Climate Office Director
John Holbrook	Texas Christian University
Kaj Johnson	Earth and Atmospheric Sciences
Lai-yung (Ruby) Leung	Pacific Northwest Laboratory
Sarah Pietraszke-Mattner	ExxonMobil Technology + Engineering
Tom Skirvin	Skirvin Geoscience Consulting
Todd Thompson	Director and State Geologist, IGWS
Ellen Reat Wersan	Chevron North American Exploration

photo credit: Ruth Droppo

For the 2024-2025 academic year we have 57 graduate students. This is the largest class in the last ten years. In the last 3 three years, applications to the DEAS graduate program have increased ~50 %.

this is who we are

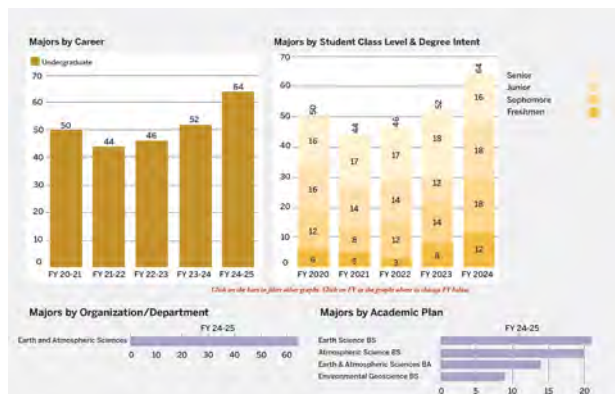
2024-25 GRADUATE STUDENTS and their advisors

Durga Acharya	Ph.D.	Kaj Johnson
Gombodorj Batsukh	M.S.	Andrea Stevens Goddard
Allison Bormet	Ph.D.	David Polly
Adeline Bowen	M.S.	Andrea Stevens Goddard
Bristol Brabson	Ph.D.	Jackson Njau
Eric Burton	Ph.D.	Kaj Johnson
Isabelle Caban	M.S.	Brian Yanites
Nicholas Castro-Perdomo	Ph.D.	Kaj Johnson
Anupama Chandroth	Ph.D.	Claudia C. Johnson
Ping Chen (Evan) Chiang	M.S.	Kaj Johnson
Janelle Cook	M.S.	Chen Zhu
Syan Das	Ph.D.	Brian Yanites
Peyton Dewaelsche	Ph.D.	Ginny Gong
Jayson Eldridge	M.S.	IGWS
Joshua Elms	M.S.	Travis O'Brien
Jake Gearon	Ph.D.	Doug Edmonds
Jeong Yeon Han	Ph.D.	Doug Edmonds
Samantha Hartzell	Ph.D.	Claudia C. Johnson
Kirsten Hawley	Ph.D.	Claudia C. Johnson
Jenni Hurst	M.S.	Shelby Rader
Ariful Islam	Ph.D.	Ginny Gong
Lorena Jevnikar	M.S.	Claudia C. Johnson
Ye Jing	M.S.	Doug Edmonds
Annika Jorgenson	M.S.	Julia Kelson
Diya Kamnani	Ph.D.	Travis O'Brien
Sarah Kolodny	M.S.	Shelby Rader
Thomas LaBarge	Ph.D.	Jackson Njau
Heather Lawson	Ph.D.	Arndt Schimmelmann

Bryan Lee	M.S.	Ed Herrmann
Tony Li	Ph.D.	Ben Kravitz
Ya-Shien (Zax) Lin	Ph.D.	Brian Yanites
Sierra Lopezalles	Ph.D.	David Polly - Biology
Khanh Minh Luong	Ph.D.	Chanh Kieu
Owen Madsen	Ph.D.	Simon Brassell
Minindu Mallawa	M.S.	Juergen Schieber
Garrett Marietta	Ph.D.	Jose Luis Antinao + Henry Loope (IGWS)
Trenton Meier	M.S.	Simon Brassell + Ed Herrmann
Phu Nguyen Duc	M.S.	Travis O'Brien
Trung Nguyen	Ph.D.	Ben Kravitz
Garrett O'Hara	M.S.	Doug Edmonds
Danielle Peltier	Ph.D.	Ed Herrmann + Jackson Njau
Rebecca Porter	M.S.	Travis O'Brien
Kwesi Quagraine	Ph.D.	Travis O'Brien
Bethany Remain	M.S.	Julia Kelson
Nathan Roden	M.S.	Shelby Rader
James Ryan	Ph.D.	Ben Kravitz
Charles Salcido	Ph.D.	David Polly
Brooke Santos	M.S.	Brian Yanites
Kat Sestrick	Ph.D.	David Polly - Biology
Alec Siurek	M.S.	IGWS
Hrisikesh Sivanandan	Ph.D.	Ben Kravitz
Quentin Smith	Ph.D.	David Polly
Emily Throop	M.S.	Doug Edmonds
Eli VanDyke	M.S.	Andrea Stevens Goddard
Madeline Williams	M.S.	Brian Yanites
Hao Yuan	Ph.D.	Simon Brassell
Zonghao Zhang	Ph.D.	Juergen Schieber

DEAS UNDERGRADUATE ENROLLMENTS INCREASE

Demographics are calling for an overall decline in student enrollment at U.S. universities and colleges. The enrollments are down in the College of Arts and Sciences at Indiana University in Bloomington by about 3 % this year compared to last year. However, the enrollment statistics of our department show the opposite trend which testifies to our recent vibrant successes.



new faces

FIVE POSTDOCS STARTED SINCE THE FALL SEMESTER BEGAN

This Fall we are welcoming a cohort of 13 new graduate students and 14 new undergraduate majors, in addition to five new postdocs.



photo credit: Jake Dorsett

Post-doctoral researcher **Jake Dorsett** is working with **Kaj Johnson** in Geophysics. Jake is a computer programmer working on improving code workflows and computational methods for the Geophysics group.



photo credit: Alice Hardman

Post-doctoral researcher **Alice Hardman** is working with **Simon Brassell** in Geochemistry. She writes, "I am interested in using biomarker lipids to develop novel proxy-based temperature calibrations and to reconstruct paleoclimatic conditions. I am currently delving into carbon isotope geochemistry and using algal lipid biomarkers to reconstruct paleo-pCO₂ conditions on ancient timescales such as the Cretaceous."



photo credit: Timothy Lee

Post-doctoral researcher **Timothy Lee** is a seismologist working on tectonics in Asia (Taiwan), the European Alps, and currently in North America. His expertise lies on establishing high-quality earthquake catalogs, seismic tomography of subsurface structures, and faulting mechanisms. His current project with Assistant Professor **Ginny Gong** involves the use of machine-learning in combination with classical methods to build a high-resolution catalog for the Cascadia region and its seismic hazards relating to strong after-shock sequences in 2021 and 2022 around the Mendocino region.



photo credit: Yuan Li

Post-doctoral researcher **Yuan Li** joined Professor **Doug Edmonds'** group in September 2024. As a fluvial geomorphologist, Yuan is using numerical modeling and remote sensing technologies for understanding how rivers change their courses over time. She is developing a database of oxbow lakes of meandering rivers from remotely sensed images. She is also working on identifying the erosion of artificial levees.

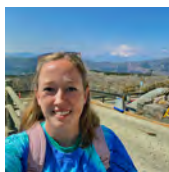


photo credit: Elizabeth Sherrill

Post-doctoral researcher **Elizabeth Sherrill** (Ph.D. 2024) is working in Professor **Kaj Johnson's** lab on viscoelastic earthquake cycle models at Cascadia and Nankai subduction zones. The overall goal of her work is to better assess where subduction zone faults slip during earthquakes, as well as where they do not slip between earthquakes (and may slip in future earthquakes).

FROM ABC NEWS:

David Polly was interviewed by ABC News about *Stegosarus* fossil

The specimen was heading to auction in summer with an estimated value of up to \$6 million. The specimen, known as “Apex,” was excavated in 2023 near Colorado’s Morrison Formation, close to the town of Dinosaur. Professor David Polly pointed out that auctions often put the focus on finding complete dinosaurs versus studying the surrounding environment, giving an incomplete picture of the specimen.

[*read the whole story*](#)



Dr. P. David Polly
Photo credit: Ruth Droppo

FROM COLLEGE OF ARTS + SCIENCES NEWS

Breakthrough study from IU scientists predicts catastrophic river shifts that threaten millions worldwide



Photo credit: James Gearon

An interdisciplinary team led by Ph.D. student **James “Jake” Gearon** and Professor **Douglas Edmonds** published key insights into the dangerous phenomenon of “river avulsion” in the prestigious journal *Nature*, offering a way to predict when and where rivers may suddenly and dramatically change course. Co-authors and former members of our department’s earth surface processes lab include **Harrison Martin** (Ph.D. 2023, DEAS, now a post-doctoral fellow at CalTech), **Clarke DeLisle** (Ph.D. 2023 DEAS, now at EVS, Inc.) and **Eric Barefoot**, a former post-doctoral researcher at IUB and now a faculty member at UC-Riverside. The team applied their interests in sedimentology, remote sensing, and geoinformatics to offer a new framework for anticipating sudden changes in river courses, providing a more complete picture of flood risks across the world. This breakthrough study sheds light on a process that has shaped human history through devastating floods and continues to threaten millions of people worldwide.

[*read the whole story*](#)

Chanh Kieu advised high school students on a project examining chaotic motion.



Dr. Chanh Kieu
Photo credit: Ruth Droppo

In September 2024, Associate Professor **Chanh Kieu** began serving as an Editor for the *Journal of the Atmospheric Sciences* which is among the most trusted technical journals in atmospheric science and is currently managed by the American Meteorological Society.

Furthermore, Chanh advised Bloomington South High School students **Ashton Hoff** and **An Kieu** while working in Chanh’s lab. The pair used a prototype model for weather chaos known as the Lorenz butterfly model and built their own deep-learning models to examine chaotic motion in a Rayleigh-Benard convective cell. They showed that machine learning (ML) models can indeed predict convective states up to a certain forecast range, beyond which ML models can no longer capture the future states of convection. In particular, measuring such a maximum predictability range using the error growth or attractor topology gives two different answers, thus highlighting the difficulty of developing ML models for chaotic systems.

These results demonstrate the promising capability as well as drawbacks of data-driven models in understanding weather chaotic systems. The students had their research poster presented at the American Meteorological Society 31st Conference on Severe Local Storms in Virginia Beach, VA from October 21-25, 2024.

This is a screen captured from a YouTube movie that was recorded and posted by Arndt's collaborator Scott A. Ensminger, a naturalist in Buffalo, New York.



Arndt Schimmelmann's work on hydrocarbon gases featured in video

Senior Scientist **Arndt Schimmelmann** guided a film crew of the Maximus Film GmbH from Munich, Germany for the on-site recording of a TV documentary about natural seepages of hydrocarbon gases in upstate New York. Schimmelmann's research group had earlier documented the extent, geochemistry, and natural history of active and extinct gas seepages in the area (<https://doi.org/10.1016/j.scitotenv.2018.06.374>). One highlight of the TV documentary was setting ablaze plastic bags filled with methane/ethane/propane gas that had been collected from bubbling seepages in a creek.

[watch the video](#)

Doug Edmonds and Ben Kravitz join ICCL and IAMAS

Professor **Douglas Edmonds** and Associate Professor **Ben Kravitz** have successfully completed their promotion processes. Furthermore, Ben has been selected to join the prestigious International Commission on Climate (ICCL). Membership in the ICCL is limited to fewer than 20 current scientists. Ben will be the sole American member of the ICCL and explained that "the organization is part of the International Union of Geodesy and Geophysics (IUGG), which is comprised of 59 regular member countries and 15 associate member countries. The IUGG is dedicated to the international promotion and coordination of scientific studies of Earth, and within the atmosphere section, called the International Association of Meteorology and Atmospheric Sciences (IAMAS), they have a focus area on climate." The IUGG encourages the application of scientific knowledge to societal needs, and Kravitz's main area of research is climate engineering, which involves major interventions to counter climate change.



*Dr. Douglas Edmonds
Photo credit: Ruth Droppo*

Ben Kravitz co-authored an American Geophysical Union (AGU) report on the ethics of geoengineering research.

Geoengineering is also known as climate intervention and involves attempts to alter the climate system to counter global warming. The report states that as unintended consequences of large-scale geoengineering are largely unknown, any research into it must be grounded in sound ethical principles. Responsible assessments of physical, environmental, and social consequences of the research should include the discussion of the purposes and design of the research with potentially impacted groups. Funding and research processes should be transparent and require approval from an independent body for technologies with significant risks.



*Dr. Ben Kravitz
Photo credit: Ben Kravitz*

Travis O'Brien's research on GHG emissions and precipitation was published in *Nature*

Assistant Professor **Travis O'Brien** published an article about greenhouse gas emissions and precipitation in the prestigious journal *Nature*. Quoting the article: "A comprehensive understanding of human-induced changes to rainfall is essential for water resource management and infrastructure design. However, at regional scales, existing detection and attribution studies are rarely able to conclusively identify human influence on precipitation. Here we show that anthropogenic aerosol and greenhouse gas (GHG) emissions are the primary drivers of precipitation change over the United States. GHG emissions increase mean and extreme precipitation from rain gauge measurements across all seasons, while the decadal-scale effect of global aerosol emissions decreases precipitation."

[read the article in Nature](#)



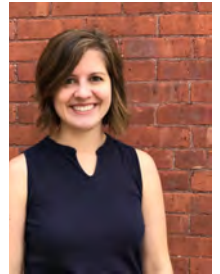
*Dr. Travis O'Brien
Photo credit: Travis O'Brien*

faculty research + awards

Andrea Steven Goddard received an NSF award

Assistant Professor **Andrea Stevens Goddard** received a highly prestigious and competitive NSF five-year Faculty Early Career Development (CAREER) Program grant entitled “quantifying tectonic and biologic controls on erosion using detrital thermochronology” with a \$884,000 budget. Andrea will test the relative contributions of tectonic uplift and vegetation on erosion and sedimentary transport using data from the Paleozoic North American midcontinent sedimentary basins that cover the interval during which land plants evolved. Furthermore, Andrea received one of this year’s Trustees Teaching Awards that are given each spring to honor outstanding teaching during the prior calendar year. The award honors faculty who have had a positive impact on student learning, especially undergraduates.

[read the whole story](#)



Dr. Andrea Stevens Goddard
Photo credit: Andrea Stevens Goddard

Elizabeth Kenderes honored with ASURE teaching award

Lecturer **Elizabeth Kenderes** received the 2024 David and Cheryl Morley ASURE Teacher of the Year award. Elizabeth has been an instructor in the ASURE program since 2021 and has been consistently implementing changes that enhance the experience for ASURE students in the DEAS stream. Elizabeth coordinates the experiences of students in a number of DEAS faculty labs as well as running her own research lab. Her approach focuses on facilitating students building their research skills as well as instilling a sense of ownership of their research project and education. Through her efforts Elizabeth provides a venue for students to understand what research is, the iterative nature of the process, and that answers are not final but a step in a developing process. She has accomplished this year, as in past years with the ASURE Program, the Program’s goal of transforming students in their abilities to engage with complex research questions and think critically throughout the process. Elizabeth also serves as the 2024-25 Chair of Geological Society of America’s (GSA) Education Division.



Dr. Elizabeth Kenderes
Photo credit: Elizabeth Kenderes

The Screwball Ballot is Now Open!!!

Vote for the wackiest professor in the department - the winner of this completely democratic election shall win the prestigious Screwball Award

Rules

1. Votes are collected electronically via Google Form
2. Voters may vote for multiple professors on their ballot
3. Voters can submit multiple ballots; votes are cumulative
4. Poster propaganda is one of the most effective ways to ensure your candidate's success - be creative!!

ONLINE BALLOT BOX CLOSING ON 11/20/2024

Scan the QR code below to vote!

SCAN ME

The poster features a drawing of a ballot box with a face, a QR code, and a small image of a screwball trophy.

The Screwball season is officially upon us! If you don’t know already, the legendary Screwball trophy (pictured here) is awarded each year to one professor who best exemplifies the great EAS spirit of insurmountable wackiness and silliness.

breaking news!!

We have a **winner** for the 2024 Screwball Award: Dr. **Cody Kirkpatrick** won by **171,000 votes**.

No, that’s not a typo.



educa- tion + public outreach

DEAS AT SCIENCE FEST

*The explosion of a liquid-nitrogen-containing plastic bottle under water in a large trash can simulates a volcanic eruption.
(Photo credit: Michael Hamburger).*



DEAS students participating in this year's Science Fest on October 5th — showing of the DEAS stream table outside of the Student Building. Participants include (left to right) graduate students Garrett O'Hara, Ye Jing, postdoc Yuan Li, JeongYeon Han, and Emily Throop—all members of Doug Edmonds' Sedimentary Systems lab. (Photo credit: Michael Hamburger).

Fun scientific outreach was offered during Science Fests twice in 2024, first in April and in October. In April, Ph.D. student **Elizabeth Sherrill** (now a post-doc) was a key organizer in the first Science fest, along with co-organizer Ph.D. student **Sayan Das** and advising faculty Senior Lecturer **Cody Kirkpatrick**. The organizers acknowledged the support of **Terry Stigall** who generously lends her time and her van with seemingly endless space for transporting stuff every year. **Nora Ferstead** ensured the availability of supplies and sustenance. **Ruth Droppo** provided swag to give out to kids. **Maria Mastalerz** and **LaBraun Hampton** supplied liquid nitrogen as the most essential component of our trash can volcano. **John Hettle** expertly corralled all supplies throughout the building. On October 5th, M.S. student **Alec Siurek** served as the main coordinator and was assisted by his faculty advisor Senior Lecturer **Cody Kirkpatrick** and numerous student volunteers.

Teaching Climate Change in High School

Ben Kravitz and Paul Goddard on NPR

FROM NPR ALL THINGS CONSIDERED:

Picture copied from the NPR article. NPR caption: Ben Kravitz, an Associate Professor of the Department of Earth and Atmospheric Sciences at Indiana University, chats with high school students DeWayne Murphy and Emerald Yee during a class at Bloomington High School South. Photo credit: Chris Elberfeld/WFYI



Incorporating Climate Engineering into Secondary Education: A New Direction for Indiana's Science Classrooms

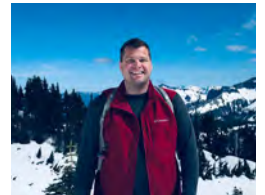
Associate Professor **Ben Kravitz** and Assistant Research Scientist **Paul Goddard** were featured on National Public Radio (NPR) about their partnership with faculty at

Bloomington High School South to teach students about the ramifications of global warming. Fostering climate optimism is a big part of this lesson. Ben noted that “the neat thing about seeing all of these ideas come out of the classroom is it's not I can't do it. It's we can do it. Humans, when they get together, can do amazing things. And that's what gives me hope.”

[read the whole story](#)

Ben and Paul appeared on the national PBS *News Weekend* — a very nice piece about their outreach efforts with MCCSC biology teacher Kirstin Milks on geoen지니어링.

(<https://www.pbs.org/newshour/show/december-15-2024-pbs-news-weekend-full-episode>).



*Dr. Paul Goddard
Photo credit: Paul Goddard*



*Dr. Ben Kravitz
Photo credit: Ben Kravitz*

COLL- C105

Natural Disasters, Sustainability, and the Future of Civilization

In Fall 2023, Professor **Michael Hamburger** combined forces with IU's Distinguished Professor of English Christoph Irsmscher to offer a special version of his "*Natural Disasters, Sustainability, and the Future of Civilization*" to a group of academic elite undergraduates from the Wells Scholars program.

As a follow-up to that seminar, Hamburger accompanied Irsmscher and 17 of the Wells students on a special expedition to the Sierra Nevada mountains of California. In ten days' adventurous travel the Wells Freshmen explored landscapes that spanned some 12,000' in elevation, from a scorching Death Valley desert two hundred feet below sea level to the peak of Mammoth Mountain at the Sierra Crest.

They explored dendrochronology at the crest of the White Mountains at the Bristlecone Pine (the world's most ancient living trees) reserve, and explored the nation's youngest volcanoes in the Mono-Inyo chain, still fresh from their eruptions a few hundred years ago.

They visited an abandoned nuclear bomb testing site, a WW II internment camp, and the controversial dams and aqueducts that carry the clear mountain stream water from northern California to the water-hungry urban population of Los Angeles.

They visited volcanic vents made almost entirely of obsidian and explored limnology at Mono Lake, an alkaline lake where no fish can survive, but where tens of thousands of migratory birds visit each year.

Perhaps most important, the field experience helped turn a group of 17 diverse college students into a cohesive family—sharing adventures, mountain picnics, dormstyle housing, storytelling, basketball games, swims in frigid mountain lakes and soaks in volcanic hot springs, evening meals and dishwashing. The group returned with a renewed sense of belonging to their Wells cohort.



Professors Hamburger and Irsmscher (lower right) pose with the Wells Scholars by the "Moebius Arch" in the Alabama Hills of eastern California. (Photo credit: M. Hamburger)



Professor Hamburger is photographed here with Wells Scholar Aika Noguchi, hoisting a pumice boulder at Panum Crater, a young volcanic vent situated near Mono Lake in eastern California. (Photo credit: M. Hamburger)

EAS E490/G690 Environmental and Energy Diplomacy

Professor **Michael Hamburger** continues to offer IU's Diplomacy Lab program as an opportunity for students to work collaboratively with faculty in key areas of foreign policy interest identified by the U.S. Department of State in the form of collaborative research projects between IU classes and State Department embassies and offices. This year, Hamburger offered his "Environmental and Energy Diplomacy" class to an academically diverse group of undergraduate and graduate students from our department and several other IU departments and schools. The collaborative project with the State Department offers a rewarding capstone experience for upper-level undergraduates and graduate classes. This year's project focused on natural hazards facing U.S. citizens working or traveling in Western Canada. As an outgrowth of that class, Hamburger traveled to Washington, DC to the U.S. State Department with a group of IU students as part of the Diplomacy Lab project. The IU delegation included ten students, mostly IU undergrads, who participated in three Diplomacy Lab courses. Three of the students, including two of our undergrad majors (**Carter Dills** and **Mia Keller**) and one O'Neill graduate student (**Tavia Hedrick**) were from our "Environmental & Energy Diplomacy" class.



IU participants in the Diplomacy Lab Fair at the State Department in Washington, DC. The IU team included undergraduate students Mia Keller (3rd, front), Carter Dills (5th, rear), and Michael Hamburger (far right, rear), who leads IU's Diplomacy Lab program. Photo credit: Michael Hamburger

E490/690 interviews with the U.S. Department of State

[Tavia Hedrick](#)
[Mia Keller](#)
[Carter Dills](#)

EDUCATING for Environmental Change

First Tuesday Teacher Workshops and Saturday Teacher Workshops
2024 Summer + Fall Programs

Since 2017, Educating for Environmental Change (EfEC) has provided professional development programs to help K-12 science educators effectively teach the science and policy of climate change.

Utilizing hands-on activities co-designed by IU environmental scientists, EfEC helps elucidate and deepen educator understanding of key concepts related to climate change including its causes, impacts, and steps we can take to mitigate its severity. EfEC is a collaboration between Indiana University faculty, K-12 educators, and the WonderLab™ Museum of Science, Health, and Technology.

In 2020, EfEC received Indiana's top environmental award, the Governor's Award for Environmental Excellence, for "extraordinary initiatives in protecting the environment."

read more on the EfEC webpage

The grid contains eight posters for EfEC workshops:

- Workshop for Elementary Educators** (2024 Summer): August 10, 2024, 10:00 AM - 3:00 PM, IU School of Education.
- Hurricanes and Climate Change: Understanding and Quantifying Impacts** (2024 Fall): Tuesday, September 3, 2024, 7:00 PM - 9:30 PM, Online.
- Teaching Tomorrow's Ecology: Fostering Student Innovation in Biodiversity Solutions** (2024 Summer): Saturday, September 21, 2024, 9:00 AM - 4:00 PM, IU School of Education.
- ICE AT THE POLES: HOW REMOTE ICE SHEETS INFLUENCE GLOBAL EFFECTS** (2024 Fall): Tuesday, November 5, 2024, 7:00 PM - 9:30 PM, Online.
- AI IS FOR THE BIRDS** (2024 Summer): Saturday, November 16, 2024, 9:00 AM - 4:00 PM, IU School of Education.
- TEACHING Reengineering** (2024 Summer): Saturday, November 16, 2024, 9:00 AM - 4:00 PM, IU School of Education.

educa- tion + public outreach

visit to the **LILLY** LIBRARY



DEAS graduate students explore the amazing world of 15th century geography. From left to right: Sarah Kolodny, Lorena Jevnikar, Emily Throop, Garrett O'Hara and Ye Jing. (Photo credit: Michael Hamburger)



Students examine William Smith's early 19th century hand-colored geological map of Great Britain. From left to right: DEAS graduate students Sarah Kolodny, Bethany Remian, Alec Siurek. (Photo credit: Michael Hamburger)

Each fall, in conjunction with the “Professional Development for the Geosciences” class, Professor **Michael Hamburger** treats DEAS students to a personalized tour of IU’s famed Lilly Library rare book collection. Once again this year, a group of about 20 DEAS faculty and students got a chance to not only see but put their hands on some of the priceless gems of the Lilly science collection. Erin Chiparo, Lilly’s curator for sciences and medicine, offered students an introduction to the Lilly Library, with a focus on some famous books in the history of science. Students were treated to some of the great masterpieces in the history of science—including first editions of Copernicus, Galileo, Newton, and Darwin—as well as some of the seminal works in the history of earth and atmospheric sciences. Those included first editions of Hutton, Lyell, von Humboldt, Dalton, Hooke, and a beautifully illustrated edition of William Smith’s “map that changed the world”. Some of the more astonishing pieces included a medieval vellum-bound edition of Aristotle, a “pop-up” version of Euclid’s geometry, and a beautifully illustrated 15th century atlas of the “known world”. The visit to the Lilly helped connect our students state-of-the-art research with their roots in the history of science. Our visit to the Lilly Library concluded with a glimpse at some of the most famous gems from the collection: one of a handful of original copies of the Declaration of Independence, a complete First Folio of the works of Shakespeare, and—the most popular—John Ford’s Oscar for “Grapes of Wrath”.



DEAS students chat with Lilly Library curator Erin Chiparo. From left to right: Emily Throop, Rebecca Porter, Annika Jorgensen, Sarah Kolodny, Garrett O'Hara, Erin Chiparo. (Photo credit: Michael Hamburger).



DEAS first year graduate student Rebecca Porter prepares her acceptance speech for the Oscar ceremony. (Photo credit: Michael Hamburger)



DEAS graduate student Quentin Smith offers his acknowledgments for the assembled Oscar viewers. (Photo credit: Michael Hamburger)



a new
PODCAST

Assistant Professor **Shelby Rader** started a podcast, *Earth on the Rocks*, featuring weekly episodes with a new guest from the earth and atmospheric sciences, highlighting some of the important work they are doing while also getting to know the person behind the science.

You can find *Earth on the Rocks* on all major podcasting platforms (Spotify, Apple Podcasts, Amazon Music, etc.) or directly on the podcast website: <https://geologyontherocks.transistor.fm/>.

Guests for this season include **Andrea Stevens Goddard**, **Michael Hamburger**, **Julia Kelson**, **Ed Herrmann**, **Travis O'Brien**, **Jackson Njau**, **Cody Kirkpatrick**, and **Brian Yanites** with a new slate of guests coming in the spring.

Shelby received help from many individuals, including two students with connections to our department - **Connor Leimgruber**, a student in the IU Media School, provided the artwork and logos and **Cari Metz**, an EAS minor, has served as producer for the show. Funding for the podcast was provided by the National Science Foundation grant EAR-2422824.

Host: Shelby Rader

Producer: Cari Metz

Graphic Credit: Connor Leimgruber

Board Operator: Kate Crum, Betsy Leija

Funding for this podcast was provided by the National Science Foundation grant EAR-2422824.

listen to the podcasts

<https://geologyontherocks.transistor.fm/>



11/4/24: Welcome to the show!

Welcome to *Earth on the Rocks* with your host, me - Dr. **Shelby Rader**! On this episode, we dive into what to expect for the rest of the season.

11/8/24: Stuck between a rock and a sledgehammer

Join us today to hear from Dr. **Andrea Stevens Goddard**, a thermochronologist with extensive field and lab work, who is looking to understand the timing and rates of various Earth processes. Andrea, a proud Hoosier, has traveled around the world for her work, which we get to hear a bit about today.



11/14/24: From Russia with love (of rocks and hazards)

On today's episode of *Earth on the Rocks*, Dr. **Michael Hamburger**, an earthquake seismologist and hazards specialist, joins us. We'll hear about his atypical journey into the geosciences, some incredible field experiences, and his time rubbing elbows with the Who's Who of the climate world.



11/22/24: The Lab Rat Pack

Listen in today and get to know Dr. **Julia Kelson**, a sedimentary geochemist looking at past Earth climates. Julia talks us through how she entered the field (you might say it runs in the family), some of her field experiences, and a bit about what work is like in the lab.



11/29/24: To be(er) or not to be(er)

Joining us today is Dr. **Ed Herrmann**, a microbiologist by training who is a geoarchaeologist by way of the pharmaceutical industry and beer brewing. His geoarchaeology work draws on and builds from his experience and time in both of these seemingly unrelated fields that makes for a really exciting and unique perspective.



12/6/24: Super (computer climate) model

Today we get to know Dr. **Travis O'Brien**, a climate scientist who looks at and models extreme weather and other climate phenomena that could impact our day-to-day lives. We get to hear about some of his more recent work, including using climate models, his time at a national lab and how that works, and a really interesting time living on an alpaca ranch.



news from the

IU GEOLOGIC FIELD STATION

We had a great summer in the field this year. We had a great group of students participate this summer and the hot weather and fire season held off until late in the course. The last two weeks were quite smoky with fires off to the west of the station, especially those in Idaho.

We are wrapping up the planning on our 2025-2030 Strategic Plan for the Field Station and will be posting it on the IUGFS website in January. The faculty and DEAS Advisory board have contributed lots of good ideas and suggestions and we will work with the College Development office to implement them. Two key points of the plan are returning our student enrollments to pre-pandemic numbers and a couple of capital improvement projects to our existing infrastructure, including the kitchen.

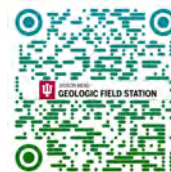
We also hope you would be willing to share your statements of how the field camp experience impacted your own careers. You can upload your comments on the form “Reflections from 75 years in the field”. You can access the form by scanning the QR code or clicking on the link below. The link also can be found on the “News from the Field Station” ribbon on the IUGFS main page which will be open through the end of the year. We think it is important to share these perspectives with future students looking ahead toward their careers.



The AGI report “Critical workforce skills for bachelor-level geoscientists” lists ‘field skills’ as the most important skill employers are seeking based on analyses of over 3600 job advertisements (Shafer *et al.*, 2023). First-hand accounts and examples like yours go a long way toward making it real to our students and help them see themselves. We look forward to hearing from you, thank you!

A handwritten signature in black ink, appearing to read 'Erika Elswick'.

Erika Elswick
Director, Indiana University Geologic Field Station



scan the QR or
click [this link](#) to
go to the form



Students in the EAS X429, Field Geology in the Rocky Mountains course for summer, 2024, pose in front of the Field Station classroom building. The new property sign was installed in June. (Photo credit: Erika Elswick)

renovation of the
MINERALOGY LAB



Screenshot of the construction of the Geology Building in 1961, published in the [Hoosier Geologic Record 1961](#)



Many alumni will remember the old mineralogy lab/classroom on the 2nd floor in the northwest corner of the geology building (now called room 2064) that had changed very little since the building's construction in 1961/1962 except that over time, central benches, specimen, molecular model cabinets, and lighting had been installed.



The room now is a merged space acting as the mineralogy, microscopy, and petrology classroom all in one.

IU alumna **Kendall Gibson** posted a video on YouTube where one part shows a ca. 2018 (?) mineralogy class in the room taught by Professor **David Bish** and our alumnus **Ryan Deasy** (Ph.D. 2019): (see from 1:36 until 2:17 in the video).

[*watch the video*](#)

Abhijit BASU



The following essay was contributed by Emeritus Professor Abhijit Basu (Ph.D. 1975). (Photo credit: Ruth Droppo)

Late Professor Warren G. Meinschein – my gratitude

Reminiscences are usually boring and surely annoying if self-aggrandizing is woven in. And is repulsive if braggadocio is achieved only by belittling others. However, the editor assures me that only the sympathetic might read this memory-recall.

When I started as a graduate student in our department (which was then called the Geology Department) in August 1971, Professor Warren Meinschein was the Chair. I later learned that he was an interim in the wake of a turmoil in the department. Academic activism by students, informally led by Robert (Bob) Schwartz (Ph.D. 1971) and Richard (Alex) Alexander (Ph.D. 1972) continued through the fall. How Dr. Meinschein successfully mediated between the students, faculty, and the Dean is a total mystery to me even now. I did not know Dr. Meinschein then.

I learned that Organic Geochemistry was his field of research. Coming from a traditional education system with set courses and a hiatus of nearly 10 years as a field geologist in India, I had not heard of that discipline. I heard that there was a large mass spectrometer in a room at the eastern end of the third floor with adjoining geochemical laboratories. My fellow students told me that Dr. Meinschein had made fundamental contributions to the understanding of the origin of petroleum and that he was engaged in investigating lunar soils to determine if there was any evidence of life on the Moon. I was in awe. I never ventured to talk to him lest I waste his time.

Two years went by.

Then on a weekend morning in early August, I received a call at our student housing, BBHN apartment. It was from Dr. Meinschein! He asked me if I would like to be a research assistant to him in his lunar research. Of course, I said yes. I also told him that I was slated to assist Professor Charles Vitaliano in his course on Optical Mineralogy. He simply said it would be OK and shifted my support.

At that time, I was working under Professor Lee Suttner's supervision for my Ph.D. dissertation on the petrology of Holocene sands. I knew nothing about the Moon. Not even the difference between mare and highland. Fellow graduate student David DesMarais and chemistry Professor John Hayes were my go-to persons as I started my journey into lunar literature. Dr. Meinschein was extremely generous and let me learn about lunar soils on my own and at my own pace, answering questions when I stumbled.

Dr. Meinschein saw to it that I acquired some knowledge and skill in lunar science. In October or November in 1973 he sent me to the NASA Space Center in Houston for training in lunar soil petrography. At the time it was by far the most advanced center for research in lunar regolith. That training with Dr. David McKay stood me in good stead for decades. Dr. Meinschein took me under his wings especially at the 5th Lunar Science Conference, my first. He belonged to and hobnobbed with top tier scientists. He took me out to dinner one evening during the conference. I was introduced to several leading scientists.



Professor Meinschein. Photo credit: IU University Honors and Awards

Abhijit **BASU**

After all these years, I only recall Ted Ringwood (ANU) and Sam Epstein (Caltech). I sat next to Dr. Ringwood and listened to a lively discussion with disagreeing interpretations of lunar geochemical data. I was able to follow some of it because I had taken a course in geochemistry from Professor David Towell at Indiana. Dr. Ringwood was very pleased that I had read his two-part 1955 paper on the theoretical aspects of the geochemical behavior of trace and rare earth elements.

A few months later, Dr. Meinschein took me to a Gordon Conference-style small meeting held in a retreat on the shores of Williams Bay, home to Yerkes Observatory. The meeting dealt primarily with the history of the Sun as preserved in the regolith of the Moon. I have a vague recollection that select principal investigators were invited who could bring one or two students with them. Dr. Meinschein decided that I should give the talk on the research in which I assisted. I think he wrote out the first few sentences of the talk, which I memorized, and the rest was extempore. That was my first talk on lunar science. Dr. Johannes Geiss (Bern, Switzerland), a doyen of deciphering the “history ... of astronomical objects”, spent nearly an hour with me in an evening by the lake shore to discuss solar wind elements in lunar regolith. What an experience!

Two years down the road I would complete my Ph.D. I had one year left in my US visa and leave of absence from my employment in India. To complete my education, Dr. Meinschein arranged a post-doctoral position for me with Dr. John Wood, FNAS at the Smithsonian-Harvard Astrophysical Observatory (Cambridge, MA).

In infinite gratitude to Dr. Warren G. Meinschein for his selfless mentoring.

Emeritus Professor Abhijit Basu

Mary **IVERSON**

The granddaughter of long-term staff member **Mary Iverson** wrote that Mary is living with her family in Florida. Mary is in good health physically, but struggles with her memory.

Ed **RIPLEY**



On August 13th, Emeritus Professor **Edward Ripley** suffered a stroke and was airlifted to the Methodist Hospital in Indianapolis. A few days later, he was able to breath without a breathing tube and was eventually moved to the General Surgical Progressive ward for initial physical/speech therapy. Ed was later moved to the Bloomington Regional Rehabilitation Hospital and receives daily physical, occupational and speech therapies.

*Dr. Ed Ripley
(Photo credit: Ruth Droppo)*

Emily GERCKE



Emily Gercke planting Pongamia pinnata trees in April 2022 on the north shore of O'ahu, Hawaii. Pongamia is a climate-resilient tree with beans that can be made into sustainable food and biofuels. (Photo credit: Emily Gercke).



Emily Gercke in May 2009 with a sediment core from Catalina Island in the Dominican Republic. (Photo credit: Emily Gercke)

Emily Gercke (M.S. 2011) is Portfolio Operations Manager at Elemental Impact and contributed the following update:

It's hard to believe, but math tells me it's been 14 years since I completed my master's in DEAS (then still called Department of Geological Sciences). While at IU, I spent much of my time with the Underwater Sciences Working Group, and for my MS, I studied windward and leeward island sediments on a coral island in the Dominican Republic with Dr. Erika Elswick. Our data collection trip to La Romana was unforgettable, especially due to our "field camp" at a beachside resort where I picked up trapeze lessons—a hobby I continued back in Bloomington.

I also have fond memories of serving as the associate instructor for Dr. Lisa Pratt's sedimentology course for two years. One year, we took an epic road trip to Apalachicola, Florida, over winter break, even making time to visit the manatees at Crystal River. One of the best parts of graduate school was the camaraderie and shared learning experiences with fellow students, building leadership skills along the way.

After IU, I joined Arcadis in Indianapolis, working in the contaminated sites group. I enjoyed returning for the Crossroads Conference and the Career Fair, and continued with Arcadis through a move to Vancouver, British Columbia. Four years—and one child—later, I had a short stint with the North Carolina Department of Environmental Quality before moving to Honolulu, Hawaii, where I began working for Elemental Impact (formerly Elemental Excelsior), a nonprofit focused on climate investment. We support emerging climate technology companies, emphasizing both climate impact and social justice. Now I'm based in Madison, Wisconsin.

One of my passions is career mentorship, and I recently served on an AGU-NSF panel about entrepreneurship in the geosciences. I truly believe that every job, now and in the future, will in some way be a "climate" job. I'm excited to join the Advisory Board of DEAS and contribute in this new capacity.

Mark LEONARD



*Mark Leonard
(Photo credit: Mark Leonard).*

Mark Leonard (M.A. 1979) is a long-time active alumnus of our department and served on the advisory board for 10 years, he was the Executive Director of our field station for a year, and he has otherwise been very involved in IU and our department over the years. In 2024 Mark received an IU College of Arts and Sciences distinguished alumni award (nominated by Astronomy and DEAS) and was honored on October 24th at a College awards ceremony.

[read about the award](#)

Michael GRAHAM

I'm happy to share some of my experiences at IU dating back almost 50 years. Prior to receiving my M.S. and Ph.D. degrees from IU's Geology Department, I received my undergraduate



After a long career in nuclear and environmental projects and businesses, our alumnus Michael Graham (Ph.D. 1979) is currently a member of the Advisory Board of the Solestiss management consulting firm. He contributed the following essay. (Photo credit: Michael Graham)



degree in Chemistry and Biology from the University of Notre Dame. During my senior year, I had taken courses in Aquatic Biology and Chemistry. This sparked my interest in water and I decided to pursue an advanced degree in that field. I found that most of the graduate programs related to water were in geology departments. I guess I wasn't a typical applicant to geology graduate programs having never taken a geology course as an undergrad!

My wife Katie and I arrived in Bloomington as newlyweds in January 1975. We had signed up for graduate student housing before arriving and decided that living in a two-bedroom trailer would be better than an apartment. We found our way to Bloomington and our new home, 155A Walnut Grove Trailer Park. The WW II-vintage trailers were well past their prime (to say the least), and to say it was two-bedroom was a stretch. But it was only \$77.50/month fully furnished and included utilities. We shed a few tears and got to work. After that first semester, I received a RA position that changed our lives. The RA included a tuition waver and paid \$3000/year. We could afford to move out of the trailer! It was my first professional project that grounded me in the discipline of planning, teamwork, and execution. My advisor was Professor Ruhe who, to this day, was one of the most demanding and challenging human beings I have ever met. I am sure there are Ruhe stories still bouncing around the building! Those of us involved in Ruhe projects banded together and supported each other. We had a miniature boot hanging from the rear-view mirror of our field vehicle – a reminder of what would happen if we missed a detail or made a mistake!

degree in Chemistry and Biology from the University of Notre Dame. During my senior year, I had taken courses in Aquatic Biology and Chemistry. This sparked my interest in water and I decided to pursue an advanced degree in that field. I found that most of the graduate programs related to water were in geology departments. I guess I wasn't a typical applicant to geology graduate programs having never taken a geology course as an undergrad!

My wife Katie and I arrived in Bloomington as newlyweds in January 1975. We had signed up for graduate student housing before arriving and decided that living in a two-bedroom trailer would be better than an apartment. We found our way to Bloomington and our new home, 155A Walnut Grove

Trailer Park. The WW II-vintage trailers were well past their prime (to say the least), and to say it was two-bedroom was a stretch. But it was only \$77.50/month fully furnished and included utilities. We shed a few tears and got to work. After that first semester, I received a RA position that changed our lives. The RA included a tuition waver and paid \$3000/year. We could afford to move out of the trailer! It was my first professional project that grounded me in the discipline of planning, teamwork, and execution. My advisor was Professor Ruhe who, to this day, was one of the most demanding and challenging human beings I have ever met. I am sure there are Ruhe stories still bouncing around the building! Those of us involved in Ruhe projects banded together and supported each other. We had a miniature boot hanging from the rear-view mirror of our field vehicle – a reminder of what would happen if we missed a detail or made a mistake!

My M.S. project focused on the chemistry and sediments of Lake Monroe. We collected so many data – spending countless hours in the field. When I finished my degree, I was asked to consider staying on for a Ph.D., something I had not considered. When I decided to stay on, the office secretary said she was surprised that I said yes. I will never forget her reply when I asked why: 'I think you are too smart to be a Ph.D.!' I took that as a compliment as I was still carrying the humble beginnings of my upbringing in West Virginia. It stayed with me as a reminder that positions and titles are not as important as other aspects of our lives. I needed to declare a minor and decided that applied mathematics would be a great complementary match. This was in the early days of modeling groundwater flow and transport. Apparently, I was the first in the Geology Department to attempt that minor. I just had to take three 400-level applied math courses. How hard could that be? One of my fellow classmates in the Geology Department offered to audit classes with me. He went to the first class and bailed! Professor Chadam was my minor advisor and instructor. He recognized that I wouldn't have all the training and skills that the math majors had in solving complex equations. But he appreciated that I had an understanding in how to set up the equations that framed the physical dynamics. I survived and learned so much, including how important it is to take on stretch assignments.

My first professional job was as a project hydrogeologist with the USGS Water Resources Division in Salt Lake City. In that time period, that was the place for hydrogeologists to go. Four of us who worked together at IU went there. I didn't feel particularly challenged in my job with the USGS and took an offer in 1980 to go to the Hanford Site in Richland Washington where plutonium was produced for atomic weapons during the Manhattan Project. The environmental impacts of that effort were just being realized, particularly the impacts to groundwater.

To make a long story short, I ended up changing my dissertation topic and finished my thesis on groundwater contamination at the Hanford Site. Besides Professor Chadam, my committee consisted of professors Murray, Towell, and Krothe. My Ph.D. proved to be very valuable in my career at the Pacific Northwest National Laboratory where I held project management and executive leadership positions. I then went to Bechtel managing their nuclear and environmental projects and businesses for over 20 years.

Katie and I were so blessed with professional opportunities and a meaningful career. The faith that IU had in me and the training they provided me opened the doors to those opportunities and provided the foundation for my career.

August 26: iDEAS Seminar

Speakers: Faculty and Students

Title: *What I Did This Summer*

September 9: iDEAS Seminar

Speaker: Enrique Merino, Professor Emeritus DEAS

Title: *The Elusive Phenomenon of Mineral Replacement. The Blind Spot of Geochemists.*

Speaker: Brooke Santos, M.S. Student with Brian Yanites

Title: *Prolonged Flood Risks Following Typhoon Morakot Linked to Channel Conveyance Changes.*

September 16: DEAS Colloquium Series

Speaker: Broxton Bird, Indiana University Indianapolis

Title: *Late Holocene Climate-Flood Dynamics in the Midcontinental United States.*

September 30: iDEAS Seminar

Speaker: Ya-Shien Lin, Ph.D. student working with Brian Yanites

Title: *Capturing Cascading Hazards in Taiwan From Earthquakes to Landslides and Debris Flows.*

Speaker: Tom LaBarge, Ph.D. student working with Jackson Njau

Title: *Crocodile Predation on Early Pleistocene Potamochoerini: Taphonomic Evidence From Olduvai Gorge, Tanzania.*

Speaker: Evan Chiang, M.S. student working with Kaj Johnson

Title: *Mountain Building in Taiwan Across Time Scales.*

October 7: DEAS Colloquium Series

Speaker: Maria Molina, Assistant Professor, Department of Atmospheric and Oceanic Sciences, University of Maryland

Title: *Machine Learning for Earth System Prediction and Predictability.*

October 14: DEAS Colloquium Series

Speaker: Maggie Osburn, Associate Professor, Osburn Isotope Geobiology Lab, Northwestern University

Title: *Subsurface Geomicrobiology of the Heterogeneous Terrestrial Crust.*

October 21: DEAS Colloquium Series

Speaker: Ben Rostron, GSA Birdsall-Dreiss distinguished lecturer, University of Alberta

Title: *Lithium in Brines (Duperow Aquifer) in Southeast Saskatchewan: A Modern-Day Gold Rush.*

October 28: DEAS Colloquium Series

Speaker: Ran Feng, Assistant Professor of Earth Sciences, Computational Climate Change Lab, University of Connecticut

Title: *Insights from Past Warm Hydroclimate Change.*

October 30: DEAS Colloquium Series

Speaker: Aaron Celestian, Mineralogical Society of America Distinguished Lecturer, Curator of Mineral Resources, Natural History Museum of Los Angeles

Title: *Prospering Backyards: A Collaboration of Art, Science, and Community.*

November 4: DEAS Colloquium Series

Speaker: Lizzy Trower, Assistant Professor of Geological Sciences, University of Colorado Boulder.

Title: *A World in a Grain of Sand: Learning to Read the Geological Information Preserved in Ooids.*

November 11: iDEAS Seminar

Speaker: Hao Yuan, Ph.D. student working with Simon Brassell

Title: *Decoding Microbial Sources of Amorphous Organic Matter in Astronomically-Forced Cyclic Eocene Lake Shales from the Saline Qianjiang Formation.*

Speaker: Janelle Wittmer, M.S. student working with Chen Zhu

Title: *Multi-Isotope Tracer Experiments of Basalt-Water Reactions for Enhanced Rock Weathering.*

Speaker: Nicolas Castro, Ph.D. student working with Kaj Johnson

Title: *Resolving the Slip-Rate inconsistency of the Northern Dead Sea Fault.*

November 18: DEAS Colloquium Series

Speaker: Kelsey Roberts, Senior Postdoctoral Associate, Biophysical Ocean Modeling (BOM) Lab, Department of Ocean and Coastal Science, Louisiana State University

Title: *Potential Impacts of Climate Intervention on Marine Ecosystems.*

December 2: DEAS Colloquium Series

Speaker: Matt Crawford, Research Geologist, Geologic Hazards Section, Kentucky Geological Survey, University of Kentucky

Title: *The Landslide Hazards Program at the Kentucky Geological Survey: Research, Opportunities, and the Future.*

message to DONORS



*Dr. P. David Polly
Photo credit: Ruth Droppo*

Dear donors,

Thank you for giving to the Department of Earth and Atmospheric Sciences this year. The contributions from donors like you help us support our students, pay for the costs of graduate research, allow us to offer students experiences in the field and to present their research at conferences, and to host visiting researchers and partners from industry to enrich the experience of students and faculty alike.

Since last July, we have been able to give student awards of more than \$160,000 from our IU Foundation accounts.

The Ralph Esarey fund, the Norman King fund, the William Thornbury fund, the Peter and Susan Dahl fund, and the John B. Patton fund all supported graduate student research projects this year, including research on the origin of organic residues in the New Albany Shale, paleoenvironmental reconstructions at the Gray's fossil site in Tennessee (one of the few terrestrial Neogene sites in eastern North America), and sequence stratigraphy of the Ste. Genevieve Limestone.

The Robert Saenger Scholarship rewarded undergraduate student **Bridgit Wisdom** and graduate student **Elizabeth Sherrill** for academic excellence in their respective areas.

The Frank and Shirley Pruett fund, the Maynard and Winifred Collier fund, the Life is a Ride fund, the Bill and Jan Cordua fund, the Senior Support fund, and the Sheldon Turner fund collectively rewarded twelve undergraduate students for academic excellence.

The N. Gary Lane fund provided all of our beginning geologists and atmospheric scientists with tools of their trade and also recognized undergraduate **Melissa Humburger** for her intense interest in field-based science.

The Lawrence Taylor fund, Erle Kauffmann fund, Peter and Susan Dahl fund, William Thornbury fund, Cumings-Mallott fund, Donald and Margie Hattin fund, the Noel Kroethe fund, Mary Parke fund, and the Arch McPheeters fund all supported students who were presenting research at conferences or were attending special field courses, and the Erle Kauffmann fund additionally supported students who published a first-authored paper during the year.

Six graduate fellowships for the past year were supported by the Galloway-Perry-Horowitz fund, the Daniel Tudor fund, the Edward Grassmann fund, and the Robert Schrock fund.

The John and Mary Droste fund rewarded our best graduate student instructors.

And, of course, our many funds associated with the IU Geological Field Station (which include the Deiss, Vialiano, Nevers, Brown, Compton, Klusman Family, Leon, Kuzmitz, Mead Family, Tinger, Van Benschoten-Rapoport, Douglas, and Douglas and Pratt funds) supported the students doing our capstone field program in Montana.

We are sorry that we are no longer allowed to publish a list of those who made generous donations to our department. Indiana University respects the privacy law, especially the Privacy Act of 1974, that legally prevents us from naming our donors.

The following note was mailed to donors by Professor David Polly before he took a sabbatical in summer 2024.

message to DONORS

Many of you gave to our general accounts – the Earth and Atmospheric Science fund, the Excellence in Geological Sciences fund, and the Excellence in Geology fund – which provide indispensable support for the department. This year we used these funds to bring in speakers in our colloquium series, to host student recruitment events on campus and at the GSA and AGU conferences, to recruit new faculty, to run field courses in the Colorado Plateau, Appalachian Mountains, and at Olduvai Gorge in Tanzania, to maintain instruments and service contracts, and much, much more. It would be impossible to maintain an active, first-class program without these funds.

Similarly, the general funds associated with the IU Geological Field Station – Excellence in Field Geoscience, Judson Mead Field Station, and Geology Field Station Maintenance funds - provided critical support for maintaining the infrastructure and program in Montana.

Many of you have given to funds I haven't mentioned already that support faculty research, reward our high performing faculty, support library acquisitions, or which are accumulating income to be used to make student awards in the coming years.

Some of these include the Judson Mead Professorship, the Patton Visiting Professorship, the Shrock Professorship, the Suttner Professorship, the Haydn Murray Chair, the Malcolm and Sylvia Boyce Chair, the Gary Lane Paleontology Collection fund, CSIT research, the Rudman-Pavlis Geophysics fund, the Harold Kaska library endowment, the James R. Orgill fund, the William Rawles fund, and the Geological Sciences library fund.

All of us deeply appreciate your support to the department, the field station, and to our programs and students.

This coming year I will be on research leave and Professor **Kaj Johnson**, one of our senior geophysics faculty, will serve as Acting Chair and is looking forward to meeting many of you at our events in Houston and GSA. If you are visiting in Bloomington, please don't hesitate to drop by the department.



P. David Polly

Professor and Chair, Department of Earth & Atmospheric Sciences

Indiana University

easchair@indiana.edu

hello alumni!

(we'd love to hear from you)

Are you an alumnus or alumna of the Department of Earth and Atmospheric Sciences
(formerly the Department of Geological Sciences)?

Would you like to update your contact information?

If so, please visit our online form and send us some stories, news about your
employment or address or just chat.

<https://earth.indiana.edu/forms/share-your-story.html>



VISIT US ON SOCIAL MEDIA

Website: earth.indiana.edu

X: @IU_EAS

Facebook: <https://www.facebook.com/IUEarth>

Indiana University College of Arts + Sciences
Fall 2024 Alumni Newsletter of the
Department of Earth and Atmospheric Sciences

This newsletter is published by the
Department of Earth and Atmospheric Sciences
in cooperation with the

College of **Arts + Sciences**

to encourage alumni interest in and support for
Indiana University.