

**PennState** College of Earth and Mineral Sciences Earth and Environmental Systems Institute

With the state of the state of the state of the

# EESI Does It

*EESI Does It* is a publication of the Earth and Environmental Systems Institute in the College of Earth and Mineral Sciences at Penn State.

Director: Susan L. Brantley

Faculty Guest Editor: Peter Wilf

Editor/Lead Writer: Francisco Tutella

**Contributors:** Matthew Carroll, A'ndrea Messer, David Pacchioli, Peter Wilf

#### **Contact:**

Earth and Environmental Systems Institute 2217 Earth-Engineering Sciences Building University Park, PA 16802-6813 Telephone: 814-863-7091 Email: info@eesi.psu.edu

This publication is available in alternative media on request.

The University is committed to equal access to programs, facilities, admission and employment for all persons. It is the policy of the University to maintain an environment free of harassment and free of discrimination against any person because of age, race, color, ancestry, national origin, religion, creed, service in the uniformed services (as defined in state and federal law), veteran status, sex, sexual orientation, marital or family status, pregnancy, pregnancy-related conditions, physical or mental disability, gender, perceived gender, gender identity, genetic information or political ideas. Discriminatory conduct and harassment, as well as sexual misconduct and relationship violence, violates the dignity of individuals, impedes the realization of the University's educational mission, and will not be tolerated. Direct all inquiries regarding the nondiscrimination policy to the Affirmative Action Office, The Pennsylvania State University, 328 Boucke Building, University Park, PA 16802-5901, Email: aao@psu.edu, Tel (814) 863-0471. U.Ed. EMS 21-05.

Cover Photo: "Fossil collecting into the night in southern Vietnam, January 2020, Venus above us." Peter Wilf.

#### www.eesi.psu.edu

## In This Issue:

Letter from the Director	3
EESIUpdates	4
Fall External Review	6
Faculty Editor Feature: "Finding the first plant fossils from southern	-
Vietnam"	/
EESI News Highlights	9
Faculty Profiles	12
Know Your Staff Q&A	13
Community News	15
Support EESI	15

## Letter from the Director



Dear EESI community,

I'm happy to present to you the first annual EESI newsletter— *EESI Does It*. Given the events that have transpired in the last six months, we hope you will enjoy getting some good news about EESI and its activities. We focus here on how we meet the challenges of the modern and ever-changing world.

In the last academic year, we hosted two very well-attended EarthTalks seminar series. Klaus Keller and Seth Blumsack organized "The Dynamics of Deep Decarbonization" in the fall. The series brought to campus renowned leaders in the field of decarbonization, including Jae Edmonds from the Pacific Northwest National Laboratory and Klaus Lackner from Arizona

State University. And in the spring we ran a series "Societal Problems, EESI Science towards Solutions," that featured thirteen lectures and panels focused on our associates' work and how it impacts society. You can watch some of these talks from our archives: bit.ly/EarthArchive.

Last fall, EESI helped host two outreach events that brought our science to the community or, more precisely, the community to our science. Graduate student Mike Forgeng organized a watershed snapshot day that saw nearly fifty Penn State students and citizen scientists sample fifty-five sites throughout the Shaver's Creek watershed. The event was hosted by EESI, Trout Unlimited, and the Shaver's Creek Environmental Center, with funding provided by Marilyn Fogel, professor emerita in Earth and environmental sciences, University of California, Riverside, and the Susquehanna Shale Hills Critical Zone Observatory. The Shale Hills CZO also hosted a field trip for approximately forty science writers attending the annual ScienceWriters meeting, a joint meeting of the National Association of Science Writers and the Council for the Advancement of Science Writing.

During the middle of spring break, the COVID-19 pandemic hit. Many of us were out of town on research trips or vacations. The University gave our faculty members what amounted to a weekend to shift from inperson to remote learning. The faculty didn't miss a beat, and our staff worked tirelessly to assist them in making the transition to remote work as smooth as possible.

In the midst of the pandemic, we've also had to reckon with longstanding and systemic social injustices. I'm proud to say that EESI stands with Black Lives Matter, and we are looking for ways to increase our support for individuals from minority and underrepresented groups. We took part in #ShutDownSTEM and #Strike4BlackLives, and we're using input from across EESI to create a diversity and inclusion action plan for the institute. These changes take time, but we will continue to take the necessary actions one step at a time until we have a truly diverse and inclusive community.

I thank you all—faculty, staff, alumni, and students—for the work you complete to keep our institute running. Together, we are addressing some of the most important and challenging problems of our time, and we have the talent and skill sets to make important contributions. We will surely face additional challenges this fall and winter. It is of utmost importance that everyone within EESI and touched by EESI, here at Penn State or elsewhere, works to stay well and keep their families and communities healthy. Together, we will overcome these challenges.

Sincerely,

Jusan prouting

Susan L. Brantley Distinguished Professor of Geosciences Director, Earth and Environmental Systems Institute

# **EESI Updates**



EESI is pleased to welcome five new faculty hires, and one familiar face is joining us now as an associate. If you haven't already, please take the time to welcome:

**Laifang Li,** assistant professor of meteorology and atmospheric science, who received her Ph.D. in climate dynamics from Duke University. Before joining EESI, she was a postdoctoral research assistant in the Nicholas School of the Environmental Sciences. She studies the oceanic component of the global water cycle, its impacts on terrestrial precipitation, and its modulation of decadal climate variability.

**Shujie Wang,** assistant professor of geography, who received her Ph.D. in geography and GIScience from the University of Cincinnati and spent two years as a postdoctoral scholar at Lamont-Doherty Earth Observatory, Columbia University, before joining Penn State. She uses remote sensing, numerical modeling, and data analytics to study the dynamics and interactions between climate, cryosphere, and biosphere systems, with particular interests in ice sheet stability, surface mass balance, and glacial microbiome. This fall she is also teaching a new class, spearheaded by EESI and targeted at all graduate and undergraduate students in EMS, EMSC 497 Environmental Data Analytics.

**Kimberly Lau,** assistant professor of geosciences, who received her Ph.D. in geological sciences from Stanford University, followed by an Agouron Geobiology postdoctoral fellowship at the University of California, Riverside. Most recently, she was an assistant professor at the University of Wyoming. She studies the feedbacks controlling paleoenvironmental conditions in the oceans in Earth's geologic history, their relationship with periods of biotic evolution and extinction, and the ways in which scientists reconstruct these environmental conditions using inorganic geochemical signatures left in ancient sediments.

**Christopher Boxe**, associate research professor of geosciences, who received his Ph.D. in environmental science and engineering from the California Institute of Technology. Prior to joining EESI, he was an assistant professor of environmental science and chemistry at Medgar Evers College of the City University of New York. He was also a NASA Postdoctoral Fellow for two years and a research scientist at NASA-JPL. His research encompasses indoor/outdoor air/water/soil quality analyses and planetary numerical modeling.

**Sara Kimmig,** facilities director for the Laboratory for Isotopes and Metals in the Environment, who received her Ph.D. in geology from the University of Saskatchewan, Canada. Most recently she was an Earth scientist and before that a postdoctoral research associate at the Pacific Northwest National Laboratory in Richland, Washington. Her main research interests revolve around novel applications of mass spectrometry for environmental remediation and geochemical fingerprinting.

**Seth Blumsack**, professor of energy policy and economics and international affairs, who has been a faculty member in the Department of Energy and Mineral Engineering since 2007. He has been active in the EESI community for many years and has been director of the EESI-supported Energy and Environmental Economics and Policy Initiative since its inception in 2011.

#### EESI has also welcomed two new staff members:

**Matthew Lisk**, a research data management specialist, who provides technical support for research, education, and outreach activities by creating and modifying software codes and research datasets, documenting software codes in datasets, and generating publication-quality figures.

**Kylie Bocklund**, program delivery specialist with the NASA Pennsylvania Space Grant Consortium, who assists with the planning and implementation of educational programs and project activities. She is also responsible for the post-award reporting obligations to NASA of student data and project activities.

#### **Continuing Faculty Search**

The institute has one continuing faculty search that will re-open this fall. It is in land-water data analytics.

#### EESI 2020-25 Strategic Plan finalized

The institute has finalized its 2020-25 strategic plan. The planning process began last summer, and all associates, affiliates, and staff were invited to contribute to the plan. The final document describes seven initiatives. They are:

- 1. EESI will seek to increase faculty, student, and staff diversity;
- 2. EESI will provide support for broader impacts and extend opportunities for virtual collaborations;
- EESI will transform faculty-student-staff interactions;
- 4. EESI will develop new expertise to project environmental change;
- 5. EESI will forge a dedicated convergence research collaboration space (jewel);
- 6. EESI will grow expertise in the area of data analytics for environmental systems; and
- 7. EESI will grow expertise in the area of environment and human well-being.

The 2020-25 strategic plan is available online at www.eesi.psu.edu/resources.



#### **EarthTalks Roundup**

During the last academic year, the institute hosted two EESI EarthTalks seminars that achieved record turnout.

Klaus Keller, professor of geosciences, and Seth Blumsack, professor of energy policy and economics and international affairs, organized the fall series "The Dynamics of Deep Decarbonization." The series brought prominent researchers to campus to give talks on energy systems transition, negative carbon emissions, terrestrial sequestration, decisionmaking under uncertainty, and public policy relevant to deep decarbonization. Featured presenters included Klaus Lackner, a renowned carbon capture technology expert from Arizona State University, and the Department of Energy's Gary Geernaert. The seminars are available online at bit.ly/EarthTalksFall2019. The fall series was so well-received that EESI Director Susan Brantley decided to run a spring series associated with the EARTH 400 Earth Science and Policy class. The series, "Societal Problems, EESI Science towards Solutions," featured lectures and panel discussions by EESI associates and graduate students who shared their latest thoughts on some of society's biggest environmental issues, from climate to energy to limits on natural resources. The series continued remotely after the University implemented its coronavirus restrictions, which allowed us to reach more members of the Penn State community as well as outside stakeholders. The lectures and panels are available online at bit.ly/Spring2020EarthTalks.

#### **Spring 2021 EarthTalks Series**

Jim Kasting, Evan Pugh University Professor of Geosciences, and Chris Forest, professor of climate dynamics, will organize the spring 2021 series, tentatively titled "Energy and Climate Policy: How to Avoid a Global Hothouse." The series will focus on policies and technologies that could help slow down global warming. It will address questions related to carbon taxes, renewable energy subsidies, and the feasibility of carbon sequestration, among other topics. The series will be held in conjunction with EARTH 400, a course for students who wish to pursue these topics in greater depth.

#### **EESI Environmental Scholars**

The Environmental Scholars program facilitates connections between departments and research groups, increases student diversity, and improves recruitment efforts. Every year, six graduate students are nominated to become EESI Environmental Scholars and are awarded top-up funds upon acceptance of admission to Penn State. This cohort of students has grown to twelve currently in residence. EESI welcomes the incoming cohort for the 2020-21 academic year:

- Fan Wu, meteorology and atmospheric science, adviser Laifang Li
- Casey Hamilton, geography, adviser Erica Smithwick
- Dani Niziolek, geography, adviser Alan Taylor
- Sarah Jonathan, geosciences, adviser Roman DiBiase

Nominations for the next cohort are due mid-February 2021. All EESI faculty are encouraged to check their email in January for nomination instructions. In addition to the Environmental Scholars, EESI provides assistantships for graduate students every year as a way to promote promising research led by EESI faculty. Faculty are encouraged to reach out to the director for these opportunities.

## Get Social with EESI

Ready. Set. Click! EESI is taking its storytelling to Instagram, a social media platform for sharing photos and videos.

If you are on a research trip, analyzing specimens in the field or lab, or just come across an interesting item related to your research interests, take a photo or short video and send it to our communications specialist, Francisco Tutella (francisco@psu.edu), so we can share it on our social media channels. We especially encourage EESI alumni to send us news to share. Be sure to follow us on Instagram (@eesipennstate), Twitter (@PSUEarth), and Facebook (@EESIPennState).



## Website Updates

We've been busy adding visuals and a page on research foci to our website. The visuals, created by our own Katerina Kostadinova, show how the EESI centers relate to one another and the research performed by our institute, as well as how far into the past the centers go for data and how far into the future their projections



range. You can find these graphics on the "Research" and "Research – Centers, Initiatives and Labs" pages.

We identified four areas of EESI expertise during our strategic planning process. They are climate science and uncertainty, energy and the environment, Earth history, and critical zone science. We've dedicated the "Research – Foci" page to these fields. The page includes brief descriptions of our faculty associates' research interests and expertise.

We've also been following the number of COVID-19 cases across Pennsylvania and the United States. Xianzeng Niu has been pulling data from Johns Hopkins and depicting it in pulse maps featured on our website homepage and online at bit.ly/ COVIDMaps.

Make sure you check out these new website highlights. Please send any comments or suggestions to Francisco Tutella (francisco@psu.edu) or Bernd Haupt (bjhaupt@psu.edu).

### Fall External Review

The departments and institutes in the College of Earth and Mineral Sciences are evaluated on an eightyear cycle by an external review panel within an international (research) and national (education and service) context, and to provide constructive feedback.

EESI's external review will take place via Zoom this fall semester from September 29 to October 2. The following experts have agreed to be part of EESI's external review panel:

- Michael Celia, professor of civil and environmental engineering; director, Princeton Environmental Institute, Princeton University.
- Julia H. Haggerty, associate professor of geography, Department of Earth Sciences, University of Montana.
- Alexander N. Halliday, professor of Earth & environmental sciences; director, Earth Institute, Columbia University.
  James W. Hurrell, professor and Scott Presidential Chair
- James W. Hurrell, professor and Scott Presidential Chair in Environmental Science and

Engineering, Colorado State University.

• Eric J. Steig, professor of Earth and space sciences, University of Washington, Seattle.

The external evaluators will interact with faculty, staff, and students during their virtual visit. EESI has also prepared a focused self-study for the reviewers.

Please be prepared to meet with the reviewers on September 30 and October 1, and give them a warm (virtual) welcome to EESI.

# Finding the first plant fossils from southern Vietnam

Peter Wilf

Karst hills and agricultural landscape south of Hanoi, Vietnam. Photo credit: Peter Wilf

Vietnam is a biodiverse country in the seasonal tropics whose spectacular animals and plants, from elephants to durians, evolved with links to both the Malay Archipelago and continental Asia. Despite its significance in light of the modern biodiversity crisis, the origins of Vietnam's vegetation remain obscure because few of its plant fossils have ever been reported. The only detailed publication is a century old and involves just the northern part of a country that spans the north-south distance from Milwaukee, Wisconsin, to Tallahassee, Florida. Vietnam is a wonderful example of how undersampled our planet's fossils remain. In the year 2020, most fossils are still in the ground, and paleobotany's age of discovery is only beginning.

Before the coronavirus curtain fell in March, I had the good fortune to participate in a paleobotany field trip to Vietnam during our last winter break, coinciding with Vietnam's dry season. I was invited



by collaborators Dr. Tao Su, a former Penn State visiting scholar who heads the Paleoecology Group of the Xishuangbanna Tropical Botanical Garden (XTBG), Chinese Academy of Sciences, Yunnan, and Dr. Truong Van Do, a botanist at the Vietnamese National Museum of Nature (VNMN) in Hanoi, which ran all the logistics. One other VNMN scientist and four XTBG professors and students also participated. The National Science Foundation and Chris Davidson and Sharon Christoph of Flora of the World (floraoftheworld.org) supported my participation. In preparation, I used a language app for several months to learn some basic Vietnamese and found, as I always do, that even a rudimentary understanding of the host language, in this case one with six tones, magnifies the quality of an international experience.

Following the Ho Chi Minh Highway south along the Laos border, we traversed a landscape of endless karst spires of Paleozoic limestone, each topped with a sky island of rare plants and animals protected by inaccessible steep sides, the largest natural cave in the world at Phong Nha-Ke Bang National Park, and numerous forest reserves where we enjoyed hikes to experience the diverse rainforest flora that we compared to our fossils, such as chinkapins, dipterocarps, and yellowwoods. Our hosts' expert knowledge of every living creature, forest, town, and type of cuisine we encountered made the experience incomparable.

Our scientific goal was paleobotanical reconnaissance of Neogene deposits in several isolated basins of central and southern Vietnam, where fossil leaves had been reported only as brief text entries in old publications. In the Khe

Pictured left, a karst spire of Paleozoic limestone. Photo credit: Peter Wilf

Bo Formation in central Vietnam, we made small collections of generally poorly preserved leaves from a local coal mine. Then on New Year's Eve, in the Kon Tum Formation in southern Vietnam, at the end of what had been a largely unsuccessful foray in the area that included walking to riverbank exposures on narrow dikes through enormous rice fields and sliding gingerly through hostile thorny-bamboo thickets, we explored quarry pits behind a local brick factory and found a large clay lens, about ten meters thick and filled with fossil leaves. Freshly exposed rocks, brought down by a helpful backhoe operator, were too wet to split, but we found several spoil piles with well-dried blocks that produced numerous, diverse, and well-preserved Miocene leaf fossils with cuticle. The fossils were so abundant that we found ourselves collecting well into the night, still trimming fossils in the manner of cooks—with meat cleavers the only lighting provided by our headlamps and Venus above us.

To obtain a high-quality, landmark first collection for the entire region, we remained at this site for the rest of the trip. Our total Kon Tum collection housed at VNMN numbers about 560 leaf fossils, plus several pollen and geochronology samples. This collection will provide a massive infusion of new information about the evolution of southeast Asian vegetation and an outstanding starter for the doctoral studies of new Penn State geosciences graduate student Tengxiang Wang, who plans to join us in January 2021 following his master's work at the XTBG. I am grateful for our good fortune to have completed this important field trip to Vietnam when we did, while we still could. We will go back as soon as we can!





Pictured, clockwise from top left, Wilf (center front) and colleagues at their new fossil site in the Kon Tum formation in southern Vietnam; hills covered in dipterocarp forest; and some of the 560 leaf fossils now housed in the Vietnamese National Museum of Nature. Photos courtesy of Peter Wilf.

# **News Highlights**

## Novel hypothesis goes underground to predict future of Greenland ice sheet

The Greenland ice sheet melted a little more easily in the past than it does today because of geologic changes, and most of Greenland's ice can be saved from melting if warming is controlled, according to a team of Penn State researchers. Greenland was ice-free within the last 1.1 million years even though temperatures then were not much warmer than conditions today. The researchers think that when the Iceland hot spot passed under Greenland 80 to 35 million years ago, it left molten rock deep underground. When Greenland's ice sheet subsequently grew and shrank, it allowed the molten rock to rise closer to Earth's surface, even to the base of the ice, making it easier to melt. This effect would have



been largest the first time the ice sheet grew and shrank, according to Richard Alley, Evan Pugh University Professor of Geosciences. bit.ly/eesi201



#### Federal research significant in environmental rule-making

Federally sponsored science plays a more significant role in bringing together stakeholders and facilitating environmental governance debates than all other types of research, according to an international team of researchers. The researcher team, which included Jennifer Baka, assistant professor of geography, examined the role of federal-government sponsored research in the environmental rule-making process for the U.S. Bureau of Land Management's 2012 proposal to regulate hydraulic fracturing on federal and tribal lands. They found that the diverse stakeholders used "government research as a key tool to argue for or against their position," said Baka. "Stakeholders are arguing about the interpretation of the analysis, but nonetheless they are coming together to talk about the research." The study results highlight the importance of federally sponsored research and the knowledge vacuums that would arise if the government slashed federal research budgets. bit.ly/eesi-202

## Penn State students hit the road to investigate greenhouse gas emissions

Greenhouse gas emissions in State College, Pennsylvania, are relatively low, according to data taken by Penn State students during the spring 2019 semester. The students drove around State College with a portable instrument that measured carbon dioxide and methane emissions. They found elevated emissions in areas with increased vehicle traffic, by the agricultural fields and wastewater treatment plant, and behind CATA buses, which run on natural gas. Small greenhouse gas leaks are difficult to find, and portable sensors make collecting data in places like State College more feasible, said Ken Davis, professor of atmospheric and climate science and the course instructor. bit.ly/eesi203

> Adam Savary, a Penn State meteorology and atmospheric science student, prepares to collect greenhouse gas data around State College. Photo credit: Anthony Preucil.





#### Atlantic and Pacific oscillations lost in the noise

The Atlantic Multidecadal Oscillation and the Pacific Decadal Oscillation do not appear to exist, according to a team of meteorologists. Using observational data and climate model simulations, the researchers found no evidence of these oscillations that could be differentiated from climatic noise—random year-to-year variation. "Given the current sophistication of climate models as seen in their ability to capture the El Niño/Southern Oscillation, we would expect to see consistent evidence for oscillations across a suite of climate models," said Michael E. Mann, distinguished professor of atmospheric science. "We found no such evidence." These purported oscillations are most likely the result of external influences, like greenhouse gas

and aerosol emissions by humans, according to the scientists. bit.ly/eesi-204

## Penn State-led Nittany Radiance team refines infrared-signal detection

A Penn State-led research team is using hyperspectral imaging to better identify materials and gases based on the unique heat signals they emit. Hyperspectral imaging divides a wavelength into 256 individual bands, compared to three bands with conventional imaging and about a dozen bands with multispectral remote sensing. Guido Cervone, professor of geography, meteorology and atmospheric science, and his research group took different thermal readings of targets on the University Park



campus using field equipment and a drone, while an airplane fitted with a high-resolution instrument circled the campus at 10,000 feet. They also released gases with distinct heat signatures that the researchers could easily identify. The project allows for better characterization of the atmosphere and, in turn, detection of gases and solids, said Cervone. bit.ly/eesi206



## South African forests show pathways to a sustainable future

Native forests make up 1 percent of the landscape in South Africa but could play a key role in reducing atmospheric carbon and identifying sustainable development practices to counter global climate change, according to Erica Smithwick, professor of geography and assistant director of the Penn State Institutes of Energy and the Environment. In one of the first studies to quantify carbon content in Africa, Smithwick, with help from students in Penn State's Parks and People study abroad program, calculated the carbon storage of a forest in the Dwesa-Cwebe nature reserve and studied how the government and

local community use the forest's resources. The key, according to Smithwick, is figuring out the right balance between forest productivity and resource extraction to ensure that humans can get the materials they need without negatively influencing forests. bit.ly/eesi205

## Forest soils release more carbon dioxide than expected in rainy season

Current carbon cycle models may underestimate the amount of carbon dioxide released from the soil during rainy seasons in temperate forests like those found in the northeast United States, according to Penn State researchers. The team, which includes Distinguished Professor of Geosciences and Director of EESI Susan Brantley, analyzed soil gas samples and found that bacteria in the soil continue to produce carbon dioxide even when little oxygen is available for respiration. The findings show that the microbes shifted from using oxygen to metals for growth. Approaches like soil gas sampling are needed to understand how soils will respond to changing climate, said Brantley. bit.ly/eesi207





## Sediment loading key to predicting post-wildfire debris flows

The mudslides that follow wildfires in Southern California can be deadly and destructive, like the ones that hit Montecito in January 2018, killing twenty-three people and causing hundreds of millions of dollars in damage. Research led by Roman DiBiase, assistant professor of geosciences at Penn State, identified the process of dry sediment loading as the main contributor to these post-wildfire disasters in steep landscapes. He and his team used lidar to map areas where dry sediment loading occurred. Authorities can use lidar as a rapid response tool to decide which mountain channels to clear before a storm hits, said DiBiase. bit. ly/eesi209

## Forest carbon still plentiful post-wildfire after century of fire exclusion

Forests in Yosemite National Park hold more carbon today than they did 120 years ago despite burning in the severe Rim Fire in 2013, according to a Penn State-led team of researchers. The researcher team, which includes Alan Taylor, professor of geography and ecology, and postdoctoral scholar Lucas Harris, quantified forest carbon in 2002 and again after the Rim Fire. They found that after a century of fire exclusion, the forest held more carbon, but the fire exclusion policy also encouraged the growth of lessfire resistant tree species and shifted where the forest stored carbon. bit.ly/eesi208



## Find these and more research stories at <u>www.eesi.psu.edu/news</u>

# **Faculty Profiles**

#### **Digging into the past**

One of the driest places on Earth holds the keys to understanding how plants, animals, and humans adapt to a changing climate. Sarah Ivory, assistant professor of geosciences, searches the craggy cliffs of Oman's desert for fossilized middens—communal toilets used by generations of rock hyraxes, some middens being used for tens of thousands of years. The piles of fossilized urine and poop can tell scientists how a landscape, and everything living there, adapted to a changing climate and how they may change in the future. bit.ly/eesi2010



#### In Antarctica, you're never really alone

Sridhar Anandakrishnan knows about social distancing. The professor of geosciences and co-director of the Penn State Ice and Climate Exploration group spends field seasons in some of the remotest places in the world—Greenland and Antarctica. He sees parallels between his field experiences and the current experience of social distancing in the time of COVID-19, including the need for support systems and social responsibility. bit.ly/eesi2011





## Know Your Staff: Q&A with Tracy Bernier

Tracy Bernier knows all about the hustle. Bernier, EESI's administrative support coordinator for the last eleven years, manages the office, supervises the staff, maintains the general operating budget, serves as liaison to human resources, and acts as facilities coordinator. She also assists the director with various initiatives, organizing her calendar and travel. Here, Bernier discusses some of her favorite moments with and beyond EESI.

## What's your favorite memory of working in EESI over the last eleven years?



One thing that comes to mind is Richard Alley receiving the BBVA Frontiers of Science Award in Climate Change. I did a lot of work on the award package and helped write the nomination letter. It was a prestigious award that included a monetary award to Richard. Since I helped write the nomination, it felt really good that he got it.

That's probably the most memorable work-related project that I felt proud of, but I'm also proud of being able to work with the staff that I have had over the last ten years. We've done a lot of good for the college. One of the things I've tried to instill in the staff is we want to encourage the faculty associates to come here, submit their proposals through EESI, and work with us. We want to offer more than what the departments can offer to provide an excellent service, and I know many faculty are pleased with it. I'm proud that we're able to get faculty over here to use our staff; it tells us we're doing a good job and have distinguished ourselves in the college by going above and beyond for the faculty.

## That leads into the next question: What's the best part of your job? What's the one thing you look forward to doing?

I actually like working with the budgets, especially this time of year when I have to figure out how to pay people from the different grants and figuring out the salary distributions for all our associates. It's juggling a bunch of different awards and balances and trying to put them into a salary schedule for the full year. Unfortunately, it's always during a stressful time (laughs), so I can't really enjoy it, but I do like that part of the job.

Also, I just like making Sue's life easier. Whatever I can do to ease her load, take some heat off her, and make her a better researcher by letting her focus more on research than administration. Even though I may not like



some of the activities, I like that I'm doing them for her.

#### What's your favorite EESI-run activity?

That's a tough one. Everything we run is a lot of work (laughs), and I'm always glad when it's over. The best activity is probably the pizza lunches, which are less stressful and easier to organize. Even though I have to skip my daily run, the talks are really interesting, and my favorite food is pizza. Plus, you get to relax a little bit and socialize with people, which doesn't happen very often in my job.



## Where do you get the best pizza in the State College area?

Faccia Luna. There's no doubt. Except it's not as good taken out or reheated, so you have to eat the whole pie when you're there (laughs).

#### What's your secret skill?

If I like doing something, people know about it. It's not a secret.

It might be a secret to the people I work with, but I played softball up until I was 50-years-old and decided it was time to quit. I was a very good softball player. I played on teams that went to national tournaments. The highest we placed nationally

was fifth. There are ASA rankings for teams. D-class used to be the lowest, and the highest was A-major. We were an A-major team for several years, and there were only two other A-major teams in Pennsylvania. We were pretty good. I started at third base. We used to travel to different tournaments throughout Pennsylvania, Maryland, and New York a couple weekends a month. That was my life. I married later because I was too busy playing softball and having fun. I actually met my husband, Eric Bernier, at a softball tournament—he was an umpire.

#### Outside of work, what's your go-to Penn State activity?

Oh my gosh! Hands down, Penn State wrestling matches. I've come to love the sport. I used to work at Rec Hall as an usher and attended all the sporting events held there. I loved volleyball and basketball, but I didn't care about wrestling. Then I met my husband, who is a big wrestling fan. He has season tickets, and it only took me a few years of attending matches to become a huge fan, and I came to appreciate the hard work and effort that the wrestlers put in to be the best.

I think wrestling is the most grueling, challenging sport out there. These guys are arguably in the best shape of any athlete. I'm still not an expert by any means, but the more you learn about what they're doing and the moves they're making, it's just fascinating. To see them thinking two steps ahead about what's going to happen, it's just thrilling. Penn State's wrestlers are fun to watch.

#### Since it's summer I have to ask, what's your favorite Creamery flavor?

Happy Happy Joy Joy. It's coconut ice cream with almond chips, like an Almond Joy bar. They don't have it all the time, so when they have it, I get it. And I just like the name Happy Happy Joy Joy. One of the flavors they have all the time, my backup flavor, is Peanut Butter Swirl.

#### Lastly, if you could be a superhero or have a superpower, what would it be?

I would be Ant Man. He can change from being big to small. It would be pretty cool to be an ant crawling around, able to go in anywhere undetected and listen to people's gossip. I don't see how that's great for mankind, but for me it's cool.

But I don't want to be a superhero, I want to be his girlfriend. I want to be Iron Man's girlfriend, Pepper Pots, but only if Iron Man is Robert Downey Jr. If they put someone else in Iron Man's place, it's not the same. Iron Man is Robert Downey Jr.

Photo credits: Pictured on previous page, Bernier and her husband, Eric, at Churchill Downs Racetrack, Louisville, Kentucky (top); Bernier and husband Eric at Grand Canyon National Park.

Pictured above, Bernier and her husband at Lake Tahoe. "We love visiting national parks," says Bernier.

# **EESI Community News**

**Michael Mann,** distinguished professor of atmospheric sciences and director of Penn State's Earth System Science Center, was elected to the National Academy of Sciences in recognition of his distinguished and continuing achievements in original research. Membership in the NAS is one of the highest honors given to a scientist or engineer in the United States.

**Guido Cervone** was promoted to professor of geography, meteorology and atmospheric science. He is also the associate director of the Institute for Computational and Data Sciences.

**Erica Smithwick,** E. Willard and Ruby S. Miller Professor of Geography, was named associate director of the Penn State Institutes of Energy and the Environment (IEE).

**Klaus Keller,** professor of geosciences, received the Paul F. Robertson Award for Research Breakthrough of the Year in the College of Earth and Mineral Sciences. The award recognizes Keller's pioneering research on climate risk analyses and communication.

**Jenni Evans,** professor of meteorology and atmospheric science, was named an American Association for the Advancement of Science (AAAS) Fellow for novel contributions to the quantitative understanding of the life cycle of tropical cyclones and associated weather extremes, and for outstanding leadership in the atmospheric sciences. Evans is also director of the Institute for Computational and Data Sciences and past president of the American Meteorological Society.

**Kelly Núñez Ocasio,** a Penn State doctoral candidate studying how hurricanes form and an EESI Environmental Scholar, received an Alfred P. Sloan Minority Graduate Scholarship. The Sloan Scholars program, funded by the Alfred P. Sloan Foundation, provides support to students from underrepresented minority groups who are enrolled in a doctoral degree program in a STEM field.

**Andrew Shaughnessy,** a doctoral student in geosciences, was awarded a 2019 Graduate Research Fellowship from the National Science Foundation. He is one of seven EMS students and 24 Penn State students to receive the honor.

### Retirements

**Todd Sowers,** research professor, retired on August 2 after twenty-two years with EESI. Todd is one of the preeminent analytical geochemists of his generation. His ability to measure concentrations and isotopic signatures with the highest sensitivity is second to none. His work on ice core geochemistry changed our understanding of trace gas dynamics over time. He returned repeatedly to the deep field to successfully collect ice-core samples under the most trying conditions. We will miss him on his scooter as he moves around campus, and in the lab and office.

**Dave Pollard,** research professor, retired from EESI on September 10. Dave wrote the book on climate and ice sheet modeling. He is the creator of the best and widely used model to predict melting of polar ice in the face of global warming and pioneered modeling of land-surface processes. Always quiet but always ready to help, Dave has moved climate and ice science forward within EESI for twenty-three years. He's also a Fellow of AGU. We will miss Dave in the office and at Tussey Mountain, where he occasionally was happy to ride his board on the snow.

# Support EESI

The Earth and Environmental Systems Institute brings together scientists studying environmental science that crosses human to geologic timescales and transcends from fundamental to applied science. Its diverse and world-renowned faculty members are engaged in innovative and collaborative transdisciplinary research on questions related to our environment and how humans interact with the environment. To help support our mission (and help EESI do it), please consider donating to the Institute at raise.psu.edu/eesi.



## Earth and Environmental Systems Institute

Earth and Environmental Systems Institute 2217 Earth-Engineering Sciences Building University Park, PA 16802-6813



