GEO GRAPH

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Recognizing Achievers

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College of Earth
and Mineral Sciences

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IN THIS ISSUE

ON THE COVER

From the Recognition Reception in April 2019, Jamie Peeler displays the E. Willard Miller Award in Geography she won for her Ph.D. proposal. In 2020, Peeler received the William and Mary Easterling Outstanding Graduate Research Assistant Award.

This publication is available in alternative media on request.

From the Head of the Department

Spilling forward to a new kind of fall

Spring spilled into summer, which is spilling into fall. And through these past months, we are strong. The department budget is healthy; the new curriculum, a boon to undergraduates; our grads, inspiring; online enrollments, higher than ever; and a new master of science online degree in spatial data science, set to kick off in January 2021. We have reworked our fall resident courses to a new mix of remote and in-person. All of our classes with in-person aspects have rooms that accommodate cohorts of students, with social distancing. For example, I plan to see one half of my students on Mondays and the other half on Wednesdays. Social distancing is the challenge that "shrank" all the Penn State classrooms to a small proportion of their regular capacity.

Our work took on new forms through the months. The department created summer jobs for the grads who couldn't go on to previously planned summer jobs and research trips. Those jobs helped instructors get ready for a new kind of fall. Staff are working effectively from new home offices (and kitchen tables) to keep the department functioning, with new safety plans and new processes for expenses, approvals, appointments, and all those tasks we used to complete in person. I miss the in-person interaction though, especially with new staff. Many of us haven't met Judy Heltman, our new graduate program assistant, in person yet.

We worked on a new departmental five-year strategic plan this past year, and we have a bunch of good ideas that respond to key scientific areas of concern and change in society. Our focus is building a resilient and just world. We are advancing that vision by researching and communicating how to sustain landscapes and livelihoods, respond to the climate crisis, and make data science spatial.

We also welcome two new geography professors this year, Doctors Louisa Holmes and Shujie Wang, whom you will learn about in this issue of the department newsletter. Also in this issue is celebration of our award winners from last year, since we couldn't get together with our donors for the department's spring Recognition Reception. Please enjoy catching up with Penn State Geography, and know that we are thriving. I hope that you are building space and place into your life, even if it's from the armchair at home on too many days.

Award-winning undergraduates: Get involved, challenge yourself

Amanda Byrd

Rising senior pursuing a B.S. in geography, with a minor in GIS, and certificates in human geography and geospatial big data analytics.

2019–20 Academic Awards

- Jeff Gockley Memorial Award
- G. D. Richardson and Kathy LaSauce Undergraduate Scholarship in Geography in the College of Earth and Mineral Sciences
- Ryan Scholarship in Earth and Mineral Sciences
- Maiorino Scholarship in Geosciences

Byrd is the recipient of the department's top undergraduate award, the Jeff Gockley Memorial Award, which was established in 2005 to honor the memory of alumnus Jeff Gockley, who graduated in 1997. Byrd said she intends to allocate the scholarship to her tuition.

"I was pleasantly surprised and honored to receive the Jeff Gockley award," Byrd said. "This award is given to the top geography student in the GIS option. As a rising senior, I have had the opportunity to take many of the GIS courses the department offers, and I have thoroughly enjoyed all of them."

Byrd said she attributes her academic accomplishments over the past year to her enjoyment and passion for GIS and an ability to persist despite initial challenges.

"During fall semester 2019, I took GEOG 365 Introduction to GIS Programming, which was my first programming course," Byrd said. "I completely failed the first exam and was really frustrated with my lack of understanding of the material. However, at the advice of some upperclassmen who had already taken the class, I stuck with it, eventually aced the final and felt like I really understood the language."

Similarly, Byrd said she is proud of the group project she and her classmates produced in GEOG 301 Thinking Geographically, during spring semester 2020.

"We worked very hard throughout the entire semester, and despite everything having to move online due to COVID-19, we all still met virtually and worked diligently to produce a quality project."

Completing a group project virtually was a big change from the way Byrd said she prefers to work and from the experiences that have provided important memories for her.

"The late nights completing assignments in 208 Walker Building feel like such quintessential college memories," Byrd said. I love how willing geography students are to step aside and help their classmates. There have been so

many instances when one student might have finished the project hours ago, but they stick around to answer everyone's questions and provide some much-needed laughter."

Byrd said she would recommend new geography students join clubs, like UnderDoGs, of which she is vice president. They're a great way to meet other students with a passion for geography," she said.

She has recommendations on courses too.

"Specifically for GIS-focused students, I would recommend taking the programming and database management courses that the department offers because having a strong foundation in any language makes picking up other ones much easier."

During summer 2020, Byrd has been participating in a virtual internship with Duquesne Light Company, which has exposed her to a lot of real-world GIS applications, including Python and other new programming languages.

"It really confirmed my passion for this field," Byrd said.

Byrd said she is looking forward to her senior year at Penn State and fall classes, especially with her favorite professor, Roger Downs. After graduation, she plans to pursue a career in the renewable energy industry or the federal government as a GIS professional.

"I would also like to eventually pursue a master's degree in a data science or GIS field, maybe the new spatial data science degree Penn State is offering," she said.

Talia Potochny

Rising senior and Schreyer Scholar pursuing a B.S. in geography with a minor in entrepreneurship and innovation

2019–20 Academic Awards

- Balmat Family Scholarship in Geography
- Matthew J. Wilson Honors Scholarship
- Schreyer International Study Grant
- Student Engagement Network Grant

The Balmat Family Scholarship in Geography provides recognition and financial assistance to outstanding sophomores, juniors, or seniors in the Department of Geography. It was established with a generous contribution by Bruce M. and Ruth Kohut Balmat in 2002.

"I am so thankful to have received the Balmat Family Scholarship," Potochny said.

"Getting accepted to the Schreyer Honors College (SHC) definitely helped me achieve an academic status worthy of this award, in addition to getting good grades and being on the Dean's List for the

See Potochny, p. 6

Potochny from p. 5

past few consecutive semesters."

Potochny is also very active within the University, the College of Earth and Mineral Sciences, and department research communities.

"I am very involved in research in the department and participated in the Undergraduate Research Opportunities Connection (UROC) program, through professor Alex Klippel's ChoroPhronesis lab," Potochny said. "I am heavily involved in EMS Student Council, THON and a few other clubs, and work for Penn State Teaching and Learning with Technology (TLT) on their Creative Learning Initiatives team. Additionally, I participated in the EMS CAUSE Program in Colorado and traveled abroad in both Australia and most recently, Spain."

The grants and scholarships she received have helped Potochny pursue her love of travel and enabled her to continue working part time with TLT, while being a full-time student.

"As a geography major, I realize there is great value in experiential learning," Potochny said. "Learning about a place in the classroom is great, but experiencing it for yourself by meeting the people and learning about the culture, physical landscape, and the way people interact with their environment or technology adds so much to the experience."

For her thesis research, Potochny is studying how the switch to online learning affects students with disabilities.

"I am creating resources for students and educators to develop an awareness of the challenges facing students with disabilities," she said. "My first project will include Zoom guidelines for both students and educators and will be designed to account for accessibility for students with auditory disabilities. My second project will be a classroom activity designed for the TLT Dreamery that will showcase how emerging technologies like virtual reality, augmented reality, 3-D printing, telepresence robots, and artificial intelligence can be used in the classroom to enhance student learning for students with visual disabilities."

Potochny said her most memorable experience in the geography program so far was participating in UROC.

"Not only did I get to learn how research works in the area I was interested in, virtual and augmented reality, but also I got to learn about what my peers were researching and how different and diverse the fields were within geography," she said.

Potochny said she would recommend new students attend the American Association of Geographers annual conference as early as possible in their careers and to present a paper or poster.

"And talk to your professors and get to know them on a more personal level," she said. "They really want to help you have the best experience and get the most out of your degree."

To illustrate, Potochny shared that she was initially intimidated by Roger Downs.

"When I first came to ask him about applying to SHC, he pressed me to think about what I wanted to get out of being in

See Potochny, p. 22

Harman Singh

Rising senior pursuing a B.S. in geography, with a minor in Earth and sustainability.

2019–20 Academic Awards

- Rodney A Erickson Discovery Grant
- E. Willard Miller Award in Geography

The purpose of the E. Willard Miller Award in Geography is to encourage accomplished written, graphic, and/or analytical expression by students as part of their degree program in geography. Papers, study proposals, cartography, and software are all eligible.

Singh's proposed study, "Examining the Relationship between Flooding and Land Use Land Cover in Kerala through a Mixed Method Approach," investigates the relationship between anthropogenic factors, such as urbanization, and the frequency of flooding in Kerala, India over the past two decades.

"My project aims to examine the relationship between land use and land cover change, like from pervious to impervious, and the intensity of flooding using remote sensing data, policy analysis, and interviews," Singh said. "Results from this study will be submitted to academic journals and will be included in applications to granting agencies to fund future research."

Singh began her project during fall 2019 and is using the funding from her awards to cover research expenses.

"My initial plan was to use the grant money to travel to India to conduct field research and in-person interviews," Singh said. "Due to COVID-19, I had to adapt to the situation and conduct interviews via Zoom. Now, the grant money will now be used to request data from various agencies for quantitative analysis and to cover publication costs."

Singh has had numerous previous experiences to conduct and present research.

"One of my most memorable experiences was being part of the Undergraduate Research Opportunities Connection on two occasions," Singh said. "I was introduced to many different research methods in a hands-on way and I was able to take what I learned in class and apply it to those projects."

In addition, Singh said that professors Trevor Birkenholtz and Helen Greatrex have mentored her research projects.

"They have both challenged me to improve my knowledge and ability and have helped me to build a strong work ethic," She said.

As a result of those experiences with research, Singh has given several presentations.

"I presented research at the American Association of Geographers conference in 2019, Penn State's Campus and Community Sustainability Expo in 2019, where I earned second place, and the College of Earth and Mineral Science' Undergraduate Poster Competition in 2019 and 2020," Singh said. "In addition, I was offered a digital fellowship

See Singh, p. 11

Recognition Reception revamp

Students, faculty, staff, alumni, and friends of the Department of Geography did not gather in Walker Building on the final day of spring semester 2020 classes. With students and faculty learning and teaching remotely and all University events cancelled through June 19, the Recognition Reception, the department's annual event to recognize the accomplishments and contributions made throughout the year by Penn State geographers, was shifted to a virtual mode.

A website, **https://sites.psu.edu/geogrecrec20/,** showcases graduating students and awards for undergraduate students, graduate students, faculty, and staff. Student organizations and Undergraduate Research Opportunities Connection participants are also acknowledged.

This issue of GEOGRAPH features profiles of students and faculty who received awards this year.

Community Updates

Newcomers

Judy Heltman joined the Department of Geography as the new graduate administrative assistant.

Louisa Holmes joined the Department of Geography as an assistant professor of health geography. She is a Social Science Research Institute co-hire with the Consortium to Combat Substance Abuse.

Darlene Peletski joined the Department of Geography as the new receptionist and undergraduate administrative assistant.

Mandy Thompson joined the Department of Geography as the new budget administrative coordinator.

Shujie Wang joined the Department of Geography as an assistant professor. Hired into the EMS position "Understanding Land-Water Systems Using Data Analytics," she specializes in Earth and environmental sciences using data-driven tools and methods.

Welcome to new graduate students joining us this fall: **Matthew Bauerline, Ruth Buck, Casey Hamilton, Owen Harrington, Jessica Kromer, Matthew Leddy, Dani Niziolek, Zhuolai Pan, Gillian Prater-Lee, Timothy Pretsby, Emma Robertson.**

Alumni

Lauren Maloney, who graduated in 2020 with a master of professional studies in homeland security, geospatial intelligence option, was awarded the 2020 Lt. Michael P. Murphy Award in Geospatial Intelligence.

Joseph Nadonley, who earned his bachelor of science degree in geography in 2020, accepted employment as a GIS production analyst for Fugro Earthdata, Inc.

Emily Domanico, who earned her master of science in geography in 2019, won second place in the College of Earth and Mineral Sciences Graduate Student Poster Competition and Recognition which took place during fall semester 2019.

Carolynne Hultquist, who earned her doctoral degree in geography in 2019, accepted a lecturer (assistant professor) position in geospatial science in the School of Earth and Environment at the University of Canterbury in Christchurch, New Zealand.

Liping Yang, a former GeoVISTA postdoc, started in 2020 a tenure-track position as an assistant professor in the Department

See Community, p. 14

Graduate students emphasize relationships

Vivian Rodriguez-Rocha

Doctoral student, dual title in geography and women's gender and sexuality studies.

2019–20 Academic Awards

- E. Willard and Ruby S. Miller Distinguished Graduate Fellowship in Geography (2018–20)

The E. Willard and Ruby S. Miller Distinguished Graduate Fellowship in Geography provides support for academic excellence for graduate students.

"When I first found out that I had gotten this fellowship, it helped ease some of the feelings of insecurity that come with feeling out of place," Rodriguez-Rocha said. "It was validating, in a sense, to think that maybe I did belong in a geography department after all."

Rodriguez-Rocha said that out-of-place feeling came from three things: she is a nontraditional older graduate student; she is an international student; and her academic background was in women's, gender and Latin American studies.

"This fellowship was more than I had hoped for, for sure, but it was a big part of why I was able to come to Penn State," she said, adding that she was grateful for all the help she received in completing the application.

"Coming here, it was really lovely to experience what it means to actually be part of a department, have an office with officemates, and run into people in? the hallways or at events like Coffee Hour, or student-led initiatives like Wednesday Club," Rodriguez-Rocha said. "Those ended up being opportunities to bond with people in the department."

She said that Brian King, Melissa Wright, and Lorraine Dowler are inspirations to her. And that Emily Rosenman's "eloquent and clear" Coffee Hour lecture made her want to become a better public speaker.

Rodriguez-Rocha said she also enjoyed teaching, because it helped her to build closer relationships with faculty members and classmates.

That experience is echoed in the advice she would give to new students.

"I would tell them to spend time in their office space or the lab at least a couple of days a week to make sure they get to know people, and try take on service roles like being a graduate student representative or Supporting Women in Geography officer. These are ways to shape the

See Rodriguez-Rocha, p. 10

Rodriguez-Rocha from p. 9

program into something closer to what you hope it would be," she said. "I would advise them to rely on their peers, form study groups, and have a cohort group chat because it is a way to create an intimate community with shared experiences. When things get tough, like during comprehensive exams, but also life, they will be the ones to see you through."

Rodriguez-Rocha also would recommend taking a combination of geography seminars and seminars outside geography, "because you can think geographically about basically anything," she said.

Rodriguez-Rocha demonstrates that philosophy through her primary interests in feminist political geography and feminist political ecology.

"My current research project looks at embroidered iconography in the protests against femicide in Mexico from the perspective of feminist care ethics," Rodriguez-Rocha said. "Feminist geographers have done a great job of showing that practices of care are spatialized, and my project thinks about the ways in which this particular iconography, seen as a practice of care, seeks to restore the geographies of murdered women and girls and resists masculinist nationalist views that justify the killing of women with impunity."

In the future, Rodriguez-Rocha said she hopes to work as a researcher in an international organization or a governmental institution back home.

"I would like to be able to do work that supports civil society in a way that bridges the current divide between grassroots movements and academia."

Julie Sanchez

Doctoral student in geography

2019–20 Academic Awards

- E. Willard and Ruby S. Miller Distinguished Graduate Student Fellowship in Geography (2019–20)
- Supporting Women in Geography Nancy Brown Community Service Award
- NASA Pennsylvania Space Grant Consortium Graduate Fellowship

"I was extremely honored to have received the E. Willard and Ruby S. Miller Distinguished Graduate Fellowship," Sanchez said. "I know everyone who applied is well-deserving of this award."

The E. Willard and Ruby S. Miller Distinguished Graduate Fellowship in Geography provides support for academic excellence for graduate students.

"Receiving the Nancy Brown Community Service Award is special to me because it was voted on by my fellow colleagues," Sanchez said. "Since I was thirteen, I have been volunteering in my community and it makes me proud to be a part of a department that also values this."

The Nancy Brown Geography Community Service Award recognizes students who are involved in service

in the department and the community, particularly in ways that go unrecognized while students complete their degrees.

"During her time at Penn State, Julie has demonstrated exceptional leadership and volunteerism," said Jacklyn Weier, a current SWIG officer. "This went beyond her commitment to SWIG as an officer and into further outreach. The graduate students of this department recognized that dedication and rewarded her for it."

Sanchez's area of scholarly interest is climatology.

"I am interested in climatology, specifically the cause of the increasing temperature in the Arctic region and Greenland," she said. Sanchez said her most memorable student experiences are "my first year orientation with my amazing cohort." She said that all her professors have been supportive and inspiring, "but especially, Roger Downs has always been someone who I will remember in my graduate career due to his warm-hearted character and encouraging conversations."

She has advice for new students.

"Try to have conversations with everyone in the department, even if they are not in your field because you are guaranteed to learn something."

Sanchez said she is looking forward to finishing her doctoral degree.

"I will be the first person in my family to earn one," she said. "Then I hope to teach at a small state school or work for a private industry that focuses on climate change and sustainability.

Singh from p. 7

with the American Institute of Indian Studies for summer 2020."

Teaching and outreach are also important to Singh, who aspires to attend graduate school and pursue an academic career.

"I was a teaching intern in spring 2020 for GEOG 301 Thinking Geographically and was offered a TI position in fall 2020 for GEOG 364 Spatial Analysis," she said.

Singh also volunteers as a student member on the EMS sustainability sub-committee, and was as a member and president of the GIS Coalition.

"I enjoy promoting geography to other students and forming a community of undergraduates who share a common interest," she said.

While she appreciates the diversity and flexibility within the Penn State geography program, Singh's primary area of interest is natural disasters.

"I have really enjoyed learning and applying GIS and qualitative human geography analysis to aid my research in flooding," she said.

Singh advocates that new students should try to take a variety of geography classes because each class has something unique to offer.

"The classes helped me discover which path I liked within geography," Singh said. "I would also recommend that new students pursue the certificates offered by the geography department. Lastly, I would tell students to approach faculty with questions, ideas, and their own goals. The faculty in geography are very engaged with undergraduates and want them to achieve the best they can for themselves."

Saumya Vaishnava

Doctoral student in geography

2019–20 Academic Awards

- Outstanding Graduate Teaching Assistant Award

The Outstanding Graduate Teaching Assistant Award recognizes a graduate student who has performed his or her responsibilities as a teaching assistant in a commendable manner. The department recipient becomes eligible for the EMS George Schenck Teaching Assistant of the Year award.

Vaishnava, who has been teaching the general education course, GEOG 30 Environment and Society in a Changing World, said it means a lot to her to receive the award.

"I have always wanted to teach, and a big part of my decision to come to graduate school was the many opportunities to grow and learn as a teacher," Vaishnava said. "I have really enjoyed my TA experience so far, and I have learned so much from Brian King and Brandi Robinson, the faculty I was a TA for, and from Vivian Rodriguez-Rocha, my fellow TA. As graduate students, we invest a lot of ourselves into our TA assignments and so recognition by the department through this award is very encouraging."

GEOG 30 aligns with Vaishnava's research interests as well. She described herself as a nature-society geographer.

"I just finished my master's thesis on policy responses to geological risks in dam construction in the Indian Himalayas," she said. "After my Ph.D., my plan is to find work that allows me to do meaningful policy research as well as continue teaching students."

To new students, Vaishnava said she would emphasize the things that have worked for her: time management, taking good notes, and asking for help when stuck.

"For those interested in teaching, I would recommend taking advantage of the fantastic resources and courses at the Schreyer Institute for Teaching Excellence," she said.

World Campus graduate, reservist wins award for geospatial intelligence

By Hilary Appelman

When Lauren Maloney trained in military intelligence with the U.S. Air Force, she was impressed by how much information could be conveyed by geospatial intelligence, which uses images and data to analyze activity in specific locations.

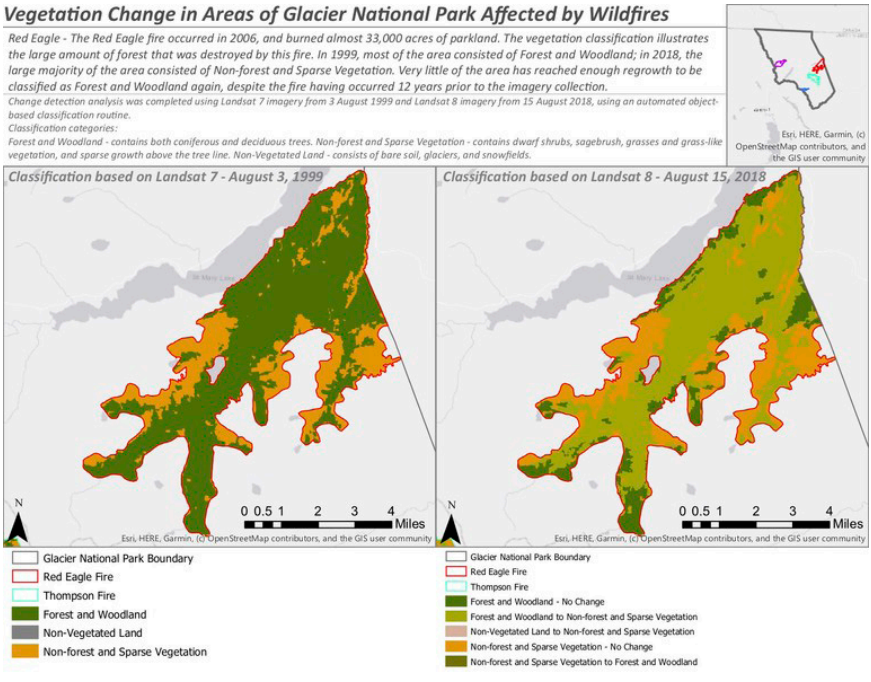
"We typically write reports and use a lot of words to convey a message. With GEOINT you can convey it with images, and the message is so much clearer," said Maloney, who graduated this year with a master of professional studies in homeland security, geospatial intelligence option, offered online by the Penn State College of Earth and Mineral Sciences and Penn State World Campus. "I fell in love with the whole idea."

Maloney recently was awarded the 2020 Lt. Michael P. Murphy Award in Geospatial Intelligence, which recognizes a student in Penn State's geospatial intelligence program who has served in the U.S. armed forces or with the geospatial intelligence community, and demonstrated "exceptional contributions to the discipline."

Todd Bacastow, lead faculty for graduate geospatial intelligence programs, called Maloney "the next geospatial intelligence generation. She is team-oriented. Her knowledge and mastery of technology seems hard-wired. She is dedicated to self-development. Our future is in good hands," he said.

Maloney lives in northern Virginia, where she works for BAE Systems as a full motion video

See Maloney, p. 14



For her final project in a GEOINT class, Lauren Maloney analyzed vegetation growth patterns in areas affected by wildfires in Glacier National Park.

Maloney from p. 13

analyst. She is an intelligence officer in the Air Force Reserve and served as deputy chief of intelligence at Westover Air Reserve Base in Massachusetts before her recent reassignment to the Pentagon. At Westover, she was in charge of preparing air crews for what to expect on route and on the ground at their overseas destinations.

"I am truly honored to receive the award because I am passionate about the field of geospatial intelligence, and I strive to incorporate the new skills I have acquired from this program into every aspect of my work," Maloney said.

"Studying GEOINT at Penn State has given me the tools and experience I need to deliver results in both my civilian and military careers," she added.

Maloney, 34, cross-trained in intelligence after leaving active duty in the Air Force and decided she wanted to focus on GEOINT.

"As soon as I started asking around, everyone spoke so highly of Penn State," she said.

Maloney said the program was challenging, and "I learned so much. I am able to incorporate GEOINT into every aspect of my work."

For her capstone project at Penn State, Maloney studied Russia's military buildup in the Arctic. For a final project in another class, she analyzed vegetation growth patterns in areas affected by wildfires in Glacier National Park.

Maloney said she was honored to receive an award named for Lt. Michael P. Murphy, a Penn State graduate and Navy SEAL who was killed during a reconnaissance mission in Afghanistan in 2005 and posthumously given the Medal of Honor.

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of Geography & Environmental Studies at the University of New Mexico.

Morteza Karimzadeh, who earned his doctoral degree in geography in 2018, and **Azita Ranjbar,** who earned her doctoral degree in geography in 2017, have both started tenure-track assistant professor positions in geography at the University of Colorado Boulder.

Jack Swab, who earned his bachelor's degree in geography in 2017, and is currently a graduate student at the University of Kentucky, was elected Student Councilor for the American Association of Geographers.

Nathan Amador Rowley, who earned his doctoral degree in geography in 2015, was awarded tenure and promotion to associate professor in the Department of Geology and Geography at Ohio Wesleyan University.

Ann Myatt James, who earned her doctoral degree in geography in 2014, accepted an appointment as a data services librarian at George Washington University's Gelman Library in Washington, DC.

Matthew Popek, who earned his bachelor of science in geography in 2009, received his American Institute of Certified Planners certification in fall 2019.

Brendan Collins, who earned his MGIS in 2011, founder of the spatial data science company, makepath, is supporting the effort to battle COVID-19 behind the scenes.

Jessica Whitehead, who earned her doctoral degree in geography in 2009, was named the first chief resilience officer at the North Carolina Office of Recovery and Resiliency, tasked to think ahead in new ways to bolster the state against the effects of climate change.

Robin Leichenko, who earned her doctoral degree in geography in 1997, now professor and chair of the Department of Geography at

See Community, p. 25

Dowler receives award for service to women in geography

By Patricia L. Craig

Lorraine Dowler, Penn State professor of geography and women's, gender and sexuality studies, is the 2020 recipient of the American Association of Geographers (AAG) Feminist Geographies specialty group's Jan Monk Service Award.

This award is named in honor of Jan Monk, a past president of AAG, and "recognizes a geographer who has made an outstanding service contribution to women in geography and/or feminist geography."

"The award typically goes to a feminist geographer with a distinguished track record of service work throughout their career, which is certainly true of Lorraine," said Carrie Mott, assistant professor of geography at the University of Louisville and member of the selection committee. "She's someone who has built her career around service to others through her research, writing, teaching and service."

Typically, Dowler would have been presented with the award at the AAG annual meeting in April, but due to the COVID-19 pandemic she received it online.

Dowler, who also serves as the associate head of undergraduate programs for the Department of Geography, has been a member of AAG for more than twenty-three years, organizing several workshops and conferences. She is a longtime member of the AAG Feminist Geographies specialty group, formerly named Perspectives on Women, and serves on the editorial boards of the journals Geography Compass and Geopolitics.

"My scholarship is rooted in a feminist approach to geopolitics that enables more fluid conceptualizations of compassion, identity, and individuality as related to understanding everyday life, private spaces and the lives of women and other marginalized groups," Dowler said. "I am honored to receive this award."

The AAG is a nonprofit scientific and educational society founded in 1904. Currently, the association has more than 10,000 members from more than 60 countries. AAG members are geographers and related professionals who work in the public, private and academic sectors.

Geospatial education faculty member wins Lidar Leader award

By Adrienne Goldsberry

Karen Schuckman, associate teaching professor at Penn State, was awarded the Outstanding Personal Achievement in Lidar Award from the International Lidar Mapping Forum and *LIDAR Magazine.* This is the second year in a row that Penn State faculty have received this award; Karl Heidemann won the award last year. Schuckman teaches three courses in Online Geospatial Education, a joint program between the John A. Dutton e-Education Institute, Penn State World Campus, and the Department of Geography and also manages the Graduate Certificate in Remote Sensing and Earth Observation.

"For more than twenty years, Karen Schuckman has made significant contributions to the geospatial community, and has been instrumental in expanding the reach and impact of lidar technology in the context of mapping," said Anthony Robinson, director of online geospatial education programs for the department.

Lidar, which stands for Light Detection and Ranging, is a remote sensing method that uses light in the form of a pulsed laser to measure distances to Earth's surface. This detection method results in 3-D images of the Earth's surface and is used in a variety of fields, including archeology, agriculture, conservation, and many others.

"For more than twenty years, Karen Schuckman has made significant contributions to the geospatial community, and has been instrumental in expanding the reach and impact of lidar technology in the context of mapping ..."

Schuckman is an influential professional in the lidar field. For example, she led the first statewide lidar mapping program in Pennsylvania and helped form the Lidar Division of the American Society for Photogrammetry and Remote Sensing. Schuckman has also been recognized with other awards from ASPRS, including the award for Outstanding Service in 2011, 2017, and 2018.

"When Schuckman joined the Penn State online geospatial education program, it was primarily focused on GIS, with little emphasis on the remote sensing field. She has worked hard to significantly expand the program's reach into education on remote sensing

See Schuckman, p. 24

Holmes detects patterns to thwart health disparities, disease

Louisa Holmes joined the Department of Geography in fall 2020 as an assistant professor. She is a health geographer and demographer, with primary interests that include health disparities, socio-spatial determinants of health, tobacco control, substance use, quantitative and geospatial research methods, survey research, and area-level observational studies.

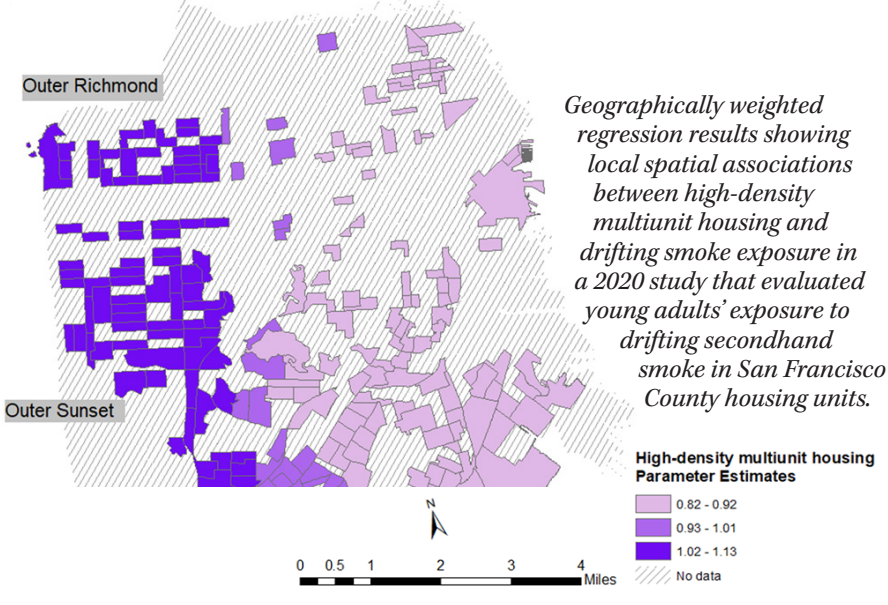
"Health geography centralizes place as a crucial determinant of health and embraces social and critical theory as a means to promote broad conceptions of wellness that are not defined by medical treatment systems," Holmes said. "I'm interested not only in disease and treatment per se, but also in the social determinants of disease and wellness and how health disparity is perpetuated."

An early work experience at a residential school for adolescents struggling with disorders like bipolar depression and schizophrenia helped Holmes to realize that focusing on treatment, to the exclusion of broader social context, was not the right path for her.

That led her to work at the Suicide Prevention Resource Center, a Substance Abuse and Mental Health Services-funded national technical assistance center, where she could take a more holistic population health approach.

"Working with tribal leaders on western reservations, for whom access to municipal services was a huge challenge—not to mention inordinately high suicide rates—really broadened my perspective," Holmes said. "Suicide has a very clear geographic pattern, so I learned a great deal about context and behavior in that position, and my interest in health inequality was cemented as well."

See Holmes, p. 18



Geographically weighted regression results showing local spatial associations between high-density multiunit housing and drifting smoke exposure in a 2020 study that evaluated young adults' exposure to drifting secondhand smoke in San Francisco County housing units.

Holmes from p. 17

That experience prompted Holmes to go back to school for a doctorate in health policy at the University of Southern California. While there, a professor (who later became her adviser) assigned readings in health geography and the social determinants of health.

"That's when it started to click for me that I was in the wrong field." Holmes said. "Geography provided the opportunity to integrate a variety of disciplinary approaches into my research, ask broader questions, and focus on place as a primary determinant of health, which was something I think I'd long understood instinctively but didn't know how to verbalize or study more formally."

Completing her doctoral degree in geography gave Holmes the tools she needed to apply geospatial analysis to uncover local patterns of health behavior and investigate how local and regional policy may exacerbate disease outcomes, or provide opportunities for health promotion and intervention.

"At a basic epidemiological level, visualizing population disease prevalence and trajectories can provide immediate insight into spatial patterns of disease, populations at greatest risk, and where to focus resources," Holmes said. "We've seen this with COVID-19; universities with medical schools, as well as the major national newspapers, have developed their own maps to track case and mortality rates. Historical GIS approaches have also been used to study viral trajectories to anticipate current and future outbreak patterns."

COVID-19 has highlighted the health disparities in the country, in part as research revealed the disproportionate numbers of Black and Latino people who have been infected or died.

"The virus itself is indiscriminate," Holmes said. "But the socioeconomic and racial inequalities that have increased in recent decades — such as uneven access to health care and disparate occupational safety issues — have underlined the structural barriers to good health that nonwhite and poor people encounter at much higher rates than their counterparts. So, while COVID-19 is the immediate concern, structural inequality is the most serious public health problem in the United States in general."

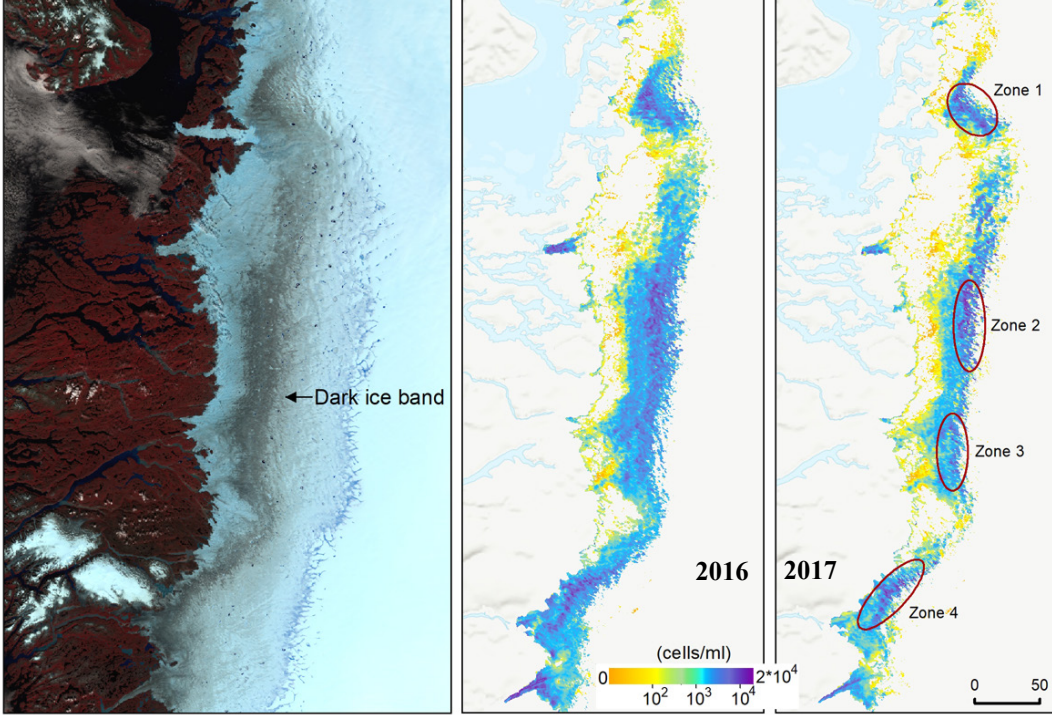
Holmes also brings geospatial analysis to her teaching. She will teach GEOG 260 Geographic Information in a Changing World: Introduction to GIScience in the fall, and GEOG 464 Advanced Spatial Analysis and GEOG 497, a health geography course to be named, in the spring.

"When teaching population health to geography students with little health background, I usually start with maps of the United States portraying different disease prevalence rates, which is immediately eye-opening for many of them, because there are such clear spatial concentrations of major diseases, like heart disease and cancer, particularly in the Deep South."

Holmes also has several active research projects. Currently, she is analyzing data from a recently concluded panel survey on young adult tobacco, vaping, and cannabis use behaviors and health outcomes in the San Francisco Bay area.

"Then I'll get to start evaluating changes in substance use behaviors and health outcomes over a five-year period during which California legalized retail

See Holmes, p. 24



Observations from the Sentinel-3 satellite in 2016 and 2017 show widespread algal blooms. Credit: Wang et al., 2018, https://doi.org/10.1029/2018GL080455; data from Copernicus Sentinel-3/ESA.

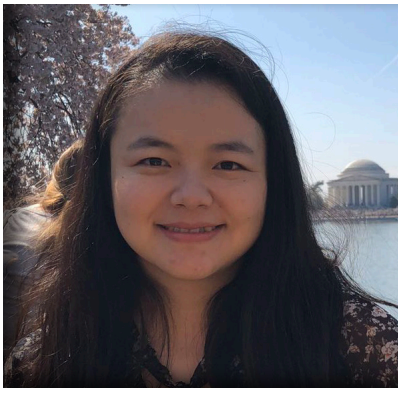
Using satellites to map life on a cold, barren world: Earth's ice sheets

Shujie Wang joined the Department of Geography in fall 2020 as an assistant professor. Her interests include remote sensing, machine learning, numerical modeling, ice flow dynamics, snow and ice albedo, and glacier algae.

"I was so surprised to learn that life could develop in such cold and barren environments," Wang said. "Glacier algae generate a brownish-grey purpurogallin pigment that can darken the ice surface and can now be observed and mapped using data from satellites."

Wang and colleagues conducted the first study utilizing the advanced capability of Sentinel-3 satellites in detecting chlorophyll-a, a typical pigment generated by algae, during the summers of 2016 and 2017.

Glacial algae had not received much attention until recently, although the presence of this supraglacial phenomenon was first documented in 1872.



"Now we know that glacier algae blooms play an important role in enhancing the surface melting of the Greenland ice sheet through their role in darkening the ice sheet surface and reducing the albedo," Wang said.

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Wang from p. 19

As a onetime aspiring biologist who accidently became a geographer, Wang was inspired to study ice sheets after attending a seminar related to climate change and polar ice sheets.

"My first thought as a geographer was 'how can I map this,'" Wang said. "Because I had field sampling experience studying harmful algal blooms in lakes, I quickly theorized that satellite sensors designed for ocean color studies could also be used to map glacial algae on the ice sheet surface."

Wang likes to employ fieldwork and remote sensing in a complementary way.

"Fieldwork is very important for us to obtain ground truth samples," Wang said. "Ground truth is important for remote sensing in two ways: it provides us with prior knowledge to be able to derive information from remote sensing data; and it validates the retrieved information from remote sensing data."

Wang said it is logistically difficult to map regional patterns by conducting fieldwork only, particularly when studying the ice sheets, which are remote and inaccessible.

"Remote sensing provides a synoptic and efficient way to characterize geospatial phenomena across large spatial scales," Wang said. "Besides, we can use various remote sensing techniques (gravimetry, microwave, altimetry, and multispectral) to 'measure' the ice sheets from different perspectives and study different processes."

Wang said she continues to collaborate with climate modelers to parameterize the biological impact of glacier algae into climate models and with biologists and geochemists to understand the nutrient cycles of the supraglacial microbiome.

She is also working on combining satellite imagery, satellite altimetry data (particularly ICESat-2), and machine learning techniques to study the morphological changes of ice surface, such as fractures, supraglacial lakes, and river channels.

"As observational and modeling data for Earth and climate systems are increasing in both quantity and quality, the emerging data mining and machine learning methods are becoming more and more important to discover patterns and relationships of various processes and to predict future dynamics," Wang said.

She intends to incorporate those novel methods with remote sensing and climate modeling to continue her study of the ice sheets.

"The spatiotemporal development of glacier algae is not well understood, and it is important to know how much glacier algae contributes to surface mass loss," Wang said, "The impact of glacier algae on the ice sheet also inspires us to think more about the vital but not well-understood linkages between climate, cryosphere, and microbes."

Shujie Wang will be teaching EMSC 497 Environmental Data Analytics in the fall semester, and GEOG 362 Image Analysis during the spring semester.

Piekielek promotes geospatial data literacy

Nathan Piekielek is an associate professor of geography (a new joint appointment beginning fall 2020) and the Kalin Librarian for Technological Innovations and Geospatial Services Librarian at Penn State. He leads Pattee-Paterno Library's Donald W. Hamer Center for Maps and Geospatial Information, where he promotes and facilitates spatial literacy and the use of maps and geospatial technologies across the University.

Is he a geographer who specializes in geospatial librarianship, a librarian who specializes in geography, or something else entirely?

"It is interesting that you place geospatial librarianship as a subset of geography," he said. "I wonder what librarians would say about that?"

Piekielek observed that geographers often seem to claim "everything," or "nothing," in the sense of borrowing theory and methods from other disciplines.

"Whether or not I am a geographer is debatable; it is pretty hard to put me in a box or assign a single title that well captures my career path–ecologist would work just as well, too," he said. "Titles are important, they dictate expectations, but in my case you might be surprised what you get. For example, I completed more graduate course work across two degrees in statistics than in geography."

Piekielek said he has always had interdisciplinary interests.

"I love to learn new things and get involved in research projects that span academic fields, and my current position allows me to do both," he said.

Protected area conservation was an early focus of Piekielek's career. He spent more than ten years working for, and later with (as a graduate student and postdoc), the U.S. National Park Service and a United States Geological Survey climate science center on biodiversity conservation research projects. The focus of this work was on biodiversity

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Piekielek from p. 21

conservation in the face of land use and climate change within and around protected areas.

Penn State was an early adopter and participated in the Geographic Information Literacy project, a partnership between the Association of Research Libraries and Esri, an international GIS software company, in 1992. In 1994, the Department of Geography and University Libraries pooled their funding to create the first GIS librarian position at Penn State and later opened a GIS computer lab in what was then the Map Library.

"More recently, geospatial services here at Penn State have been in high demand," Piekielek said. "We have done a pretty good job of getting the word out about our services and regularly help a pretty diverse cross section of the University, but there is more work to be done."

Piekielek said that many academic libraries are in transition, and their future is not clear.

"I think the primary challenges for geospatial services departments have to do with continuity of staff and services, and familiarity of library administrators with geospatial," he said. "Right now, geospatial remains a pretty fringe thing in libraries that gets shuffled around a lot within the organization and/or consolidated with other initiatives with which they are not necessarily well aligned. Both map libraries and geospatial services in libraries have struggled to find and retain their place, and this has limited their impact and effectiveness. I have a pretty clear story in my head about this that I have been trying to get out into a coherent paper for some time."

Piekielek received his bachelor of science in geography from Penn State in 2000. While family played an important role in his decision to return to the area, he noted he loves being a part of the Penn State community.

"Penn State is full of really accomplished academics and intellectuals who remain down to earth and approachable," he said. "I aspire to this real or fictitious Penn State ideal every day–to accomplish as much I can while remaining a humble student and generous community member."

Potochny from p. 6

the honors college and why I was applying to begin with," she said.

"Now I consider him to be one of my closest mentors. He is always pushing me to do better and explain my ideas more clearly, which has helped me to become a better student and a more well-rounded individual."

Potochny said that being part of the department and college shaped her Penn State experience in ways she could not have imagined.

"In fact, I had never even heard of anyone studying geography before I came to TOTEMS, but I am very happy to have found it," she said.

[Total Orientation to Earth and Mineral Sciences (TOTEMS), recently renamed Total Engagement with Earth and Mineral Sciences (TEEMS) is a pre-semester program specifically designed for first-year students at the University Park campus who are new to the College of Earth and Mineral Sciences.]

"I am so glad I chose this as my major, and I am grateful for all the professors, mentors, advisers, and peers who have helped shape my experience," she said.

Racial justice, moving forward

By Emily Rosenman (on behalf of the ad-hoc working group faculty: Lorraine Dowler, Helen Greatrex, Josh Inwood, Brian King)

Our department is committed to becoming actively anti-racist, and we look forward to working with all members of our departmental community to build consensus and move forward.

Members of the Department of Geography stand in solidarity with Black Lives Matter, our Black and racialized students, and all people calling for racial justice. We stand against police brutality directed at Black people in the United States, including the killings of George Floyd, Breonna Taylor, Tony McDade, and countless others. And we stand against violence directed at protesters exercising their constitutional rights. Our research and teaching embrace diversity because we believe in a pluralistic society and are committed to justice for all peoples. We would like to share actions and initiatives related to racial equity that are in development for the 2020–21 academic year.

In January 2020, under the leadership of our department head and through faculty consensus, diversity and equity emerged as one of three key strategic planning themes for our department for the next five years. Our aim is to weave equity and diversity throughout the strategic planning process, including such areas as faculty hiring, student recruitment, curriculum, admissions practices, and goals for creating a safe and welcoming culture in our department. The latter will be addressed both by looking outward to diversify our departmental community but also by reflecting inward on how our department operates.

The protests in the immediate aftermath of George Floyd's murder, alongside strategic planning discussions and a wealth of research revealing how institutions like universities perpetuate racial injustice in their everyday activities—even if this is not the intent—have prompted members of our department to think deeply about our role in creating a safe, welcoming, and anti-racist environment in the halls of Walker Building, in our discipline, and in society.

On June 10, 2020, the department and the College of Earth and Mineral Sciences participated in #ShutDownAcademia and #ShutDownSTEM as part of a call from a coalition of scholars for academia and STEM to take action against anti-Black racism. Geography graduate students have also held discussions and made proposals for action to combat anti-Black racism and diversify the discipline of geography. Graduate students have provided crucial intellectual leadership as we discuss actions our department can take to disrupt anti-Black

See Justice, p. 24

We always want to know where you are in life. Send your news to geography@psu.edu.

Justice from p. 23

racism and other forms of racism on Penn State's University Park campus, in State College, and in the United States today.

As of fall 2020 our department will have a new Diversity, Equity, and Inclusion committee to spearhead these efforts. Preliminary proposals include holding regular, repeated discussions among the full faculty about racism and anti-racism; creating a venue for members of the department to anonymously comment on the departmental atmosphere, racism, and related topics; creating a monthly reading group, open to everyone in the department, focused on race and anti-racism from both an academic and practical standpoint; exploring how the department can source more materials and services from Black, Indigenous and people of Color (BIPOC) businesses, and supporting colleagues across campus in discussions about Penn State's relationship with policing.

Our department is committed to becoming actively anti-racist, and we look forward to working with all members of our departmental community to build consensus and move forward.

Schuckman from p. 16

topics," Robinson said. "As a result, the program now includes a graduate certificate in remote sensing and observation."

Along the way, Schuckman developed a pedagogical approach for teaching highly technical material in an online format. Since joining Penn State, Schuckman has taught more than 1,000 students. She currently teaches: GEOG 480 Exploring Imagery and Elevation Data in GIS Applications, GEOG 481 Topographic Mapping with Lidar, and GEOG 589 Emerging Trends in Remote Sensing. Schuckman also serves as an adviser to students in the MGIS program who are pursuing remote-sensing related research topics.

Holmes from p. 18

cannabis and San Francisco passed the strictest e-cigarette laws in the nation," Holmes said. "Should be interesting!"

Holmes is also working on several publishing projects with colleagues on a variety of topics: A COVID-19 paper based on a website analysis of cannabis retailers who were designated "essential personnel" during quarantine; a project to identify a comprehensive set of sustainability metrics for metro areas in the U.S.; and a study on predatory publishing practices in pharmacy schools.

When she needs to take a break from work, Holmes said she likes to hike and spend time outdoors. A Seattle-native who is missing the Pacific Northwest, she is "looking forward to discovering the many state parks and forests in central Pennsylvania."

Community from p. 14

Rutgers University, was elected as an American Geographical Society Councilor. She will serve a three-year term.

Carol Bouchard, who earned her bachelor of science in geography in 1987, got married in October 2019. Her husband, Glen, works in Las Cruces, New Mexico, while she is caring for her father full time in Cape Cod, Massachusetts. "Penn State gave me the proverbial golden foot in the door when I entered on duty at what is now the National Geospatial Intelligence Agency back in 1989," Bouchard said. "I retired after a wonderful 30-year career, having visited 135 UN countries."

Thomas Potteiger, who earned his bachelor of science in geography in 1981, retired from Lockheed Martin in spring 2019 after 21 years. Potteiger worked in the Flight Operations Department in flight tests and as an avionics aircrew instructor on subjects including navigation solutions and digital map display. He also served in the U.S. Air Force for 25 years as a C-130 navigator from 1983 to 2007.

Joel Burcat, who earned his bachelor of science in geography in 1976, published a novel, Drink to Every Beast. An environmental lawyer in Harrisburg, Pennsylvania, Burcat has been writing in his spare time for many years.

Students

Peter Backhaus was certified as a Wetland Professional in Training (WPIT) by the Society of Wetlands Scientists Professional Certification Program.

Kayla Bancone, Seamus Gibbons, Jacob Grande, Sara Maholland, Kyle Myers, Jenna Pulice, Sophie Tessier, and **Lixun Wang** were inducted to the Gamma Theta Upsilon Alpha Tau chapter in fall 2019.

A class project for GEOG 586 Geographical Information Analysis in the online MGIS program was published in *PLOS ONE.* **Blanford, J.I., T. Belcher, T. Black, E. Derner, J. Dunham, E. Galvan Campanero, M. Gority, R. Jones, B. Kaley, J. Kuli, R. Ligon, E. Mandal, T. Quink, J. Shinsky, M. Sodek, N. Teigland,** and **S. Turner** collaborated on, "Pedal Power: Explorers and commuters of New York Citi Bikesharing scheme."

Harrison Cole and **Saumya Vaishnava** were named as 2020–21 representatives to the College of Earth and Mineral Sciences Graduate Student Council.

Jeremy Diaz received a 2020 National Science Foundation Graduate Research Fellowship.

Andrea Garcia wrote the articles "From 1967 to 2020: A history of the racism Black students have faced at Penn State" and "Black community members at Penn State share frustrations with University's administration," in *The Daily Collegian.*

Zachary Goldberg received the American Association of Geographers Cultural and Political Ecology Specialty Group Field Study Award.

Mikael Hiestand and **Andrew Carleton's** paper, "Growing Season Synoptic and Phenological Controls on Heat Fluxes over Forest and Cropland Sites in the Midwest U.S. Corn Belt," was published in the *Journal of Applied Meteorology and Climatology.*

Milan Liu was selected to represent the College of Earth and Mineral Sciences as the student marshal for Penn State's summer commencement, which was held virtually on Aug. 15.

Jamie Peeler received a Graduate Research Innovation Award from the Joint Fire Science Program for her dissertation research in Wyoming.

Michelle Ritchie accepted a tenure-track assistant professor position at the University of Georgia's Institute for Disaster Management and the Department of Health Policy and Management. She

See Community, p. 26

Community from p. 25

will finish her last year of her Ph.D. program remotely.

Marie Louise Ryan received the Graduate Student International Research Award from the Graduate School at Penn State.

Hannah Schreck was named a spring 2020 EMSAGE Laureate.

Harman Singh received an Erickson Discovery Grant for summer 2020, for her project, "Examining the Relationship between Flooding and Land Use Land Cover in Kochi through a Mixed Method Approach."

Jacklyn Weier's first single-author research paper, "(Re)producing the sexuality binary: on bisexual experiences in U.S. gay and heterosexual spaces," was published in *Gender, Place & Culture*.

Yanan Xin won the Best Presentation Award in the 3rd ACM SIGSPATIAL International Workshop on AI for Geographic Knowledge Discovery (GeoAI' 19) for, "Mapping Miscanthus Using Multi-Temporal Convolutional Neural Network and Google Earth Engine."

Wendy L. Zeller Zigaitis was named the 2020 recipient of the United States Geospatial Intelligence Foundation K. Stuart Shea Endowed Scholarship.

Faculty and Staff

Jennifer Baka joined the editorial board of the *Annals of the American Association of Geographers*.

Cynthia Brewer was selected by the American Geographical Society to receive the O. M. Miller Cartographic Medal for outstanding contributions in the field of cartography.

Lorraine Dowler was awarded the 2020 Jan Monk Service Award from the American Association of Geographers Feminist Geographies Specialty Group.

Helen Greatrex joined the World Meteorological Organization Societal and Economic Research Applications Working Group.

Joshua Inwood wrote an article for *The Conversation* titled, "Closing polling places is the 21st century's version of a poll tax."

Denise Kloehr received the 2020 Department of Geography Staff Outstanding Service Award.

Doug Miller was on the team that won the fall 2019 TechCelerator pitch competition hosted by the Ben Franklin Technology Partners of Central and Northern Pennsylvania. The team was awarded a $10,000 investment for their fledgling enterprise, RealForests.

Hari Osofsky was quoted in the Reuters news article, "Climate battles are moving into the courtroom, and lawyers are getting creative."

Bronwen Powell was invited by the United Nations Forum on Forests and the Food and Agriculture Organization of the UN to participate in a meeting to set global forest indicators.

Emily Rosenman received a seed grant for "'Invest in People, Literally': The Rise of Income Share Agreements as an Alternative to Student Loans in US Higher Education," from the Penn State and the University of Auckland Joint Collaboration Development Program.

Luke Trusel's research was cited in the 2019 UN Intergovernmental Panel on Climate Change Special Report on the Ocean and Cryosphere in a Changing Climate.

Manzhu Yu received a seed grant from the Penn State Institute for Computational and Data Sciences for her project, "Utilizing geometric deep learning to predict the rapid intensification of tropical cyclones."

The article, "Fine-scale spatial homogenization of microbial habitats: a multivariate index of headwater wetland complex condition" by **Jessica B. Moon, Denice H. Wardrop, Erica A. H. Smithwick, and Kusum J. Naithani,** published in *Ecological Applications* in October 2018, was among the top 10 percent most downloaded papers among work published between January 2018 and December 2019.

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