DEPARTMENT OF
GEOGRAPHY, GEOLOGY, AND THE ENVIRONMENT
Illinois State University

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Glacial Deposits

A Message from the Chair

I hope this volume of *Glacial Deposits* finds you and your loved ones safe and healthy. We are pleased to announce that the past 12 months have continued to be productive for us. Our faculty, staff, and students made significant contributions to the mission of Illinois State as teachers, mentors, scholars, and citizens. The new B.S. major in Environmental Systems Science and Sustainability (ESSS) is off to a great start with 45 students enrolled. Dr. O'Reilly was promoted to Professor. Dr. RJ Rowley was named our Douglas Clay Ridgley Fellow until fall 2020 and Reecia Orzeck received this honor from 2020 through 2022. We are excited that this fall the department welcomed two new faculty colleagues, Dr. Melissa Heil and Dr. Aondover Tarhule. Dr. Heil was hired as our newest Assistant Professor of Urban Geography and Planning from the University of Illinois, Urbana-Champaign. Dr. Tarhule joins Illinois State University as our Provost and Vice President of Academic Affairs. As a geographer his interests lie in hydroclimatic and environmental change. He brings new regional expertise in Africa. You may find additional information on each colleague on the pages that follow.

The past six months have brought unprecedented challenges to our lives on and off campus as we continue to face the COVID-19 pandemic. Illinois State shifted all instruction online on March 23 following Spring Break. However, we rose to the challenge as our commitment to the success of our students does not waiver. Faculty adapted their courses to remote learning quickly and worked tirelessly to make sure that students were not left behind because of technology, personal challenges, or other academic reasons. Once again, we awarded over a dozen scholarships this spring to recognize our students' academic excellence and support their professional development through unpaid internship programs. Although the University had to cancel its graduation ceremonies, we organized a remote reception for our graduating class and kept our tradition of providing the best sendoff we could for our students. While faculty and students typically utilize the summer months to move their scholarly works forward, this year required many to realign priorities to ensure a successful start to the fall semester. Faculty offering capstone experiences through internship and field-based programs devoted significant amounts of time to working with students to help them march through their original plans or identify new opportunities to ensure that students were able to keep moving through their programs in a timely manner.

Planning for the new academic year amidst great uncertainty continued as we prepared for a variety of realities for the fall. Faculty and staff spent time reimagining their classes, perfecting learning outcomes, and developing new and innovative ways of assessing these outcomes through novel delivery modes. This year we welcomed students to ISU through the new online Preview Program and Welcome Week, helping each student make best decisions amidst the fluctuating circumstances ahead.

We begin the new academic year having shifted all instruction online in general education, Geography, and Environmental Systems programs. We will continue to navigate through the impending challenges ahead, and through hard work, determination, dedication, reflection, and innovation we will emerge even more resilient, transformed, and ready to embrace new opportunities that lie ahead. I will be away on sabbatical this academic year; Dr. John Kostelnick will serve as Acting Chair in my absence. I encourage you to leaf through the following pages to learn about the many developments and accomplishments we have enjoyed over the past year, and remember that many of these were made possible through the generosity and continued support of friends and alumni like yourself.

Dagmar Budikova, Chair

In This Issue

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New Geography Scholarship pg. 9

Laying a Foundation: Bone Scholar Carving Out Career in Geology Field

By: Kate Arthur (Originally published on news.illinoisstate.edu)

Geology student Jackie Epperson was recently named a Bone Scholar, the highest undergrad honor given at Illinois State University.

The summer after her freshman year, Jackie Epperson worked in a lab testing water samples. That's when she decided she didn't want to do that for the rest of her life.

Growing up, she was on the school bus two hours a day, riding past cornfields. That gave her a lot of time to think, but she didn't know what she wanted to do with her life. She knew she wanted to work outdoors, but thought those jobs didn't pay enough. When she enrolled at Illinois State University, she still hadn't decided. She took an earth science class her first semester, and that's when she figured it out. Only eight weeks into it, her advisor asked if she wanted to go on a spring break geology field trip. She jumped at it.

"That's when I realized how much I love it," she said.

She loves rocks–young rocks that are only 8,000 years old, and 9 million-year-old rocks that have much more of a story to tell. It's the detective work that intrigues her.

"You go out with a blank notebook and you look at a rock formation and there's all these clues and you put the story together," she said. "You can look at a rock and say it's there because there was a mountain-building event."

She has been named a 2020-2021 Bone Scholar, Illinois State's highest honor for undergraduates. She was recognized for her involvement with the hydrogeology program, working as a teaching assistant in structural geology and stratigraphy, and research that led to presentations at national conferences. One of her projects was looking into Quaternary Period sediments in Baja California Sur in Mexico.

Quaternary?

"It's just a time period," she said, explaining she was working with young sediments, those only a few thousand years old. "It's hard to wrap your head around how long the time span is of geology, but that's what's cool about it. You feel the world is very small and very young. It's crazy to think the world is just clues to earth history."

Last summer, she did an internship in Mexico.

"It was the best three weeks of my life," she said. "It was life-changing. I had never even been on a plane before. I had to figure out how to get on a connecting flight. It was a completely new place with new geology and the culture was different for me too."

When she says she's majoring in geology, a common question she gets is: What are you going to do with that?

"Where I grew up, no one is a geologist," she said. "People don't know about it. I can go so many places and do so many things with it, you just don't hear about it a lot."

She could pursue civil engineering, work as a staff geologist for an oil or mining company, or be a mapper with a state or the U.S. Geological Survey.

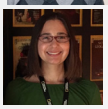
That last one particularly appeals to her. It's perfect for someone who likes to do something different every day, she said. And, geologists travel. One thing she may have to leave at home are her rocks.

"I have too many rocks," she said, laughing. "Whenever I move, they are so heavy."

Current Faculty

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

Adam Bauer
Instructional Assistant Professor of Geography



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

Dr. Dagmar Budikova
Professor of Geography & Chair; Climatology, GIS

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

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

Dr. Melissa Heil
Assistant Professor of Geography; human geography, urban geography, urban planning

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

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

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

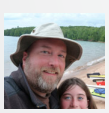
Dr. Catherine O'Reilly
Professor of Geology; Biogeochemistry, Water Quality, Hydrogeology

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

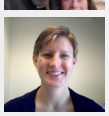
Dr. Eric Peterson
University Professor of Geology; Hydrogeology, Karst Hydrology

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

Dr. Wondwosen Seyoum
Assistant Professor of Geology; Hydrogeolgy, Remote Sensing, Hydrologic Modeling



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



Dr. Lisa Tranel
Associate Professor of Geology; Geomorphology, GIS Applications

FB.com/isugeography
and
FB.com/ ILSTUGeology

Current Staff

Karen Dunton
Administrative Clerk

Barbara Fiest
Civil Service Extra Help

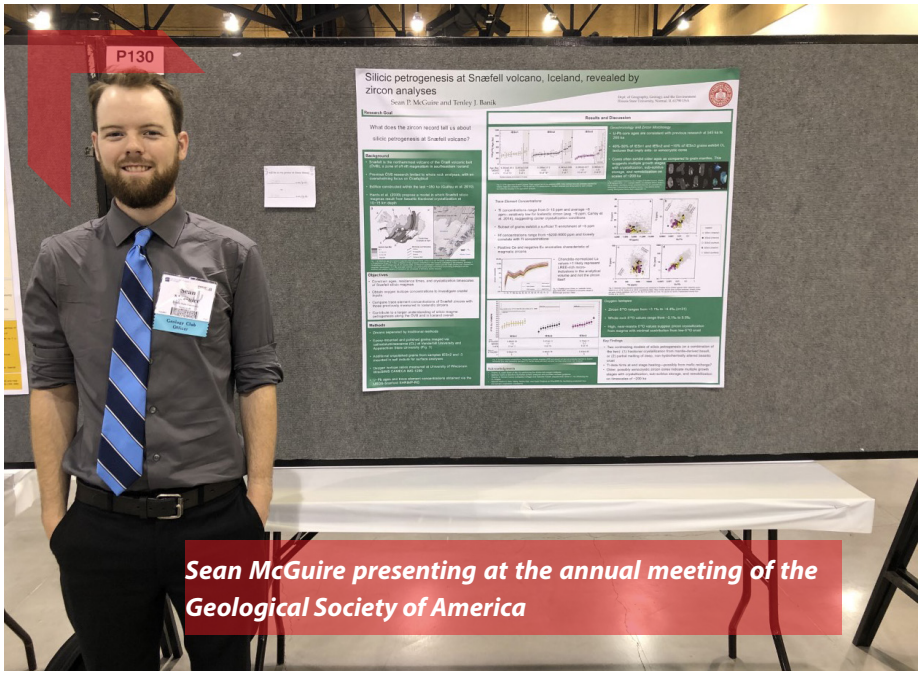
Megan Maher
Assistant Director of GEOMAP, Public Outreach Coordinator, GIS Specialist

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

Laura Roethle
Account Technician

Jill Thomas
Geography Advisor, Teacher Education Specialist, Geography Lecturer

Mujen (Jack) Wang
LEA Laboratory Coordinator



Sean McGuire presenting at the annual meeting of the Geological Society of America

Geology Undergraduate Furthers Petrologic Education Through Grant from the Undergraduate Student Research Program

By: Sean McGuire

I had a fantastic time presenting my research at the annual meeting of the Geological Society of America in September 2019. My poster showcased my research from the past year on silicic magma formation at an off-rift volcanic system in Iceland. My advisor, Dr. Tenley Banik, and I collected geochronology, trace element, and oxygen isotope data from zircons from the Snæfell volcanic system in Iceland in order to learn more about the history of the magma system and get a better understanding of how rhyolites form in a dominantly basaltic environment. These zircon data were then used to evaluate crystallization ages, magma residence times, compositional changes in the host magmas, and if the zircons' host magmas were derived from more from the mantle vs. recycling of underlying crust. This project was crucial to my professional development, and I couldn't have asked for a better department to prepare me for a successful career in the geosciences.

Sean is currently employed as a petrographer in the Chicago area.

2019-20 Donors. Thank you!

Steven Baumann
Roger Blair
Dagmar Budikova
Gary Carnaghi
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Rob Wencel
Charles Wiles
Lois Yahr
Robert Young

Gifts were received between 09-1-19 and 08-01-20

Meet Dr. Aondover Tarhule, Provost

In July 2020, I joined Illinois State University as Vice President for Academic Affairs and Provost. In early August, Dr. Dagmar Budikova asked me to introduce myself to the department and alumni through the annual department yearbook, *Glacial Deposits*. I was thrilled at the invitation and happy to do so. It's now the end of August and I have spent many hours meeting over Zoom. Many have mentioned to me how unique and challenging a time it is to be stepping into this role and I wholeheartedly agree.

Yet, I remain excited and enthusiastic about joining Illinois State University and my home department, Geography, Geology, and the Environment. As I see it, all of the fundamentals and attributes that first attracted me to this institution, remain. In fact, as I have come to know the institution and people better, I have a deeper appreciation for just how special ISU truly is.

Our world views are shaped by our environment and experiences. I grew up in a rural village in central Nigeria, which to this day has neither running water nor electricity. My parents, both peasant subsistence farmers, had zero years of formal education and neither could read nor write. With no machinery to work the land, we the children, became my father's de facto John Deeres.

Having grown up on the farm, geography and environmental issues came naturally to me. In many ways, school was little more than learning formal terminology associated with processes with which I was already profoundly familiar. And, having grown up with no television, the opportunity to learn about other cultures and regions outside of my own limited experience was infinitely fascinating. Years later, I chose to focus my research on issues of water because of my direct personal experiences with that resource or, more accurately, the lack of it in my childhood. Thus, the very constraints that could have been debilitating for me became major advantages that solidified my life's passions and career path. In ongoing research, I continue to investigate along with my post-doctoral colleague, Emad Hasan, the use of total water storage anomalies measured by the GRACE Satellite system as a resource for studying water scarcity.

Despite my new position, I am determined to keep a certain level of research going. In the same vein, I am committed to teaching. Drs. Budikova and Kostelnick have both promised to let me teach a course on the Geography of African Development in the Fall of 2021. They did not have to say it aloud but I got the impression that there was an unspoken caveat, "if you behave yourself!" Still, I am looking forward to it as well as to engaging with you, my colleagues, in exposing the world to the exciting world of geography, geology and the environment!

Welcome to the Department!

Dr. Melissa Heil

Melissa joins the faculty as an Assistant Professor of Geography. She holds an M.A. (2016) and a Ph.D. (2020) from the University of Illinois, Urbana-Champaign. Her research interests include urban governance, urban water systems, and geographies of human welfare in cities. Melissa's recent research focuses on the geography of water access in Flint and Detroit, Michigan. She will teach classes in human geography, urban geography, and urban planning.

Laura Roethle

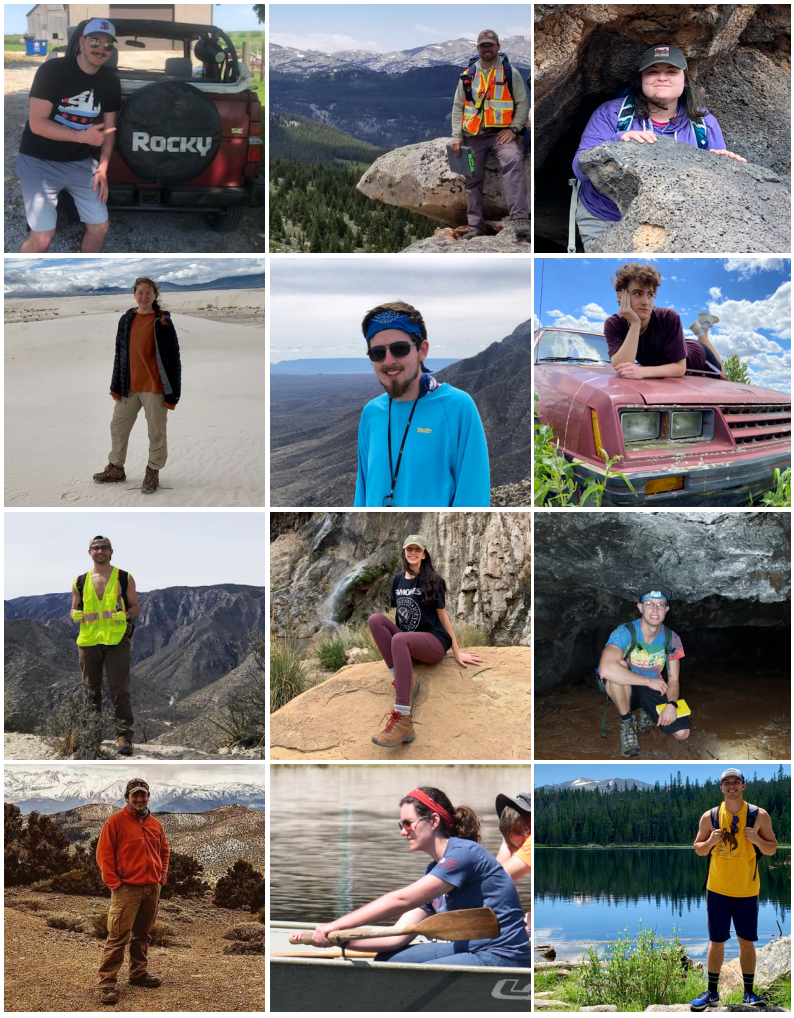
Laura is originally from Louisville, Kentucky. She received a Bachelor degree in Accounting and Computer Information Systems from Murray State University in 1999. She came to Bloomington to work for State Farm for 14 years. After spending a few years at home with her children, she was ready to return to the workforce at Illinois State University. She is working part-time primarily lending office support for all the grant work in the department and the Limnology Lab. At home she stays busy with her four girls, ranging in age from two to 12!

2019–2020 Geology and Hydrogeology Award Winners

By: Tenley Banik

The Geology and Hydrogeology Programs recognized our annual undergraduate and graduate award winners this Spring. Emerging from the excellent candidate pool are Cameron Essex, Evan Ricchio-Hitchcock, and Katie Sculthorpe, recipients of the Lathrop-Watterson Award for promising second-year Geology students. Look for great things from these undergraduates in the future! We also recognized graduate students Ethan Conley and Grace Sieggreen for the Research Potential and Research Achievement Awards, respectively. Ethan's work focuses on the development of tools, GIS analysis, and rock property examination to identify areas of cave collapse. Ethan submitted a manuscript detailing the GIS analysis to the Journal of Cave and Karst Science. Grace, who was also last year's Research Potential Award recipient, studied nutrient uptake dynamics and metabolism in an urban stream, the first research of this type done on a cement-lined system. She submitted a manuscript based on this work to Aquatic Sciences and starts a new job at the Iowa Department of Transportation. We look forward to following the impactful careers of these promising scientists. Last (but not least), we celebrate our 2nd Annual recipients of the Geology Program Awards. Starting in 2018–2019, the Geology and Hydrogeology Programs present student awards that reflect the characteristics we value in our programs. These values include being engaged in department activities, helping each other, working hard, valuing teaching, and excelling in research. See the full-page spread for photos of everyone, including our Trilobite (Matthew Huisman), Teaching Assistant (Ryan Bessen and Preston Konop), Gneiss Person (Kaitlyn Dooley and Eli Schukow), Gold Star (Danika Mayback), and Titanium (Kyle True) Award recipients for this year. Keep up the good work, Redbirds!

Congrats!



Scholarships and Awards

Louis Miglio Scholarship:
Matthew Adelman
Dallas Askins

Henry O. Lathrop & Arthur Watterson Memorial Award:
Cameron Essex
Luke Gallagher
Evan Hitchcock-Ricchio
Katie Sculthorpe

George R. Means Geography Scholarship:
Jessica Abdelnour
Rebekah Bollin
Trevor Partin
Alex Wilson

Margaret Means Endowment Stipend:
Dawson Council
Eduardo Amador
Jaime Merdinger

Eunice Blackburn Scholarship:
Rebekah Bollin
Krystina Wayne

Excellence in Environmental Sustainability Award:
Emmi Chambers

Joseph Fluder Excellence in Geography Award:
Joshua Gifford
Shea Grehan
Krystina Wayne

Gamma Theta Upsilon:
Anna Bukowska
Matthew Gawlik
David Lackajs
Grace Metz
Zach Mueller
Sara Schelinski
Andrew Tondini

Faculty Spotlight

In this section, we would like to shine a spotlight on the accomplishments, research, and publications of a few of the Department's faculty members. This year's spotlight is on ...

Dr. Tenley Banik:

Receives Research Initiative Award

Illinois State University celebrates research and creative activity each year with faculty awards selected by the University Research Council. This year, the Department of Geography, Geology, and the Environment's Dr. Tenley Banik was one of the recipients of the Research Initiative Award that recognizes faculty members who have initiated an impressive research agenda early in their academic careers.

"These faculty members will become leaders in their respective fields and drive innovation and creative expression on campus," said Associate Vice President for Research John Baur. "Some are the University Professors and Distinguished Professors of the future."

Dr. Banik has been an assistant professor at Illinois State since completing her Ph.D. in 2015. Her research interests fall broadly in the realm of magmatic processes, where she uses rock- and mineral-scale analyses to unlock histories of magmatic systems and investigate crust-forming and volcano-forming processes. Dr. Banik's current research projects are based in Iceland and rely on geochemical data to identify and understand the past and potential future behaviors of volcanic systems related to climate change as well as early continent building.

Dr. Reecia Orzeck:

Ridgely Fellowship

Dr. Reecia Orzeck conducts research on topics that include law and geography, the historical geography of Israel-Palestine, and geography pedagogy. She is also an accomplished and devoted teacher. Her most recent project, supported by a Scholarship of Teaching and Learning University Research Grant, aims to understand and improve students' information literacy.

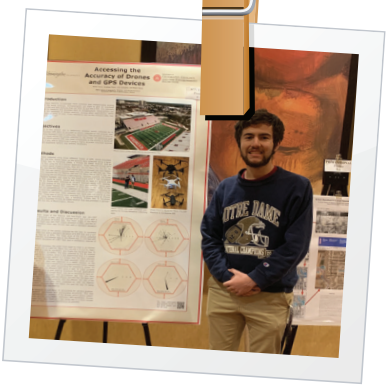
While college-aged students may be "digital natives," research has shown that they lack many of the skills necessary to be discerning consumers of information, especially online. Helping students to approach news and entertainment media more skillfully is especially important today given the rise of disinformation on the internet, the substantial control that social media platforms like Facebook and Twitter and search engines like Google have over the information that their users encounter, the rise in the use of social media platforms and messaging apps as news sources, and the ongoing consolidation of media ownership in the US.

Because students are especially vulnerable to inaccurate or misleading representations of other places—a topic of long-standing importance to many geographers—Dr. Orzeck drew on geographical and library and information science literatures in order to create a two-week information literacy module for her course on the Middle East. Several months after the course, she recruited students to complete an online survey that assesses whether their information literacy knowledge and practices have improved. She is currently finalizing a manuscript based on the module and the study for the *Journal of Geography in Higher Education*.

Dr. Orzeck is an associate professor and will be the Douglas Clay Ridgley Fellow for a two-year period beginning in August 2020.

Thank you so much for selecting me as a scholarship recipient, and Go Redbirds! J.A.

I will be using this scholarship to help me do this professional practice and I am so grateful to all of the donors that have helped to make this experience possible for me. E.C.



To be completely honest, this was not only a tremendous honor but a very pleasant surprise during a period of time where it seemed like anything that came through my email was not very positive news. This scholarship was very much appreciated. I am honored that the department would find me worthy of such an award. I just wanted to extend my sincerest thank you.

L.G.

Congratulations, Graduates!

Geography
Jade Allen
Eduardo Amador
Olivia Bachtold
Thomas Berard
Bobby Boykin
Jacob Burton
Sara Chamberlin
Dawson Council
Kaci Crowley
Nicole Derf
Joshua Gifford
Shea Grehan
Alan Haney
Seth Hardin
Sean Hopkins
William Jacobson
Shaun Johnson
Jack Kowalis
David Lackajs
Hailey Machnikowski
Molly Mahoney
Jill Marlott
Alexander Martin
Grace Metz
Tim Moore
Kristen Ohls
Aaron Paque
Nicolas Plaza
Colin Ringle
Emily Ryan
Abigail Shaver
Ethan Stoneburner
Kylie Tunk
Matthew Vetter
Drew Wilson

Geology
Ryan Bessen
Victoria Edelman
Marina Franco
Grace Hill
Katarina Kaplarevic
Sean Mcguire
Jarod Przybylski
Peter Von Bun
Leah Watters
Peter Welsh
Steven Young

Hydrogeology
Gare Ambrose-Igho
Jeremy Babin
Patience Bosompemaa
Ashley DiVincenzo
Preston Konop
Grace Sieggreen
Emmett Spooner
Tewodros Tilahun
Hannah Wirth

Loss of Arctic Sea Ice May Mean More Heat Waves in the United States

By: Mary Caperton Morton (Originally published on news.illinoisstate.edu)

Over the last 40 years, Arctic sea ice thickness, extent and volume have declined dramatically. Now, a new study finds a link between declining sea ice coverage in parts of the Canadian Arctic and an increasing incidence of summer heat waves across the southern United States.

The new study in AGU's *Journal of Geophysical Research: Atmospheres* explores how seasonal fluctuations of sea ice coverage trigger changes in atmospheric circulation patterns during the boreal summer. The study draws upon four decades of satellite data of Arctic sea ice coverage collected between 1979 and 2016, overlapped with heat wave frequency data across the United States during the same time period.

The team found evidence for a strong statistical relationship between the extent of summer sea ice in the Hudson Bay and heat waves across the southern Plains and southeastern U.S. "The latest research on this topic suggests that declining Arctic sea ice may be linked to increased incidence of extreme weather patterns across the northern hemisphere," said Dagmar Budikova, a climatologist at Illinois State University in Normal and lead author of the new study. "Our results confirm this hypothesis by offering further evidence that Arctic sea ice variability has the potential to influence extreme summer temperatures and the frequency of heat waves across the southern U.S."

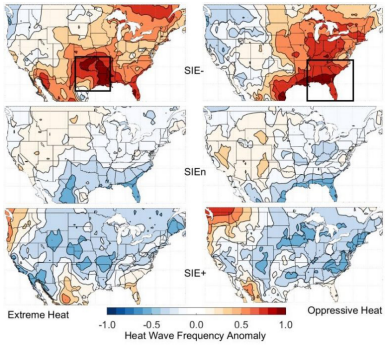
A better understanding of the physical relationships may allow scientists to forecast heat wave-prone summers, Budikova said. "If Arctic sea ice continues to decline as predicted, then we could expect more summer heat waves across the southern U.S. in the future," she said.

Warm Arctic spring, hot southern summer

The new study finds the loss of sea ice across the Arctic begins with warmer-than-usual spring temperatures in the Hudson Bay and Labrador regions in the southeastern Canadian Arctic.
"This process starts when temperatures across the southeastern Canadian Arctic and northwestern Atlantic are 2 degrees [Celsius] warmer than expected in March, April, and May," Budikova said.

Composites of summer extreme (left panels) and oppressive heat wave (right panels) frequency during summers of low (top), neutral (middle), and high (bottom) Hudson Bay sea ice extent.

This springtime warming lessens the north-to-south change in temperature between the high and middle latitudes of eastern North America, leading to a reduction in the strength of regional wind patterns. These conditions are symptomatic of weakened large-scale movements of air that appear to persist into the summer months, Budikova said.



Composites of summer extreme (left panels) and oppressive heat wave (right panels) frequency during summers of low (top), neutral (middle), and high (bottom) Hudson Bay sea ice extent. Image from AGU

The weakened circulation typically leads to increased undulation in the jet stream and the formation of persistent high-pressure systems over the southern U.S. The presence of high-pressure systems, also known as an atmospheric block, ultimately promotes unseasonable surface and atmospheric warming, and increased heat wave incidence.

Heat waves can last for days or weeks as high-pressure zones inhibit wind, clouds, and other weather systems from entering the area.
"Local humidity, soil moisture, and precipitation conditions are shown to influence the 'flavor' of the heat waves, which are more likely to be oppressive in the southeastern U.S. and extreme across the southern Plains during summers experiencing low Hudson [sea ice extent]," Budikova and colleagues wrote in the new study.

The next step will be to use dynamic modeling to confirm the statistical relationships between Arctic sea ice coverage and summer heat waves, and explore in detail the physical and dynamic atmospheric processes that make such linkages possible.
"General circulation models would further elucidate the processes that are taking place in the atmosphere to drive these connections," Budikova said.

This story was posted by the American Geophysical Union (AGU), and is re-posted here with permission. The original can be found at the GeoSpace blog from AGU.

Mary Caperton Morton is a freelance science writer. Follow her on Twitter @theblondecoyote.

Posted in: Journal of Geophysical Research

New Geography Scholarship

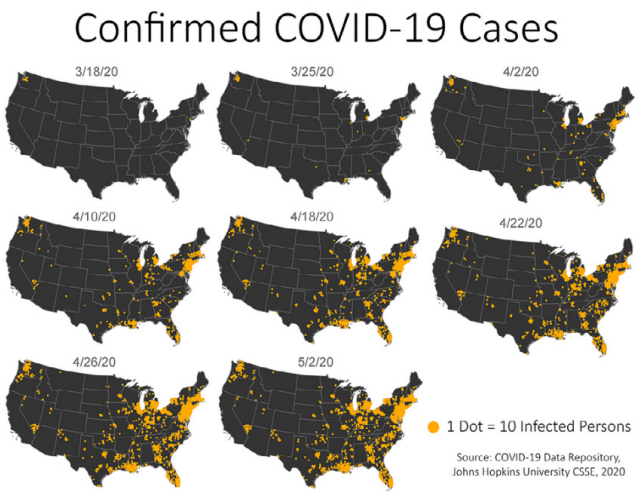
By: Dagmar Budikova

The Department is thrilled to introduce a new scholarship geared towards academic and professional development of our Geography majors. Students may apply for the award at any point in their program. The award may sponsor the purchase of new equipment such as computers, textbooks, and software, and well as activities related to faculty-led research travel to the field and conferences. The Michael D. and Patricia A. Sublett Geography Professional Development Fund Award grants up to $500 each to potential and current students enrolled in the Geography and Geography Education majors. The gift is bestowed by Michael and Patricia Sublett. Michael, now Professor Emeritus of Geography, served as faculty member in our department between 1970 and 2015. Patricia managed the University Registration Office from 1971 until 1978. During his service, Michael served as Chair for 10 years, developed and implemented the Geography Internship Program in 1985, and oversaw the publication of the first 40 volumes of this yearbook, *Glacial Deposits*. This award is a testament to the Subletts' commitment to the success of our Geography programs and students. If you are a major and wish to apply for the award, contact Dr. Kostelnick (jckoste@ilstu.edu) for further instructions. If you would like to make a gift in support of this award, you may do so by directing your funds to the Sublett Fund through our Giving pages can be accessed from our main departmental website at geo.ilstu.edu. On behalf of all of us in the department, I extend our appreciation to the Subletts for their continued generosity.

COVID-19: An Atlas of a Pandemic

By: John Kostelnick

Students in the Spring 2020 Cartographic Design (GEO 351) course put into practice their map design skills to create a class atlas entitled *COVID-19: An Atlas of a Pandemic*. According to Dr. John Kostelnick, course instructor, the purpose of the atlas is to tell the story of COVID-19 through maps—where it has spread, what it is has impacted, and how it has changed life for everyone. Students in the course were required to contribute three original maps to the atlas as part of the final project for the course: 1) Status map that displays the current geography of COVID-19 cases; 2) Impacts map that displays some type of impact of COVID-19; and 3) Story map that integrates text, photos, and maps into a narrative about COVID-19. Dr. Kostelnick's goal with the atlas project was to provide students with a practical map production experience that resulted in a tangible project for them to remember a most unusual semester. *COVID-19: An Atlas of a Pandemic* is available at https://spark.adobe.com/page/vxGRO9m7uk3nz/ and includes over 40 static and interactive maps. Students in the Cartographic Design course included Jessica Abdelnour, Rebekah Bollin, Jacob Burton, Sara Chamberlin, Bailey Estell-Edghill, Luke Gallagher, Josh Gifford, Alan Haney, Grace Metz, Trevor Partin, Max Smith, Jacob Stites, Andrew Tondini, Alex Wilson, and Luke Wolter.



A COVID-19 status map by Rebekah Bollin that appears in *COVID-19: An Atlas of a Pandemic*.

From Good Deed to Technical Lead: Brad C. Szedlar's Intelligence Agency Odyssey

By: Michael D. Sublett

On one of his Horn of Africa missions, Brad Szedlar took time to visit the lowest point on the African continent, Lake Assal in central Djibouti. Dormant volcanoes and black lava fields reflect in the lake's emerald water. Hot springs provide very salty water, and slabs of dry salt yield an economic resource.

Brad (not Bradley or Bradford) was "doing a good deed," as he puts it, for his grandmother painting her apartment in 1989, when the Defense Mapping Agency (DMA) called to offer him a job as a production cartographer in its St. Louis facility. Today his official title at the same shop, which has for several years answered to National Geospatial-Intelligence Agency (NGA), is Geospatial-Intelligence Technical Officer, or Technical Lead. This brief biography is an attempt to summarize Brad's journey as a descendent of the Granite City steel industry through the Geography Program at Illinois State to an international presence as a technical authority and subject matter expert interacting with friendly intelligence agencies around the world.

Granite City, Illinois, deep in the Downstate, across the Mississippi from St. Louis, is where the odyssey began. Szedlar men, his great-grandfather (after migrating from Hungary), his grandfather, and his father plus a lot of other relatives before Brad's generation, went into fabrication work at American Steel Foundries (ASF). They made, among other things, the trucks on which railroad car wheels fit; but times were changing in the 1980s as steel fabrication in the USA became less competitive on the world stage. Brad's father told him there might not be a career for him at ASF, that he should think about getting a college education.

Brad started college as a commuter student driving daily to nearby Southern Illinois University at Edwardsville (SIUE). While taking a variety of courses at SIUE, including a couple in Geography, he worked full-time hours at a local grocery store. Not finding the academic inspiration that would propel him to a college degree at SIUE or having a lot of time for academics, he transferred to Southeast Missouri State University, in Cape Girardeau, thinking he might major in teaching or physical therapy. Again, the career inspiration failed to strike him; but he did take more Geography. Looking around, in the spring of 1987, facing a life crossroads, he remembered high school buddies who had left Granite City High, class of 1985, and headed up Interstate 55 to Illinois State. "I decided to give [Illinois State] my last try at college life," he wrote recently, adding that he is "so happy I gave it one last shot." So are we, and so is the NGA.

Transferring to Illinois State and taking his 28.4 hours from SIUE and 27 from Southeast Missouri, Brad had to get with the program if he wanted to graduate in the usual four collegiate years. He still needed to complete his general education requirements but had to roll quickly into his new major: Applied Geography. He and I met for the first time in June of 1987 so I could advise him about what courses to take. Right away we got him into basic cartography and basic remote sensing. The following spring, after good grades in the fall, he went on to other technical courses, like Cartographic Processes. He was able to land a prime internship that summer, 1988, in the Aerial Surveys Section of the Illinois Department of Transportation, at the Springfield headquarters of IDOT. From the internship he learned how to process aerial photographs in the photo lab, how to create arrays of interlocking photos of roadway projects, and how to take these photos from the Cessna aircraft that the state was then using. Back in the section, he got to develop his aerial photos. At Aerial Surveys he talked to IDOT employees who had worked at DMA on maps of Earth's moon. They told him DMA, for a guy from Metro East, might be a good career option after he completed his final two semesters at Illinois State. Besides the good deed as apartment painter, Brad credits his IDOT internship as an experience that "set him apart from many other potential candidates" for a cartography position at DMA. His senior year went well, and he graduated on time.

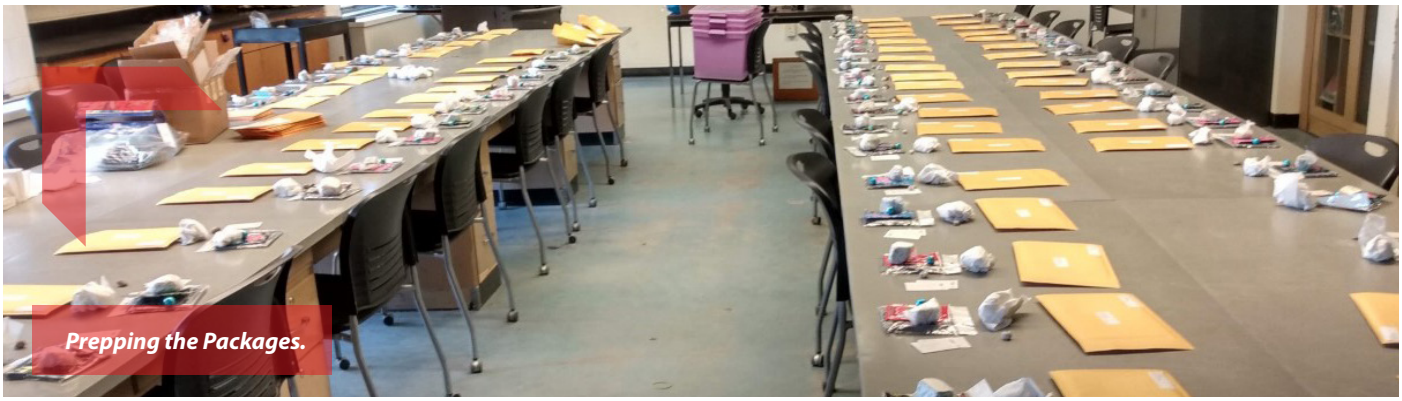
DMA's facility south of downtown St. Louis was in 1989 (and still is) an imposing structure. Highly secure, it has no windows, which for Brad took some acclimation. His first job, while awaiting his top security clearance so that he could work "inside the wire," was measuring distance between trees in various terrains so that the military could determine the types of vehicles that would be able to traverse the terrain—pass between the trees. He soon progressed, however, to much more technical and sensitive projects, as he worked day shift or second shift producing topographic line maps, image maps, ARC digitized raster graphics, and intelligence reports for several years. Then he got a break. The Agency was looking for staff to further their education, and he took the opportunity to return to SIUE to work on his Master of Science with a focus on Remote Sensing. DMA would pay for the degree if he promised to give DMA three years of service

for every year of master's schooling. He earned the degree in 2001 and has far surpassed that promise of continuing service.

DMA had Brad targeted for significant management duties, which began seriously in 2006. NGA that year sent him to nearby Scott Air Force Base as the NGA Lead. In that role he supervised 24 NGA Analysts and six active duty Intelligence Specialists at Scott; Newport News, Virginia; and NGA St. Louis. It was during that assignment that he got to fly with the 109th Air National Guard Wing Commander on a ski-equipped LC-130 Hercules cargo aircraft from Scotia, New York, to Greenland to deliver updated map information. Satisfied with his service as a GS-13/14, NGA promoted him to his current GS-15 when he came back to NGA St. Louis. He continued to move up the management ranks to Branch Chief for the Domestic Threat Analysis Office; Division Manager for six production branches that extract, finish, and populate topographic data in support of combat and humanitarian missions; and Operations Manager in charge of geographic intelligence satisfaction of domestic and friendly foreign customers of NGA. Toward the end of his management years, he served as NGA Site Lead at Camp Lemonnier, Djibouti, in support of Combined Task Force-Horn of Africa, on two six-month deployments. In addition to Djibouti, his African responsibilities involved Kenya, Uganda, and Nigeria. While in Africa, he represented the USA at a Border Security Conference in Addis Ababa, Ethiopia, at the African Union Headquarters. On these African missions and at other times, it was not unusual for Brad to interact with American flag officers, like generals Stanley McChrystal, Kurt Sonntag, and James Kriesel.

As 2017 transitioned into 2018, NGA had different plans for Brad Szedlar. Beginning in February 2018, he became the Geospatial-Intelligence Technical Officer (or Lead) at NGA. Now, instead of managing analysts and other personnel assets, he provides technical guidance and leadership on intelligence standards in house and internationally. As his current resume summarizes (unclassified), "This position offers me the opportunity to represent USA interests in a variety of international venues and advocate for [intelligence] community consensus, adoption of and compliance with GEOINT [geospatial intelligence] standards." He must maintain a high level of GEOINT competency and still gets to travel extensively (when the pandemic permits it) but no longer faces those never-ending managerial headaches.

Life is good for him and his family. Two of his three children work in the geospatial environment, a daughter for software giant ESRI and a son for an NGA St. Louis contractor. His brother, with a Geography/GIS degree and Air Force officer experience, is an NGA Analyst for the military's Transportation Command at Scott Air Force Base. Madison County has lots of hiking and biking trails, which keep Brad busy; but he is quite excited to flip his first house with his younger "hands-on" son who loves woodworking and recently began taking courses for his welding certification. Brad's 1989 resume from the Seminar in Geography course was not far off for when he listed as his career objective a plan "To obtain a position in map design and map production." He said he was "Most interested in computer and mechanical mapping techniques." Not every Geography major can say they came so close to fulfilling the goals they had in their senior year at college.



Prepping the Packages.

COVID Care Packages

By: Catherine O'Reilly

When the university shut down after spring break, we missed our geology majors so much that we sent them care packages. These packages contained some fossils and unique rocks (along with info cards), some chocolate rocks and other rock-related edible items, plus our very own custom geology buffs!

Alec Schroeder, Danika Mayback, and Kaitlyn Dooley modeling their geology buffs sent in the care packages.

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