

SPARTAN GEOGRAPHER



View of the Natural Science building on the MSU campus. This building was the home for Geography from the department's inception in 1955 until 2005.

MICHIGAN STATE

UNIVERSITY

Department of Geography,
Environment, and Spatial Sciences
College of Social Science

Hello Spartan Geographers!

I hope 2019 is off to a good start for everyone. January marks the time of year that we produce our annual newsletter. While organizing my thoughts, I read that last year it was a chilly 22°, with about 4" of snow on the ground, when I wrote this introduction. Although we have about the same amount of snow as I write today (1/21), it's a balmy 6°! Frigid for sure, but it really is the worst of it so far this winter. In fact, beyond some snow in early November, we were snow free virtually all of December. I even snuck on to a golf course on January 5 with a couple of buddies. Is this the future in Michigan?

As you likely know, this past year has been one of dramatic upheaval and change at MSU. Much of this change unfortunately centered on the highly publicized and tragic fallout from the gross misconduct of a well-known osteopathic physician on campus. At about this time last year, the problem's scope was becoming apparent to all of us at MSU and beyond. Last spring was a very difficult time on campus, one that demonstrated the individual and collective strength of numerous young women who had survived systematic abuse. The outcry of revulsion, compassion for the survivors, and demand for change swept across the community in a tidal wave. In response, numerous organizations and departments on campus, including our own, held mediated retreats and town halls to assure colleagues, co-workers, students, and friends, that we are committed to fostering safe environments. It was a powerful time, one that led to the resignation of President Simon and sweeping ripple effects on campus. Although the situation has stabilized to a marked extent, some fallout continues in the aftermath. Just last week, for example, interim President Engler resigned following a pattern of comments viewed by the Board of Trustees (and most everyone else, for that matter) as being "extremely hurtful" to the survivors. The Board then appointed Dr. Satish Udpa, formerly executive vice President for administrative services, as acting President. This appointment is strongly supported on campus due to Dr. Udpa's great record of academic achievement, commitment to diversity issues, and integrity. We seem to have finally turned an important corner,

one that should pave the way for a new President. The search for this individual is ongoing as of this writing.

Although this has been a difficult time for the university as a whole, our department continues to be in terrific shape. We remain ranked in the top 10 of research departments nationwide because our faculty are producing high quality work at a prodigious rate. Last year our faculty collectively produced 111 peer-reviewed papers, 3 books, 83 non-refereed papers, and 197 delivered papers. They also submitted 93 proposals to various agencies and obtained slightly over \$1 million in grants. The range of research is really amazing, including (but sure not limited to) investigations of human-environment interactions in Africa, Asia and Latin America, health-medical issues in Michigan, the impacts of ongoing climate change on Midwestern agriculture, fire forecasts in the American west, Arctic permafrost, and the evolution of landscapes in the Great Lakes region. It really is great to be around so many quality people doing such diverse work. They won several awards, which are highlighted later in the newsletter. We are about to increase our range even further with our ongoing search for a new coastal geomorphologist, which is a perfect fit for the department given our location in the core of the Great Lakes region.

On the student front, our current group of graduate students is doing great work. We brought in a strong new group of 13 in 2018, including three African-American women who comprise our first cohort of an initiative geared toward increasing diversity within the discipline. You can read more about this initiative later in the newsletter. All of our new students kicked off their programs at our annual GeoCamp in August at Camp Wa Wa Sum on the AuSable River. This century-old fishing camp (now an MSU property) is a beautiful place to get to know one another before the semester begins. We awarded PhD degrees to seven students in 2018: Fatoumata Barry, Kevin Credit, Daniel Saul Ddumba, Jeanette Eckert, Ameen Kadhim, Joshua Vertalka, and Peiling Zhou. Six students graduated with an MS: Lonnie Barnes, Michael Bomber, Cody Lown, Clayton Queen, Amanda Rzotkiewicz, and Marshall Stageberg. With respect



Alan Arbogast
Professor and Chair

to our undergraduates, we continue to have about 100 in our program. Most of our students are enrolled in our Environmental Geography or Economic Geography majors.

We also continue to promote our department aggressively across campus. The highlights of these efforts are our annual Career and Internship Fair in the last week of February, as well as the presentation we sponsor during Geography Awareness Week (GAW) each November. Our Career and Internship event last year was a smashing success, with a number of students scoring good jobs and internships with their budding geography careers. Bill Weir, who is a reporter with CNN, gave our feature presentation at GAW. Bill is a former host of Nightline and the host of The Wonder List, a classy show that examines threatened places around the world. Bill spoke about the happiest and healthiest places on Earth and what they share in common with each other. The presentation was in the Pasant Theatre at the Wharton Center to a packed house of about 550 people. He was awesome!

So, as you look things over, remember that the newsletter is a representative slice of life in the department. It leaves out a lot of things, such as the great work that our energized Advisory Board is doing on our behalf, the fantastic work our onGEO group is doing with our online courses, and the success

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we've had marketing our Professional Certificate in GIS. We also have a fantastic staff, including Becky Young, Claudia Brown, Tamsyn Mihalus, Ana O'Donnell, and Sharon Ruggles that keeps the trains running on time. In short, although this past year was difficult on campus, our Department remains a wonderful place to work!

Weather Update:

After submitting this introduction - including its happy description of balmy January weather - for production, we were blasted by this year's rendition of the polar vortex in the latter part of the month. You probably heard about it. It was FRIGID, with a high of -5°F one day and wind chills of -30°F. MSU closed for two days! This great satellite image of the region on January 27 shows streams of arctic air swooping over the lakes, producing bands of clouds over an icy landscape at the height of the event. As fast as it came, however, it was gone, with temperatures back in upper 40s on February 4th. Very strange indeed.

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Kyla Dahlin

Assistant Professor

Greetings, fellow geographers! In 2015 I introduced myself to you all as one of the newest members of the MSU Geography team. Since then I have been continuing my work to try to better understand ecogeographical processes using satellite and airborne remote sensing and Earth system models (and some fieldwork). I have also been teaching quite a bit of remote sensing - GEO424 (Advanced Remote Sensing) and GEO837 (Remote Sensing of the Biosphere, a course I developed) - along with more general courses - GEO401 (Global Plant Geography) and ISS310 (People & the Environment). We also added another member to our family, so now we have two young daughters who both get really excited any time it snows. The past few years have been a fun blur of research, teaching, and family.

In 2017 I received a grant from the National Science Foundation (NSF) MacroSystems Biology program to ask the question: How much of an influence does forest vertical structure have on the carbon cycle across the eastern United States? To address this question, in 2017 and 2018 a PhD candidate in my group, Aaron Kamoske, travelled to sites from Alabama to Massachusetts that are part of the National Ecological Observatory Network (NEON), where airborne remotely sensed data (hyperspectral imagery and LiDAR) is being collected on a semi-annual basis. At each of these sites Aaron, along with help from undergraduate researchers (and occasionally faculty) has been collecting tree leaves from throughout the canopy using very tall pole pruners, a giant slingshot, and/or a pressurized line launcher. This work is in collaboration with Scott Stark (MSU Forestry) and Shawn Serbin (Brookhaven National Lab). The picture shows Aaron and one of our undergraduate interns, Opal Jain, using the giant slingshot in Talladega National Forest, Alabama. The plan is to connect these leaf-level measurements to the airborne data, then build a three-dimensional model of the forest canopy that will then allow us to estimate the within-canopy light environment and, then, photosynthesis, in each 'voxel'

(volumetric pixel) of the forest. Phew!

Meanwhile, my interest in semi-arid and savanna-type ecosystems continues on a parallel track. PhD candidate Ryan Nagelkirk has been working for the past several years on mapping woody plant cover in national parks across eastern Africa, with the ultimate goal of understanding how elephant population densities impact vegetation patterns. Mapping woody cover in savannas is an incredibly tough remote sensing problem, but he has developed several exciting tools using a combination of statistical methods and cloud computing systems like Google Earth Engine. Ryan has also supervised two undergraduate interns working on savanna-related questions; one (Emily Setlock) even co-authored a paper with us in 2017. Gloria Desanker, a recently graduated Masters student in Forestry who I have also been working with, is wrapping up a manuscript also focused on eastern African parks. She has spent most of the past two years mapping 'phenoregions' (areas of landscapes that are phenologically similar, meaning they have similar seasonality) using satellite remote sensing data. Her work has led to some great insights about the complexities of ecogeographical patterns in these heterogeneous landscapes. Gloria will soon join the San Francisco Estuary Institute, which will start an exciting new professional chapter for her.

The last project I'll mention is one focused (finally!) in Michigan. At the very end of 2016 Dr. Jiquan Chen (GEO and CGCEO) was awarded a grant from



NASA (I am a co-investigator) aimed at understanding the 'socioecological' carbon cycle in the Kalamazoo River watershed. We have been working with an excellent team including other MSU faculty, graduate students, a postdoc, and a company called Planetek Italia to get this complex project up and running. Recently we added a new graduate student, Donald Akanga, to the group to work with me on modeling the carbon cycle in the watershed using a well known land surface model. We are very excited to see how this very interdisciplinary project comes together in the next year or two.

We expect the coming years to yield more great ecogeography research, lots of fun, and new collaborations. If you want to follow along with our group's progress you can check out our website - www.ersamlab.com - and/or follow us on twitter (@ERSAM_Lab) and on instagram (@ersam.lab). Happy 2019 (how is it already 2019?)!



Kyle Evered

Associate Professor

In the spring semester 2018, Kyle Evered taught his GEO-440 *Geopolitics* course. Offered every-other spring, it is one of his favorites and always feels like a new class due the dynamic changes in domestic and international politics. Also in the spring, like most faculty and many of the graduate students of the department, Kyle enjoyed travelling to New Orleans for the annual meeting of the American Association of Geographers (or AAG). Each time he attends, he also tries to attend the annual pre-conference meetings of the AAG's Political Geography Specialty Group (or PGSG). Typically hosted at a nearby university campus, 2018's PGSG pre-conference was at the University of New Orleans. At both meetings, he co-presented papers with his regular collaborator and spouse, MSU historian Emine Evered. Some of their recent research has focused on historical and contemporary geographies of alcohol in Ottoman and republican Turkey. Their PGSG paper was titled *Wild Turkey: the tavern as regulatory target in late Ottoman and republican cities* and it dealt with geographies of the Turkish tavern through time both as a site in the country's socio-cultural landscape and as a focus for state scrutiny and policing. Their AAG paper, *Of beer and belonging: a geopolitics of consumption, abstention, and Turkish nationalism*, was included in a set of sessions concerned with geographies of nationalism and emotions of love and hatred. Identifying and analyzing the contested places and associations of beer in Turkish society, the Evereds thus exposed and critiqued how divisive aspects of contemporary identity politics elevate the significance of an everyday alcoholic beverage from the mundane to the extraordinary and irreconcilable. In a context of increasing regulatory control, advertising has become so restricted that one of the nation's leading brands resorted to promotions that merely depict the iconic shape of their bottles—with no words identifying or describing their contents or indicating actual brand names (HINT: the leading brand depicted in this that of Anadolu Efes' Efes Pilsen, the world's eleventh largest brewer and Europe's sixth largest).



Over the summer, Kyle returned to his past collaborative work with Emine to further investigate the geographies of Turkey's therapeutic landscapes, which appeared in an issue of *Landscape History*. Focusing on the development of the country's premier spa town for balenological (or bath) therapy, Yalova, he wrote a paper that was delivered at the annual meeting of the Middle East Studies Association (or MESA) in San Antonio, Texas in November 2018. Over the coming years, he hopes to turn this into a country-wide examination of hot springs and baths throughout Turkey, past and present.

Of course, in the fall semester 2018, Kyle's research on beer and the opium poppy featured in his relatively new GEO-214 *Geography of Drugs* course. In the coming year, he and Emine will have a chapter on beer in Turkey published in an edited volume that brings together histories of alcohol that were first presented as papers at a conference in Oxford, UK several summers ago. Moreover, he added material from his ongoing work on the geopolitics of opium in Turkey—where Nixon targeted his first campaigns in his self-declared "war on drugs" in the early 1970s. Examining Turkish archival materials, newspapers, and other sources, his current work expands on his earlier oral histories among poppy farmers to interrogate how the war was perceived more broadly within Turkey at the time.

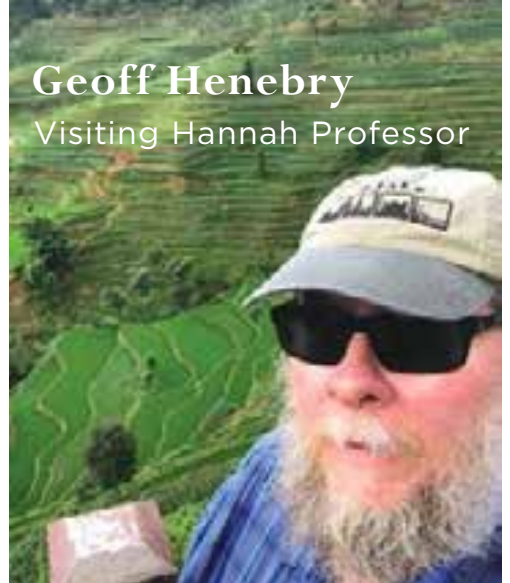
In the fall, Kyle also appreciated teaching (for the first time at MSU) GEO-336 *Geography of Europe*. This was almost nostalgic for him because as a graduate student at the University of Oregon, *Geography of Europe* was one of the first courses that he worked in as a teaching assistant, and he first independently taught the class several times at Oregon State University. Finally, as the year came to a close, he prepared a paper/poster to deliver in the first week of January 2019 in

Chicago at the annual meeting of the American Historical Association (or AHA). This poster conveys his first-hand observations from his 2013 visit to Turkey during the Gezi Park protests and focuses on the politics of graffiti and state efforts to criminalize its inscription and subsequent quotations of it. His work on Gezi graffiti appeared online in early 2018 and will feature in-print in a forthcoming issue of the British geography journal *Area*.





Discussing maps of landscape change with members of a local pasture committee is At-Bashy rayon, Naryn oblast, Kyrgyz Republic



Geoff Henebry
Visiting Hannah Professor

Currently, I am a John A. Hannah Distinguished Visiting Professor in the Department and in the Center for Global Change and Earth Observations. I came to MSU after 13 years at South Dakota State University where I directed, since 2011, the Geospatial Sciences Center of Excellence, which was a very productive group of scientists focused on basic and applied research in terrestrial remote sensing. I am not, however, a remote sensing scientist. Rather, I am a broadly trained environmental scientist who uses the constellation of Earth-observing sensors and ancillary geospatial data as a *macroscope* to study the changing face of our planet. Of particular interest are land-atmosphere interactions in grasslands, croplands, wetlands, and in urban areas, especially those modulated by land use, terrain, recent weather, climate oscillation modes, and their interactivity.

I have long been fascinated with the myriad biospheric consequences of the collapse of the Soviet Union, and I have studied Central Asia since 2001 in this context. We first discovered a significantly earlier onset

of spring greenup across northern Kazakhstan in the early 1990s that arose not from a warming climate but from a combination of idled fields and far fewer livestock grazing the land; this earlier onset affected interactions between the vegetated land surface and the atmospheric boundary layer. In recent years I have been working in the mountain pastures of Kyrgyzstan untangling how shifting snow seasonality, changing land surface phenology, rural-to-urban migration and the subsequent remittances back home all shape the montane agropastoralism widely practiced in the Tien Shan mountains of Central Asia. Since arriving in August, I have been working with MSU colleagues to focus again on Kazakhstan where rapid economic development presents both opportunities and challenges for the sustainable use of land resources, particularly the grasslands.

Closer to home, I will be conducting a series of lunchtime discussions this spring on research ethics for the graduate students and post-docs associated with the Department and the CGCEO. Graduate education

Hani Rice terrace in Honghe prefecture, southern Yunnan province, China

rightly focuses on knowledge acquisition, technical training, and scholarship. However, there is also a distinct need to prepare students to be *professional scientists*. In my years of advising and mentoring, I have found discussions about ethics to be both engaging and effective. I currently serve as an Associate Editor for *Remote Sensing of Environment* and on the editorial boards of *Landscape Ecology* and the *International Journal of Biometeorology*. I am active in the American Geophysical Union and the International Association for Landscape Ecology.

Finally, I have collaborated with Profs. Jiaquo Qi, Jiquan Chen, and Peilei Fan in various capacities for several years and, thus, I am pleased to be able to work on a daily basis with them and other colleagues at MSU.



Faculty and Staff at the Department retreat at the Eagle Eye Golf and Banquet Center in August 2018



Lifeng Luo

Associate Professor

It is hard to believe that it has been five years since I contributed to the newsletter last time in 2014. There have been a lot of changes in my life in the past five years. I was promoted to associated professor with tenure in 2015, and in the same year our family added a new member, Alina Luo. She is turning four in February. Time flies, and it flies even faster when there is a little one around...

My research is continuously moving forward in several directions. After completing a few projects from NOAA, NASA and USDA, my current research on drought, funded by NOAA's Climate Program, focuses on developing research-to-operation capability in forecasting drought at subseasonal to seasonal time scales. In particular, we are working to create a skillful and reliable weekly drought prediction system that can serve as the prediction component of the U.S. Drought Monitor (USDM). Our current work has already been used by NOAA's Climate Prediction Center (CPC) in their monthly drought discussion, and I expect our research result will be more visible and useful in the near future. Through collaborations with computer scientists, I also developed new research area in machine learning. We have a NSF-funded project to develop novel multi-task machine learning methods to deal with spatio-temporal data to solve geospatial problems. We are eager to find out if machine learning approaches can replace human

forecasters to produce useful drought analysis maps, and if we can predict the crimes in New York city based on vast amount of predictors. Artificial intelligence and machine learning are the frontier in computer science and their applications in geography are also the cutting-edge research area that interests many people. I am glad that we are making some contribution in this exciting direction.

Besides teaching several weather and climate related courses, I have also branched out to teach some new courses in 2018. *Geoprocessing* (GEO429) was taught by Prof. Ashton Shortridge in previous years. As he is now the interim director of the *Social Science Data Analytics* (SSDA) initiative, I took over the course. I was lucky to have a group of wonderful undergraduate and graduate students in the class when I taught it for the first time. I accidentally designated 5pm on Sundays as the deadline for all the course assignments, and then I was told by other professors that a group of students were working in the computer lab pretty much every weekend. Oops! I am pretty sure those were my students. But all the hard work paid off, we had a fruitful semester. Almost everyone appreciated the wonderful learning experience they had in the class.

In the past few years, several of my students graduated. Steven Schultze, who was my first PhD student, started his tenure track position as an assistant professor at the University of South Alabama right after graduation. Deanna Apps graduated with a master's degree and now works for the United States Army



Corps of Engineers. Sam Arcand, who was a master student co-advised by Profs. Sharon Zhong and me, graduated in 2018 and now works as a research associate at MSU. My current PhD student, Pouyan Hatami is leading the effort in the NSF project on machine learning and is doing well. I also hosted a number of visiting PhD students and scholars in the past few years, and most of them now have taken academic positions at Universities in China. With this wonderful group of students and collaborators, we published 30 peer-reviewed papers in high quality journals in the last few years.

In my previous newsletter, I mentioned that my next destinations for travel were Africa and Australia. Unfortunately, that hasn't happened yet. But I had a number of business or family trips to several really nice places, including the Glacier National Park in Alaska. I also took Alina to the Mesa Lab of the National Center for Atmospheric Research in Boulder, CO last year. As the daughter of two atmospheric scientists, Alina was fascinated by the tornado model (see picture) at 3 years old.



Hi to everybody from an oddly mild and sunny January in East Lansing! 2018 was busy and exciting in the Geography Department and for my research on agriculture and climate.

Two big publications came out this year that I participated in. The first was a synthesis about sustainable systems in Asian Russia with Peilei Fan, Jiquan Chen, Joe Messina and Qi. Briefly, central Asia and Russia in particular are changing incredibly quickly; the new sustainability index indicates that after the fall of the Soviet Union, urbanization is boosting economic development, social development and environmental degradation. These complex interactions are not separable. The second was an analysis of hydropower and problems with the sustainability of large dams led by Emilio Moran in PNAS. It points to significant historical and projected negative impacts of building giant dams on the developing world's major rivers. Large dams tend to benefit fewer people and have larger negative impacts on the environment and society, and much smaller dams may be a possible solution to meet needs for more power production.

I have been truly fortunate to have been working with some very bright and productive PhD students. Victoria Breeze continues to develop a model of China's impacts on land use in Africa, and her recent appearances in *The Conversation* and *The Economist* continue to bring media attention. Nafiseh Hagtalab's research on changing rainfall in Malawi is under review, and recent feedback from AGU is leading to a new publication soon, this time about precipitation changes in the Amazon basin due to both climate change and land use



change. We are also analyzing WRF climate model data to estimate the impacts of expanded urban areas (due to dam building) on the general circulation of the Amazon. In addition, I am also working on land use change in east Africa with Dan Wanyama, who is becoming an Earth Engine wizard as he determines how forests and agriculture are battling over the slopes of Mount Elgon. Rainfed maize is a staple of the area, but critically dependent on strong seasonal rainfall. We want to test how feedbacks between land cover and climate in this region may be strongly coupled, and we plan to estimate how much deforestation has occurred—and if this has significantly reduce forest-recycled moisture and thus rainfall.

No summer would be complete without a road trip; the family and I drove to Montreal, Quebec City, and Jacques Cartier National Park.

Probably the biggest news this year is that I signed on as Graduate Director this August, following Ashton Shortridge (big shoes to fill!), who has been super supportive in transitioning me in to the new role. I have a newfound respect for all that he has done as I learn the ins and outs of managing the graduate program. To start it off, I had the opportunity to lead a great GeoCamp this August,

once again at Wa Wa Sum. The new students cooked, cleaned, played, and made new connections. We were accompanied by our good friend Shengpan Lin, who tragically passed away unexpectedly in September. He led the festivities in many ways and served as a bridge between the old and new. I have really enjoyed getting to know all the new students and their interests. One of the big surprises in this new role is how big the department is, and how many fascinating projects are underway all over campus. I have taken this as a sign that we need more networking, and more problem sharing, so that we can build even stronger cohorts going forward into careers. The grad students have been open with their ideas too, and I am interested to find out new avenues to promote their growth and productivity.

It has been a real delight to get to know the whole batch of incoming students. They are excited and driven, and the enthusiasm is infectious. As my oldest child goes off to college, I am glad to know there are so many talented and hard-working researchers lighting the halls of academia.

All the Best for 2019---
Go Green!

Nathan Moore

Associate Professor and
Graduate Director

Fritz Nelson

Adjunct Professor

Students work with Department Alumni on Juneau Ice Field in British Columbia

This past July Dr. Fritz Nelson, two MSU grad students, and a fellow alum of MSU's Geography program conducted research in northwestern British Columbia, near the Juneau Icefield. Fritz earned a master's in geography from MSU in 1979 and is currently an adjunct professor in the department. While a student at MSU he traversed the icefield from Juneau, Alaska to Atlin, British Columbia and wrote a thesis on periglacial (cold-climate, nonglacial) geomorphic processes, under the mentorship of MSU Professors Dieter Brunnschweiler (Geography) and Maynard Miller (Geology). Miller was the director of the Juneau Icefield Research Program (JIRP), which originated with the American Geographical Society and from 1960 to 1975 was administered through MSU. More than 40 years later the MSU periglacial geomorphology group, in collaboration with JIRP, returned to British Columbia in July 2017 and 2018 for fieldwork on problems in periglacial geomorphology.

This past summer, the MSU group included Fritz, PhD candidate Kelsey Nyland, incoming master's student Raven Mitchell, and Geography department alumnus Chris Cialek (B.A. 1973, M.A. 1977). The group investigated the role of late-lying snow patches in slope development processes on Frost Ridge, adjacent to the Cathedral Glacier. The team stayed



After a week of fieldwork at Camp 29 of the Juneau Icefield Research Program MSU personnel (from left to right) Chris Cialek, Raven Mitchell, Fritz Nelson, and Kelsey Nyland stand in front of Cathedral Glacier (photo taken July 31st, 2018).

in JIRP's Camp 29 near the study area and collected sediment transported by snow meltwater. They also conducted ground- and drone-based surveys of terrace-like forms developing on the ridge. Work conducted on the icefield is part of a larger project investigating the origins and development of large, distinctive landforms called cryoplanation terraces, found in polar climates around the world.

Chris Cialek's master's project consisted of mapping the Cathedral Massif, which contains the Cathedral Glacier, Camp 29, and Frost Ridge. The data he collected are still employed on Canadian Geological Survey maps

of this area. Surveying and general expertise about the area from the two alumni were invaluable to the students while in the field. When asked about his impressions Chris said:

"In the final entry of my 1976 journal, I reflected on the powerful impact of that summer's JIRP experience and committed to return to Atlin before long. Who knew 42 years would pass before I would step back onto the Cathedral Massif? Despite the declining condition of its glaciers in 2018, the beauty of this place remains sublime, and the intelligence, industry, and camaraderie of my MSU travel partners, inspirational".



Ken Corey

Professor Emeritus

Dr. Ken Corey (Professor Emeritus, Geography, and former Dean of the MSU College of Social Science) on his 80th birthday, 11/11/2018.

Amber Pearson

Assistant Professor

In 2018, Dr. Amber Pearson, Assistant Professor, was engaged in a number of collaborative projects and supervised a number of student-led projects, as co-lead of the Space, Health And Community (SHAC) Lab (alongside Dr. Ashton Shortridge). This past year, Dr. Pearson was the winner of the 2018 *Emerging Scholar award* from the Health and Medical Geography Specialty Group of the American Association of Geographers.

Over the year, she has seen a number of both graduate and undergraduate students in her lab complete their studies and take up successful new positions. Notably, Dr. Tim Chambers accepted a research fellow position at University College London, Amber DeJohn was accepted to a Master's program at the University of Toronto and Christopher Lowry was accepted to a Master's Program at Stanford University. Dr. Pearson's research in the two primary areas of water security and neighborhoods and health has continued to develop, with new collaborations and projects.

In terms of her water security research, she was named as a Steering Committee member for Research Coordinating Network for studying household water insecurity (NSF funded). This study involves teams in over 20 countries, and is led by Dr. Sera Young, Dr. Wendy Jepson and Dr. Amber Wutich. Dr. Pearson led data collection efforts in Arua, Uganda (with Dr. Gershim Asiki) and in Mérida, Mexico (with Dr. Cuau Sanchez). Several



publications on the findings from this global research have been accepted for publication in 2019, including the protocol for a development of a cross-cultural index of water insecurity and the often ignored practice of water sharing with findings from countries in sub-Saharan Africa. She will serve on a panel on this topic at the upcoming American Association of Geographers conference in Washington, DC in April 2019. In 2018, she also published papers on water quality in the Yucatan and cross-cultural water sharing practices.

In terms of her neighborhoods and health research, in the summer of 2018, Dr. Pearson led pilot data collection on a project called "Study of Active Neighborhoods in Detroit" (see study team photo). The purpose of this study was to collect cardio-metabolic health, physical activity and stress data on residents in two neighborhoods in Detroit, to ultimately understand neighborhood factors which promote health in these high

vacancy, low-income neighborhoods. She found that while most residents (66%) perceived their neighborhood as having high levels of crime, they also had very high levels (>80%) of interactions with their neighbors while walking in the neighborhood, indicating social connectedness. One third of participants had more than 150 minutes of moderate or vigorous physical activity during one week. Others averaged about 50 minutes of physical activity over a week. Dr. Pearson hopes to expand this research, pending funding. She will be presenting some of the preliminary findings at the AAG conference in April 2019. In 2018, Dr. Pearson also published papers on children's neighborhood exposures to alcohol marketing in New Zealand, use of twitter and depression, utility of Google Street View in health research, neighborhood vacancy and mental health in Flint, smoke free playgrounds in the USA, and Michigan neighborhoods and child antisocial behavior. This month, she also led a study, to be published in the *Annals for the American Association of Geographers*, titled "Initial evidence of the relationships between the human postmortem microbiome and neighborhood blight and greening efforts" based on collaborations with the Wayne County Medical Examiner Office and MSU's Department of Entomology.

In 2019, the lab has exciting plans for extending research and fosters work with some exceptional students, with anticipated incoming graduate students in the fall. For more information about Dr. Pearson's research, the SHAC lab, or up-to-date news on the group, see <https://msu.edu/-apearson/projects/index.html>.



David Roy

Professor

I came to the states in 1996 and was told I shared a birthday with “the man” while getting my visa authorized at the U.S. embassy in Milan. I was initially confused, but later learned that Martin Luther King and I were born on the same day, January 15th. I am a geographer. At high school my favorite subject was geography and I took a B.Sc. in Geophysics at Lancaster University. The year I graduated the price of oil collapsed, so instead of working as a geophysicist for an exploration company, I moved to Scotland and got an M.Sc. in Remote Sensing and Image Processing at Edinburgh University.

Twenty-five years ago remote sensing was generally considered as a form of geophysics from satellites. My Ph.D. was on an aspect of remote sensing, and I graduated from the Department of Geography, University of Cambridge in 1993. I then spent a year as a post-doc. at the University of Reading and most of my salary commuting three hours a day as I lived in London with my girlfriend. In 1994, Jane moved to Italy with me because I obtained a post-doc. fellowship at the Joint Research Centre of the European Commission situated in Ispra. I moved to the U.S. as a research scientist at the University of Maryland, Department of Geography, and NASA’s Goddard Space Flight Center where I spent eight years running a group charged with ensuring that the Moderate Resolution Imaging Spectroradiometer (MODIS) satellite land products were fit for purpose. I was lucky to be there in a period of significant funding for global change research and when computing had evolved sufficiently that NASA’s goal of deriving satellite products to document the geophysical and biophysical status of the planet was possible on a daily basis. Meanwhile, Jane and I got married and our kids, George and Isla, were born in Washington D.C.

For nearly the last two decades I have been a member of the MODIS land fire science team that is responsible for global systematically generated fire products used to support the fire information needs of the research, applications, and policy communities. In the early 2000s I participated in the international multi-agency Southern African Regional Science Initiative (SAFARI 2000). This collaborative research led to the formulation of the Southern African Fire Network (SAFNET) which I continue to support on a pro bono basis, and it is now

a formal regional network of the international Global Observations of Forest Cover – Global Observations of Land Cover Dynamics (GOF-C-GOLD). Related, I am a co-chair of the international GOF-C-GOLD Fire Implementation Team that seeks to refine and articulate the international observation requirements and make recommendations for the best possible use of fire products from existing and future satellite observing systems for fire management, policy decision-making, and global change research.

In 2006 we moved to South Dakota and I joined the Geospatial Sciences Center of Excellence (GSCE) at South Dakota State University as one of six original faculty hires. Several people suggested that I was crazy to move to the rural Midwest. However, Jane and I wanted to live in an affordable good school district and where the front door could be left accidentally unlocked while on vacation. Also, professionally I had a plan. I sought to advance my goal of applying what I had learned from MODIS to Landsat. The Landsat series of satellites provides the longest temporal record of space-based surface observations. The GSCE was a joint collaboration with the United States Geological Survey’s (USGS) center for Earth Resources Observation and Sciences (EROS) that is home to the Landsat ground system and archive. I secured NASA research funding to derive higher-level Landsat products to help meet the needs of the terrestrial user community. This led to my becoming a member and then co-lead of the USGS NASA Landsat science team. The 45+ year Landsat record was continued with the successful February 2013 launch of Landsat 8; Landsat 9 will be a clone of Landsat 8 with a scheduled 2020 launch. Landsat 10 is being negotiated between NASA and the USGS as a Sustained Land Imaging program with the Landsat science team in an advisory role. I hope to ensure an operational status for Landsat 10 and follow on missions. The first ever environmental satellite data were sensed by Landsat 1 in 1972, and the Landsat satellite series now provides a record of the planet acquired over a period when the human population has doubled and the impact of climate change has become discernible.

Looking forward, the Internet is changing how we connect globally. Services such as Google Maps have introduced the public to satellite earth observation and fundamentally raise expectations for visualization of remotely sensed data and interaction with such data. In the next decade,

the ability to process, analyze, and distribute satellite remotely sensed data will increase dramatically due to increasing computer processing and storage capabilities, increasing network connectivity, decreasing hardware costs, space agency support for free satellite data, and the proliferation of satellite direct broadcast reception systems. These advances will generate tremendous challenges and opportunities for my research. With the exception of weather forecasting, there are few systematically implemented environmental remote sensing applications. Near real-time satellite processing for land monitoring and change detection is in its infancy, and only limited research has been undertaken on the fusion of satellite data from different sensors for improved land surface information extraction. I am particularly interested in the fusion of Landsat 8 data with the Landsat-like European Space Agency (ESA) Sentinel 2 data and I have recently received NASA funding to develop a 30m burned area product for Africa using both data streams.

In January 2019 I moved into a 1940s house in East Lansing. The house hasn’t been lived in for five years. I asked Alan Arbogast to lend me a sledgehammer; I think he thought I was joking. Jane and my daughter will move here in the summer when the house is more habitable and in time for the fall high school semester. I can walk to the Geography Department, and it’s a short drive to the Manly Miles building which is where I also have an office in the Center for Global Change & Earth Observations (CGCEO). I hope to be a valuable member of the department, the center, and MSU, if you see me around please say hello.

Validation field work in Kruger National Park, South Africa, October 2018, Lidar engineer (Francesco), Ph.D. student (Pedro), Dr. Roy



Morris Thomas

Fixed-Term Professor

My first interest in geography began when I was pre-kindergarten. I lived with my Grandmother who would read to me. Because I wanted to have my own book, she gave me my mother's elementary geography (circa 1928) which had lots of pictures and maps. I would look at pages and ask my grandmother lots of questions. Later that year my uncle drove us to Chicago. Having looked at the map and being shown the route, I noticed each state had a different color. I therefore assumed that each state would be different at the border. I made my uncle promise to stop at the border with Indiana so I could take a good look. It was after dark when I was awakened to see the "Welcome to Indiana" sign. I was very disappointed that the land was the same on both side of the sign! That was my introduction to the myriad of invisible lines that define our lives. As I tagged along after my grandfather on the farm I became aware that fences showed property lines and certain roads and rivers were township and county boundaries. These "places" became a regular part of rural life as there was no GPS.

My formal interest in geography began during fall semester (1965) of my senior year at MSU, when I took *World Regional Geography* (GEO 204). Professor Ian Matley sparked my interest that geography could be a career choice. My present major was soil science. After graduation in 1966 I worked for John Deere for about a year. I then contacted Professor L.M. Sommers who was department chair at the time about graduate school. I enrolled part-time to prove myself; the rest is history.

In 1969 I was hired as the only full time geographer at Lansing Community College (LCC). During my 31 year tenure at LCC I taught many classes and thousands of students. While at LCC I was fortunate to travel to South and Central America often taking groups of students during spring break. I had interesting experiences, such watching from our 3rd floor of the Prado Hotel, in Tegucigalpa, Honduras as the police tear gassed students. They had blown up the student government office at the University of Honduras which we had just visited. Toncontin airport in Tegucigalpa is not for the weak. The runway is like the deck of an aircraft carrier partially surrounded

by mountains. Upon take off it seemed like the plane lost altitude for a second. It is rated the second most dangerous in the world. The locals would joke that the Pope will not land at their airport. Before 9-11 air travel to the region was quite casual. I would often let the captain of the plane know that I was a geography professor and be invited into the cockpit. Airlines such as SASHA, TACA and VARIG were very amenable to me. On one occasion as we approached Belize City the pilot banked the plane so I could get a better photo of the city. The students usually bought machetes as souvenirs. Upon boarding the, flight attendants would always tell us with smile "You boys must store those in the overhead bins".

Now that I am in a wheelchair, my wife Carol and I have taken several cruises to the Caribbean during spring break. Whenever I visited a place I would try to get some maps. After going into The Panama Canal locks, the ship stopped in Balboa, Panama. I went off in my wheelchair to buy a map and found a very nice detailed one for \$12.00US. Upon returning home my credit card showed a \$21,000.00US! After about 4 months of negotiations I finally got the problem taken care of. I now pay cash only.

In Rio de Janeiro, my quest for a topo map of the city took me to a military post where I was interrogated for a couple hours because I might be a spy. I was told no maps were available and to leave before someone higher up came. I wanted to tell him that there was probably a satellite gathering better data than was on any map. As I was walking about a block away a barefooted young man with no uniform came running up with a rolled up map in his hand. He wanted \$5.00US and advised me not come back the next day.

One of my most exciting events was when I went up a small plane that landed on a black water tributary of the Rio Negro near Manaus, Brasil. It was an incredible experience to be flying low over the forest canopy and only see water and trees for miles. These are a very small sample of experiences that were useful in classroom lectures. I am happy that I was able to inspire many students travel the world.

After retiring from LCC in 2001, I have spent the next 17 years as an adjunct professor at MSU in the Department of Geography, Environment, and Spatial Sciences. It was very fulfilling being around other professional geographers. When began in the department I was still using the overhead projector



Morris' first day on the job as a professor at Lansing Community College in 1969.



Morris and two other notable fellows in department history: Harm De Blij (left) and Larry Sommers (right).

and transparencies. I loved to draw on the maps with different colored markers, a technique which I copied from Professors Hunter and Winters. After being "shamed" by others I was able convert everything over to PowerPoint. My graduate teaching assistants and hourly undergraduates were extremely valuable helping me with the technology. Wilson Ndovie, our IT specialist, obtained a laptop for me that I could draw on while making PPT presentation. Life is good!!

A very important event in my years teaching at MSU was when Prof. Schaeztl asked to me to author a chapter in a book that he co-edited with Professors Darden and Brandt. In the process of writing the chapter I developed an in depth interest in the survey system of Michigan. For example the Michigan Meridian begins in a non-descript agricultural field in Fulton County, OH. As result of this work on the survey system I was part of a committee that helped promote the Base Line and Meridian State Park celebrating the 200th year anniversary of the survey system in Michigan.

I would like to thank the colleagues, office staff and IT staff of the Department of Geography, Environment, and Spatial Sciences for making these past 17 years very enjoyable. I have had forty nine years of getting paid to do something that I like! Life is good!

Raechel White

Assistant Professor

Members of the Environmental Analytics and Visualization Lab had an outstanding year in 2018. In the spring, graduate student, Michael Bomber completed his M.S. for his research using Unmanned Aerial Systems for mapping the distribution of jack pine after the Duck Lake Fire in the Upper Peninsula. Michael is now employed as a UAS technician with STS, Inc. of Chicago. Dr. Raechel White was elected as Assistant Director of the Remote Sensing Applications Division of the American Society of Photogrammetry and Remote Sensing in the spring, extending her 5-year service to the ASPRS community. She was also awarded a Faculty Fellowship through the United States Air Force to study human reasoning in virtual reality systems at Wright-Patterson Air Force Base during the summer. Upon returning

to MSU, Dr. White received a Provost Undergraduate Research Initiative grant to support undergraduate student Luke Gerber to develop further the virtual workbench that she began building over the summer. Luke has worked with Dr. White for the past year on this current research as well as the role of geographic information science in supporting digital humanities scholarship. During this research position, Luke expanded his programming skills to include C#, a programming language not commonly taught in GIS but is the core for developing gaming environments. With the increasing interest in virtual reality, these new skills will give Luke an advantage over traditionally trained GIS students. Over winter break, Luke will be participating in a study abroad experience in Dubai, before wrapping up his undergraduate studies in the spring semester. He hopes to continue his education with a focus on international relations or military intelligence. Another topic currently being



pursued by our members is the visualization of political violence data related to the events that took place between 1965 and 1966 in Indonesia. This work, funded by the Henry F. Guggenheim Foundation, is being conducted in partnership with Dr. Siddharth Chandra from James Madison College. New insights regarding the extent of the violence, as well as geospatial factors affecting its spread through this work and it, has the potential to open up a dialogue about these historical events that until only recently have been brought to the public eye.

Catherine Yansa

Associate Professor

You're never too old to play with mud! I am still coring the mud (sediment) of lakes to analyze the plant fossils contained in these deposits, most recently with MSU Geography Professor Randy Schaeztl in northern Lower Michigan. We were awarded a National Science Foundation grant in 2018, with Randy as the Principal Investigator (PI), and myself, along with three other colleagues at other institutions, being Co-PIs. The goal of this project is to examine the paleoenvironmental history of a newly discovered, ancient glacial lake, called "Glacial Lake Roscommon" that came into existence as early as 24,000 years ago, 7000 years earlier than other lakes in the area due to its unique geologic setting. Houghton Lake, Higgins Lake, and Lake St. Helen are all deep spots in what was once a much larger Glacial Lake Roscommon. During two weekends (January and February) in 2019 we will extract sediment cores from these remnant lakes; competing for space on the lake ice against people celebrating at "Tip-up Town." We will obtain radiocarbon dates for the bottom of these cores to identify when Glacial Lake Roscommon formed, as well as analyze both plant and animal fossils. Ph.D. student Albert

Fulton is a Research Assistant funded by this project and this semester will assist me in analyzing the fossil pollen and seeds from the lake sediment cores. Additionally, I have been helping Albert write papers that are components of his dissertation (see his write-up in this newsletter). I also serve on the Advisory Board of MSU's Canadian Studies Center, the longest run (since 1958!) Canada-focused center at an American university.

I still teach GEO 330 (Geography of the U.S. and Canada) every spring, where I can share my love of Canada (my homeland) with students. Dr. Grant Gunn gives a guest lecture on (guess what?) HOCKEY to my class wearing his Leafs jersey (which the students enjoy). I also regularly instruct ISS 310 (People and Environment), GEO 201 (Plant Geography), and occasionally GEO 206 (Physical Geography) and GEO 871 (Graduate Seminar in Physical

Geography). I last taught GEO 201 this past fall where I took the students (16) into two of MSU's natural areas to collect vegetation data (identify tree species, measure basal diameters) to compare a species composition and age structure of a remnant old-growth beech-sugar maple stand (Toumey) to a secondary growth sugar maple-beech stand (Sanford). I guided the students through the research process, which included compiling and analyzing the data, and then they each wrote individual reports based on the research. I thank Albert Fulton for helping me supervise the students' fieldwork. Several students reported on how they enjoyed their time in the woods during class time, especially given that we had nice weather in the early autumn. I am glad to continue the tradition set by the late Jay Harman in taking Plant Geography students into the field.



Undergraduate Student Highlights



Hope Lewis

Hope Lewis, a freshman at MSU, is working as a research assistant in Dr. Pearson's SHAC Lab, through funding from the Honors College. During her first semester at MSU, she has assisted on a number of projects, using data from a New Zealand-based research project called 'Kids Cam'. These data were collected using a GPS and automated camera to understand the everyday lives of children (aged 10-13y). In addition, the cameras captured images every few seconds, which allows a researcher to see exactly what the kids were doing and with whom. Hope used these data to examine images that were clustered together within 'green spaces' (according to GPS data). Green space was defined as an area like a park, beach or sports field. Hope then analyzed images to determine whether the participant was in a group of people or if they were alone, and what activities the children were engaged in (e.g., walking, phone usage, ball sports, etc.). The purpose of analyzing these data was to understand how often children utilize the green space available to them as well as what common activities kids are engaged in and with whom, while in green space.

The second project Hope worked on focused on what activities children engaged in at school, during free times such as recess. So, during this time period, children could independently decide where they wanted to be and what they wanted to do. The pictures were analyzed image by image, and activities and companions were examined, along with a description of their location. This study is focused on understanding children's leisure time usage of the school yard in order to understand

what features might promote physical activity among children.

Claudia Allou, a junior at MSU, has been working in the SHAC lab, with Dr. Pearson for the past year and a half. Over the summer, she conducted a systematic review of the positive health effects of natural sounds, with funding from the Honors College and Mowbray Scholars program. She searched research databases to compile a collection of articles that tested how natural sounds may affect human health. While the searches yielded thousands of results, Dr. Pearson and Claudia eventually included only 24 studies on this topic. This systematic review is important in understanding how to create research that builds off of previous work and finding gaps in the research. So, this review serves as the beginning of future work upon which Claudia will build her 2019 research. The results of the review are now being written up as an academic manuscript, in collaboration with Dr. Rachel Buxton at Colorado State University, and will be presented at the AAG conference

in April 2019. Claudia is now funded under a grant from the Michigan Department of Health & Human Services and has learned website development and online mapping and geocoding techniques. Claudia is also extending her spatial skillset as she attempts to make soundscape maps using audio data collected in 2018.



Claudia Allou



Alex Lafler

Last summer, I had the opportunity to intern at the headquarters of the American Association of Geographers alongside two other bright student interns and the immensely supportive staff at the AAG. In what can only be described as a fruitful experience, interning with the AAG was likely the most valuable professional experience my young geography career could have experienced. While working on-site in Washington, DC, I had the opportunity to work with a diverse staff of geographers on a variety of

projects, all intent on furthering the vast professional network of the AAG and the discipline of geography itself. These projects, which all instilled a greater knowledge and prowess in understanding the wide spectra of geography professions, including: processing databases to establish ideal candidates for a national education initiative; assisting with major pieces of the AAG's annual Guide to Geography Programs in the Americas; updating the AAG Jobs and Careers portal; Transcribing interviews that would eventually become "Profiles of Geographers". Although no words can do these sentiments justice, I would like to express my gratitude to the staff of the AAG for granting me the opportunity to learn from an entire organization of kind and talented geography professionals, to my fellow interns for being a friendly beginning to a peer career network, and for our own MSU geography department for helping me to gain the abilities and skills necessary to be a part of such an organization. I was proud to be able to represent Michigan State Geography during my AAG internship, and will always be thankful for the experiences therein.

The Changing Face of Downtown East Lansing

View to the north of the City-Center project from the west side of the MSU student union.



As an alum, it's always fun to see the changes in your college town after you've been gone for a while. Many such changes are ongoing in downtown East Lansing, which is in the midst of an exciting construction boom in an effort to make the city a more vibrant community. Most of this development is associated with large, mixed-use complexes sprouting on Grand River Avenue. The largest project is the City-Center development in the block between MAC Avenue and Abbot Road. Much of the footprint for this project is the former parking lot behind (east of) Beggars. This project includes two large buildings, with one facing Grand River Avenue and the other Albert Avenue. These structures will collectively contain over 350 residential rental units, an Urban Target store, multi-story parking and street-level retail space.

A nearby development is the Park District, which is centered on the northwest corner of Abbot and Grand River. This site will reportedly become a mixed-use building with apartments, retail, and a separate hotel building on Grand River Avenue. As of this writing, the blighted buildings (an old bank and Indian restaurant) that formerly

occupied the site have been (finally) demolished and construction will hopefully begin soon. Rumors abound that the project may even include a multi-screen theatre complex! Yet another development is The Hub, which is rising near our building at the corner of Grand River and Bogue Street. You may remember that this site was formerly occupied by the 7-11 store. This project features a 10-story mixed-use building with street retail and about 350 apartments.

You can learn more about these developments on the city web page. These projects, which follow the

construction of several other, smaller apartment complexes along Grand River in the past few years, provoke interesting geographical questions about the changing demographics of downtown East Lansing. A long stated goal of the city has been to increase foot traffic and long-term residency in the downtown area. The City-Center project is particularly exciting because it will contain a grocery store that should be a hub both for people living in downtown East Lansing and for the MSU community. It will also contain apartments geared toward individuals 55 and over. Will it work?

Stay tuned.



View west along Grand River Avenue, near the intersection with Charles Street, toward the rising City-Center complex.



View of the northwest corner of Grand River Avenue and Abbot Road. This site is slated to become the core of the Park District development.

Sharon Ruggles

Jack Breslin Distinguished Staff Award

Sharon Ruggles was recognized last spring as one of six people across the university this past year to win the *Jack Breslin Distinguished Staff Award*. This Award is one of the most prestigious commendations bestowed upon employees at Michigan State University. Selections are determined by an employee's overall excellence, supportive attitude, contributions to the unit and service to the university. Since 1978, only 241 individuals have received this award. Sharon richly deserved the award because of her dedicated service to MSU for over 40 years. She has been a member of our department since 1990 when she joined us as our Graduate Secretary. She has been stellar in this role and in many ways is the face of our graduate program. Many of our alums certainly share our appreciation she has chosen to spend lots of her MSU years in the Department of Geography, Environment, and Spatial Sciences. Congratulations Sharon!



Congratulations to Dr. Joe Darden who has received the *2019 AAG Lifetime Achievement Honors*. Geography, Environment, and Spatial Sciences is honored to have him as part of the Department. Dr. Darden, a former Fulbright Scholar, has put his heart in his research interests of urban social geography, residential segregation, immigration and socioeconomic neighborhood inequality in multi-racial societies. He has authored books like, *The State of Black Michigan, 1967-2007*, and *Detroit* that received 2014

Amber Pearson

AAG Emerging Scholar Award

Congratulations to Amber Pearson for being named the winner of the *Emerging Scholar Award in Health and Medical Geography* from the Health and Medical Geography Specialty Group at AAG.

The Award seeks to recognize early career scholars who show significant potential for distinguished scholarship in health and/or medical geography. Early career scholars who are in their 2nd-8th years of receiving their Ph.D. degree from an accredited degree program at the time of the 2015 AAG meeting are eligible for the Award. Amber's win will be announced on Thursday, 4/12 in the Oak Alley Room at the Sheraton.

Congratulations Amber!

Joe Darden

AAG Lifetime Achievement Award

Michigan Notable Book Award, and *Historical Society of Michigan State History Award*. Along with co-authoring many more books and roughly 160 journal articles. Dr. Darden has received many academic awards; he is the recipient of *MSU's Distinguished Faculty Award (1984)*, the *Ethnic Geography Specialty Group's Distinguished Scholar Award (2006)*, the *AAG Enhancing Diversity Award (2006)*, and the *Distinguished Ethnic Geography Career Award (2015)*. In 2018 he was elected to the inaugural cohort of AAG Fellows.

College of Social Science Washington, DC Program Participant Receives Rachel P. Kahan Memorial Scholarship

In a cooperative effort between Michigan State University's College of Social Science and James Madison College, and through gifts from family and friends, the Rachel P. Kahan Memorial Scholarship for Spring 2019 has been awarded to Crystal King of Detroit, Michigan.

King, an Economic Geography senior, feels a strong connection to Rachel in that they both have adventurous sides, saying "Rachel Kahan was not afraid to step away from campus and explore what else was out there and neither am I." Having participated in three study away/abroad programs prior to the upcoming Washington, DC semester, King's passion for exploring opportunities is clear.

This Scholarship strives to honor the enthusiastic spirit of community engagement displayed by Kahan during her time with the Washington, DC Program and beyond. "Just like Rachel Kahan, I place high importance on giving back to the MSU community" said King. Reflecting on their commitment to the LGBTQ resource center, which serves people of similar identities, these opportunities have been beneficial to their university experience on a larger level. King offers, "It has really helped me to be able to connect and have an impact... especially on first year students."

Kahan was a graduate of MSU's James Madison College and an alumnus of the College of Social Science Spring 2007 Washington, DC Semester Study Program. Also a member of DC Spartans Board, Rachel

was very active in giving back to MSU and the DC Study Away program. Rachel passed away in 2012 after an inspiring battle against cancer. Rachel touched the lives of many Spartans and through this scholarship will continue to positively inspire active community participation and leadership.

This spring, King hopes to intern for the American Association of Geographers (AAG) in Washington, DC. The AAG internship will focus on an annual international conference where fellow geographers, GIS specialists, environmental scientists, and other leaders meet to share the latest in research and applications in the field. King expects this internship will go a long way towards their long term goals. "I think this internship will be a great opportunity to really experience what it's like to live on the east coast, network with professionals, build my brand, and hopefully make connections to eventually get a full time consulting position" King said.

When asked how they were feeling about being awarded this scholarship, one word came to mind for King, "grateful." King plans on using the funds to pay for study away expenses, and will be taking full advantage of all DC has to offer thanks to the Rachel P. Kahan Memorial Scholarship. "Rachel set the best example of what it means to make the most out of the opportunities MSU has to offer, and I would like to follow her footsteps and do the same for myself."

Applicants must be currently enrolled at Michigan State University



Crystal King

and planning to participate in an internship in Washington, DC as part of MSU's Semester Study Program. Recipients can be enrolled in any college at MSU, but must be in good academic standing. Those applicants who have demonstrated the Spartan tradition of community engagement and civic leadership are encouraged to apply.

Original Source: MSU College of Social Science Washington, DC Program (December, 2018).



Sharon Zhong

CSS Leadership Council
Research Excellence Award

Sharon Zhong was presented with the *College of Social Science Leadership Council Research Excellence Award*. This award was given to Sharon in recognition of her vast contributions to the discipline, department, and College in the area of research. Sharon received this award during the first annual College of Social Science week in March, 2018.

MSU Department Takes Bold Action to Address Underrepresentation of US Citizen Minority Doctoral Students in Geography

December 7, 2018 will be remembered as the day the faculty of MSU's Department of Geography, Environment & Spatial Sciences took bold action to establish the first and only continuous recruitment program aimed at increasing the representation of underrepresented US citizen doctoral students by a geography department in the United States. The program will recruit, fund, retain, support and provide campus-wide engagement opportunities for these students. The financial support may be derived from any of the following funding sources: teaching assistantships, research assistantships; traineeships; or grants. Underrepresented US Citizen Graduate Students include: African Americans, Hispanic American, Native Americans or Alaska Natives.

The continuous recruitment program, to be called "The MSU Model for Addressing Underrepresentation of US Citizen Doctoral Students in Geography," replaces the pilot "Advancing Geography Through Diversity Program" (AGTDP), which involved the recruitment and funding of three African American women in 2017. This first AGTDP cohort began their tenure in the MSU Geography Department in fall of 2018 (see *AAG Newsletter*, April 30, 2018). These two historic moves are progressive actions that will result in *measurable* progress towards changing the *underrepresentation* of US citizen doctoral students in the Department.

Earning a doctorate depends primarily on the financial support received from the department where the graduate student is enrolled. According to the National Science Foundation's report on *Doctorate Recipients from U.S. Universities (2016)*, African Americans depend more on their own families for financial support than any other racial/ethnic group, followed by Hispanic/Latinos. In other words, departments are less likely to fund such students to pursue a doctorate degree even when compared to non-citizens, i.e., international students (see the Integrated Postsecondary Education Data System <https://nces.ed.gov/ipeds>). This lack of funding has probably contributed to the extreme underrepresentation of African Americans and Hispanic Americans in doctoral geography



*The MSU Model for Addressing Underrepresentation in Geography team
L to R: Dr. Ashton Shortridge, Dee Jordan, Dr. Alan Arbogast, Sharon Ruggles, Dr. Joe Darden*

departments in the United States.

"The MSU Model for Addressing Underrepresentation in Geography" is a comprehensive recruitment, retention, support, engagement and funding program aimed at increasing the representation of underrepresented US citizen doctoral students. The Model's success will rely upon the following: (a) the strong support of Chairperson Alan Arbogast, who has a demonstrated track record and real commitment by agreeing to establish the program, going beyond only talking about support for the concept of diversity but taking action to achieve it; (b) a commitment by the new Chair of the Admissions and Awards Committee that rises to the level demonstrated by Dr. Ashton Shortridge (who was a strong advocate of the recruitment efforts while in those roles); (c) continued financial support of Ms. Dee Jordan, a highly experienced, geography doctoral candidate with a strong background in diversity issues, who can relate to the recruitment of underrepresented domestic minority doctoral students; (d) faculty advocate, Dr. Joe Darden, who is committed to the recruitment program and is willing to assist it in ways necessary for its success,

including outreach to potential students and mentoring students who get admitted; and (e) the dedication of the Graduate Secretary, Ms. Sharon Ruggles, who is the first contact that most prospective graduate students have with the department. This is the team that will make it happen.

The progress and success of the program will be reported at annual meetings of the AAG. The results of the Department's actions will also be revealed in future data gathered by the *Integrated Postsecondary Education Data System (IPEDS)*. The data now show that virtually all 67 departments of geography in the United States that offered a doctorate degree from 2011-2017 had at most 1 or 2 students who were African American/Black or Hispanic American. Indeed, most had zero.

We welcome a review of our program in the future, confident that this, the first such doctoral recruitment program in geography in the U.S., will bring a positive change in MSU's Department of Geography, Environment and Spatial Sciences and we hope will become a model for other American university geography departments.

Geography, Environment, and Spatial Sciences Forges Partnership with Lansing Community College

The Department of Geography, Environment, and Spatial Sciences and the College of Social Sciences at MSU and the IT program at Lansing Community College's IT program have completed and formalized a groundbreaking "2+2" Articulation Agreement in the Fall of 2018. This program allows students to enter LCC's Geospatial Science program to complete an Associate of Applied Science (AAS) degree, and transfer seamlessly to Michigan State to complete a Bachelor of Science degree in Geographic Information Science (GISci).

An initial meeting in the Fall of 2014 involving representatives of the two programs led to Alan's approval as Chair to go forward with the

process of working out the details, drafting the agreement, and gaining approvals from the administrations of both institutions. MSU GEO Department Undergrad Advisor Gary Schnakenberg and his LCC counterpart, former MSU GISci student Rebecca (Boehm) Rogers, had multiple meetings and phone conversations over the next few years in order to better understand each other's programs and to find places in which they did not align. GISci professor Ashton Shortridge also took part in several meetings, along with some faculty and administrators from LCC.

Reflecting on the process, Gary remarked, "One of the things that I think was the most significant through this process is that there was

a genuine back-and-forth between the parties involved. Rebecca talked with the faculty at LCC, and they agreed to make some changes in a couple of their courses, while on our side, we agreed to waive a required course if they had taken two specific LCC courses, each of which contained elements of our course. This kind of cooperation and commitment across institutions to work out problems to the benefit of students is what made it happen. And, it's not always the case."

In a message congratulating Alan and Gary on the final approval of the agreement, Associate Dean of Academic and Student Affairs in the College of Social Sciences Walter Hawthorne said, "I think it is important to have established tracks for students to follow from community college through four-year university. This [agreement] could be a model for others."

NSF-Funded Circumpolar Active Layer Monitoring (CALM) Program comes to MSU

The U.S. National Science Foundation (NSF) recently announced that the Circumpolar Active Layer Monitoring (CALM) program will be renewed for its fifth consecutive funding cycle. The additional five years of funding means that in 2024 this project will have been funded continuously by NSF for 25 years. Collaborating institutions on this project are the George Washington University (lead institution), Northern Michigan University, University of Montana, and now MSU. The program will include funding over the next five years for MSU graduate research assistants in geography. The assistants will write theses related to the program and will be supervised by Professors Fritz Nelson and Grant Gunn (co-PIs on the project).

The Circumpolar Active Layer Monitoring (CALM) program is

focused on assessing the long-term responses of the active layer and near-surface permafrost to climate change. The *active layer* is the layer of earth materials between the surface and the top of permafrost that thaws each summer. The active layer is an important feature of cold-regions environments, controlling the depth of hydrological activity and the rooting depth of plants. Increasing temperature at the surface leads to thickening of the active layer, an anticipated consequence of climate change, and can result in significant increases of carbon dioxide and methane being released into the atmosphere. In ice-rich permafrost, increased depth of thawing and loss of ground ice can lead to damage and even collapse of

infrastructure in northern communities.

The CALM network consists of 288 permafrost observatories located throughout the Arctic, Antarctic, and selected mid-latitude mountain ranges. MSU CALM personnel will focus on maintaining sites in Alaska's North Slope and Nome boroughs. MSU students will gain field experience with a variety of surveying and environmental monitoring methods in the field and will work with a diverse group of students supported by CALM. This past summer an MSU Geography PhD candidate, Kelsey Nyland, led a CALM field crew consisting of geography master's students from MSU, George Washington University in DC, and Moscow State University in Russia.

The 2018 CALM field crew on the Alaskan North Slope continuing long-term records on (from left to right) snow pack development (being performed by Nina Feldman, George Washington University), surface and air temperatures (Raven Mitchell, MSU), and thaw depth (Vasily Tolomanov, Moscow State University). Photo by team leader, Kelsey Nyland (August 15th, 2018).





Map of flood extent on the MSU campus on February 22, 2018. Rapid melt of thick snowpack, following by several days of rain, resulted in this notable event. Maximum discharge was slightly over 4,000 cfs. The extent of flooding was acquired by an approved drone flight

It continues to be a time of rapid change at RS&GIS, changes that are expanding our skills sets, client base, and outreach across campus. We are hard at work on a wide range of projects both in the office and field. We are thrilled to be busier than ever as we can bring in more students and staff to foster our training and teaching goals. Over the past year and a half, we have strived to make RS&GIS better known across campus and seen as a valuable source of knowledge and skills to assist researchers. To achieve such goals, we have dedicated a lot of time and effort into new program development, establishment of a broader collaborative network, and to work more closely with students via trainings, jobs, and collaborative research activities. Over the course of 2018 we have experienced big changes that have set us up to be more productive and work more efficiently with our colleagues across campus, below is a brief synopsis of the year's highlights. Feel free to reach out to us anytime for more information (www.rsgis.msu.edu).

In the summer of 2018 RS&GIS made a big move from Geography to the Nisbet Building. Our new space affords RS&GIS the opportunity to increase student and faculty involvement, expand our collaborative network, and more easily meet with clients visiting our campus. Additionally, the new space better situates RS&GIS to serve the needs of faculty at MSU and other institutions, continue our outreach to state and local government, and provide quality geospatial training opportunities for students, faculty

and professionals. To break in the new space, we held two well attended events during the 2018 Geography Awareness Week, two ESRI-sponsored workshops and our first annual open house. Our open house, which was attended by approximately 70 people, highlighted RS&GIS projects, training events, technology available in house, and our talented staff. Thanks to all who attended!

Conference attendance is always an enjoyable and productive time for our team and this year was no exception. Amongst our staff we attended prominent conferences including the ESRI Developers Summit in Palm Springs, California, IMAGIN 2018, American Society for Photogrammetry and Remote Sensing (ASPRS) Easter Great Lakes Regional Fall 2018 Conference and the American Association of Geographers (AAG) Annual Meeting. In the spring of 2018, at the AAG annual meeting in New Orleans, our Director Erin Bunting, presented final results from her research with the United States Geological Survey (USGS). The presentation, entitled *Understanding Spatiotemporal Relationships between Plant Production and Water Balance across Dominant Communities and Deserts of the Southwestern U.S.*, highlighted research Erin had conducted prior to joining RS&GIS and proposed a new methodology for determining drought tolerance thresholds for certain vegetation types. At the 2018 IMAGIN Conference Robert Goodwin and Nicholas Weil co-presented on a project entitled *Using Unmanned*

Aerial Systems to Map and Quantify Flooding at Michigan State University. This research was initiated on February 22, 2018, when RS&GIS was asked by MSU Police and Infrastructure Planning and Facilities (IPF) to capture imagery and video footage of the Red Cedar River as it reached peak level during a flooding event.

RS&GIS also had a significant presence at two major MSU conferences this year: the Fall 2018 Extension Conference and Agricultural Innovation Day. At the Extension conference, both the Analyst and Developer team leaders, Robert Goodwin and Joel Lenz, presented work or took part in / lead workshop events. Joel was a moderator in the Application of Geographic Information Systems in Extension Programming session; whereas Bob, presented a talk on *Unmanned Aerial Systems, Agriculture, and MSU Extension* and provided a drone flight demonstration for attendees. At the 2018 MSU Agriculture Innovation Day RS&GIS worked with several Extension agents to develop a drone demonstration event entitled: *Using Unmanned Aerial Systems to Assist with Management of Fruit and Vegetable Production.*

This year RS&GIS has pushed more into the research world than ever before, submitting 25 grants /contract and collaborating on numerous other submissions. Of those 25 submissions 14 were funded and 6 are still under review; overall, a terrific track record! We were thrilled to be funded by Project GREEN, USDA National Institute of Food and Agriculture (NIFA), and the Michigan State Horticultural Society on exciting projects on the cutting edge of the geospatial sciences. In the coming year work will continue and/or begin our newly-funded grants including very interesting UAS remote sensing work with Dr. Zachary Hayden on a project entitled: *Understanding and addressing key constraints for vegetable systems on sandy soils.*

Developer Team Highlights: RS&GIS has had a long history of providing application development and data automation services involving spatial sciences. RS&GIS continues to offer programming services to a number of disciplines, both on and off campus. Our development team has been working towards a systematic approach to improve the application development process in a number of ways, including client interaction and collaboration.

As with previous years, RS&GIS has partnered with the Geography department on a number of interesting projects including new onGEO course development and website development (more on these projects shortly). One RS&GIS-Geography project of note has been the development of GeoConnect, a database utilized by the faculty and staff that work with the MSU onGEO program. GeoConnect is a web based application that tracks all aspects of onGEO from the number of enrollments to the financial reporting. In addition, GeoConnect includes a database for tracking Geography department contacts and was utilized for generating the distribution list for this newsletter. GeoConnect was developed jointly by Joel Lenz and Christian Matsoukis of RS&GIS with a lot of assistance and input from Geography staff including Becky Young, Yi Shi, Beth Weisenborn and Claudia Brown.

Starting in 2018, and continuing into the new year, another key client for the developer team, and one with a large connection to the MSU Geography program, is Dr. Jeff Andresen and the Enviroweather group. In 2018, Climatology asked RS&GIS to provide support and development for new website, database construction, and application development. This project, which is truly a collaborative effort with the Enviroweather team, is being co-developed by multiple members of the RS&GIS staff including Joel Lenz, Christian Matsoukis, and Dylan Hoffner. Included in this project is a new mobile-friendly version of the Enviroweather interface with a user driven dashboard that will enable users / growers to customize their views and quickly obtain key climate or disease model data.

For several years RS&GIS has worked with Ingham County (MI) on their public facing parcel viewer. In 2018, Ingham County made the decision to seek an open source alternative to their current parcel mapping applications. So, for the first time RS&GIS is diving into open source GIS development work to create a new parcel viewer. Projected to be completed in spring of 2019, the Ingham County parcel viewer will have diverse querying and identifying functionalities, be ADA compliant, and be built without pricy software.

Analyst Team Highlights: Over the past year our analyst team, including Robert Goodwin, Nicholas Weil, Joseph Welsh, and multiple students, have been hard at work completing projects

for on campus collaborators such as MSU Extension, Horticulture, AgBio Research, Plant and Soil Sciences, the police department, and Geography to name a few. Off campus projects have, predominantly, been with clients from Iosco County, Michigan Nursery and Landscape Association (MNLA), Ingham County, the State of Michigan, and the Edward Lowe Foundation.

Our analyst team was excited to further push into the research world this past year when our first internally developed grant was funded. The research project, funded by the Michigan Horticulture Society, looks to map potential *Vitis Vinifera* wine grape distribution across Michigan. This project is an important collaborative effort between RS&GIS, Jeff Andresen, and Paolo Sabatini (MSU Horticulture). The overarching goal of this applied research is to help the industry meet their goal of more development and yield by identifying suitable areas for wine grapes in counties close to the Great Lake's shoreline using geospatial data and modern techniques. In order to meet increased demand for Michigan-sourced wine grapes, it is necessary to utilize new geospatial data and methods, paired with industry knowledge, to map *vinifera* production suitability over large areas at a property level scale.

In the summer of 2018 the

RS&GIS analyst team began a new partnership with the onGEO Program to develop online courses. The first course developed, called FAA Part 107 Drone Test Prep and Beyond, looks to help drone users learn the rules, regulations, and standard operating procedures needed to pass the remote pilot aeronautical exam and become a Federal Aviation Administration (FAA) remote pilot.

Over the course of 2018 RS&GIS held 30 training events on topics from Introduction to ArcGIS to ArcGIS for MDOT to Drone-to-GIS workflows. This is the most training events RS&GIS has ever held, training nearly 200 people in total. In April of 2018, for the first time, RS&GIS partnered with the Universities of Wisconsin and Minnesota to hold a 2-day Lidar training. This training event was attended by 16 people and had positive reviews. We are looking to hold more of such events in the coming year.

Thanks to a grant from Project GREEN, a program within MSU AgBio Research, Drs Bunting and Basso were funded to teach a series of commodity-focused UAS workshops across Michigan. In the late summer and early fall of 2018, RS&GIS successfully taught three workshops focused on drone use for Tree/Bush Fruit, Nursery Stock and Viticulture. These workshops took place at the Southwest Michigan



Licensed drone pilots at RS&GIS. From left to right, Bob Goodwin, Joe Welsh, and Nick Weil.

Research and Extension Center, MSU Main campus, and the Northwest Michigan Horticulture Research Center. Each workshop took place over a 2-day period and included hands-on instruction involving drone operation, data collection, data processing and applications.

With the move to Nisbet we also have a new training space in the works which will accommodate many more students in our workshops. 2019 will be another big remodel year for RS&GIS as our training lab gets completely redone! Additionally, we are now able to conduct workshop on the move as RS&GIS has invested in virtual desktop computing capabilities to conduct workshops off campus on a wide range of topics including applications of GIS, remote sensing, and mobile data collection. Information about our 2019 training events is available on our website.

As a geospatial focused group, we are always looking for new technology and methods to assist our clients and research collaborators. Over the course of 2018 we strongly pushed to expand our in-house drone technology. It is our goal to make RS&GIS the go-to group for drone knowledge and work at MSU. As such we have recently acquired some amazing new technology including a Zenmuse XT thermal imager courtesy of an equipment grant via Dr. Jeff Andresen, a MicaSense RedEdge-M multi-spectral sensor, and several new DJI Phantom Drones. In the coming year we look to further invest in drone technology with the addition of a drone-mounted Lidar sensor, a fixed-wing VTOL platform from AeroVironment and, hopefully thanks to a MSU strategic partnership grant by Addie Thompson, a hyperspectral sensor and mount. Contact Robert Goodwin for more information on the RS&GIS drone program.

In the coming year there is a lot to look forward to at RS&GIS from new projects starting to new collaborations. In early spring of 2019 our new website

will finally come online. Our new website will more clearly highlight our projects, skills, staff, and events. Additionally, the new website will detail and highlight our research outputs including new datasets and publications. By leveraging ArcGIS Enterprise solutions, our new website will allow our grant collaborators to display and otherwise share geospatial data and metadata publicly or privately in a secure manner.

Also, in 2019 we have multiple large grants / projects that will commence including remote sensing work that looks at the pattern of lake ice phenology across Arctic regions with Dr. Grant Gunn and socioeconomic work across

FAA Part 107 Drone Test Prep & Beyond

Check out our new online course taught in partnership with onGEO!

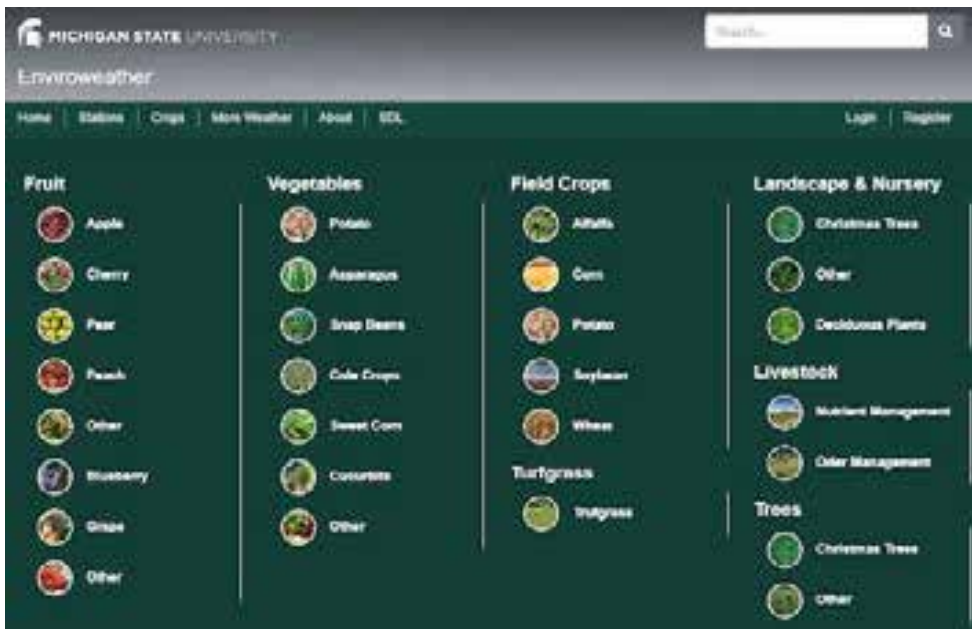
Starting January 2019

- & FAA Regulations Governing Unmanned Aerial Systems
- & Components of the National Airspace
- & Drones and Weather
- & Drone Operations
- & Drone Data Collection, Processing and Analysis

MICHIGAN STATE UNIVERSITY | Department of Geography, Environment, and Spatial Sciences
College of Social Science

south Africa on water scarcity induced conflict with Dr. Elizabeth Mack. Additionally, we have several exciting contracts that will hopefully be funded this year including a project that looks to map historic battlefield sites from the Mexican-American and French-Indian Wars. This project, if funded, will utilize historic documents and artifacts to map battlefield boundaries, troop movement, and artillery positions, among other things. Also starting in 2019 RS&GIS will begin work for the Gun Lake tribe to perform a Drone-based survey of Wild Rice. 2019 will also mark the beginning of several new exciting collaborations for RS&GIS with CURES at Wayne State University, Henry Ford Health Systems, MSU A-CAPP and MNLA.

RS&GIS is excited about opportunities in 2019 to work more closely with research faculty and continuing our success in the areas of outreach and training. Information about our staff, projects, and trainings can be found on our website: <http://www.rsgis.msu.edu>.



Gamma Theta Upsilon Spring Reception

Owen Gregg Global Climate Change Research Award recipient Brad Peter.



Initiates: L to R: Dr. Alan Arbogast, Vincent Black, Noah Bussell, Michelle Church, Benjamin Dougherty, Augustus Evered, Hannah Klein, Dr. Elizabeth Mack, Jacob Scott, Dr. Ashton Shortridge, Dr. Gary Schnakenberg (GTU Chapter Advisor). Missing from photo: Mikaela Czupski, Aires Rafael Gonguela, Rajiv Paudel.



E. James Potchen Awards in Geography Graduate of the Year April Frake (left) and Undergraduate of the Year Michelle Church (right).



Graduate and Undergraduate Research Presentation Competition Winners: L to R: Victoria Breeze (second place), Chase Kasmerchak (third place), Celia Hallan (Undergraduate winner). Missing from photo: Kelsey Nyland (first place).



The Geography Club President Alex Lafler (left) and Vice President Kaitlynn Burkhard (right).



Marjorie and Lawrence Sommers Graduate Fellowship for International Research and Travel Award Presented by Laurie Sommers (left) to graduate student recipient Cristina Gauthier (right).

Geography Awareness Week

We again celebrated Geography Awareness Week this past November. As in past years, we had a variety of events geared toward promoting the department and discipline to the campus at large. Our goal is to demonstrate the relevance of geography to society as a whole, and in people's lives. The hope is, by doing so we will attract more majors. Those of us affiliated with the discipline intuitively know why geography matters so much, but, unfortunately, this awareness is not common.

In this context, the department celebrated our discipline with a bang last year. Our undergraduate geography club, SWIG chapter, and many of the graduate students participated in events across campus. The highlight of the week was the visit by Bill Weir, who is a great reporter at CNN and host of *The Wonder List*. Bill came on Wednesday evening when he attended a reception in his honor at Cowles House (the President's traditional home) on campus. This event was sponsored by Dean Croson in the College of Social Science and was a great success. Bill taught a class in *World Regional Geography* the next day, had lunch with a bunch of graduate students, and then gave a great presentation to a packed house (~550 people) at the Pasant Theatre that night. He absolutely nailed it and just did a wonderful job representing geography. Thanks Bill!

THE DEPARTMENT OF
**Geography, Environment,
and Spatial Sciences**

*Go Spartans!
Bill Weir*

PROUDLY PRESENTS
AN EVENING WITH
— **CNN'S** —
**BILL
WEIR**

“ Stories and
Secrets from
the Happiest,
Healthiest
People in
the World ”

Thursday, Nov. 15th @ 7pm | Pasant Theater, Wharton Center
FREE EVENT - OPEN TO THE PUBLIC

College of Social Science
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OUR SCIENCE TRANSFORMS THE HUMAN EXPERIENCE
AND BUSINESS LEADERS



Dean Rachel Croson and Bill Weir at the reception at Cowles House.



Cadi Fung and Victoria Breeze anchored our table in the MSU Student Union during Geography Awareness Week.



Bill Weir with graduate students at lunch in the Geography Building.



Mattie Kelepile and Judith Namanya eagerly awaited Bill Weir's presentation at the Pasant Theatre.



Bill Weir and Sparty before Bill's presentation at the Pasant Theatre. Sparty is now considering a major in geography.

Alan, Jordan Smith (middle), and Becky Young (right) before Bill Weir's presentation at the Pasant Theatre.



onGEO Professional Certificate in GIS and New Specialty Courses

The **onGEO Professional Certificate in GIS** program had its best year in 2018 -- perhaps most notably, enrollment increased by 40% over the previous year! Furthermore, during the second spring session in 2018 our enrollment exceeded 100 students for the first time in program history. The number of graduates also hit a high mark with 87 students graduating with their certificate in 2018 -- that is nearly 60% more graduates than in 2017. It is exciting to see the ongoing efforts in marketing our program really pay off this last year both in numbers and reach. We have had several international students enroll over the past year, as well as many past graduates who have credited new jobs to the program and their certificate.

Another major milestone for the program was the development of two new specialty courses through close collaboration with RS&GIS and the MSU School of Criminal Justice. *Criminal Justice Applications in GIS* is a course designed for law-enforcement professionals, which covers the fundamental concepts and applications of Geographic Information Systems and Remote Sensing in contemporary Criminal Justice and Law Enforcement fields. The basics of geospatial technologies are presented through a combination of online lessons and labs that inform and then test and apply usable skills in common and often complicated real-world scenarios. Beginning last spring this class was offered four times in 2018, with a total of 22 students successfully completing the course

Along with Yi Shi, Gary Schnakenberg represented the Department of Geography, Environment, and Spatial Sciences at the "Michigan Alliance for Environmental and Outdoor Educators" Annual Conference in Port Huron in October. They promoted the Professional Certificate in GIS Program, as well as provided information about our undergraduate degrees so that teachers could encourage their students to consider geography as a major. The Department was one of the event's 'top-tier' sponsors.

-- over half employed by the Detroit Police Department. The Detroit Police Department was so happy with the quality of training their employees received that they expressed a strong intent to provide employees with more opportunities to participate in our certificate program courses moving forward. We plan to offer our CJ specialty course three or more times, based on demand, in 2019.

The second new specialty course developed in 2018 was the *Federal Aviation Administration (FAA) Part 107 Drone Test Prep & Beyond*. This class was designed to prepare drone pilots at any level, from hobbyist to professional, to take their required FAA exam. The course covers the fundamentals, regulations, and applications of Unmanned Aircraft System (UAS) flight according to FAA laws, specifically part 107. Under part 107 (Flying Under the Small UAS



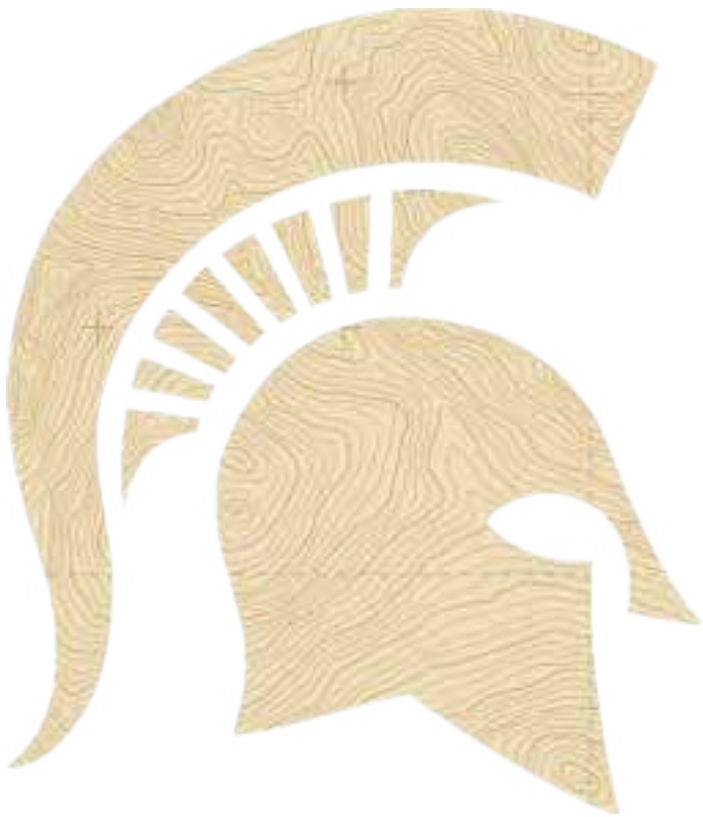
Rule) there is an extensive amount of detail on the basics of UAS mechanics, airspace, weather, operations, and processing data, all of which pilots need to be aware. The power of UAS imagery with correct processing technique is also a part of the course, as are past test questions to help prepare students for the part 107 exam administered by the FAA. We are happy to be offering our FAA specialty course several times throughout 2019.



PLEASE JOIN OUR CELEBRATION AT AAG IN

WASHINGTON DC

ALL ARE WELCOME!



Thursday, April 4, 2019
7:00 - 11:00 pm
2450 18th St. NW
(Adams Morgan)
Washington, DC 20009

Cash Bar and Appetizers Provided



Department of Geography,
Environment, and Spatial Sciences
MICHIGAN STATE UNIVERSITY

MAP **your** FUTURE

B.J. Baule

Since starting my doctoral program at MSU in 2016 I've had the opportunity to work on developing both my research program and outreach skills working with the Great Lakes Integrated Sciences and Assessments (GLISA) and the Michigan State Climate Office. My own research has focused quantifying the characteristics and changes in precipitation across the Midwest and how these changes have affected nitrogen management and prevalence of tree fruit diseases. In addition to evaluating what has happened with these systems, my work also looks at what is projected to happen through the use of regional climate models and statistical downscaling methods. This past year I was fortunate to present results of my research at several conferences: the *Annual Meeting of the Association of American Geographers* in New Orleans, LA; the *16th Annual Climate Prediction Applications Science Workshop* in Fargo, ND; the *Annual Meeting of the American Association of State Climatologists* in Nebraska City, NE. I am planning on presenting further results at the upcoming Annual Meeting of the Association of American Geographers in Washington D.C. I was also fortunate to receive a Summer Research Fellowship from the Kellogg Biological Station Long-Term Ecological Research Program to fund my field work this past summer, where we undertook extensive soil and plant sampling on two corn fields in Mid-Michigan to validate crop models that

I am using in my dissertation work. My plans for the upcoming summer include supplemental soil and plant sampling at multiple locations around Michigan to collect additional crop model validation data. This past year, I also received a fellowship to serve on the organizing committee for the MSU Environmental Science and Policy Program Fall Research Symposium where we brought in 4 expert speakers from around the country and students from across MSU and other Michigan universities to present and discuss ongoing research in the Food-Water-Energy-Climate Nexus in East Lansing.

I've also had the opportunity to further develop my scientific communication and outreach skills. Over the past year, I've delivered presentations on climate change and adaptation to the Michigan Crop Improvement Association, University Lutheran Church, MSU Fate of the Earth conference, the United States Forest Service, and the National Oceanic and Atmospheric Administration. A group of climate scientists, that I helped coordinate through the Great Lakes Water Quality Agreement, published an annual binational climate summary for the Great Lakes region that will also be published again this year. This group involves scientists from Michigan State University, the University of Michigan, National Oceanic and Atmospheric Administration, Environment and Climate Change Canada, and the Great Lakes Water Quality Agreement.



Myself (back) and Geography alumna Olivia Davidson (front), currently with the Basso Lab in the Department of Earth and Environmental Sciences at MSU, processing corn plants for analysis near Portland, MI in October 2018.



Taking deep soil cores near Springport, MI in December 2018.



Pouyan Hatami

Pouyan is a third year PhD student studying the application of machine learning in geography. His research applies newly developed machine learning algorithms in the analysis of high resolution and large-scale spatiotemporal datasets where the traditional methods have been overwhelmed by the growing volume and variety of spatiotemporal data that is now being collected. Since joining the program, he has worked on two separate projects; the first involves developing a real-time crime prediction framework using multi-task learning, and the second attempts to predict the same drought analysis map produced by the US Drought Monitor (USDM) based on observations and land surface model simulated quantities using machine learning.



SUPPORTING WOMEN IN GEOGRAPHY

SWIG's aim is to support women within the field of Geography and help empower them to pursue careers in Geography by creating opportunities to provide academic, professional, and personal support. SWIG hosts a breakfasts series which creates an intimate space to allow students to talk with female geographers or female leaders who are visiting, a weekly writing group to share writing goals and designate consistent time each week to work towards these goals, a graduate-undergraduate mentorship program, and various social events, like game night.



Albert E. Fulton

As of Spring 2019, I am in the final semester of my PhD program in the Department of Geography, Environment, and Spatial Sciences at MSU. Having started in Fall 2012, this is further proof that a doctoral program is more like a marathon than a sprint...endurance, persistence, and patience are key.

My research is focused on reconstructing the dual impacts of climate change and prehistoric human populations on the landscapes of Eastern North America over the last several thousand years. To this end, I utilize paleoecological data derived from lake and wetland sediment cores, including pollen, charcoal, stable isotopes, and sediment magnetism. I also employ written historical records, modern vegetation surveys, and archaeological/ethnographic data to round out our knowledge of the regional vegetation and its relationship to climate, disturbance regimes, and human land-use and culture change.

During my time in the PhD program, I have had the good fortune to receive several grants and awards

for my dissertation research, including a *National Science Foundation Doctoral Dissertation Improvement Grant (2015)*, a research grant from the *Robert E. Funk Memorial Archaeology Foundation of New York State (2016)*, and a *Graduate Student of the Year award (2015 - 2016)*. More recently, I have had a chapter of my dissertation accepted for publication in the *Annals of the American Association of Geographers (2019)*. I have also engaged in public outreach to Native American communities, giving lectures at the Seneca/Iroquois National Museum (2015) and Iroquois Indian Museum (2016). For all of these accomplishments, I owe a huge debt of gratitude to my advisor, Dr. Catherine Yansa, whose knowledge, encouragement, editing prowess, and enthusiasm for brainstorming of ideas have been critical components of my success. Post-dissertation, I hope to pursue a postdoctoral position that will enable me to expand upon some of the ideas developed in my dissertation work and pave the way toward a fulfilling academic career combining research and teaching.



Victoria Breeze

Another year, another AAG presentation. If you stopped by the poster session in New Orleans last spring, "China's Agricultural Land 'Use' in Africa" was on display. This work continues my investigation into China's different agricultural relationships with Africa, representing a deep-dive on agricultural trade. Accordingly, 2018 was the year of data analysis (spreadsheets for days) and writing. There was also a short jaunt to Japan, just for fun (pictured with my partner Eric at Kofuku Temple in Nara). Lots of work to do in 2019, but all of it in preparation for my dissertation defense and graduation. Should be fun!

Cristina Gauthier

Midway through my fourth year in the PhD in the Department of Geography, Environment, and Spatial Sciences, I find myself in the Brazilian Amazon. I am currently abroad collecting data for my research titled *Socioeconomic disparities in waste and water management: The case of Altamira and the Belo Monte Hydroelectric Dam*. I'll be here for a year collecting data. Alas, it's not the beachy landscape or full-on jungle landscape you may imagine when you think of Brazil.



Essentially, I go study what environmental and social factors have an impact on basic sanitation in the Brazilian Amazon. Particularly, in a place called Altamira where the world's third largest dam was recently built. I am acting as a visiting scholar with the Universidade Estadual de Campinas and Universidade Federal de Pará, leading collaborative research across geography, microbiology, and hydrology. I work with local residents, students, and scholars to investigate drinking water quality and management in Altamira. I interview residents and local agencies, gather locational household data on water wells and septic tanks, and will ultimately attempt to better understand how basic sanitation has been affected in this region.

This project is funded through the *National Science Foundation Graduate Research Opportunities Worldwide* program, Brazil's Ministry of Education, Brazilian Federal Agency for Support and Evaluation of Graduate Education, MSU's College of Social Sciences, Center for Global Change and Earth Observations, Center for Latin American Studies, and last but definitely NOT least, our



beloved Department of Geography. The tools provided to me through courses and the collaborations fostered at the Geography Department have allowed me to engage in all these opportunities and international research partnerships abroad. Seeing a project through, participating in data collection and data analysis, and being a hands on researcher and project manager is all part of the PhD experience. Caution: This may lead to getting quite dirty!

Aaron Kamoske is a third year PhD candidate in Dr. Kyla Dahlin's Environmental Remote Sensing and Modeling Lab (ERSAM). Aaron earned his Bachelor's degree in Natural Resource Conservation and a certificate in GIS Science and Technologies from the University of Montana's College of Forestry. This past summer he traveled to Talladega National Forest in Alabama, Oak Ridge National Laboratory in Tennessee, Mountain Lake Biological Station in Virginia, and Harvard Forest in Massachusetts to collect leaf samples to help quantify and model the productivity of eastern US temperate forests for his dissertation research. During this academic year he published his first manuscript titled "Leaf area density from airborne LiDAR: Comparing sensors and resolutions in a temperate broadleaf forest ecosystem" in *Forest Ecology and Management*, passed his written and oral comprehensive exams, attended a week long ecophysiology training workshop at the Holden Arboretum in Ohio, and presented some of his remote sensing research at the ForestSat conference in Washington D.C. This coming year he is looking forward to completing his PhD course work, collecting more leaves at the University of Michigan Biological Station in Michigan, collaborating on a continental scale LiDAR and hyperspectral remote sensing project, and continuing his own research on using remote sensing and ecological models to better understand the drivers of ecosystem productivity in the eastern US.

Aaron Kamoske



Cheyenne Lei

I am currently in my third year of my PhD program. I successfully completed my oral and written comprehensive exams in November 2018 and currently have seven strong months of fieldwork for my dissertation research. I am currently investigating the effects of albedo-- the ratio of reflected solar radiation to total incident radiation for a given area of land surface-- on biofuel energy ecosystems at the Kellogg Biological Station, and how it subsequently affects global warming potential at a local-regional level. Results thus far have indicated perennials such as switchgrass and native grasses can provide significant global warming mitigation and higher surface reflectivity, which can in turn help combat rising surface temperatures and climate change.



Kelsey Nyland

Kelsey Nyland is a University Distinguished Fellow and PhD Candidate whose dissertation investigates the origin and development of cryoplanation terraces, a landform found in polar climates. Her research advances a more than 100-year-old mystery in geomorphology surrounding these terraces by establishing their ages and rates of development using cutting-edge technology, including cosmogenic nuclide dating and drone-based surveys. Over the past few years results from work conducted in Alaska and Canada have been presented at international conferences in Germany and France, and in the US in Boston, New Orleans, and San Francisco. Kelsey received a National Science Foundation Doctoral Dissertation Research Improvement award, as well as grants from the Geological Society of America, the Arctic Institute of North America, MSU's Graduate Office and the College of Social Science to conduct this research.

In addition to her dissertation project Kelsey has led field teams in Alaska for the NSF-funded Circumpolar Active Layer Monitoring (CALM) program and outreach activities with the National Park Service and local communities in Arctic Alaska. For her collaborative work with Iñupiat whalers in Utqiagvik (formerly Barrow), Alaska and recent publication on impacts of permafrost thaw on their traditional ice cellar food storage practices, Kelsey was named a 2018 Arctic-Frontiers Of Sustainability (FROST) Early Career Fellow.

Kelsey on the Cathedral Glacier in Northern British Columbia. Photo by Raven Mitchell, July 30, 2018.



Raven Mitchell

Raven Mitchell is a first-year M.S. student in physical geography, specializing in permafrost and periglacial geomorphology. For her thesis work, Raven is exploring the roles of flowing water on the development of sorted patterned ground in the Juneau Icefield region, near Atlin, British Columbia. Raven is also a research assistant on the NSF-funded Circumpolar Active Layer Monitoring (CALM) network, in which she participates in fieldwork in northern Alaska and updates the network's database.

During her first six months as a MSU grad student, Raven has completed a field season in Alaska and British Columbia, traveled to Chamonix Mont-Blanc, France to attend the Fifth European Conference on Permafrost, and presented CALM research results at the Fall Meeting of the American Geophysical Union. At the close of the 2018-2019 academic year, Raven will have been a teaching assistant for two geospatial courses and presented preliminary work on her thesis topic at the Annual Meeting of the American Association of Geographers in Washington D.C.

Raven on the Aiguille du Midi during a field trip for the Permafrost Young Researchers Network, associated with the Fifth European Conference on Permafrost in Chamonix, France. June 24, 2018 (Photo by Bri Rick, Colorado State University).



Leah Mungai

I am a fourth year doctoral candidate and a graduate research assistant at the Center for Global Change & Earth Observations (CGCEO). My research* is interdisciplinary and applies agroecology and geographic spatial analysis to explore human-environment interactions in a changing climate and landscape, specifically, exploring food production for smallholder farming systems.

Last summer, I went to Malawi for fieldwork where I sampled over 200 locations in Central Malawi to collect ground truth information and observations on agricultural dynamics in smallholder farming systems. The information will be used in my research to explore where and which indicators of intensification of agriculture are found in relation to the productivity trends.

Additionally, on this field trip, I carried out semi-structured survey interviews with agricultural extension staff at four extension areas in two Districts (Dedza and Ntcheu) of Central Malawi. One of the survey participatory activities we did with the agricultural extension staff was to sketch maps to identify and discuss key landmarks, minor and major roads, market locations, rivers, and distribution centers for subsidized inputs such as fertilizer and seeds within each extension staff designated farming sections. The data assisted in highlighting challenges and opportunities across space on agricultural extension services in different areas in the smallholder farming systems. This research will improve our understanding of multi scale complexities of smallholder systems, the nuances of farmer resource needs and access that can be improved by partnering with scientists, community and decision-makers to design holistic strategies that develop farming communities.

*This research is part of the Africa Research in Sustainable Intensification for the Next Generation (Africa RISING) funded by USAID and Feed the Future Innovation Lab for Collaborative Research on Sustainable Intensification (SIIL) located in Kansas State University.



(Left to Right: Emmanuel, Hannah, Edward and Leah): one of the photos where my field assistants and me, wore map your future t-shirts, thanks to the geography department for the t-shirt donations.

Brad Peter

Brad G. Peter is a Doctoral Candidate in the Department of Geography, Environment, and Spatial Sciences at Michigan State University researching the intersection of environmental niche and agricultural system decisions. His dissertation focuses on global agricultural land suitability, the geographic scaling potential of sustainable agriculture technologies, and remote sensing for precision agriculture across space and time scales. Much of this research centers on Malawi and Sub-Saharan Africa; however, the methodologies devised have been adapted into

generalizable, multi-scalar models that provide support across geographies and crops. Outcomes of these projects are now published in the *Annals of the American Association of Geographers* and *The Professional Geographer*.

Brad is passionate about geographic science and cartographic art and enjoys exploring innovative ways to transform empirical data into actionable knowledge with geospatial analytics, geovisualizations, and maps. Recently, he is using interactive web-based geographic information systems to evaluate the fundamental climate niche of ecosystem service offering crops and is refining a manuscript that leverages cloud-computing to locate spatial data outliers. In the cartography



sphere, he has developed and launched a bivariate color matrix web application for testing bivariate choropleth mapping color palettes. Other projects of his include geovisualizing the modifiable areal unit problem, using field photography to design maps, and exploring the geography of food. A complete collection of his carto-geographic science can be viewed online at <https://cartoscience.com/>

Cordelia Martin-Ikpe

Cordelia Martin-Ikpe, a Detroit native, joined MSU's Department of Geography, Environment, and Spatial Sciences during the fall 2018 semester. She was motivated to pursue a PhD in Geography (specializing in Health and Medical Geography) after having spent a number of years as a Research and Evaluation Specialist at Michigan's Public Health Institute (MPHI). As a public health professional, she had the opportunity to work on a number of community-based projects geared towards improving the health outcomes of mothers and their newborns. Through her work, she was continuously confronted with the reality of inequitable access to health care and maternal/infant health disparities along race and socioeconomic lines. Then one day, like most geographers, she was introduced to the numerous opportunities offered within the discipline of Geography while in the midst of already being a practicing public health professional. The allure of "the possibilities" were strong, because from that point forward, it became clear that the application of geographical methods and technologies brought forth an opportunity to approach maternal health outcome disparities from a spatial analysis perspective, which would serve as a wonderful complement to conventional public health practice. Working under the direction of Dr. Sue Grady, within her Global Health and Medical Geography Lab, affords Cordelia the opportunity to combine epidemiological methods with GIS technologies to holistically approach and research maternal/infant health disparities.



Rajiv Paudel

One of my research interests is rural food security in developing countries. Last year, I had an opportunity to visit Mali to collect some data for my research. The readings that I had done prior to the visit were highly successful in imprinting acutely food insecure gloomy Malian communities in my mind. I have never visited Africa, let alone Mali, and I did not know what to expect. However, I wanted to meet with members of the “gloomy” communities and ask them about their issues.

During my visit, I managed to have a few chances to talk to the members from rural communities. The people I talked to represented different sociocultural, and economic backgrounds. Some of them were large farmers, but most of them were poor and small farmers who frequently faced food insecurity. I was curious about food security in

the region and their coping strategies. They all had different experiences with food scarcity, and interestingly enough, they also coped differently.

However, I found that their sense of community was strong. Everyone mentioned that they turned to their communities when faced with adverse situations. People helped each other directly or through local cooperatives. Households with excess food often provided food to needy families. “Community won’t let us die of hunger,” one local said. Their communities were, in fact, acting as safety nets protecting them from food scarcity, and the locals were proud of that.

The gloomy communities engraved in my mind suddenly changed. I saw optimistic people who were proud of their communities. However, I was still dubious; I asked, “would you

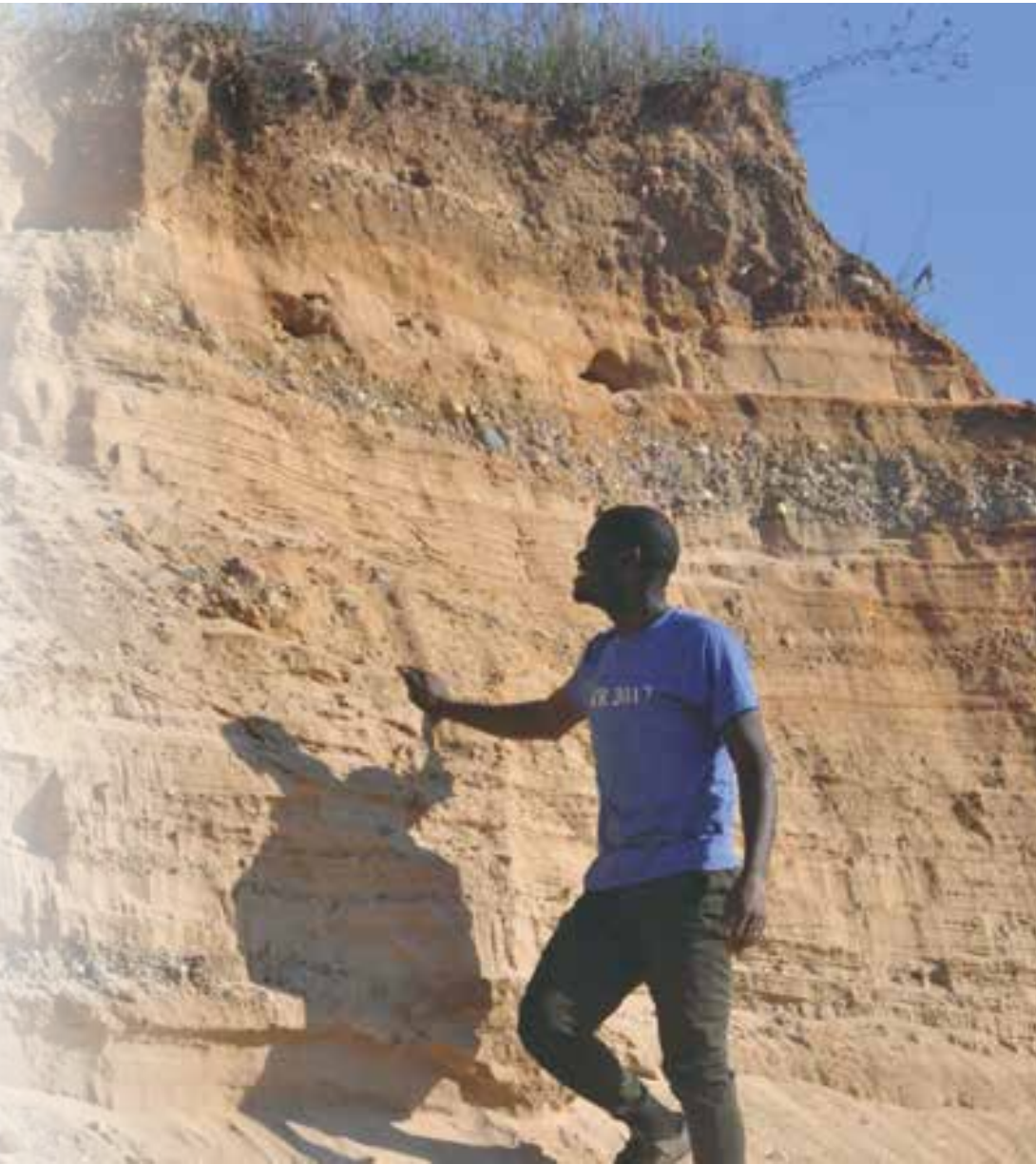


ever stop supporting a family? What if it required support every year?” The reply I got put a big grin on my face “we never stop supporting each other. It doesn’t happen here; not sure if it happens in your country.”



Dan Wanyama

I am in my second year now and that means the past year has been a very busy but exciting one! I spent this past year trying to figure out most of the PhD preliminary stuff (putting together my dissertation committee, holding initial meetings and keeping up with coursework). I also worked on my dissertation, which generally aims at understanding landscape change within the Mount Elgon ecotone in East Africa and using this information to help in simultaneously improving agricultural yields and enhancing environmental sustainability. Preliminary work on the first chapter has revealed that the Mount Elgon landscape as natural vegetation is converted to agriculture and settlement. This work was presented at the AGU Fall Meeting in December and I received very valuable feedback. The plan for the coming year is to keep working on this chapter (on the side) but also start some preliminary work on the second chapter which aims at modelling Mount Elgon farmers’ decision-making processes in the context of climate change and assessing how the decisions have shaped the landscape. I also plan on taking my comprehensive exams later in the year and therefore, this is going to be an even busier year!



Department Advisory Board News

Several years ago the idea of an Alumni Advisory Board was conceived for the Department of Geography, Environment, and Spatial Sciences with the goal to:

- Encourage and facilitate communication between alumni and students to better
 - Connect students to professionals for mentorship/ internship opportunities
- Establish closer contact between the department and its alumni
- Encourage career development networks and enhance student learning
- Grow the department endowment to directly benefit students
- Assist in the recruitment of students to the department and programs (e.g., Professional Certificates)
- Serving as a sounding board for the Department
- Support the Department's initiatives to University Administrators

Now that this Board is created we are running full steam ahead and wanted to share with fellow alumni a few milestones that we have accomplished in the past year. First and foremost the board itself has grown from 9 members to 11 voting

members and several members in a non-voting capacity. This growth has allowed for the board to have a larger reach in terms of their network and more of an ability to accomplish work in a team fashion. The full board now includes Alan Arbogast (Department Chairperson), Stephen Aldrich, Josh Bocks (Chair), Mike Cousins, Melissa Faustich (Vice Chair), Paige Gebhardt, Brett Grech, Sara Hession, Brandon Lambrix, Michelle Lee (past Chair), Lindsay Maki, Ruth Sotak, and Beth Weisenborn.

This group has accomplished many great things in the past year. We have compiled a database of hundreds of alumni, we have begun outreach for potential alumni gatherings such as golf outings and tailgates around the country, and we have mentored several students as they prepare for life after college. Additionally, our board members have participated in a number of on campus activities including a professor for a day program, job fairs, Geography Awareness Week, and the senior graduation awards ceremony.

Additionally, the Alumni Advisory Board has been on campus for a few special events as well. The Department hosted guest speaker Bill Weir from CNN at the Cowles House and board chair Bocks and vice-chair Faustich were in attendance. In addition to this event, both Bocks and Faustich



Josh Bocks (Alumni Advisory Board Chair) and Melissa Faustich (Vice-Chair) with CNN's Bill Weir at Cowles House on the MSU campus

were inducted to the MSU Berkey Society. The Board looks for continued growth and outreach as we attempt to generate interest in new students and raise funds for the betterment of the Department and the University as a whole. If you are interested in helping Board in its initiatives or simply want more information please contact us at MSUGEOAlumniAndFriends@gmail.com Learn more about the board at http://geo.msu.edu/people_categories/alumni-advisory-board/

Lastly, the Alumni Advisory Board would like to thank Michelle Lee for her guidance and leadership in board activities. Michelle took the board from its infancy to a smoothly operating system that will benefit MSU and the Department of Geography, Environment, and Spatial Sciences for years to come.



Spartan geographer helped free trapped soccer team in Thailand

Last summer, when 12 young soccer players and their coach became trapped in a cave in Thailand, the story of their plight and rescue dominated the news cycle.

After wandering too far during a team hike, the Wild Boars boys' soccer team—along with their 23-year-old coach—became trapped in complete darkness for nearly two and a half weeks. Monsoon season was approaching and authorities had to act fast to rescue them. The whole world was watching.

In order to get the boys out, the rescue team needed to carefully examine the terrain and understand the geographic barriers present. That's where Pariwate Varnakovida stepped

in. He is a 2010 PhD grad from the College of Social Science and a current professor at the King Mongkut's University of Technology Thonburi.

He used his expertise in geography to carefully map out the rescue team's escape route and understand the geography of the caves and surrounding areas. He even stood by during the rescue operation to keep the team informed about precipitation levels from the approaching tropical storm.

Varnakovida is just the latest example of how Spartans around the world use their educations to defy odds and overcome insurmountable challenges.

Original Source: MSU Alumni Association Newsletter (October, 2018).



Robert W. McKay

As I began to write this submission it hit me that September 2017 marked the fortieth anniversary of the *Atlas of Michigan*. The publication is described as follows on the Amazon.com web site: "This is the first comprehensive atlas of Michigan to be published since 1873 and the first ever sponsored by a Michigan university for the citizens of the state and the nation. Nearly 100 faculty members and graduate students from twelve colleges at Michigan State University, as well as many experts from various departments of state government, have contributed to this extensive work."

Although many who know me are aware of my role in the production of the Atlas, few would also know that 2018 was the fiftieth anniversary of my freshman year at MSU. At the end of the following year, I encountered a friend on his way to the Natural Science Building to pick up his final project from a class called "cartography". When I saw what that was all about, I immediately knew that I had found my calling, so the following fall I enrolled in the introductory cartography class (simultaneous with my playing trombone in the MSU Spartan Marching Band, I might add).

As time passed, I moved from the Geography Department at MSU to the Geography Department at the University of Michigan. From there, I taught cartography one year at Portland State University before moving to New York City to take part in developing the first-ever GIS approach to legislative redistricting with the Legislative Advisory Task Force on Reapportionment subsequent to the results of the 1980 Federal census. By the end of that decade, I had become a cartographer in the Cartography Unit of the Office of Conference Services at the United Nations Headquarters in New York City (UNHQ-NY).

Within two years, we made immense strides in developing "computer cartography". This was on the Macintosh platform where work which had previously taken a month of manual scribing and type-setting could be reduced to less than a week. As structural reorganization progressed within the United Nations, the Cartographic Unit within the Department of Management became the Cartographic Section of the Department of Information, and was later transferred to the Department of Peace-Keeping Operations. It was

while this was taking place that our primary role of providing maps for reports of the Secretary-General on peacekeeping missions was expanded to include field work "in theatre" and even "rapid response" cartography with mobile darkroom and map distribution in UNPROFOR (Croatia).

My first field experience was in 1991 with a Department of Political Affairs advance reconnaissance mission to Cambodia during the final days of the Cambodian civil war prior to the arrival of UN Peacekeepers. One year later, I returned to Cambodia to begin the "Cambodian Boundary Integrity Project". During the remainder of the decade, other out-of-office assignments came along. One of particular note was participation in proximity talks between Eritrea and Ethiopia in the summer of 2000 at the US Department of State in Washington DC, which led to the establishment of the Eritrea - Ethiopia Boundary Commission in 2002.

In late 2002, at the request of the Secretary-General of the United Nations, I was dispatched to participate in a meeting at Yaoundé, Cameroon to establish a framework to implement the 10 October judgment of the International Court of Justice (ICJ) on the Cameroon - Nigeria boundary dispute. This meeting created the Cameroon - Nigeria Mixed Commission (CNMC), the mandate of which came to cover demarcation of the land boundary and delimitation of the maritime boundary between the two countries, as well as withdrawal of troops and transfer of authority in the Lake Chad area, along the land boundary and in the Bakassi Peninsula. I remained involved with the CNMC for the following eight years, supervising satellite map production work in the Cartographic Section of the UN Department of Field Support and participating in further work in Africa, typically with the Joint Technical Task Force of the CNMC meeting in the Cameroon capital of Yaoundé or the Nigerian capital of Abuja. That work would also have me in Dakar (Senegal) and Lagos (Nigeria) for

City of Vassar Parks and Recreation Commissioner Robert McKay navigating the rapids shortly after the remnants of the abandoned dam built in 1851 across the Cass River were removed to make kayaking the mighty Cass through Vassar possible.



technical assignments during the last few years prior to my retirement from the United Nations in 2010.

After I retired, I moved back to my boyhood hometown of Vassar, MI where I presently reside. Having had an interest in recreational use of the Cass River here since I was in elementary school, I became involved with the Cass River Greenways Committee, which in turn led to an appointment on the City of Vassar Parks and Recreation Commission -- a position which I still hold. More recently, the Tuscola County Board of Commissioners appointed me to the Parks and Recreation Commission, of which I am presently the Chairman. In this capacity, I continue my advocacy for recreational use of the mighty Cass and take both pride and pleasure in noting the number of canoe - kayak launch sites that have been constructed along the Cass River in the Vassar area (with hopes for more to come further upstream). Over the last two years, I have sought to expand bicycling in the City of Vassar and Tuscola County, hoping to eventually create the "Trans-Tuscola Bike Route" for recreational use. Presently, I am involved with defining the Iron - Belle Trail between Millington and Vassar, hoping to see something constructed along the existing rail bed between Millington and Vassar as a northerly extension of the exiting Southern Links Trail.

Oh yes; and about the trombone: I presently play trombone in both the Vassar City Band as well as the Frankentrost Band, and expect to be in this year's Frankenmuth Bavarian Parade as I have so many times in the past. See you there after the parade in front of the Rummel Insurance Agency on Main Street. Prost!





Four former MSU graduate students, all advised by Antoinette WinklerPrins (now at the National Science Foundation), met up at the annual Department-sponsored gathering at this year's AAG Annual Meeting in New Orleans. From left: Gary Schnakenberg (PhD 2013; current Department undergrad advisor and instructor), Bilal Butt (PhD 2007; Associate Prof. at the University of Michigan's School for Environment and Sustainability), Meleia Egger (MA 2007; Peace Corps 2007-2018 and now an Analyst with the Federal Transit Administration), and Courtney Gallaher (PhD 2012; Asst. Prof. in the Dept. of Geographic and Atmospheric Sciences, University of Northern Illinois).



Marc Bennetts

I retired from the State of Michigan in June 2017 after 36 years of service to the people of Michigan. 30 years at the Michigan Historical Museum as part of the first education unit in the museum's history. I then left because of staff reductions to the Department of Environmental Quality in the Remediation and Redevelopment Division where I performed as the FOIA coordinator for about three years. Retirement is awesome doing some traveling and a lot of reading.

1975 BA in History/Education w Geography minor

1987 BS in Geography/Historic Preservation

Brad Blumer

Hello! A lot has happened since my last contribution. After 6 years at Milwaukee County I have moved on to the role of GIS Coordinator at Waukesha, a city of 72,000 just west of Milwaukee. Here I manage the GIS analyses, projects, hardware and software used by staff and residents throughout the city. Also this spring I campaigned and was elected to a four year term on the City of Brookfield Common Council representing the City's 7th district. I hope to bring a "geographic perspective" to the issues and decisions being made by the council. On top of that, in 2017 my wife Devon and I welcomed our son Collin into our lives, all in all making life very busy and very happy!



Daniel Cole

Daniel G. Cole (MA, 1979). Since last April, I have been president of the *Cartography and Geographic Information Society (CaGIS)*, and at the AAG conference this April, I will transition to being the past-president. In recent years, I have become more involved with working with the Exhibits departments around the Smithsonian. Related to this work, I gave a presentation (“Educating the Public through the Use of Maps & GIS: Providing Geographical Context for Museum Exhibits”) during August at the International Geographical Union/National Council for Geographic Education/Canadian Association of Geographers joint conference in Quebec City. And currently, I have been researching, designing and producing maps for an exhibit at the National Museum of American History dealing with the 150th anniversary of the trans-continental railroad which will open in May 2019.

Jamie Boelstler

I am currently working for the City of Greeley, in Greeley, Colorado. I work for the Water and Sewer Department as a Development Reviewer. In my position, I spend a lot of timing reviewing incoming projects coming into the city. I look particularly at how the water and sewer system is being proposed, making sure they are following all our criteria, and ensuring it is a proper addition to our current system. I also am working on creating a map that includes all of our spatial data, making it easier to identify a particular parcel and know the amount of ‘raw water’ associated with it. Colorado Water Law is very strict, and it has been a huge task to make sure I am well educated to make myself useful in my position. Having my GIS capabilities at hand is very helpful for myself, and for other staff members. I’m hoping to be able to utilize it more within the coming months.

Carolyn Fish

This has been a big year for me. I finished my PhD in August at Penn State and started a new job as an Assistant Professor of Geography at the University of Oregon in September. I am now working on publishing my dissertation research which is on how maps are used to communicate climate change and other important social and environmental issues. Specifically, I looked at how cartographic climate change communication is being done by cartographers at The New York Times, National Geographic, NASA, and NOAA, as well as how other publications use and re-use maps of climate change from just a few elite set of mapmakers.

In September, on my way from Pennsylvania to Oregon, I stopped by the department in East Lansing and had a chance to see Al Arbogast, Randy Schaetzl, and Raechel White. I continued my journey up and across the UP of Michigan, a place I hadn’t really had a chance to explore except for one field trip I took with Randy



Schaetzl and the physical geography seminar back in Fall of 2009. It was nice to explore the UP with the same critical eye I developed during that seminar at a better time of year! I look forward to seeing everyone at AAG in DC in April.

I’ve attached an image of my PhD advisor and MSU alum, Cindy Brewer and I from my graduation in December.

Harry Colestock

We received your request while on a two-week birding trip to Portugal and Spain. For the past several years, my wife and I have been involved with significant travel for birding around the world. While we are involved heavily in a couple of birding projects in our home state of Virginia, we also fulfill our passion for seeing new places and having new experiences in those places. Our two projects involve identifying bird species in specific mapped areas to (1) map the changes in species as we experience the impacts of sea-level rise and land subsidence in coastal Virginia, and (2) provide data on species of breeding birds in Virginia over a five year period to compare with the previous Virginia Breeding Bird Atlas produced 25 years ago. My wife and I also volunteer at the Center for Archaeology, Preservation, and Education in Gloucester, Virginia to help with various projects in this historic region of the country. I was asked to be on the county’s Local Emergency Planning Committee since my pre-retirement job was running Virginia’s state emergency operations center. This task has been a fun challenge to get people to think in radically different ways about doing things in a crisis than in their everyday activities. I can honestly say my geographic education and training has been critical to my success in personal and professional accomplishment throughout my life (I rarely get lost even without GPS).

Art Getis

Art Getis was on the faculty at MSU in Geography from 1961 to 1963. He received the Jean Paelinck Award from the Regional Science Association International for distinguished scholarship in regional science methods.



Owen Gregg

It's been 55 years since I've been in a classroom, but I had the fabulous opportunity to "audit" Dr. Shortridge's World Geography class in November, featuring Bill Weir of CNN as speaker. Not only was his talk a great prelude to his main presentation that evening, but I learned an awful lot in that hour. I also observed the students around me; not one was writing anything down; they all had laptops or Ipads. The evening presentation by Bill was very interesting. I seriously considered moving to Iceland or Bhutan. Too much trouble now, though. I'll make the best commuting between Florida and Minnesota.

Speaking of Minnesota, we have a remote cabin on a small island on Rainy Lake, near the Canadian border. Normally, the summers last about 3 months. This past summer, warm weather prevailed from early June, to well past Labor Day. We could actually swim on Labor Day...global warming - the Arctic Vortex meandering southward? - could be playing a part.

As always, I am heartened by the friendliness of the Geography Department at Michigan State. Thanks for having such a welcoming atmosphere.

Grace Hough

I studied economic geography at MSU for maybe one of the worst reasons—I'm a people pleaser. I learned about the new major my Sophomore year from two people I highly respected. I wasn't interested at the time, but I figured I at least owed them an additional major. It's that decision which I believe is one of the main reasons I'm studying at Duke now.

Currently, I have the privilege of working with Dr. Timur Kuran, an economist and political scientist, on a large-scale project analyzing financial power dynamics in Ottoman Era Istanbul. I met with Dr. Kuran for an informal interview, both as a research assistant and for the M.A. Analytical Political Economy program, during my Senior year. I've never doubted that the reason I was accepted was due to my GIS skills and research experience in the geography department (thanks Dr. Mack!). Now, about 5 months into the project, I'm in charge of data visualization and developing our geographic and temporal analysis. The opportunity to continue using my Turkish, do more in GIS than I knew was possible, and analyze credit markets astounds me.

I hope to pursue a Ph.D. in political science after completing my M.A. and to continue developing my skills and love for economic geography—even though it may have started as a fluke. Thank you, MSU—and specifically the geography department—for bringing me this far, and for being one of the most welcoming places on campus.



Bobbie and Dave Kromm

The big news is that Bobbie and I both celebrated our 80th birthdays in September and drove from Kansas to northern Michigan, spending time in and around Traverse City, Gaylord, and Tahquamenon Falls. We also celebrated our 58th wedding anniversary on the trip. September is a big month for us.

Tarek A. Joseph

This academic year marks my 21st at Henry Ford College in Dearborn, Michigan, where I chair the Department of Geography and teach cultural, world regional and environmental geography. Geography enrollments remain strong with considerable growth in our online course offerings. During the last year, I developed a new course, GEOG 221: Geography of the Middle East, that will run for the first time in January 2019. In addition to serving on numerous HFC committees, I am a member of the collaborative steering committee connected to a Mellon Foundation *Transfer Bridges to the Humanities* grant designed to help HFC students transfer to the University of Michigan in Ann Arbor.

Cathleen McAnneny

After twenty-four and a half years at the University of Maine Farmington (UMF) I have retired. I continue as secretary to the AAG and I have enjoyed having time to work on some longstanding research.

My husband and I have moved to North Carolina. We made the decision to move here based on sound geographic and climatological data or so we thought. The day after we arrived the Eastern North Carolina received seven inches of snow, and shivered through several days of low teens and single digit temperatures. The weather proved to be more unkind in September when Hurricane Florence arrived with at least thirty inches of rain. Our town flooded twenty-four feet of water in downtown Pollocksville, NC. Our neighboring town New Bern made the national news and was visited by the President. Recovery is slow. We were incredibly lucky, with no damage to our house or our boat.



Richard A. Santer

At the 145th Annual Meeting of the Historical Society of Michigan (HSM), I was honored to be presented with its "History Hero Award" in Sturgis. HSM traces its founding to Lewis Cass and Henry Schoolcraft in 1828. Cited were "significant and lasting contributions to Michigan History". I have been active with the HSM since 1974 especially advocating for correct graphic/map depictions of the State with its water border and numerous Great Lake islands. I still sense Professor Vinge's urging students to work with other disciplines and society to advance Geography.

In spite of the football loss, Homecoming 2018 was rewarding, as my youngest granddaughter was selected for the Homecoming Court and to speak at the pre-game Green and White Brunch.

The collage contains four news items:

- CALL FOR SUBMISSIONS!**: A notice for the Historical Society of Michigan (HSM) regarding article submissions for the 2018 magazine. It lists categories like "Michigan in the Past," "Michigan in the Present," and "Michigan in the Future." It also provides contact information for the editor, Dr. Robert M. Hughes.
- GERALD R. FORD PRESIDENTIAL FOUNDATION HOSTS USS GERALD R. FORD SALON**: A notice for a salon in honor of former president Gerald R. Ford, held at the USS Gerald R. Ford in Grand Rapids. It mentions a live-streaming ceremony and a reception.
- Richard A. Santer Receives HSM's "History Hero" Award**: A notice celebrating Richard A. Santer's receipt of the History Hero Award for his significant contributions to Michigan history and geography. It mentions his role as a past president of HSM and his work on the Great Lakes.
- Classical Historical Organization Spearheads Interpretive Trail Project**: A notice about the Classical Historical Organization's project to create an interpretive trail within the site of the Sturgeon River Lumber Company and Wisconsin Lumber Company. It mentions the trail will be a half-mile long and will feature interpretive signs.

Photo credit: HSM

Benjamin F. Richason III

Benjamin F. Richason III, PhD, 1977, was recently recognized by the Minnesota GIS/LIS Consortium as Distinguished Educator of the Year. After leaving MSU, Richason taught for 2 years at James Madison University before going to St Cloud State University where he has taught for the past 40 years as a Professor of Geography in the Department of Geography and Planning. He is also the Executive Director of the university's Spatial Analysis Research Center. He is currently working on a NSF-ATE grant to integrate UAS technology into the geospatial curriculum within the Minnesota State University System's 2-year and 4-year institutions.



Mike Rocca

Mike Rocca was a student at MSU from 1963-75 and earned degrees in geography, geology, world history, and educational administration. He is retired after 31 years in secondary public education. He taught HS history in Charlotte, was a building principal in Ionia and South Haven, and finished his career as superintendent of the Eaton Rapids Public Schools. He now enjoys traveling and living in South Haven right on Lake Michigan.

David Tyler

I only recently reconnected with the department when I saw in a newsletter a year or two ago that Jay Harman had retired. I was one of his undergraduate students long ago, finishing with a B.A. in geography and German in 1978 (Honors College; Phi Beta Kappa). I considered graduate school in geography, and was encouraged by Jay and others in the department at that time. But I'm afraid I disappointed them! Instead, I completed an M.A. in international studies from Johns Hopkins, and joined the Foreign Service in 1984 where I have remained ever since. I am nearing the end of a long and satisfying career as a diplomat, having lived and worked in several countries, visited many more, and had multiple assignments in Washington, DC. My geography education served me well everywhere I went. I returned from abroad in 2015 to become director of the State Department's passport agency in San Francisco. I hope to remain here until I retire from government service in 2021. I happen to be writing from home today since the office is closed for the Bush funeral. As I mentioned, I am always willing to engage with any current or former students who are interested in international careers in general, or the Foreign Service in particular.

I have fond memories of my time at MSU, and I still root wholeheartedly for Spartan football and basketball whenever I can catch a game on TV.

I wish you and the department continued good success, and I remain grateful for the education I received there.

Josh Watkins

I am happy to announce that I have recently started as a Lecturer of Political Science and Global Studies at National University of Singapore. At NUS, I teach Global Studies and I am continuing my research into asylum-seeker and refugee policy. My family and I are really enjoying Singapore; the food and city are amazing, and the tropical weather is pretty exciting too. I would like to thank MSU Geography for all the help along the way. I want to specifically thank Kyle Evered and Ken Corey who have continuously been sources of support.



Crosby Savage

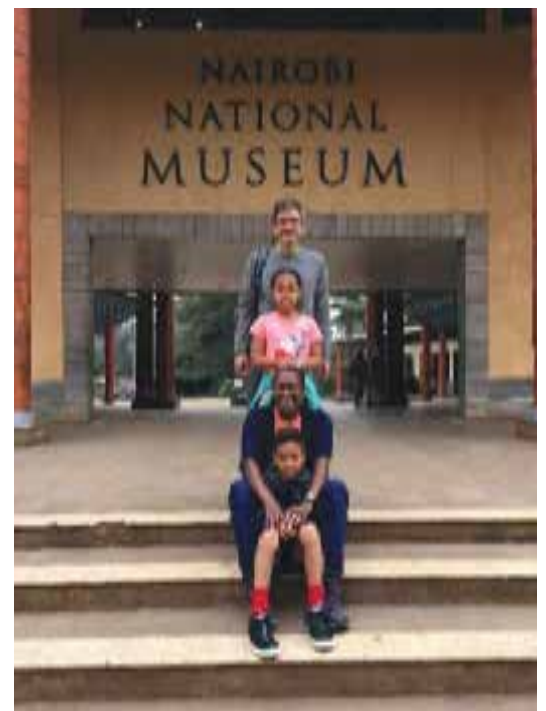
This past year marked my 10 year anniversary with my company, WindLogics. It is still the first job I took after graduating from MSU Geography with my MS degree. Over those 10 years I have sited wind turbines, supported the building of over 1 gigawatt of wind and solar farms and continue to be challenged by renewable energy. This past year I transitioned to a new position as a Principal Project Solutions Lead, where I lead a team of software engineers in building new tools to help integrate renewable energy into the power grid. This has required understanding many aspects of Geography (human behavior, GIS, environmental geography, etc.) to ensure we build a reliable power grid that is clean and is best for everyone. In this role, I visited a new solar farm and inspected the installation of 10MW of battery storage, which will help reduce the volatility of solar for easier integration into the grid (picture shown).

On a personal note, my wife Katie and I attended the Super Bowl in Minneapolis! I watched my favorite team, the Eagles, win their first Super Bowl in person! A life and debt inducing memory that was well worth it. My daughter started 3rd grade and my son started Kindergarten this year as well. This coming year will be our 9th in Minneapolis, MN and we could not love it more.



Edna Wangui and Tom Smucker

We were able to sync our sabbaticals this academic year and are spending a full calendar year based in Nairobi. Edna received Fulbright Scholar and National Geographic Explorer grants to support her research on the gender dynamics of payment for ecosystem services projects in the Upper Tana. She is also teaching at the Institute for Climate Change and Adaptation at the University of Nairobi. Tom is a visiting researcher at the Department of Geography at Kenyatta University and is working with colleagues at the International Center for Tropical Agriculture on new research that examines bridges and barriers to greater integration among drought risk reduction, climate change adaptation, and land restoration initiatives at county level in Kenya and district level in Tanzania.



Dr. Shengpan Lin

21 December 1980 – 2 September 2018

Shengpan Lin began his affiliation with MSU in 2009, when the University partnered with Zhejiang University in Hangzhou, China, for an exchange program. One MSU Assistant Professor, Nathan Moore, spent a school year in Hangzhou teaching, and he was accompanied by his wife and three young children, none of whom spoke much Chinese. Then a PhD candidate in the College of Environmental and Resource Sciences, Shengpan adopted the Spartan Family, and soon became a Spartan himself.

In 2010, he was invited to join the Center for Global Change and Earth Observations as a short-term visiting scholar, hosted by Dr. Moore and funded by Dr. Joe Messina's research on the environment of Tsetse flies to do some high resolution climate modeling. After his first short-term visit in 2011, Shengpan completed his first PhD in Remote Sensing and Geo-Information at ZJU in 2012, and returned to Michigan that summer to continue his work with Dr. Messina's project.

After being accepted into MSU's PhD program in Integrative Biology, Dr. Lin received his second PhD in April of 2017. His committee consisted

of R. Jan Stevenson, David Hyndman, Jiaguo Qi, and Steven Hamilton. Dr. Lin's dissertation title was *Climate Change and Algal Blooms*, outlined on his webpage thusly:

My dissertation research, entitled "Climate Change and Algal Blooms", quantified the unclear effects of climate change on harmful algal blooms. I developed an automatic tool to generate long-term whole-lake algal biomass using Landsat TM/ETM+ and machine-learning algorithm in Google Earth Engine. The algorithm improved the accuracy of algal biomass measurement by 15-30% over traditional linear regressions. This was the first assessment of climate change impacts on harmful algal blooms across the continental USA.

Dr. Lin stayed at MSU after his graduation as a post-doctoral fellow, and then was hired as an Assistant Professor in the new Social Science Data Analytics (SSDA) Initiative, Michigan State University, under Director Ashton Shortridge. As Associate Director at SSDA, Dr. Lin devoted his considerable creative energy to developing linkages between social and environmental scientists who were



grappling with large data problems to address pressing problems. In the final days of his life, Dr. Lin was organizing technical meetups to link MSU faculty, staff, and students with Mid-Michigan professionals in industry and government. He was a good scientist and an even better integrator.

Throughout his years at MSU, Shengpan was active with Geography faculty and students and had a wide social circle. He was known for his ready, engaging smile and phenomenal ability to connect with people. As a recent friend, a post-doctoral researcher at CGCEO said, "He made me laugh, every day."

Shengpan is greatly missed by his Geography family.

Memorial for Prof. David Campbell

Shortly after the untimely passing of Professor Campbell in 2013, the seminar room in the Geography building where David taught his last class (room 120) was renamed the "*David J. Campbell Seminar Room*." Recently, a memorial to Professor Campbell was installed in this room to highlight his career.

Dr. Campbell was well known for his extensive research on the interaction between socio-economic and biophysical processes in the semi-arid parts of Africa. During his post-doc at the Institute for Development Studies, University of Nairobi (1976 -1979), Dr. Campbell studied drought impacts and coping strategies among the Maasai in the Kajiado District of south-central Kenya. Mr. Tony Mepukori, a young local Maasai, assisted Professor Campbell with his research by facilitating interviews and numerous contentious community meetings about the politics of drought impacts. Over his career, Dr. Campbell returned many times to Kajiado conducting follow-up research and maintaining his friendship with Tony. Eventually, Mr. Mepukori became an elder and leader of his Maasai clan and presented Professor Campbell with a cane, a symbol of being an elder of the clan, in recognition of his participation with the clan for many years and of their friendship. Mrs. Mepukori hand made the beading, a traditional symbol of the Maasai, for Dr. Campbell's cane, which is now a permanent part of the Memorial in the Campbell Seminar Room.



2018 Undergraduate Degrees

Spring

Josevanio Marciano Dos Anj Antonio
BS Geographic Information Science

Michelle L. Church
BA Human Geography

Amber DeJohn
BS Economic Geography (Second degree)

Nicholas Ebrat
BS Economic Geography

Celia H. Hallan
BS Environmental Geography (Second degree)

Grace E. Hough
BS Economic Geography (Additional major)

Alexander J. Morgan
BA Human Geography

Jeremy R. Rapp
BS Geographic Information Science (Second degree)

Donavan J. Snow
BA Human Geography

Thomas M. Yazbeck
BS Environmental Geography

Mitchell A. Wiest
BS Economic Geography

Henry Wolfe
BA Human Geography

Jacqueline G. Zarzycki
BS Environmental Geography (Second degree)

Summer

Mohammed A. Abdulahi
BA Human Geography

Hannah M. Fromm
BS Geographic Information Science (Second degree)

Josh Guthrie
BS Geographic Information Science (Second degree)

Jack Kissinger
BA Human Geography

Caiden J. Pietrowski
BS Economic Geography

Fall

Ryan R. Barcal
BS Economic Geography

Harshvardhan S. Chawla
BS Environmental Geography

Daniel J. Gallagher
BA Human Geography

Erik H. Gritzinger
BS Geographic Information Science

Ashton L. Hoffman
BA Human Geography

Kyle W. Kirchmeier
BS Economic Geography

Logan A. Patterson
BS Economic Geography

Josh Turner
BS Environmental Geography

Graduate Student Degrees Completed In 2018

Barry, Fatoumata, PhD (Sue Grady), *"Flooding Oil: Investigating Poor Health in Vulnerable Communities in the Niger Delta Region of Nigeria."*

Credit, Kevin, PhD (Elizabeth Mack), *"Economic Development for the 21st Century: How Proximity to Transit and Walkability Influence Business Creation and Performance."*

Ddumba, Saul Daniel, PhD (Jeffrey Andresen), *"The Impact of Climate Change and Variability on Sweet Potato Production in East Africa."*

Eckert, Jeanette, PhD (Igor Vojnovic), *"An Analysis of the Restaurant Landscape in the Detroit Metropolitan Area: Travel Behavior and Spatial Patterns of Difference."*

Kadhim, Ameen, PhD (Ashton Shortridge), *"Measuring and Modeling the Effects of Sea Level Rise on Near-Coastal Riverine Regions: A Geospatial Comparison of the Shatt Al-Arab River in Southern Iraq with the Mississippi River Delta in Southern Louisiana, USA."*

Vertalka, Joshua, PhD (Eva Kassens-Noor), *"The Augmentation, Potential, and Practicality of Twitter Data for Predicting Influenza Emergency Room Admissions."*

Zhou, Peiling, PhD (Sue Grady), *"Physical Activity of Older People, Therapeutic Landscapes and Public Spaces in Urban China."*

Barnes, Lonnie, MS (Sue Grady), *"Investigation of Racial and Socioeconomic Disparities in Asthma Hospitalizations in Metropolitan Detroit, Michigan."*

Bomber, Michael, MS (Raechel White), *"Geobia for Identifying Jack Pine Saplings."*

Lown, Cody, MS (Igor Vojnovic), *"Railroad Investment and the Development of the Chicago Region, 1850-1910."*

Queen, Clayton, MS (Alan Arbogast and Fritz Nelson), *"Large-scale Mapping and Geomorphometry of Upland Periglacial Landscapes in Eastern Beringia."*

Rzotkiewicz, Amanda, MS (Amber Pearson), *"Exploring Neighborhood Pathways to Health: A Synthesis of Existing Methods and New Directions."*

Stageberg, Marshall, MS (Sharon Zhong), *"Sensitivities of Simulated Fire-Induced Flows To Fire Shape and Background Wind Profile Using a Cloud-Resolving Model."*

THANK YOU!

To all who contributed to the various Geography Department funds and scholarships. We are making continued efforts to increase our departmental contributions to enhance our programs and benefit students. Please consider donating to one of the Geography Department funds listed.

Please specify desired fund and make checks payable to:
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Department of Geography, Environment, and Spatial Sciences
Geography Building
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<http://www.geo.msu.edu/giving.html>

Geography at MSU Fund

Established in 2001 to promote the MSU Department of Geography, including related advertising, fundraising, travel, and similar expenses.

Geographic Field Experience Fund

Established in 2001 to fund student field experiences, including field trips, primary data collection, course related field experience, and transportation and lodging expenses.

Geographic Literacy Fund

Established by Harm de Blij, this fund promotes the field of Geography to students.

Michael A. Graff Dissertation Completion Award

Established by Michael Graff to provide doctoral students with additional resources for travel, data collection, materials, supplies and equipment to complete research for dissertation projects.



The de Blij Geography Scholars Endowment

Established in 2013 as a scholarship to be awarded to incoming freshmen who choose to major in Geography.

Ian Matley Memorial Fund

Established to bring guest speakers to campus to enrich the geographic education of students and faculty.

GTU/Geography Endowment Fund

Established in 1999 by Robert and Dorothy Thomas to fund geography-related student activities.

E. James Potchen Awards in Geography for Graduate and Undergraduate Students

Established in 2008 by Harm de Blij to fund yearly cash awards for outstanding graduate and undergraduate students based on GPA, progress towards degrees, and other quality indicators such as field work and research.

Harold A. "Duke" Winters Scholarship

To support graduate study in Geography at MSU.

Jay R. Harman Undergraduate Scholarship in Geography

To support undergraduate study in Geography at MSU.

Marjorie & Lawrence Sommers Geography Graduate Fellowship for International Research & Travel

A graduate fellowship to be awarded yearly for Masters or PhD students to support international research and travel.

Owen Gregg Endowment for Global Climate Change Research

Established in 2012 to support global climate change science research in the Department of Geography.

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