



## Department of Earth and Environmental Sciences

### Greetings from the Chair

**T**he 2020-2021 Academic Year was different, unusual, strange, odd, exhausting and challenging. We lived our lives on Our students

graduate schools and jobs. We welcomed many new students. Our faculty taught in hybrid classrooms and had gre x B  
and obtaining grants. The Murray State values - Hope, Endeavor, and Achievement - shine through. ● Robin Zhang

Gracie Schneeman receives the inaugural Neil and Joan Weber Endowed Scholarship



## 2020 - 2021 Undergraduate and Graduate Student Awards

*(L-R: Matthew Owen, Levi Belangee, Rachel Stuckey, Matthew Meyer, Cole Fletcher, Madeline Beasley)*

### 2020 - 2021 Outstanding Seniors and Graduate Students

Outstanding Senior in Environmental Science: Rachel Stuckey

Outstanding Senior in Geoarchaeology: Matthew Meyer

BS Degree Recipients: Madeline Beasley, William Levi Belangee, Cole Fletcher, Matthew Meyer, Matthew Owen, Rachel Stuckey, Jonathan Topper, Nolan Whitt

Certificate in GIS Recipients: Madeline Beasley, William Levi Belangee, Cole Fletcher, Matthew Owen, Madissen Prinster, Rachel Stuckey, Kaylin Wilson

MS Degree Recipients: Zachariah Elliott, Christopher Lance Stewart, Javus Yandal

### 2021-2022 Departmental Scholarship Recipients

A B Waters Scholarship: Logan McGowan

Alice and George Kippnut Sr. Scholarship: Skylar Ross

Clyde Reed-Jim Smith Scholarship: Pam Rodriguez

James Allan Roberts STEM Internship Scholarship: Ash Medlock

Jesse D. and Deborah C. Jones Scholarship: Sofia Bayer, Taylor Vickers

Matthai-Panzer Scholarship: Leola Dillehay, Amber Koenig

Neil and Joan Weber Endowed Scholarship: Gracie Schneeman

*EES students receive instruction from EES alumni Kyle Klass ('16) and Donnie Keeling ('01) of the local USGS office.*

## EES faculty receive significant grants

Associate Professor **Dr. Bassil El Masri** has received a \$40,753 from the **NASA EPSCoR Research Infrastructure Development Grant (RIDG)** to help better understand how plants respond to changes in water availability. The research team will evaluate and assess the impacts of evapotranspiration and gross primary production (GPP) on Ecosystem Spaceborne Thermal Radiometer Experiment on Space Station (ECOSTRESS) water use efficiency (WUE) product, using observed data from two eddy covariance flux towers in Kentucky. The grant will allow El Masri and a colleague at the University of Kentucky to validate ECOSTRESS WUE and quantify the impacts of GPP errors and solar-induced fluorescence-derived GPP on the overall accuracy of ECOSTRESS WUE. Such information can be used to determine whether plants are stressed, providing necessary information for stakeholders to address potential drought conditions.

Professor **Dr. Haluk Cetin** was awarded \$25,000 Enhanced Mini-Grant from the **Kentucky Space Grant Consortium** for his project to map invasive plant species in Kentucky using LiDAR, UAS and satellite imagery, and GIS. Dr. Cetin is currently a visiting professor at the University of Kentucky.

- Ferguson, B., Lukens, W. E., El Masri, B., Stinchcomb, G. E., 2020, Valley bottom landform [https://doi.org/10.1016/j.earscres.2020.100507](#), Earth and Planetary Science Letters 548, 119678. [https://doi.org/10.1016/j.earscres.2020.100507](#) eeo20, C2
- Somelar, P., Soomer, S., Driese, S. G., Lepland, A., Stinchcomb, G. E., Kirsimäe, K., 2020, CO<sub>2</sub> drawdown and cooling at the onset of the Great Oxidation Event recorded in 2.45 Ga paleoweathering crust: Chemical Geology 548, 119678. <https://doi.org/10.1016/j.chemgeo.2020.119678>
- Yang, Y.; Tao, B.; Liang, L.; Huang, Y.; Matocha, C.; Lee, C.D.; Sama, M.; El Masri, B.; Ren, W. Detecting Recent Crop Phenology Dynamics in Corn and Soybean Cropping Systems of Kentucky. Remote Sens. 2021, 13, 1615. <https://doi.org/10.3390/rs13091615>

After completing my basics at Madisonville Community College, I transferred to MSU - to continue working towards my Bachelor of Arts degree in English. Science had always held immense appeal for me though, and after one year there, I decided to switch to Geosciences. It turned out that GIS met my need for something more objective and scientific, yet still with the creative potential that mapmaking has.

I graduated from Murray on Saturday, May 14th, 2016 with a Bachelor in Geosciences, certificate in GIS, and 2016 Outstanding Student in GIS. The immediate next Monday, I went to work full-time in an internship with the Pennyriple Area Development District in Hopkinsville, KY. That internship extended into a temporary position until the fall, when a

contract job opened up at the Barren River Area Development District. I then moved to Bowling Green, traversing cave country, sinkhole-dotted pastures, backroads and busy highways, and Appalachian hills to map their region's sewer, water, and road systems. As my contract at BRA DD was nearing its end, Pennyriple ADD's longtime GIS manager Pat Lee was retiring. Having been taught by her during my internship, I was offered her position. So I moved back to western KY, and have been balancing the myriad responsibilities of a GIS manager at PeADD ever since. I cover everything from maps for grant applications, fixing address records for the 2020 census, helping local 911 systems to keep their data current as well as prepare it for upcoming next-generation 911 paradigms, creating maps for local trail, sidewalk, and park construction proposal, to updating and maintaining state records on nearly every county, city, federal, and other-agency-owned road in our region. I often don't know exactly what mapping task will come to my office next, so I have had to develop a broad skillset to handle it all.

An internship assignment to map the water & sewer system of Marion, KY indirectly led to a volunteer position I hold today. While on lunch break from mapping fire hydrants and sewer manholes, I would take the opportunity to visit the Ben E. Clement Mineral Museum in town. And I continued to come back in the years since, marveling over their collection and enjoying talking with the staff, until I was offered a position on the museum's board of directors just last year.

My work has so far spanned our nine counties, and the BRA DD's ten. Though I don't get to do as much of it with my current in-office responsibilities, I really enjoy locating and recording so many often-overlooked yet vital details of our infrastructure and utility systems. I also love exploring obscure corners of our local region. I am glad to be able to bring the specialized skill of GIS to the service of my rural region. I currently live in Madisonville KY, with my snake Apollo, cat Luna, and rat terrier Teenie.

(Text and pictures by Paige Carlisle)

There's a concept of "love at first sight" with regards to human relationships. I can honestly say that this is the most accurate portrayal of my interest in archaeology. Ever since I was six years old, I just knew that Archaeologist would be my job as an adult. Being able to learn about the past by looking at what was left behind sounded like the coolest job on the planet and everything else paled in comparison. When time came to select a University, I was fortunate enough to really stumble upon Murray State University during a Thanksgiving holiday at Kenlake State Park.

While the program of Geosciences didn't have a "traditional" Anthropology approach, it had a plethora of archaeological courses mixed with a healthy introduction to the technology of the field, specifically ArcGIS and Remote Sensing. It also had some necessary focus on a subject that shockingly many archaeologists aren't well trained in: soils. Last, it gave me a volunteer opportunity at Wickli e Mounds State Historic Site which introduced me to the world of the Native American Grave Protection and Repatriation Act (NAGPRA). All of these factors played a quintessential part into the archaeologist I eventually became, from how I approach my research to the type of archaeology I practice.

After completing my Bachelor's degree at Murray, I went on to complete my Master's degree at Ball State University in 2016. It was about a year after finishing my Master's program until I was able to finally get jobs as a temporary field technician for various companies which took me to places as far as North Dakota and Texas. In the summer of 2018 Cultural Resource Analysts, Inc. (CRA), a cultural resource management firm in Lexington Kentucky, offered me a full time position as a staff archaeologist which is where I am currently employed. Due to CRA performing cultural resource work for contracts specifically in infrastructure and transportation, I was considered an essential worker and stayed employed throughout 2020 during lockdown. I direct various Phase I survey projects, assist on Phase II investigation and Phase III mitigation excavation projects, write reports and interpret findings, and complete faunal analysis when faunal remains are present in an assemblage. While I am typically performing survey, excavation, or interpretation work for areas in Kentucky, I have also worked on projects in Indiana, Tennessee, and Ohio.

For now, I am building my career in the field I've always wanted to work in. I am right where I need to be and I couldn't have

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