



The Department of Earth and Environmental Sciences

Greetings, EES faculty, staff, students, alumni, and friends!

It's hard to believe that this is the start of my 22nd year at Murray State University. I am still coming to terms with the fact that freshman class of Fall 2024 is my daughter's cohort. Where has all the time gone? Last year, we set a new departmental record for the largest number of students in our classes, and the largest number of Majors (69 undergraduate and 10 graduate EES Majors) since Fall 2009, when the current tracking record started. We have a dedicated group of faculty, staff, and students! Thank you to our colleagues, alumni, families and friends for your continued support; we couldn't do it without you!

– Robin Zhang



EES hosted a very successful Solar Eclipse Watch Party, April 8, 2024.

Dr. El Masri Awarded NSF NASA Fellowship and Promoted to Full Professor



Dr. Bassil El Masri was awarded a prestigious NSF EPCoR Track 4 Fellowship to conduct research at NASA's Ames Research Center from Jan 2024 to Dec 2025. Dr. El Masri is one of 10 Fellowships awarded nationwide in this round. By processing and analyzing images taken from NASA satellite technology, Dr. El Masri's work aims to improve the detection of greenhouse gas emissions in mineral soil wetlands and shed light on the effects of landscape position and forest composition on greenhouse gas fluxes between terrestrial ecosystems and the atmosphere. "The success of this year's joint NSF and NASA faculty fellowships highlights the remarkable dedication and ingenuity within the scientific community," said Dr. Kathleen Loftin, project manager of NASA's EPSCoR Program. "These fellowships are not just about funding; they are about fostering meaningful, transformative collaborations that enrich the landscape of STEM research."

In addition, Dr. El Masri achieved the Full Professor Rank at Murray State University and was the recipient of the JCSET Outstanding Research Award in 2024 (his second time receiving this award). He joined the faculty in Fall 2014. Congratulations to Dr. El Masri!!!

Dr. Cetin Received KY NSF-EPSCoR Grant

Dr. Cetin collaborated with several researchers in Kentucky on an NSF-EPSCoR proposal entitled "Kentucky RII Track-1: Climate Resilience through Multidisciplinary Big Data Learning, Prediction & Building Response Systems (CLIMBS)" which was funded by NSF for a 60-month period starting July 1 2024. The lead institution is the University of Kentucky. Participating institutions include the University of Kentucky, University of Louisville, Eastern Kentucky University, Morehead State University, Murray State University, Northern Kentucky University, Western Kentucky University, and Thomas More University. CLIMBS will advance new knowledge and develop tools to produce a sophisticated understanding of climate change and its impacts on Kentucky in the past, present, and future. As a part of the project, Murray State will hire undergraduate students starting in 2025 and graduate students starting in 2026.

Dr. Marcie Venter Completed a Spring 2024 Sabbatical Continuing Research in Veracruz, Mexico

Dr. Venter was on Sabbatical in the spring and continued her research this summer in southern Veracruz, Mexico on her NSF funded Tuxtla Ingenio Project. She presented two invited papers at the society for American archaeology meetings in New Orleans in April. Both of those will lead to a publication in the near future.



Dr. Venter (first on the right) with colleagues at SAA in New Orleans

Dr. Katharine Loughney Traveled Across America and the Atlantic



This summer was busy, and my schedule had me traveling across the country and overseas. In May, I returned to my old field area in southern California for a short stint of field work. I revisited parts of the field area that I had not visited in several years to review the geologic features, investigated the stratigraphy of new areas, and looked for groundwater spring deposits that may be related to the location of an ancient lake margin. In June, I traveled to the University of Michigan to present at the North American Paleontological Convention, a paleontology conference that occurs every four years.

In July, I traveled to the Turkana Basin in northern Kenya to investigate fossil preservation at several fossil localities. Our small Kenyan and American field team spent two weeks camped near the fossil sites where we could readily study the paleontology and geology of the area. These fossil localities offer a glimpse into East African ecosystems from 17 million years ago when the area was occupied by a perennial river, forest, and woodland; these ancient environments were very different from the modern scrubland environment in this hot and arid region. Fossils from these localities include petrified wood and skeletal material from turtles, crocodiles, and large and small mammals, including primates. This material shows that the Turkana area once supported several species of elephants, rhinoceros, giraffes, monkeys, as well as the early hominoid *Afropithecus*. The sediments in this field area are about 13 million years older than those at other well-known and well-studied sites in Kenya and Tanzania that bear fossils of *Australopithecus*, the earliest bipedal primate, and *Homo habilis*, one of the earliest close relatives of modern humans. (Text and picture by Dr. Loughney)

Professor Johnson Spent Summer with the Commonwealth Honors Academy



This summer, I had the privilege of instructing the course "Dangerous Planet" at Commonwealth Honors Academy. Over the course of three weeks, I had the opportunity to impart my passion for Earth Science to a cohort of exceptionally gifted students. Witnessing their academic and personal growth was immensely rewarding. The culmination of our efforts was showcased at the CHA learning fair, where students presented their meticulously crafted volcano models. Working with such a motivated group of students at CHA was truly inspiring, and it was a delight to witness their achievements during their inaugural college experience. (Text & Picture from Emily Johnson)

Congratulations to our Outstanding Students and Graduates of 2023-2024!



(From left: Lauren Gilchrist, Rowan Verdegan, Madalyn Hake, Carter Nims, Zachary Brown, Melanie Johnson, Ash Medlock, Leola Dillehay, Lauren Smith, Kyle Klass)

Congratulations to our Outstanding Students and Graduates of 2023-2024!

Outstanding Senior in Anthropology: Ash Medlock

Outstanding Senior in Archaeology: Lauren Smith

Outstanding Senior in Environmental Science: Melanie Johnson

Outstanding Senior in Geology: Devin Richards

BS Degree Recipients: Sofia Bayer, Ty Blanton, Zachary Brown, Daniel Clark, Benjamin Collett, Kennedy Cook, Leola Dillehay, Lauren Gilchrist, Madalyn Hake, Tanner Huddleston, Melanie Johnson, Ash Medlock, Carter Nims, Dalton Richards, Devin Richards, Caroline Shell, Lauren Smith, Rowan Verdegan, Jack Wright

MS Degree Recipients: Fatema Hussaini, Kyle Klass, Rachel Stuckey

Certificate in GIS Recipients: Sofia Bayer, Andrew Brown, Zachary Brown, Benjamin Collett, Kennedy Cook, Leola Dillehay, Lauren Gilchrist, Madalyn Hake, Tanner Huddleston, Joseph Reese, Dalton Richards, Devin Richards, Lauren Smith

2024-2025 Departmental Scholarship Recipients

Alice and George Kipphut Sr. Scholarship: Alyson Saul, Jayden Morris

A B Waters Scholarship: Jenna Opp

Jesse D. and Deborah C. Jones Scholarship: Philicady Garland, Sidda Roche, Lauren Tackett

Jones Endowment Scholarship: Anna Compton

Clyde Reed-Jim Smith Scholarship: Mackenzie Hecht, Avery Vogel

James Allan Roberts STEM Internship Scholarship: Cameron Sullivan

Matthai-Panzer Scholarship: Easton Keenan, Katelyn Rothberger

Neil and Joan Weber Endowed Scholarship: Amelia Slaton

Summer 2024 Student Research & Internship Highlights



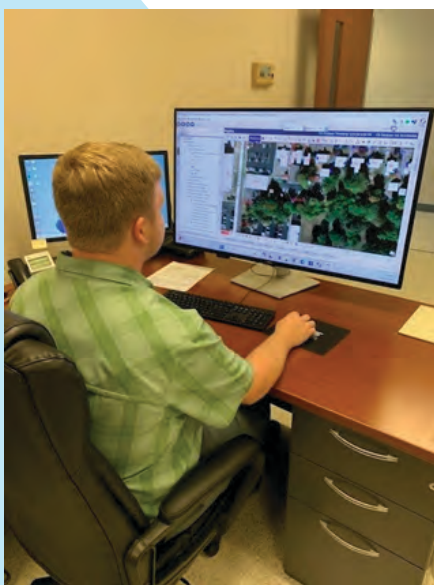
Zachary Brown – NASA DEVELOP Program at Goddard Space Flight Center, Greenbelt, Maryland

The primary goal of our project is to leverage NASA's Earth Observations to help improve the management and conservation of oak-hickory forests. These forests are experiencing mesophication, where shade-tolerant tree species are outcompeting the oak-hickory by blocking sunlight to the forest floor. By using satellite imagery, we can create detailed maps that show changes in forest canopy cover over the past four decades. These maps will allow us and our partners to identify areas where oak-hickory can be restored and protected. Our efforts are crucial because oak-hickory forests are a keystone species, providing important habitats for wildlife and maintaining the ecological balance in the region. My team and I have been diligently working with the US Forest Service, Indiana State Department of Natural Resources, and the Central Hardwoods Joint Venture. We are currently producing canopy maps of Southern Indiana from 1984 to 2023 using Google Earth Engine. Our team is also gearing up to produce a suitability map with the goal of identifying new sites for regenerative conservation to expand the presence of existing, mature oak-hickory stands in Southern Indiana. It has been a very challenging, yet highly rewarding summer thus far! We will present our research project at the NASA Headquarters in DC for DEVELOP Day on August 6th! (Text & picture from Zachary Brown)



Avery Vogel - Kentucky Division of Abandoned Mine Lands, Madisonville, KY

This summer, I was given the amazing opportunity to join the Kentucky Division of Abandoned Mine Lands in overseeing a variety of mine reclamation projects. Our division aims to protect the public from health and safety problems caused by mining that occurred prior to 1982. For instance, we have projects regarding the restoration of lands afflicted by acid mine drainage, landslides, subsidence, and highwalls. To aid in this, our team conducts investigations of citizen complaints, oversees construction related to reclamation, uses ArcGIS Pro to digitize mine maps for future use, tests water for acid mine drainage, creates and maintains drilling logs, and uses LiDAR mapping to track subsidence. It has been amazing to work with Kentucky to better our environment! (Text & picture from Avery Vogel)



Jayden Morris – Murray Electric System, Murray, KY

This summer, I worked at Murray Electric System as a GIS intern. My main task was to map the company's fiber optic network, but I also helped update the maps of the electrical system. During my internship, I gathered GPS coordinates, mapped building outlines with a measuring wheel, and gathered addresses for new buildings in Murray. In addition, I went to various job sites around town to record the positioning of newly installed poles, transformers, power lines, lights, and electric meters so that the equipment could be mapped accordingly. Overall, my summer at Murray Electric was a fantastic learning experience, and I was able to get my feet wet by learning about what a career in GIS would be like! (Text & picture from Jayden Morris)

Summer 2024 Student Research & Internship Highlights



Nadia Castillo – Murray State University

I spent the first half of my summer assisting Skylar Ross in her portion of research spearheaded by Dr. JB Moon of the biology department. I was able to explore different wetland sites, one of which included the Hancock biological station (HBS). There, I assisted in apparatus preparation and installation, planting Cypress trees, typing datasheets, and assisting with the different samples associated with Cypress trees and the surrounding pore water. I'm grateful for the opportunity to do some hands-on work, which was very fun and required a lot more strength than I anticipated! (Text & picture from Nadia Castillo)



Jenna Opp – Study Abroad in England and Scotland

This summer I had the opportunity to study abroad in England and Scotland with CCSA. Through this course we studied the fathers of geology and followed in their footsteps through Europe. We saw the work of Sir Richard Owens through the architecture and natural science research at the Natural History Museum. We saw the first geological map of England and Scotland made by William Smith. And we saw James Hutton's Unconformity at Siccar Point (pictured). While we traveled, we met a local geologist who taught us about the local geology. This opportunity was very rewarding through meeting other geology students and professors, in addition to learning about the geology of other countries. (Text & picture from Jenna Opp)

Fall Scholars Week Earth and Environmental Sciences Poster Session



Students present their work at the Earth & Environmental Sciences Poster Session during the MSU Fall Scholars Week in the Waterfield Library Gallery, continuing a new tradition since 2019. (From Left: Kenny Cook, Jayden Morris, Zachary Brown, Anna Compton, Michelle Weaver, Miranda Belanger, Devin Richards, Riley Patterson)

Alumni Update: Megan Ambrose (Paule), BS '15 - Environmental Scientist II, Tetra Tech, Fenton, MO



I transferred to Murray State halfway through my college career with little direction. I began with a major in geology before switching to a GIS degree once I found my footing. I remember being surprised by how I was instantly welcomed into the Earth and Environmental Sciences department and how involved the staff was with its students. I enjoyed my time at Murray, forming close friendships, and that led to many late-night study sessions and memories in Blackburn.

Murray State laid the groundwork for my career and helped me find what I was passionate about. I am now an environmental scientist at Tetra Tech. I do a variety of work. I manage several projects and staff. I also work as a contractor for the EPA, supporting efforts with Superfund lead removal in southern Missouri and emergency response. As a responder, I have been able to travel and experience a variety of hazardous situations, such as elemental mercury spills, ammonia tanker spills, lithium battery warehouse fires, soil vapor intrusions, and the 2022 oil spill in Kansas. My position as a responder also allows me access to abandoned warehouse properties that require Level B PPE. These properties often house hazardous materials that must be categorized via HAZCAT and disposed of. I also calibrate and manage equipment for responses and removals, which bolsters my skill set and allows me to offer training opportunities to other staff. When I'm not working, I enjoy hiking and collecting rocks. Some things haven't changed. (Text & picture from Megan Ambrose)

Alumni Update: Matthew Schwartz, BS '19, GIS Specialist, Esri, Roanoke, VA



One of my favorite things to do when I was younger was to look at a kid's atlas of the United States and memorize capitals, state birds and study the maps to see what I could learn about each state. From a young age, I've always taken an interest in the "where".

When I enrolled at Murray State and found the Earth and Environmental Sciences program with a GIS track, I knew this was the right major for me. From learning how to make my first map, to analyzing satellite imagery in our remote sensing classes, I thoroughly enjoyed my time here. Murray State was an amazing part of my journey to get to where I am today and provided a solid foundation to enter the workforce.

After graduating in 2019, I started out with an internship at Syngenta where I flew drones across corn and soybean fields, capturing imagery to look at vegetation health through NDVI maps. After this, I worked as a Geospatial Technician classifying lidar data, and then I landed at my current role as a GIS Specialist at Esri. Working at Esri has been an amazing opportunity that has allowed me to work with several organizations and help them utilize the power of GIS.

Currently I help retail and healthcare organizations use demographic data to analyze site selection, target marketing analysis and more. I also work with electric, water and other utility companies to track outages and manage their assets through the power of mapping. (Text & picture from Matt Schwartz)

Update from retired faculty: Dr. Peter Whaley (Retired since 2003)



This year Beryl and I celebrate our 87 birthdays and our 64th wedding anniversary. We are not as agile as we use to be but for our age we are ahead of the curve. In June several third cousins and I hosted the descendants of Capt. Peter Whaley at a family reunion held in the Whaley Family Cemetery in Whaleyville, Md. Many deceased relatives and over 90 living relatives were in attendance (see attached image). Most of our immediate family then joined us at our cottage in Fenwick Island, DE. Five grandchildren have become successful grand adults. The youngest, Joe, will be a junior in high school. His siblings, Ben and Emily, are in college. Joe and Emily are with us for the summer with jobs at the beach. Ben is an intern with the Wicimico County, MD, public defenders office in Salisbury, MD. (Dr. Peter Whaley and wife Beryl (2nd row, 8th & 7th from left) with extended family. Text & picture from Dr. Whaley)

Invitation to Share Experiences or Research

The Department of Earth and Environmental Sciences is always on the lookout for alumni willing to speak about their employment experiences or research. Our students greatly value the experience and guidance from our alumni! If you are in the area and would like to present on a subject or employment opportunities, please contact us. Email our administrative assistant, Ms. Tracie Russo, trusso@murraystate.edu, or call 270-809-2591 to schedule.

Giving and Gifting

If you would like to donate to the Department of Earth and Environmental Sciences, we have a number of scholarships to select from, including the Wesler Scholarship, the Matthai-Panzera Scholarship, the Reed-Smith Scholarship, the Alice and George Kipphut Sr. Scholarship and the recently formed Neil and Joan Weber Endowed Scholarship. Gifts to the Department of Earth and Environmental Sciences encourage student success in a variety of ways, by providing grants and scholarships, funding travel, or by purchasing equipment upgrades. Gifts of any size are greatly appreciated and always needed!

Checks should be sent to the Office of Development, Heritage Hall, Murray, KY 42071-3441. Please specify a fund in the memo field. Donations can be made over the phone by calling 1-877-282-0033 or 270-809-3001. Visit murraystate.edu/giving to make an online donation. Thank you for your support!