



Fall 2020 has brought many significant changes to Murray State University due to the COVID-19 pandemic. Our New Student Welcome Event was a success in spite of masks and social distancing.

Department of Earth and Environmental Sciences

Greetings from the Chair

We start Fall 2020 at an unprecedented time. The pandemic, COVID-19, has infected tens of millions of people and taken the lives of over a half million worldwide. It is a time when we rely on each other to make good choices, and to take care of ourselves and our loved ones. As the life we know takes a pause, the natural world thrives, with cleaner air and water and a surge of wildlife. It gives us an opportunity to see the delicate balance of earth systems and reveals that the work we do as earth and environmental scientists is ever more important. We will come out stronger and more committed. Wish you all a great year! ► Robin Zhang

Drs. El Masri and Stinchcomb Receive Tenure and Promotion



Dr. Bassil El Masri and Dr. Gary Stinchcomb are awarded tenure and promoted to Associate Professor at Murray State University, effective Fall 2020.

Congratulation to both of them for this important milestone in their careers and their many accomplishments in the last six years!

Faculty Spotlight: Dr. Bassil El Masri



Bassil El Masri has long been interested in plants. His young years of climbing trees to collect fruits at his parents' garden sparked his interest in vegetation and their phenological changes. Bassil completed his B.S. from the Lebanese University (2001), MS from Texas Tech University (2006), and PhD. from Indiana University-Bloomington (2011). He completed a postdoctoral appointment at the University of Illinois at Urbana-Champaign focusing on improving, calibrating, and validating land surface models. Currently, Bassil El Masri is an Associate Professor in the Department of Earth and Environmental Sciences at Murray State University.

Bassil El Masri's research focuses on investigating the soil-vegetation-atmosphere interactions and how these interactions are affected by the changing climate. He uses multi-sensor remotely sensed data for estimating terrestrial ecosystem carbon and water fluxes and for scaling up site measurements to the regional and global scales. He also uses land surface models to understand the terrestrial ecosystem carbon, water, and nitrogen

fluxes responses to environmental change. Bassil El Masri has advised several undergraduate students who have presented their research at Scholars Week. Also, he has facilitated opportunity for two undergraduate students to travel to NASA JPL to work on land surface modeling and satellite data acquisition and process. Some of his current work is focused on linking soil properties to remotely sensed vegetation functions, developing phenology models, and improving a land surface model. His work has been funded by NASA ESPCoR, MSU, and US Fish and Wildlife. (Contribution by Bassil El Masri)

Ashley Medlock Receives the Inaugural Alice and George Kipphut Sr. Scholarship



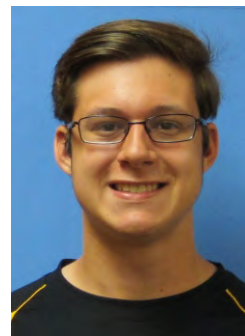
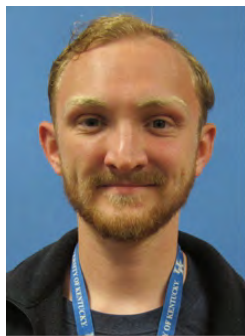
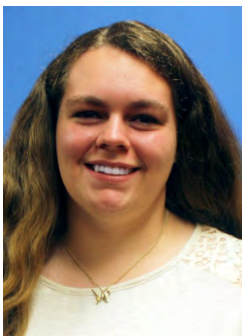
Congratulations to Ashley Medlock, a Senior in our Environmental Science program, the inaugural recipient of the Alice and George Kipphut Sr. Scholarship. "Environmental science is my passion because it affects every facet of our lives. I've always loved nature and being able to study and fulfill my curiosity is a dream come true. I plan on continuing my education to the doctorate level and I hope to be able to use my future research to positively change the way we interact with nature.", said Ashley. Dr. George Kipphut, Professor Emeritus and former Chair of our Department, established the Scholarship in 2018 to honor his parents. The Scholarship will be awarded annually to a Junior or Senior student in Earth and Environmental Sciences. Dr. Kipphut sends his congratulations to Ashley.

Faculty Recognized for Excellence in Research and Teaching



Dr. Marcie Venter, Assistant Professor, has received two top honors bestowed upon Murray State University faculty this year: the Emerging Scholar Award and the Board of Regents Teaching Excellence Award. Dr. Venter was trained as an anthropological archaeologist, who joined Murray State University faculty in 2016. The MSU Alumni Association's Emerging Scholar Award is intended to give special recognition for superior research, scholarly, or creative work conducted by Murray State University junior faculty members. BOR Teaching Excellence Awards are given each year to honor faculty members who, in the judgment of peers, deserve recognition as exemplary teachers. Congratulations to Dr. Venter!

2019 - 2020 Undergraduate and Graduate Student Awards



(L-R: Marie White, Harrison Kelly, Dante Rivera, Kevin Wann, and Kevin Takashita-Bynum)

2019 - 2020 Outstanding Seniors and Graduate Students

Outstanding Senior in Earth Science: Marie White

Outstanding Senior in Environmental Geology: Harrison Kelly

Outstanding Senior in Environmental Science: Dante Rivera

Outstanding Senior in Geoarchaeology: Kevin Wann

Outstanding Graduate Student in Research: Kevin Takashita-Bynum

2020 - 2021 Scholarship Recipients

A B Waters Scholarship: Cole Fletcher

Clyde Reed-Jim Smith Scholarship: Levi Belangee and Vanessa Sivils

James Allan Roberts STEM Internship Scholarship: Sydney Abbott and Alexa Loddick

Jesse D. and Deborah C. Jones Scholarship: Logan McGowan and Garrik Quertermous

Matthai-Panzera Scholarship: Sophia Bayer, Meah Jordan, and Devin Richards

Congratulations to our amazing graduates of 2019-2020!

BS Degree Recipients: Sarah Bowman, Matthew Canning, Amber Crawford, Morgan Franklin, Harrison Kelly, Dante Rivera, Kevin Wann, Marie White

Undergraduate Certificate in GIS Recipients: Sarah Bowman, Brendan Calhoun, Matthew Canning, Matt Meyer, Kevin Wann, Marie White

Graduate Certificate in Geospatial Data Science Recipients: Amal Ahmed I Alfawzan, Zachariah Elliott

EES Faculty and Students Completed Another Successful Field Season in Ethiopia



Simultaneously digging, sampling, and measuring the "megatrench" in search for the Toba ash.

In January and February, Dr. Gary Stinchcomb accompanied graduate student Kevin Takashita-Bynum and undergraduate student Marie White to the Gona paleoanthropological site in the Afar region of Ethiopia. The Gona project has been operating for over twenty years and has yielded hominin fossils and archaeological sites spanning six million years of geologic time. Stinchcomb, Takashita-Bynum, and White work to provide ages for archaeological sites, as well as help reconstruct past environmental conditions using fossilized soils (paleosols).

This year, much of the field season was focused on Late Pleistocene (126,000-11,700 years ago) through Holocene (11,700 years ago to present) sediments. Evidence of year-round water and complex stream networks are present in some areas of different ages. In others, there is evidence of arid conditions with significantly fewer natural resources suggesting dynamic, constantly fluctuating patterns of climate in the form of wet-dry cycles. The climate and context of sites falling within the Late Pleistocene and Early Holocene are important keys to understanding early human migration and resource use, as well as their interactions with the environment, which is a specific focus of the Stinchcomb Lab group.

While large-scale climatic patterns are important to understand, so are smaller events. About 75,000 years ago, the Toba supereruption spewed massive amounts of ash into the atmosphere. Near the source in Indonesia, there is evidence for devastating effects on local ecology. Only two studies have found the ash in East Africa, in a lake in Tanzania, which yielded results suggesting minimal effects on East African climate. In three days, Takashita-Bynum and White dug a trench measuring eight meters in height, sampling every ten centimeters, to try to capture the ash. If they find it, they will analyze the associated sediments to see if populations at Gona could have been disrupted by the Toba eruption.

When the group wasn't digging or hiking through the desert, they were enjoying the local cuisine of goat and spectating intense dah-boo-dah tournaments, a mancala-type game played by the Afar people. Everyone's respective research was put on hold as the team engaged in friendly banter with the Afar and played with a local kitten, or "doumou" in Afar, which they affectionately named Luna. As the field season concluded, the group said their goodbyes to their Afar friends and began the long trek back to Addis Ababa, the capital of Ethiopia, and then the United States. (Contribution by Marie White)



Dr. Gary Stinchcomb (3rd from left), Marie White (4th from left) and Kevin Takashita-Bynum (right) with Afar friends (Photo courtesy of Gary Stinchcomb)

Update from Alumni: Jennifer Martin, BS'12, MS'14



I returned to college as a non-traditional student and completed my BS in Geoscience in 2012 where I was awarded Outstanding Senior in Earth Science. I continued at MSU and earned my MS in Geoscience in 2014. Following graduation, I was offered an interim Lecturer position in the Geoscience/EES department which I happily accepted. In 2015, I relocated to Toledo, OH with my husband Tim Martin (also a Geoscience graduate) to join a startup company now known as Satelytics. Our company got its start by mapping water quality using space-borne sensors but has now grown to include work with numerous sensors to provide environmental and asset monitoring to the energy, oil and gas, rail, and mining sectors. As the Research and Development Manager, I lead a team of scientists that focus on innovation and automation. This position is challenging and rewarding and has afforded me many exciting opportunities for field work which include collecting physical samples for chemical analysis while simultaneously collecting spectrometer readings and coincident satellite imagery. Most notably I have sampled water on the Great Lakes, dust in the mountains of Montana, and was fortunate to travel to the North Slope, Alaska to sample thermo-karst lakes amongst the caribou, muskox, and polar bears- of which I saw three (mom and two cubs)!! Though the field sampling is fun, the heart of my work lays in the data analytics, especially with the algorithm development my team performs. I am thrilled to be in a

position where I use satellite and aerial imagery daily to solve challenging, environmentally-focused problems from a variety of sectors and am grateful that the Geoscience/EES department prepared me well for such a rewarding career. (Contribution by Jennifer Martin)



Update from Alumni: Errol Sebastian, BS '16

I remember being 19 years old back in 2014 when I first left Belize to pursue my BS in Environmental Geoscience with a Certification in GIS at Murray State University. I will never forget the nervous look on my parents' faces as I left their embrace to set about my lonesome journey to the United States, much less to a city called Murray in the State of Kentucky. When I got to Murray, I remember thinking how beautiful and tranquil the environment was, and when I saw the University I felt like I had hit the lottery as it relates to my choice for an educational institution. Unlike the cold winters, the people and students were so warm, friendly, and welcoming, I felt right at home. I remember my first day at Blackburn and seeing the awards that past students had earned, for that was when I had realized one of my goals of wanting to see my name on a plaque and leaving my mark at this fine institution as well. It took sleepless nights, numerous failures, harassing the hell out of my professors and even sometimes, battling the occasional blizzard, but in the end, it was all worth it. I'd do it all over again, especially the harassing of my professors part, not because I enjoyed being a pest to them at times but because they were so awesome, inspiring and helpful throughout my journey. I will never be able to express enough gratitude to the Department for their commitment to the students and for helping me achieve my goal of being awarded the 2016-2017 Outstanding Senior Award in Environmental Geology.



Soon after I had graduated, I had returned to Belize to the city of Belmopan, where I am now employed as a Geologist with the Mining Unit of the Government of Belize, whereby our mission is to "Realize the Mineral Wealth of Belize". I have been a part of various exploration groups with the objective of locating significant gold deposits as well as other rocks and minerals within the pristine forests of Belize, and I have also been a part of efforts to combat erosion brought on by climate change which plagues the islands that litter our coastal area. None of this would have been possible without the direction and the confidence that my lecturers had instilled in me and the potential that they helped me unlock from within myself. For that, I am forever grateful. It is as William Shakespeare once said "Be not afraid of greatness; some are born great, some achieve greatness, and others have greatness thrust upon them"; it is up to you to realize your own greatness but it is your duty to share it with the world. Go Racers! (Contribution by Errol Sebastian)



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Update from Retired Faculty - Professor Lynn Leasure



My interest in geology began in the fourth grade after reading, "In the Days of the Dinosaurs," by Roy Chapman Andrews, and still continues today. After retiring in 2010, my husband and I built our 'forever' home in rural Graves County. It was a large project that kept me busy for several months. During the construction of our house I discovered that I had another interest, in addition to geology: residential renovation and property management. (Who knew?) We have since renovated several properties in Madisonville and Mayfield. The best part of this hobby is being able to offer families houses that are very much needed. The only downside is the general maintenance of the properties that sometimes seems never-ending. Even though it's been over 10

years since I was full-time in the classroom, every year when it's time to start the Fall semester, I become nostalgic. For a brief time, I miss the beginning of school: the new students, the comradery of the faculty, exciting courses to teach; then I take a nap and I'm over it. :)

My husband and I had some trips planned for this year, but they have been derailed by the pandemic. I've included a shot of a trip taken when travel was easier and more predictable. It was taken in Canyonlands in the "Island in the Sky" district. Stay happy and healthy! (Contributed by Lynn Leasure)

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-Panzer 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!

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.