



2019 GeoCUR Award For Excellence in Student Research

William Adair, The University of Tennessee at Chattanooga
*Biology, Geology and Environmental Science, Nominated by: Dr. A.K.M. Azad
Hossain*

William Adair is an excellent undergraduate researcher at the University of Tennessee at Chattanooga and will soon graduate with a BS Geology degree. He is currently working as an undergraduate research assistant at the Geological and Environmental Remote Sensing Laboratory (GERS-Lab) at UTC. At GERS-Lab he is involved in water quality remote sensing research conducted in the Tennessee River using multispectral satellite imagery and in situ measurements. Earlier, he participated in a group research project that explored the potential of remote sensing technology for geological mapping at Woodall Shoals, SC-GA. He presented this research at the Southeastern Section meeting of the Geological Society of America in 2018 and has one published abstract on it. This semester, William is conducting research on the rain shadow effect on soils on McClellan Island in Chattanooga, Tennessee. We are proud of William and his accomplishments in our program and are very excited to nominate him for a GeoCUR Award for Excellence in Student Research.

Carson Broaddus, Fort Lewis College

Geosciences, Nominated by: Dr. Kimberly Hannula

Carson Broaddus's senior thesis is a study of normal faults about a salt anticline in Lisbon Valley, Utah. His work combines characterization of the fault core, sampling and XRD analysis to determine the mineralogy of the fault gouge, and modeling of the clay gouge ratio based on the fault slip and the stratigraphy. During his thesis, he has figured out how to index mineral in XRD by hand and how to use software used by oil and gas professionals. His work is independent, thorough, and rigorous, and is being used by graduate students and R1 faculty to characterize the permeability of the fault zone in hydrologic models.

Jared Brum, Miami University

Geology and Environmental Earth Science, Nominated by: Dr. Claire McLeod

It is with excitement and enthusiasm that Jared Brum is nominated for the annual GeoCUR Award for Excellence in Student Research. Jared has undertaken research in the Department of Geology and Environmental Earth Science on two campuses at Miami University (Oxford and Hamilton) under the mentorship of two faculty members over the past several years. These research endeavors, in two very different fields (one environmentally focused, one planetary science focused) have led to Jared presenting his work at local, regional, and national conferences such as the annual Miami Undergraduate Research Forum, the Governmental Relations Network Advocacy Conference at the state capital building in Columbus, OH, and at the annual Geological Society of America meeting. Currently, Jared is also participating in the NSF-funded AUGITE program (Advancing Undergraduate Geoscience through Integrated Training Experiences) at Miami University, which supports student professional development through a series of career-readiness workshops (e.g. resume and cover letter writing), professional certification, and (remote) attendance at conferences and webinars across the state, and USA. In the Fall of 2018 Jared received a \$1000 Miami Doctoral Undergraduate Opportunity Scholarship (DUOS) to conduct an original investigation into the history of a lunar meteorite in collaboration with a PhD student and he will be presenting this work as a first author at the 50th Lunar and Planetary Science Conference this year. The breadth of experience that Jared has to date, as an early career scientific researcher is highly commendable and it with excitement we look forward to his future endeavors and discoveries.

Steven Disipio, Penn State Brandywine

Letters, Arts, and Sciences, Nominated by: Dr. Laura Guertin

Steve has had a passion for Earth science and is tailoring his liberal arts degree to focus on Earth and environmental sciences. As a junior pursuing a minor in environmental inquiry, he has been conducting a year-long project investigating the impact of rock salt placed on campus walkways and parking lots on the water chemistry of a stream that runs through campus. Steve has literally "weathered" all sorts of conditions to collect and managed his data. Steve looks forward to disseminating his work through a local and regional undergraduate research conference and engaging in more research opportunities in the future.

Michael Hopko, University of West Florida

Earth and Environmental Sciences, Nominated by: Dr. Johan Liebens

Michael Hopko is an honors student majoring in Environmental Science who has carried out soil and sediment research for almost two years. Initially, Michael worked on a research project that investigated the concentrations and behavior of DDT and its breakdown products in wetland sediments. Michael impressed his mentors with how quickly he understood everything, how well he worked with minimal supervision, how meticulously he carried out the work, and how dedicated he was to the project. In collaboration with another student, Michael collected sediment samples with grab and core samplers, analyzed the sediments for various characteristics including DDT concentrations, and presented results at two AGU meetings and two local symposia. In a second project, Michael successfully examined the effect of land use transitions on soil health and showed that major changes in soil health are detectable 70 year after transition to agriculture. Michael once again showed how quickly he can come up to speed by reading the scientific literature and how well he can work independently. An anecdote illustrates the kind of student Michael is: after the holiday break, he came to his mentor's office and said he had not done much during the break. He had only read and summarized 14 journal articles. Michael's research has been recognized on campus by a Summer Undergraduate Research award, Office of Undergraduate Research award, and participation in a NSF-funded interdisciplinary research experience for undergraduates, and has recently been selected to present his research at CUR's Posters on the Hill event. The faculty of the department enthusiastically nominate Michael Hopko for a GeoCUR award. He is an exceptional student.

Katherine Jones, Trinity University

Geosciences, Nominated by: Dr. Kathleen Surpless

Katherine Jones is a Junior Geosciences major at Trinity University and is already an accomplished researcher. Katherine's first project involved U-Pb age dating of a suite of detrital minerals in the Cambrian Hickory Sandstone of Texas to develop a geochronologic record of the overall Llano Uplift, a structurally and petrologically complex region that remains one of the best-exposed records of the southern Grenville orogeny. Katherine presented her results at the Annual GSA meeting in Indianapolis in November 2018, where she was recognized with the Sigma Gamma Epsilon Best Undergraduate Poster award. Katherine's current research involves using geochemical and petrographic evidence to evaluate whether carbonate sediment production of the Apulia Platform of central Italy ended due to rising sea level, ocean anoxia, or other factors. Katherine completed one month of field work in Italy last summer and has been collecting and synthesizing petrologic and isotopic data from her samples through this academic year. Katherine is an excellent collaborator and a careful and conscientious researcher, and we look forward to seeing where she goes from here.

Kristin Kimble, Middlebury College

Geology, Nominated by: Dr. Patricia Manley

The Geology Department at Middlebury College enthusiastically nominates Kristin Kimble for the GeoCUR Award for Excellence in Student Research. Kristin is a tremendous student who has excelled in coursework and research during her four years at Middlebury. She has completed all the requirements for a double major in Geology and Biology, two lab sciences with high demands on student time. She studied abroad for a semester in New Zealand, going out of her way to experience the unique geology in this part of the world. She participated in off-campus courses in Costa Rica (Geology) and the Bahamas (Biology), further broadening her background in field science. In the summer before her senior year she worked for 4 weeks in a clean lab at MIT processing cave carbonate samples for U/Th dating. She then completed a week of demanding fieldwork in Utah that included accessing a remote ice cave where she collected samples for her senior thesis. These samples are of a form of cryogenic cave carbonate that had not previously been reported from North America. In her thesis research, Kristin has analyzed the physical and chemical properties of these samples, including returning to MIT to process them for U/Th dating and clumped isotope thermometry. At Middlebury, we are fortunate to have engaged and thoughtful students, but Kristin is deserving of particular recognition for her sustained and deep engagement in both her Geology and Biology majors, and for the extra effort she has applied to a challenging and successful senior research experience.

Michaela Montgomery, Chapman University

Environmental Science & Policy, Nominated by: Dr. Chris Kim

Michaela Montgomery has demonstrated excellence in independent student research in the Kim Environmental Geochemistry Lab at Chapman University through her work exploring the long-term impacts of arsenic in abandoned mining areas by investigating the weathering of mine tailings and potential mobilization/exposure of arsenic. Her experience has spanned simulated gastric fluid leach extraction experiments, detailed X-ray fluorescence mapping at the Stanford Synchrotron Radiation Lightsource, and experiments in a specialized environmental chamber under controlled temperature/humidity conditions. Michaela is a collaborative, inquisitive, and engaged researcher and is highly deserving of such recognition by the Geosciences Division of the Council on Undergraduate Research.

Taylor L. Weeden, Grand Valley State University

Geology, Nominated by: Dr. Patrick M. Colgan

The Geology Department at Grand Valley State University recognizes Taylor Weeden for her research on mapping inland eolian dunes in western Lower Michigan in order to reconstruct paleowind directions during the Pleistocene-Holocene transition ~13,600 to 11,000 years ago. Taylor tested a working hypothesis that inland dunes formed on the abandoned bed of Glacial Lake Chicago after it drained ~13,600 years ago and exposed large amounts of fine sand to wind erosion. This led to a significant inland dune-forming event, which ended after dune stabilization by vegetation at ~11,000 years ago. Taylor mapped thousands of individual parabolic dunes in six coastal counties and refined a method to determine wind directions in ArcMap 10.4, and then construct wind rose diagrams using Microsoft Excel and Stereonet programs. She found that inland dunes cover hundreds of km² in six coastal counties and that most of the inland dunes have similar morphology, geomorphic setting, and grain size. This suggests that inland dunes are genetically related, and probably formed at the same time as OSL-dated inland dunes in Ottawa County, Michigan. Taylor also distinguishes herself academically in a broad range of courses in geology and is known for her intelligence, honesty, creativity, and impressive and inspiring work ethic. Taylor presented her research at the 2018 annual meeting of GSA in Indianapolis, Indiana in a poster session, and she is writing up the results for her senior capstone paper. Taylor is planning to attend graduate school.