

NSF Awards National Weather Center REU program Grant to CAPS Scientist March 19, 2021

Dr Daphne LaDue, a CAPS Senior Scientist, has been awarded a National Science Foundation grant to run the “Real-World Research Experiences for Undergraduates (REU) in Atmospheric & Geographic Sciences” program, an REU program housed at the National Weather Center at the University of Oklahoma, for 2021-25. Dr. LaDue has a strong track record in successfully running the NWC REU program from 2001-2020, including handling the many challenges that the COVID-19 pandemic presented for the 2020 REU program.

The Real-World REU in Atmospheric & Geographic Sciences will bring 70 undergraduate students from all U.S. states and territories to Norman, Oklahoma, to conduct scientific research and learn about the wide range of career opportunities available to them. The heart of the program is an authentic research experience that introduces participants to scientific research under the guidance of one or more scientists in the weather, climate, and radar organizations within the University of Oklahoma-Norman's University Research Campus. These organizations span across Federal, state, university, and private sector groups that work collaboratively to improve our understanding of weather and climate. Additional activities in the REU program are designed to provide a well-rounded experience that help participants determine their next steps in regard to advancing education and careers. Participants attend seminars and workshops to learn about cutting edge science and to build their research skills. They tour weather, climate, and radar-related facilities and are able to learn about a day in the life of a research scientist. At the end of the program, participants share their research projects with each other, the local scientific community, and the larger scientific community at a professional conference.

This new proposal will help evolve the program in exciting new ways. It will help to advance the field by developing a Scientific Writing Workshop curriculum that is piloted, refined, and shared widely with other REU programs. It will also connect and expose participants to the idea of convergent research through a new, hands-on activity with a wide array of instrumentation ranging from experimental radars to drones and weather stations. This program will leverage experiences

running the 2020 program online to offer place-bound students the opportunity to participate and for all participants to connect more broadly with alumni of the program. Over the past 20 years, this program has brought in more than 270 U.S. undergraduate students, introducing them to research while teaching them valuable skills for graduate school and future careers. The scientific workforce is becoming more equitable because of this program, with half of the participants being female and a quarter being racial and ethnic minorities, veterans of the U.S. armed forces, non-traditional students, or students with a physical disability, all of whom are underrepresented in atmospheric sciences. The majority of this program's alumni have pursued a graduate degree and now work in meteorology or a related field. This REU has and will continue to have broader impacts at the individual, local, university, state, national, and international level through publications each year while also producing or improving databases and tools useful beyond their own research projects. Several participants' research results have been used for National Weather Service training and emergency management operations. This program builds a diverse community of scientists with a deep appreciation for quality research and increases collaborative and convergent research between the academic, public, and private sectors. These efforts assist in the growth of the next generation of inclusive scientists to maintain U.S. global leadership in weather and climate research.