Contributing to the NOAA Mission - Meet the 2018 Interns

Every summer, OAR provides opportunities for student interns to experience firsthand the research conducted at the laboratories and program offices. OAR uses various programs to bring in talent from a diverse pool of student applicants including the NOAA Hollings Scholars program, Educational Partnership Program with Minority Serving Institutions (EPP/MSI) and Cooperative Science Center (CSC) NOAA Experiential Research and Training Opportunities (NERTO) student support program. This special edition of the EEO/Diversity Program Office newsletter is to showcase and share the work the students are doing alongside our scientists. As reflected in their stories, they all value the mission of NOAA. Thanks to all the OAR laboratories and program offices who contributed articles to this Special Student Edition of our EEO Newsletter.

Photo: NOAA Boulder student interns, mentors, laboratory directors and deputy directors at the student orientation in June. This year, ESRL had a total of 29 interns. Credit: Sydnee Masias

Photo: Nineteen of the 29 interns at AOML. The interns included students participating in the Hollings Scholars and Cooperative Science Center NERTO program.

Photo: GFDL interns at the “chat and chew” themed luncheon at GFDL’s courtyard. This was one of the luncheons that Latoyia Kirton spearheaded to make interns feel welcomed to the lab and to help them get acquainted with their sponsors and hosts in an informal setting. Credit: Latoyia Kirton
Mike Moore - Creating an Aerosol Profile

Michael (Mike) Moore joined CSD this summer under the Research Experience for Community College Students (RECCS) program sponsored by the Cooperative Institute for Research in Environmental Sciences (CIRES). Mike attends Red Rocks Community College and is a Geology undergraduate. As a Colorado native from Littleton, Mike enjoys backpacking, rock climbing, and other outdoor activities. Mike was first introduced to NOAA through the RECCS program, which connects students to research opportunities in Colorado. The students participate in the nine-week program over the summer and eventually present their research at a local student science symposium and at an oral session.

This summer, Mike primarily worked on creating an aerosol profile from Doppler wind lidar measurements. Mike enjoys being exposed to new areas of research and he appreciates the opportunity to participate in science experiments from start to finish. One thing Mike will take away from his internship will be a more substantial knowledge of research and how research is done, practically.

Mike is currently a member of the Colorado Army National Guard. Federal service is important to him, so he would consider an agency career. The U.S. Geological Survey is a big deal in the geology world, and it would be a great opportunity to be able to join an agency like that one.

Mike hopes to continue his education where he will continue to develop his interest in geology, with a greater focus on hydrology. Traditionally, geology is an ideal basis for moving on to a career in a field like oceanography, so there are numerous possibilities. Mike would recommend NOAA to other students because the agency encourages and develops students, allowing them to explore research that NOAA is at the forefront of.

Jenny Chiao – Building a Doppler Lidar from Scratch

Jenny Chiao is a Hollings Scholar who majors in electrical engineering. Jenny started at Allan Hancock Community College in California and transferred to California Polytechnic State University at San Luis Obispo (Cal Poly).

Jenny began her college career in environmental engineering but switched to electrical engineering before transferring to Cal Poly. Jenny is passionate about her work at NOAA and her career path. She loves being challenged in work and school, which was what influenced her transition from environmental to electrical engineering. In her spare time, Jenny enjoys capoeira, an Afro-Brazilian style martial art.

At CSD, Jenny is building a doppler lidar from scratch. This is her first time getting experience with hardware in the engineering field, which is an exciting new challenge. Jenny and her mentors are attempting to create a lidar that can receive and analyze a greater width of reflections than current available lidar machines. The new design they are working on will be streamlined, taking up less space and more cost effective than current models. If successful, the lidar will be a marketable instrument.

Jenny is excited to have gained more hands-on experience in the world of electrical engineering. She also appreciates the opportunity to work with more women; she typically is one of only a few women in her classes and major at school, so she appreciates having a more diverse workplace. Jenny said the culture and atmosphere at NOAA is welcoming and relaxed as opposed to her prior internship. She’s enjoyed having a mentor where she has learned about different career and education paths, as well as about NOAA.
Matthew Chung – Developing a Dust Forecasting Website

Matthew Chuang, a rising junior at the University of Maryland pursuing a Bachelor’s Degree in Computer Science, has been a student intern at ARL Headquarters for two months.

Throughout middle and high school, he participated in competitive swimming and volleyball. During his first year of high school, he made the varsity swim and dive team and volleyball team. By junior year, he was the swim team captain; and by senior year, he qualified for USA Swimming Junior Nationals.

Outside of sports, Matthew was also enthralled by computer programming. His initial exposure to this field began during his first semester of high school and continues to this day. While his understanding of other subjects was above average, the same could be said to a much greater extent with programming. It didn’t take long for Matthew to decide his major in the months before university.

At ARL, he works under the guidance of Dr. Daniel Tong and Mr. Rick Jiang. Currently, he is taking part in Dr. Tong’s dust project. His role is to develop a dust forecasting website for general users. This involves various aspects of computer science including frontend and backend programming, the Linux operating system, and web design and development. He will also study and explore the Section 508 Compliance issues for ARL’s public website.

The most exciting aspect of this internship was the prospect of experience. Matthew has worked at other jobs, but none were related to his major. Matthew’s plan is to become a web or software developer after graduation. He will definitely consider a career at a federal agency and encourage his juniors to intern at one as well. He believes he will be one of the contributing factors in their decision.

Read about interns at ARL/ATDD in Oak Ridge, TN: https://www.atdd.noaa.gov/news/#!/2018_interns

Josh Kraft – What is Driving the Trends of Baseline Tropospheric Ozone?

My name is Josh Kraft and I am a senior at the University of North Carolina Wilmington, studying Environmental Science. I am interested in all things geospatial, and my research has spanned topics such as microplastic pollution, wildfire impacts on vegetation, mountaintop removal mining, and atmospheric transport.

As a Hollings scholar, I am completing my summer internship in the Ozone and Water Vapor group at GMD. I am working with Dr. Petropavlovskikh to determine what is driving the trends of baseline tropospheric ozone observed at sites along the U.S. West Coast. As the E.P.A. allowable ozone standard is lowered, it is becoming increasingly important to know how much ozone is being transported to the U.S. from other locations. We are working with the HYSPLIT model to run back trajectories on air masses of interest, to see how the origin of these air masses are changing, and how that influences the levels of ozone observed here in the U.S.

One of the best parts of my internship experience with NOAA is the ability to focus all of my attention on one project. As undergraduate researchers, we are usually trying to fit research into tiny time slots between lectures, exams, and group projects. The ability to devote my entire summer to one project has been great!
Robin Sehler - How Science Connects to the Global Economy

My favorite quote comes from Leonardo da Vinci: “Principles for the Development of a Complete Mind: Study the science of art. Study the art of science. Develop your senses- especially learn how to see. Realize that everything connects to everything else.” At GFDL, I have had the opportunity to study how science connects to the global economy and to graphic art.

I work with Dr. Sarah Kapnick on a project that employs financial market data to understand the economic importance of NOAA forecasts. I love my mentor’s dynamic approach to science, and I am inspired by her leadership. I also enjoy the interdisciplinary nature of this project, which involves collaboration with an economist from the University of Arizona and with the director of the Climate Prediction Center.

At the beginning of my project, my mentor lent me a book about the graphic visualization of scientific research. Although my academic background is in science, a Geology B.S. from Cal State Northridge and an Environmental Science M.S. from Cal State Los Angeles, I am also passionate about art. It is no wonder I married a graphic designer, who has inspired me to develop an infographic for this project. What excites me about my current internship is the opportunity to creatively represent data and disseminate it clearly.

I love the Applied Sciences, and the prospect of using scientific technology to directly help people is what fuels my goal to work with a Federal laboratory. I learned about the Cooperative Institute for Climate Science (CICS) internship, through my former NASA mentor. I strongly encourage students to intern with NOAA, not only because of the rich learning experience, but because of my experience having an awesome mentor, internship support and friends.

Bobby Garza – Ensemble-Based Climate Model Runs

My name is Bobby Garza, I am from Corpus Christi. I go to Southwestern University (SU), a small liberal arts college in central Texas. I am a computer science major and enjoy the tight knit community that SU has to offer, which is something I found replicated at GFDL. I like to play soccer, run, play video games and I like keeping up to date with all things tech.

My internship at GFDL has been a great experience. The internship feels very professional, and I feel integrated into the team I am working with. I am helping with analysis of ensemble-based climate model runs to ensure bit-for-bit reproducibility among ensemble members. There are many iterations of technology that people or groups use to run these simulations. Making sure that the simulations between different tech generations produce the same answers is important for future research and scalability. I heard of the CICS Internship through an SU Math and Computer Science department email list. The CICS internship sounded most interesting so I applied and was accepted! With this experience under my belt, I still want to continue with my plan of finding a job after I graduate, then finding something that I would like to get my Master’s in and continue my education from there.

My experiences at The GFDL have made me consider a career at a federal agency such as NOAA or NASA. Being connected to the scientific community keeps you up to date on the latest and greatest breakthroughs in research (I love hearing people talk about Science and technology with so much passion). I would recommend positions at NOAA because students get to be part of meaningful work and get a glimpse of the world they will one day be involved in.
Interns Share Experiences

**Great Lakes Environmental Research Laboratory (GLERL) - Ann Arbor, MI**

**Ting-Yi “Franky” Yang - Expanding Knowledge on Great Lakes Ice data Sets**

Franky is a Ph.D. student at the Geodetic Science Division at Ohio State University. She received both bachelor’s and master’s degrees from the Division of Geomatics, National Cheng Kung University in Taiwan. Her research interests include land vertical motion, water level change and relative sea-level rise using satellite Altimetry and InSAR data. This summer, she is working at GLERL with Drs. Jia Wang, Philip Chu and James Kessler, on Great Lakes ice data sets.

In order to determine whether atmospheric teleconnection patterns (ENSO, NAO, PDO, AMO) influence ice formation (both coverage and thickness) and to publish consistent ice coverage data format throughout time, Franky is working on 1) analyzing/updating the ice coverage data, 2) transposing ice coverage data from 510×516 pixels to 1024×1024 pixels (data format changed in 2008 winter), 3) determining the relationship between ice coverage, air temperature, atmospheric teleconnection indices, and biological factors (e.g. hypoxic area, total phosphorus loading estimates, etc.), and 4) exploring the possible solutions to derive ice thickness in the Great Lakes.

Franky is extremely grateful to have the opportunity to work with scientists at GLERL. “When I encounter challenges, my mentors always give me impressive suggestions and ideas, and figure out the solutions with me” she said. Through the intern experience, Franky is expanding her knowledge in different aspects/methods on data analyzing, improving on scientific communication and programming skills, and discovering the various research topics, which can broaden her research career. She strongly recommends this great summer internship opportunity to future STEM students, because it provides a good environment to train and learn how to do research rigorously and how to connect different disciplines to solve scientific questions.

**Cindy Lebrasse - Ecological Modeling of Muskegon Lake Estuary**

My name is Cindy Lebrasse and I am a doctoral student in Marine Science at North Carolina State University. As a Cooperative Institute for Great Lakes Research (CIGLR) fellow this summer, I am working with Drs. Eric Anderson and Qianqian Liu on the ecological modeling of Muskegon Lake Estuary to study how hydrodynamic drivers and anthropogenic stressors affect nutrient and plankton dynamics in this freshwater estuary.

I grew up on a small, tropical island in the Indian Ocean called Mauritius, surrounded by water. I was always intrigued by the ocean so I decided that my career path would be in the marine/aquatic sciences. After completing my bachelor’s degree and working for 2 years at the Mauritius Oceanography Institute, I earned a Fulbright scholarship to pursue a Master’s degree in Marine Science at North Carolina State University, which I completed last year. My research background is in biogeochemistry and coastal modeling of saltwater/brackish systems and I applied for this fellowship to broaden my research background to include freshwater ecosystems. The Great Lakes seemed like the best way to start, since they comprise the largest freshwater ecosystem on Earth! I also wanted to get exposure to working in a lab, alongside experts and scientists who mentor me and at the same time, be able to apply my knowledge and skills in modeling and computer programming to help with a project.

This is exactly what I found at GLERL so far, and being part of the scientific community here has been beneficial in all aspects.

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OAR 2018 Interns

Cindy Lahresse (con’t)
So far this summer, I have been analyzing model results to identify trends and patterns that could inform us about potential risk of hypoxia in Muskegon Lake, and its drivers. The most exciting part of this fellowship for me is being able to improve and apply my modeling and programming skills to visualize the model results through animations/movies, which is very cool! I love creating figures that can stand on their own and tell a story about the state of a system. This type of prediction from coupled physical-ecological models is essential to manage and mitigate threats to such aquatic ecosystems as the Great Lakes. Eventually, my plan after I graduate is to find a job where I can continue to do what I love, research, and turn them into actions to help support decision-making.

ESRL - Global Systems Division (GSD) - Boulder, CO

Elise Matera - Science on a Sphere, A Cool Science Phenomenon

Elise is from Chapel Hill, NC and is a rising senior at Vassar College in New York. Elise is an Environmental Studies major with a focus in Biology and Women’s Studies. She is also pursuing a minor in American Literature and runs cross country and track for her school. She loves exploring the trails in Boulder.

Elise works at GSD on education and outreach for Science on a Sphere (SOS). As an intern, she has accumulated information on cool science phenomena that get students excited. Her goal is to help teachers use SOS data sets to explain those phenomena in the classroom. After graduating, Elise plans to work for a few years before going to graduate school to study ecology or environmental science. She loves to work outside, so field research would make her happy!

Katina Jakel - Learning About IT in a Scientific Setting

Katina was born in Colorado Springs but has lived in Denver for most of her life. She attends the University of Colorado Denver and is majoring in information systems. Katina enjoys playing classical piano and writing music.

Katina learned about NOAA internships at a career fair on her campus. Connections were made and she joined GSD in the Information and Technology Services branch in May. She is excited to learn about IT in a scientific setting and meet the different people who play crucial roles in IT at NOAA. Right now she is helping create a relational database, learning about system and network administrator responsibilities and tasks, and data center operations.

Katina hopes to become either a system or network administrator and then move to a higher level that involves more of the architecture and design of systems and networks. She is still deciding what type of organization and industry for her IT work, but is leaning towards something scientific-based such as NOAA. She has a strong interest in astronomy, so IT at an aerospace company would be ideal. Katina would definitely recommend opportunities with NOAA to other students because of the variety of people who work here, and the unique experience of working at a federal agency. She also thinks it is a great environment to focus on learning and experience--everyone is eager for you to learn.
**Interns Share Experiences**

**National Severe Storms Laboratory (NSSL) - Norman, OK**

**Robert McAfee – Testing Microphysics Schemes**

Robert has always been interested in physics and after completing the Research Experience for Undergraduates program with the National Science Foundation in 2014, he became more interested in applying physics concepts to the real world. He’s getting the opportunity to do that this summer at NSSL as a NERTO intern. He is running severe weather scenarios with a forecasting model to test microphysics schemes and the impacts on the evolution of supercell thunderstorms. The purpose of running such simulations is to improve the process and test different scenarios for more precise prediction of severe storms.

To land his current internship at NSSL, McAfee credits his past experience and involvement in the NOAA Cooperative Science Center funded by the NOAA Educational Partnership Program with Minority-Serving Institutions Cooperative Agreement.

McAfee is scheduled to graduate soon with his master’s degree in physics from the University of Texas at El Paso, and plans to pursue a doctoral degree or seek an entry-level position with NOAA.

“My experience with NOAA and OAR has been eye opening to the future and for future career developments,” McAfee said. “I see more what it is like on a day-to-day basis. There’s an engineering side to NOAA I really didn’t know about before my experience.”

**NOAA’s Ocean Acidification Program (OAP)**

**Annalise Guthrie - From the middle of America to the coast - Communicating Science**

Annalise Guthrie can count on one hand the number of times she’s seen the ocean. Born and raised in Kansas City, MO the majority of her life has been spent landlocked. The closest she’s gotten to ‘wet’ science was studying indigenous perspectives on controlled burns in Haskell Indian Nations University’s campus wetlands. This summer she is immersing herself in something completely new. In fact, she hadn’t heard of ocean acidification until reading about the opportunity with NOAA’s OAP, which was a big driver in choosing the position. “For someone who is studying environmental science to not be aware of this ocean change highlights the importance of communicating about ocean acidification.” And that is exactly what she is doing this summer; creating tools to raise public awareness about this ocean change. How did she land here? She learned about the opportunity at the Tribal College and University Science Day at NOAA’s Earth System Research Laboratory. After interacting with NOAA scientists at various symposia, their dedication to incorporate indigenous perspectives into their work aligned with Annalise’s priorities.

“I see how invested NOAA employees are in sharing knowledge and ensuring informed decisions are made,” Annalise said. So where will she go from here? Annalise is very interested in communicating science and knows it will be intrinsic to her career. This experience has solidified her interest in obtaining a graduate degree in the science communication field. Although she already has a better sense of where she might contribute, she is certain that her future will involve giving a voice to indigenous people, not just from her own tribe, but ensuring indigenous perspectives are included in the dialogue. We wish you all the best Annalise!
Carlos R. Wah-González - Helping Determine Accurate Instrument Measurements

Carlos is from Puerto Rico and is an Electrical Engineering PhD candidate at the University of Puerto Rico at Mayagüez (UPRM). In school, his research is associated with the development of a passive microwave L-band radiometer that can be flown on small unmanned aircraft to obtain measurements of soil moisture and salinity. During his current internship, Carlos is working in PSD with Dr. Gary Wick on a closely related project to simulate the measurements the instrument would obtain. The results will help determine just how accurate the instrument measurements will need to be. Outside of work, Carlos enjoys reading, music, and playing volleyball.

This is his second internship with NOAA, and Carlos is grateful for the opportunities his affiliation with NOAA-CREST has enabled. He would recommend internships with NOAA to any student seeking to help the environment or study the earth. His first internship was with GLERL where he developed a program that compared different databases of rainfall amount over the Great Lakes.

Following his internships, Carlos would definitely consider a career with NOAA or other Federal agency. He would like to work either in academia promoting environmental research in engineering or as a part of a Federal laboratory conducting engineering research. He feels that we still have a long way to go to be able to understand the science and complexity of our planet and believes working with NOAA provides an interesting opportunity to learn more!

James Butts - Researching the Forecasting Skill for Seasonal and Subseasonal Weather Forecasts

James Butts currently lives in Greeley, CO, but grew up in a small town called Byers, in the eastern plains of Colorado. He has many hobbies and a large interest in many divisions of math and science.

James earned his Associates of Science in Biology in spring 2017, but continued at Northeastern Junior College in Sterling, CO for a third year to finish up some extra biology classes. This upcoming fall 2018 semester, James plans to transfer to the University of Northern Colorado (UNC) in Greeley, CO. At UNC, he will pursue a bachelor’s degree in Biology and Software Engineering. What he plans to do after graduating is unknown, but he may attempt to become an Optometrist or a Microbiologist.

This summer, under the guidance of John Albers and Julianna Dias, CIRES/PSD, he will be researching the forecasting skill for seasonal and subseasonal weather forecasts. Current technology allows experts to provide reasonably accurate weather predictions out to about two weeks. Beyond two weeks, the chaotic nature of atmospheric variability makes forecasting exceedingly difficult. However, we are also able to provide reasonably accurate forecasts for time periods beyond about 3 months. Forecasts between these two ranges are referred to as subseasonal to seasonal (S2S) predictions.

Through this internship, he hopes to gain coding skills, develop good research skills and habits, and to learn about a research scientist’s duties. James is a part of the RECCS student program. Learn More about RECCS: http://cires.colorado.edu/outreach/RECCS
**PMEL is excited to host five students this summer through NOAA’s Ernest F. Hollings Scholarship program, NOAA’s College-Supported Internship Program, and the University of Washington’s Joint Institute for the Study of the Atmosphere and Ocean (JISAO) internship program. They are working across various groups at PMEL: Genetics and Genomics, Ocean Carbon, Ocean Tracers and Atmospheric Chemistry.**

**Claudia Althoen - The Role Phytoplankton Blooms Play on SSA**

Claudia is a Hollings Scholar studying at the University of Minnesota – Twin Cities majoring in Environmental Sciences, Policy and Management with minors in Climatology, Earth Sciences, Marine Biology, and Creative Writing. Claudia is originally from Bemidji, MN and enjoys playing piano, exercising, and exploring the great outdoors and has also taken up a new hobby recently: nephology.

For my internship, I’m working with Dr. Trish Quinn and the Atmospheric Chemistry group analyzing the OC-EC and cation/anion concentrations and the chemical composition of the sea spray aerosol (SSA) samples collected during The North Atlantic Aerosols and Marine Ecosystems Study (NAAMES) expeditions. I’m looking to see what kind of role phytoplankton blooms play on SSA, and if there’s time, whether synoptic meteorology plays a role as well. I really like how this internship is a combination of atmospheric science and ocean science and that I’m researching something that I never knew much about (sea spray aerosols) before! It’s been a great learning experience and the people here are terrific! I’m planning to pursue a dual degree in graduate school and down the road I’d like to work in a federal agency doing research.

I would definitely recommend opportunities at NOAA to other students. It’s a great way to get first-hand experience doing research in a federal agency, and the research experience gained is invaluable.

**Treasure Warren - Learning About Ocean Acidification**

Treasure is a rising senior at the University of California – Davis majoring in Environmental Chemistry. She is spending the summer as a JISAO undergraduate intern working with PMEL researchers in the Ocean Carbon program.

My internship at PMEL is focused on ocean acidification by analyzing model output and mooring data from the California coast. Specifically, I am looking at seasonal variability of pH and aragonite saturation of subsurface seawater. I am elated to have this opportunity to learn about ocean acidification. Another reason I am excited about my project is I’m learning my first programming language, python.

At UC Davis, I am currently doing undergraduate research through Mentorships for Undergraduate Research Participants in the Physical and Mathematical Sciences (MURPPS), focusing on electrochemistry. I also recently completed an internship with UC Davis’ Cross Cultural Center serving the Mixed Heritage Community! I am of mixed heritage with Jamaican and Irish roots.

I am looking forward to graduate studies after graduation and would definitely consider a career with a federal agency. I highly recommend opportunities at NOAA to students because it is a great environment to grow and explore your interest in environmental science.

Read more about all of the summer students here: [https://www.pmel.noaa.gov/meet-pmels-summer-2018-undergraduates](https://www.pmel.noaa.gov/meet-pmels-summer-2018-undergraduates)
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Website: www.eeo.noaa.gov

ALTERNATIVE DISPUTE RESOLUTION:
NOAA’s Alternative Dispute Resolution (ADR) Program provides mediation and other services and seeks early resolution.
Website: www.wfm.noaa.gov/adr/

ABOUT US

VISION OF EEO OFFICE: To assist the Agency in creating a diverse workforce that is inclusive and free of discriminatory and retaliatory actions.

EEO MISSION: To bring awareness to employees, applicants for employment and management about EEO through the following:

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Exposure: Recruitment and outreach activities for short and long-term recruitment.
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Website: http://eeo.oar.noaa.gov/

CONNECTIONS NEWSLETTER

Connections is published quarterly by the OAR EEO/ Diversity Program Office. The purpose is to share accomplishments and to link Diversity, EEO and Science within all of the OAR laboratories and program offices. If you have any newsletter ideas, suggestions and stories to contribute, please email Georgia Madrid - georgia.madrid@noaa.gov.

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