

Formal and Informal Mentorship, Outreach, and Public Engagement.

Air Resources Laboratory - 2022 Lab Review

HYSPLIT Seminars

Due to wide acceptance of HYSPLIT for atmospheric transport, ARL has a long history of public engagement and academic outreach to ensure the tool is supported properly and widely used. Annual HYSPLIT Workshops have moved online since 2019, and that has enabled more global reach and participation in the weeklong training.

2016-2021 Mentoring by the Numbers:

Masters/PhD Candidates Supervised 2016-2021

- Sudheer Bhimoreddy, University of Texas San Antonio, Ph.D 2017
- Corbin Brooks, an M.S. candidate from Howard University, 2019
- Anaiya Reliford, Atmospheric Sciences and Meteorology (NCAS-M) at Howard University, Masters. 2020

Masters/PhD Committee Memberships 2016-2021

- Brittany Jenio (Porcelli), University of Tennessee Space Institute Dept. of Aerospace Engineering (M.S., Aerospace Engineering)
- Samantha D. Walley, Texas Tech University Dept. of Geosciences (M.S., Atmospheric Science)

2016-2021 ARL Interns by the Numbers:

2016 - Three: Natalie Collina, Kathryn Wheeler, Sheridan Green

2017 - Two: James Brown, John Brown

2018 - Two: Zachary Moon, Alexanderia Lacy

2019 - Two: Brittany Jenio, Corbin Brooks

2020 - Six: Daniel Yi; Eric Roy; Leah Hopson; Anaiya Reliford; Malachi Berry; Maurice Roots

2021 – Six: Alanna Goodell, Todd McKinney, Justin Bettenhauser, Dilchand Nauth, Joscelyne Guzman; Anaiya Reliford

2016-2021 Informal mentorships

Mentorship of UA Huntsville Student Balloon Experiment

Alice Crawford and Mark Cohen are working with students in the space hardware club at University of Alabama Huntsville to compare the trajectories of high altitude balloons they have launched with HYSPLIT trajectories. The club currently has two balloons in the air and plans to launch two more over the next couple months. One of the balloons has already traversed the globe twice. The balloon trajectories can be viewed at <https://www.ashballoon.info/missioncontrol>



2016-2021 Highlights and Notable Accomplishments

AGU Honors and Recognition Committee

LaToya Myles is President of the (2019-2021) AGU Honors and Recognition Committee, which maintains oversight of the Union's honors and recognition programs at all levels – Union-wide (medals, fellows, awards, and prizes) and Sections. The Committee recognizes all constituencies and fosters a planet-wide network of individuals in the Earth and space sciences who epitomize excellence and cooperation in research, education, and outreach.

NSF Geosciences Opportunities for Leadership in Diversity (GOLD) Ideas Lab

March 2016 - LaToya Myles attended the NSF Geosciences Opportunities for Leadership in Diversity (GOLD) Ideas Lab, an invitation-only workshop designed to develop collaborative research ideas and proposals to achieve goals of preparing new leaders within the geosciences community who can catalyze progress in broadening participation within their local spheres of influence.

2017 NOAA Center Champions Workshop Group award

LaToya Myles for sustained support of student mentorship and capacity building at the NOAA Educational Partnership Program Center for Environmental Sciences

August 2017 Total Solar Eclipse

Due to its location near the path of totality, the Solar Eclipse provided an excellent opportunity for the ATDD division to engage in local and community outreach. ATDD launch a weather balloon and deploy sensors to measure solar energy, wind speed and direction, and air temperature at Roane State Community College during a field trip for students from Linden Elementary School.

September 2017 and May 2019: ARL tours during NCWCP Open House

September 2017 and May 2019. For each open house, over 200 people toured ARL. Activities usually included a Directors overview talk in the Plume Prediction Center. The tour then visits ARL's chemistry laboratory, where Dr. Xinrong Ren, Dr. Winston Luke, and Paul Kelley give short presentations and demonstrations on the Lab's chemistry research programs (greenhouse gas measurements, mercury monitoring, and air quality measurements, respectively).

Dust Rising Student Film

2018 Dr. Daniel Tong, lead author of "Intensified dust storm activity and Valley fever infection in the southwestern United States," appears in a 26-minute documentary, Dust Rising. Filmed by Lauren Schwartzman of the University of California, Berkeley. Dust Rising was recently named a winner of the Student Academy Award (a.k.a. Student Oscar) by the Academy of Motion Picture Arts and Sciences.

Keynote address

Dr. Patrick Campbell gave the keynote address at the Books Motivate Foundation's 2019 National Climate Outreach Program Breakfast of Champions fundraiser on August 31, 2019. The event took place in Washington, D.C. during the 2019 National Book Festival. His talk, "Tipping points in the climate system: Global and national concerns for U.S.

citizens and policymakers,” focused on the implications of future climate change and atmospheric composition, as well as feedback loops, policy concerns, and the importance of educating and engaging students on the topic.

Recurring Outreach Activities

Formation and continuing support of UMBC Earth Day symposium April 2018 & 2019

Drs. Pius Lee and Christopher Loughner helped to plan the inaugural University of Maryland, Baltimore County’s (UMBC) Atmospheric Physics 2nd Earth Day Symposium in 2017. In April 20, 2018, both presented at the event to expose UMBC students to research opportunities within the Atmospheric Physics program and promote collaboration with the wider scientific community. Dr. Lee will address air chemistry in the Baltimore/Washington area and Dr. Loughner will discuss the benefit of historical air pollution emissions reductions on human health.

Recurring: NOAA Education and Science Forum at Howard University

LaToya Myles served as an invited speaker and panelist at the 9th Biennial NOAA Education and Science Forum at Howard University on March 18-21, 2017.

Ariel Stein, Mark Cohen and Alice Crawford participated in the 9th Biennial Education and Science Forum of the NOAA Educational Partnership Program with Minority Serving Institutions at Howard University, Washington D.C., March 20, 2018. Ariel gave an invited, keynote presentation about HYSPLIT research in a conference session devoted to NOAA’s Weather Ready Nation. Mark and Alice gave an instructional HYSPLIT Workshop that included a live demonstration of the HYSPLIT modeling system.

Recurring: Take Our Daughters and Sons to Work Day (April)

Inaugurated in 2018, ATDD has a committee to prep and host variety of outdoor activities such as a demonstration of a small unmanned aerial system and the launch of a weather balloon. Activities will resume post-pandemic



NOAA Cooperative Science Center in Atmospheric Sciences and Meteorology (NCAS-M) support:

September 2019: Ariel Stein, Howard Diamond, and Alice Crawford participated in the NCAS-M ProjectFest held at the NOAA NCWCP to match up prospective NOAA science mentors with students from NCAS-M which is a consortium of 13 universities from across the country (including Puerto Rico). Howard and Alice made three-minute lightning round presentations on their work in climate science and the HYSPLIT model respectively.

August 2021: LaToya Myles briefed in internship strategies and opportunities as well as gave an brief overview of ARL

Individual Outreach Activities

NOAA Deltas Award Scholarship

Summer 2021: ARL’s Michelle Howard and her NOAA based Delta Sigma Theta Sorority, Inc. sisters (NOAA Deltas) presented an HBCU scholarship award, which was sponsored and raised by the NOAA Deltas team.

Albuquerque International Balloon Fiesta

October 2019: Temple Lee, Ed Dumas, Bruce Baker, and Tilden Meyers from ATDD performed small unmanned aircraft system (sUAS) flights to support weather forecasting operations during the Albuquerque International Balloon Fiesta. On 10 Oct, when the balloons did not fly due to windy conditions, the group performed 17 vertical profiles with the Meteomatics between 0500 and 1000 LST to capture the dissipation of the low-level temperature inversion and development of a well-mixed boundary layer. Furthermore, on 10 Oct, Temple and Ed gave a presentation, entitled “Using Small Unmanned Aircraft Systems to Improve Weather Forecasts”, to about 30 balloonists and other members of the public in which they highlighted ARL’s role with helping in weather forecasts at the Balloon Fiesta and also in which they described how sUAS improve knowledge of land-atmosphere interactions to improve weather forecasts.

2021: Boys and Girls Club of America Earth Day Contest

LaToya Myles filmed an introduction to a Boys and Girls Club of America contest for Earth Day, April 22. Students from ages 10-12 will complete an activity to learn about their ecological footprint, then design a poster. LaToya will then judge the poster competition that is designed to encourage viewers to reduce their ecological footprint by taking a specific action.

Outreach and Public Engagement: Climate Change Talks for Middle School

Dr. Howard Diamond gave a series of four half-hour virtual talks on climate change science and his work career as a climate scientist at NOAA to approximately 300 8th grade students at Old Mill Middle School South in Millersville, MD in Anne Arundel County Maryland from April 15-16.

Weather Balloon Launches

2017: ATDD team members conducted a weather balloon launch and demonstrated meteorological instruments for students at Amherst Elementary School in Knoxville, TN

2017: ATDD team members met with Kelsey Ellis, an assistant professor in the geography department at the University of Tennessee, and did a weather balloon launch for her introductory course on weather and climate. The local news media also covered the event.

2018 and 2019: ATDD team members conducted a weather balloon launch and demonstrated meteorological instruments for over 100 sixth grade earth science students at Rockwood Middle School in Rockwood, TN

2019: ATDD team members conducted a weather balloon launch and discussed the meteorological measurements that can be obtained with this platform with students at Robertson Middle School in Oak Ridge, TN

2019: ATDD team members conducted a weather balloon launch for students at the American Museum of Science and Energy middle school science camp in Oak Ridge, TN

2019: ATDD team members conducted performed a weather balloon launch for about 20 students at a science camp near Oak Ridge and discussed ways in which these measurements are used to help scientists better understand the atmosphere.

Science Fair

2021: Temple Lee served as a judge for Earth and Environmental Sciences section of the International Science and Engineering Fair

2021: Ed Dumas, Temple Lee, and T.J. Schuyler participated as judges in the 70th Southern Appalachian Science and Engineering Fair at UT on Monday, March 29, 2021. Like last year, this year’s fair was held virtually and included science projects from students in grades 6 through 12 from a variety of schools located throughout the East Tennessee area.

Ed Dumas participated as a virtual judge in the Tate’s School Science Fair in Knoxville, TN on March 11, 2021.

Alice Crawford and Glenn Rolph served as poster evaluators for the 2018 Student Science and Education Symposium, August 2, 2018, at NOAA Headquarters in Silver Spring, Maryland.