



## Student Scholarship Internship Opportunity (SSIO) Online System

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### SSIO 2022 Internship Opportunity Position

#### Internship Information

**Project title:** Atmospheric Measurements using Small Uncrewed Aircraft Systems (sUAS) (for CSC Student)

**NOAA mission goal:** Weather-Ready Nation

**Hypothesis or objectives:** The advent of small, uncrewed aircraft systems (sUAS) for atmospheric research promises to provide new opportunities to make atmospheric measurements in the lowest layer of the Earth's atmosphere. ARL uses this technology to measure changes in air temperature and relative humidity with altitude; to map the temperature and character of the Earth's surface, and to perform storm damage assessments. Whereas thermodynamic quantities are relatively straightforward to measure using sUAS, obtaining winds are much more difficult. An objective of this project is to develop and evaluate techniques to reduce uncertainties in winds obtained from sUAS. An additional objective is to explore the feasibility of measuring and calculating fluxes of trace gasses and aerosols on sUAS.

**Academic status:** Graduate

**Estimated start - end date:** November 2021 - November 2022

**Duration:** 12 months

**Area(s) of discipline:** Atmospheric Science, Environmental Engineering, Mechanical Engineering, Meteorology

**Internship location:** Oak Ridge, TN

**Duties and responsibilities:** One graduate student will be selected to gain exposure to NOAA's atmospheric research with small Uncrewed Aircraft Systems (sUAS) through a hybrid internship experience. This student's job duties will be:

1. Evaluate and develop techniques for obtaining winds (both horizontal and vertical) from rotary-wing and fixed-wing sUAS.
2. Evaluate and develop techniques for sampling trace gas species, i.e. CO<sub>2</sub> and CH<sub>4</sub>, and aerosols from sUAS to enable sUAS to be used for measuring fluxes of these quantities.
3. Assist with sUAS operations at weather dependent times.

Through this internship, the student will gain exposure working with meteorological instrumentation and will enhance skills with select programming languages, e.g. R, Python, MATLAB, and/or IDL. It is expected that this project will be used to help fulfill requirements for a dissertation and will lead to a draft manuscript that is ready or nearly ready to be submitted to a peer-reviewed journal by the conclusion of the internship.

**Special skills/training required:** Desired skills:

- Experience with sUAS platforms and instrumentation
- Familiarity with programming in R, Python, MATLAB, and / or IDL
- Ability to analyze atmospheric data
- Ability to work independently

**Expected outcomes:** Outcomes are expected to be mutually beneficial to the student and ARL. The student will gain experience with atmospheric boundary layer measurements using sUAS and analysis of meteorological data. They will also have the opportunity to interact with scientists and engineers at ARL. The selected student is expected to contribute to a draft manuscript for submission to a peer-reviewed journal.

**Guidance and supervision:** The student will be under the supervision and mentorship of Dr. LaToya Myles. Other scientists and engineers with specialized skills will also be able to provide assistance in performing research tasks.

**Application package:** Resume  
Unofficial transcript  
Cover letter

**Posted or modified date/time:** Friday, October 1, 2021 - 3:09:00 PM

### Internship Travel Information

**Purpose (student's role):** ---

**Mode of transportation:** ---

**Date(s):** ---

**Destination:** ---

**Estimated cost:** ---

**Source of funding:** ---

### Mentors Contact Information

**Name:** Latoya Myles

**Organization:** Office of Oceanic and Atmospheric Research (OAR)

**Program office:** Air Resources Laboratory

**Mailing address:** P.O. Box 2456  
Oak Ridge, TN 37831

**Fax number:** 865-220-1733

**Phone number:** 423-218-9026

**Email:** latoya.myles@noaa.gov

**Co-Mentor name:** ---

**Co-Mentor email:** ---

**Agency or organization:** ---



### Admin Action

Submitted internship:  Approve

**Disapprove**Additional comment(s):  
(300 characters max)

Accepted for a minimum 3-month EPP NERTO internship. Requires: a workplan developed by CSC and NOAA mentor; substantial engagement with NOAA mentor; and, NOAA-aligned professional development. Queries are sent to: oed.epp10@noaa.gov.

Admin Initials (required):

### Admin Approval Information

**Comments:** Accepted for a minimum 3-month NERTO EPP graduate internship for graduate students supported through any NOAA EPP CSC awards. To see more about NERTO, [www.noaa.gov/eppnerto/](http://www.noaa.gov/eppnerto/). Send queries to, [oed.epp10@noaa.gov](mailto:oed.epp10@noaa.gov). Thank you.

**Initials:** AT

**Approval date/time:** 1/30/2020 2:58:51 PM