

Opportunity Title: EPA Simulated Pollution Modeling Systems Internship

Opportunity Reference Code: EPA-ORD-CEMM-AESMD-2020-04

Organization U.S. Environmental Protection Agency (EPA)

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How to Apply *Connect with ORISE...on the GO!* Download the new ORISE GO mobile app in the Apple or Google Play Store to help you stay engaged, connected, and informed during your ORISE experience and beyond!

A complete application consists of:

- An application
- Transcript(s) – For this opportunity, an unofficial transcript or copy of the student academic records printed by the applicant or by academic advisors from internal institution systems may be submitted. All transcripts must be in English or include an official English translation. Click [here](#) for detailed information about acceptable transcripts.
- A current resume/CV, including academic history, employment history, relevant experiences, and publication list
- Two educational or professional recommendations. Click [here](#) for detailed information about recommendations.

All documents must be in English or include an official English translation.

Application Deadline 8/21/2020 3:00:00 PM Eastern Time Zone

Description ***Applications may be reviewed on a rolling-basis and this posting could close before the deadline.** Click [here](#) for information about the selection process.

EPA Office/Lab and Location: A research opportunity is available at the Environmental Protection Agency (EPA), Office of Research and Development (ORD), Center for Environmental Measurement and Modeling (CEMM), Atmospheric and Environmental Systems Modeling Division (AESMD) located in Research Triangle Park, North Carolina. Scientists in the CEMM AESMD develop and apply large scale comprehensive atmospheric systems to study various aspects of air pollution.

Research Project: This research project will attempt to quantify the effects of new model developments in both the hemispheric CMAQ (H-CMAQ) and the next generation global MPAS-CMAQ modeling system on background pollution and the contributions from domestic and international anthropogenic sources, along with natural emission sources. This research project may include developments of a consistent setup for both the H-CMAQ and MPAS-CMAQ modeling platforms; a protocol for quantifying background pollution through emission perturbation simulations, source apportionment, and/or DDM simulations; and, an approach for prioritizing which specific model updates (e.g. halogen chemistry, deposition, secondary organic aerosols) should be tested through this platform.



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Research activities may include:

- Setting up, performing, and analyzing simulations using regional WRF-CMAQ, hemispheric WRF-CMAQ and global MPAS-CMAQ configurations to enable model inter-comparisons
- Developing methods for quantifying observed and simulated hemispheric and global background air pollution
- Obtaining new observation datasets (e.g. satellite data) and developing new tools/methods to use those data in hemispheric/global model evaluation
- Use existing methods and/or develop new methods to estimate the impact of different model configurations on simulated background air pollution
- Developing new methods to test the various individual components of the CMAQ modeling system to determine their importance in estimating background air pollution

Learning Objectives: In collaboration with the AESMD scientists, the research participant will learn how to develop and apply large scale comprehensive atmospheric modeling systems to study various aspects of air pollution. This research training opportunity will give the research participant experience that extends skills acquired through their advanced degree education.

Mentor(s): The mentor for this opportunity is Wyatt Appel (appel.wyat@epa.gov). If you have questions about the nature of the research please contact the mentor(s).

Anticipated Appointment Start Date: **September 2020.** All start dates are flexible and vary depending on numerous factors. Click [here](#) for detailed information about start dates.

Appointment Length: The appointment will initially be for one year and may be renewed up to three additional years upon EPA recommendation and subject to availability of funding.

Level of Participation: The appointment is full-time.

Participant Stipend: The participant will receive a monthly stipend commensurate with educational level and experience. Click [here](#) for detailed information about full-time stipends.

EPA Security Clearance: Completion of a successful background investigation by the Office of Personnel Management (OPM) is required for an applicant to be on-boarded at EPA.

ORISE Information: This program, administered by ORAU through its contract with the U.S. Department of Energy (DOE) to manage the Oak Ridge Institute for Science and Education (ORISE), was established through an interagency agreement between DOE and EPA. Participants do not become employees of EPA, DOE or the program administrator, and there are no

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employment-related benefits. Proof of health insurance is required for participation in this program. Health insurance can be obtained through ORISE.

Questions: Please see the [FAQ section](#) of our website. After reading, if you have additional questions about the application process please email EPArpp@orau.org and include the reference code for this opportunity.









Qualifications

The qualified candidate should have received a master's degree in one of the relevant fields, or be currently pursuing one of the degrees and will reach completion by the appointment start date. Degree must have been received within five years of the appointment start date.

Preferred skills:

- Skills and experience in running large-scale atmospheric models such as Community Multiscale Air Quality (CMAQ), Weather Research and Forecasting (WRF), Model for Prediction Across Scales (MPAS), and/or the Direct Decoupled Method (DDM)
- Experience manipulating large data sets (i.e., terabytes) in standard formats (such as netCDF)
- Experience with Unix/Linux-based systems
- Specific scientific background in more than one of the following: regional/hemispheric/global meteorological and/or chemistry transport modeling; data analysis; statistical methods
- Experience with programming and/or scripting languages such as Fortran, R, Python, or NCL

Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Master's Degree received within the last 60 months or anticipated to be received by 9/30/2020 11:59:00 PM.
- **Discipline(s):**
 - **Chemistry and Materials Sciences** (2 )
 - **Computer, Information, and Data Sciences** (16 )
 - **Earth and Geosciences** (21 )
 - **Engineering** (27 )
 - **Environmental and Marine Sciences** (13 )
 - **Life Health and Medical Sciences** (3 )
 - **Mathematics and Statistics** (1 )
 - **Physics** (2 )
- **Veteran Status:** Veterans Preference, degree received within the last 120 month(s).