Opportunity Title: EPA Air Quality Modeling of Natural Emissions Internship
Opportunity Reference Code: EPA-ORD-CEMM-AESMD-2020-01

Organization	U.S. Environmental Protection Agency (EPA)
Reference Code	EPA-ORD-CEMM-AESMD-2020-01
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	8/7/2020 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.

Research Project: Scientists in the Center for Environmental Measurement and Modeling (CEMM)'s Atmospheric & Environmental System Modeling Division (AESMD) develop and apply large scale comprehensive atmospheric systems to study various aspects of air pollution. Using the Community Multiscale Air Quality (CMAQ) modeling system (http://www.epa.gov/cmaq), AESMD applies modeling-based approaches to characterize natural emissions, evaluate fate and transport, and quantify their impact on air quality, deposition, and exposure with input from multiple data sources. In collaboration with AESMD scientists, the research participant will be involved in a focused research project that extends skills acquired through their advanced degree education. This research project will examine effects of natural emissions such as dust, wild fires, soil emissions, volcanic emissions, and lightning generated emissions on regional to global air quality using the Weather Research and

Forecasting (WRF) model and CMAQ modeling system.

Research project activities may include:
- Developing model code to improve representation of natural emission sources in CMAQ
- Running and analyzing model simulations to evaluate model performance with new model development
- Examining the relative contribution of natural sources to the total emissions budget
- Using the Integrated Source-Apportionment Method (ISAM) to understand the burden and trend of natural emissions in time and space

Learning Objectives: The research participant will gain experience on examining effects of natural emissions such as dust, wild fires, soil emissions, volcanic emissions, and lightning generated emissions on regional to global air quality using the Weather Research and Forecasting (WRF) model and CMAQ modeling system. The research participant will also learn about enhancements to the treatment of one or more of these emission pathways in the CMAQ modeling system, by conducting detailed evaluation of model simulations against available observational data sets. The research participant may have the opportunity to present research findings through presentations at technical conferences and workshops, and participate in the development of manuscripts for publication in peer-reviewed literature.

Mentor(s): The mentor for this opportunity is Daiwen Kang (kang.daiwen@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 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 be currently pursuing or have received a master's or doctoral degree in one of the relevant fields. 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 CMAQ and WRF
- 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 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 or Doctoral Degree received within the last 60 months or currently pursuing.
- **Discipline(s):**
    - **Chemistry and Materials Sciences** (1 👁)
    - **Computer, Information, and Data Sciences** (1 👁)
    - **Earth and Geosciences** (21 👁)
    - **Engineering** (27 👁)
    - **Environmental and Marine Sciences** (13 👁)
    - **Life Health and Medical Sciences** (1 👁)
    - **Mathematics and Statistics** (1 👁)
    - **Physics** (2 👁)
- **Veteran Status:** Veterans Preference, degree received within the last 120 month(s).