

Opportunity Title: EPA Faculty Summer Fellowship in Modeling Non-perennial Streamflow Variability Across Different Watersheds

Opportunity Reference Code: EPA-ORD-CEMM-WECD-2022-01

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 8/10/2022 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 U.S. Environmental Protection Agency (EPA), Office of Research and Development (ORD), Center for Environmental Measurements and Modeling Division (CEMM). The appointment is with the Watershed and Ecosystem Characterization Division (WECD) in Cincinnati, Ohio.

Research Project: The EPA's ORD in association with the Oak Ridge Institute for Science and Education (ORISE) announces a postdoctoral research opportunity collaborating with a team of EPA/ORD research scientists to characterize the spatial and temporal variability of non-perennial headwater streamflow in forested watersheds of Kentucky.

The extensive headwater stream and interacting riparian network plays an integral part in maintaining clean and plentiful water for aquatic ecosystems and human beneficial uses. Yet modeling non-perennial streamflow throughout the network is difficult, as variable factors including precipitation, physiography and contributing area change in time and space. Concurrently, stream gage data to calibrate and verify model response for non-perennial headwater streams is often limited. Monitoring sensors, and dynamic models are improving simulations of surface water flows. The improved model outputs advance the underlying scientific understanding of hydrology as well as aquatic resource management by providing a baseline for characterizing the magnitude, duration, frequency, and timing of stream drying across local, state, and regional-scale watersheds.

The focus of this research project is to apply watershed hydrological



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modeling approaches, specifically Dynamic Topmodel, to improve surface flow estimates across non-perennial headwater stream networks. A primary goal of the research is improved lateral and longitudinal characterization of stream drying in low-order stream systems. The research project will initially concentrate on selected watersheds within forested portions of Kentucky.

The research participant will collaborate with our productive and driven research team of watershed hydrologists and systems ecologists for a 3-month faculty research appointment. The research participant may contribute to multiple publications of the study findings in scientific journals.

Learning Objectives: The research participant will gain valuable experience in the applied fields of hydrologic modeling, be engaged with a collaborative scientific group, and produce scientific publications that will further our scientific knowledge in the area of aquatic resources.

The research participant may be involved with the following activities:

- Applying and modifying process-based watershed models (e.g., dynamic TOPMODEL) to answer key research questions
- Analyzing and interpreting model outputs in the context of current literature
- Developing research manuscripts and presentations at professional society conferences
- Collaborating with research scientists in other federal agencies and academia
- Developing new research questions and directions related to the project's goals

Mentor(s): The mentors for this opportunity are Drs. Heather Golden (golden.heather@epa.gov), Jay Christensen (Christensen.jay@epa.gov), and Charles Lane (lane.charles@epa.gov). If you have questions about the nature of the research please contact the mentor(s).

Anticipated Appointment Start Date: June 2022. All start dates are flexible and vary depending on numerous factors. Click [ere](#) for detailed information about start dates.

Appointment Length: The appointment will initially be for three months in the summer and may be renewed 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

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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.

ORISE offers all ORISE EPA graduate students and Postdocs a free 5 year membership to the National Postdoctoral Association (NPA).

The successful applicant(s) will be required to comply with Environmental, Safety and Health (ES&H) requirements of the hosting facility, including but not limited to, COVID-19 requirements (e.g. facial covering, physical distancing, testing, vaccination).

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

Qualifications The qualified candidate should have received a doctoral degree in one of the relevant fields (Hydrology, Environmental Engineering, Environmental Science, Ecology, Geography, Geology). Degree must have been received within five years of the appointment start date.

Preferred skills:

- Experience in hydrology, environmental engineering, environmental science, ecology, geography, or geology
- Experience in:
 - (1) numerical catchment-scale rainfall-runoff models (e.g., TOPMODEL, HBV, FLEX-Topo, others) or a combination of rainfall-runoff models (e.g., using the MARRMoT toolbox or others)
 - (2) GIS/remote-sensing software and applications
 - (3) watershed hydrology
 - (4) scripting (e.g., R, Python, MATLAB) languages

Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Doctoral Degree received within the last 60 month(s).
- **Discipline(s):**
 - **Chemistry and Materials Sciences** ([12](#) )
 - **Communications and Graphics Design** ([1](#) )
 - **Computer, Information, and Data Sciences** ([1](#) )
 - **Earth and Geosciences** ([21](#) )
 - **Engineering** ([27](#) )
 - **Environmental and Marine Sciences** ([14](#) )
 - **Life Health and Medical Sciences** ([3](#) )
 - **Mathematics and Statistics** ([1](#) )
 - **Physics** ([2](#) )
 - **Social and Behavioral Sciences** ([1](#) )

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