Opportunity Title: EPA Postdoctoral Fellowship for Simulating Watershed-scale Non-perennial Streamflow Across Space and Time
Opportunity Reference Code: EPA-ORD-CEMM-WECD-2022-02

Organization U.S. Environmental Protection Agency (EPA)

Reference Code EPA-ORD-CEMM-WECD-2022-02

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 12/9/2022 3:00:00 PM Eastern Time Zone

Description **The eligibility criteria have changed to allow applicants that are currently pursuing their degree. Please find the new opportunity posting at https://www.zintellect.com/Opportunity/Details/EPA-ORD-CEMM-WECD-2022-02A**

***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 Office of Research and Development (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 across several physiographic settings in the U.S.

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. Recent advancements in remote sensors, data processing capacities, and statistical approaches are bridging past technological barriers to improve simulations of surface water

flows. The improved model outputs advance the underlying scientific understanding of hydrology for baseline conditions and allows for scenario development to characterize the magnitude, duration, frequency, and timing of stream drying under shifting climate conditions.

The focus of this research will be to apply watershed hydrological modeling approaches, in coordination with remotely sensed data (e.g., satellite, airborne), 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. A secondary goal is to potentially apply climate scenarios to the low order stream system and document the watershed responses. This research will initially concentrate on selected watersheds within the conterminous United States where remotely sensed validation data are available.

The research participant will collaborate with a productive and driven research team of watershed hydrologists and systems ecologists for a one-year postdoctoral research appointment on or around January 3, 2023. The research participant will co-lead multiple publications of the study findings in scientific journals and present at professional conferences. The research participant will gain valuable experience in the applied fields of hydrologic modeling and remote sensing techniques within aquatic systems, be engaged with a collaborative working group, and produce scientific publications that will further our scientific knowledge in the area of aquatic resources.

Learning Objectives: Research activities may include:

- 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. Jay Christensen (Christensen.jay@epa.gov), Heather Golden (golden.heather@epa.gov), Charles Lane (lane.charles@epa.gov), and Laurie Alexander (alexander.laurie@epa.gov). If you have questions about the nature of the research please contact the mentor(s).

Anticipated Appointment Start Date: January 3, 2023. 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 one year and may be renewed upon EPA recommendation and subject to availability of

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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.

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@orau.org and include the reference code for this opportunity.

Qualifications

The qualified candidate should have received a doctoral degree in one of the relevant fields.

Degree must have been received within five years of the appointment start date.

Preferred skills:

- Experience in hydrology, environmental engineering, environmental science, ecology, geography, geology, or a related discipline
- 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; and
  - (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 👁)

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- **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 👁)