

**Opportunity Title:** EPA Fellowship on Effects of Extreme Weather on the Environment Under Future Scenarios

**Opportunity Reference Code:** EPA-ORD-CPHEA-PHESD-2023-10

**Organization** U.S. Environmental Protection Agency (EPA)

**Reference Code** EPA-ORD-CPHEA-PHESD-2023-10

**How to Apply** *Connect with ORISE...on the GO!* Download the new ORISE GO mobile app in the [Apple App Store](#) 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** 12/8/2023 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 Public Health Environmental Assessment (CPHEA), Public Health and Environmental Systems Division (PHESD) in Durham, North Carolina.

**Research Project:** Extreme precipitation events are increasing in their severity and frequency due to increased atmospheric water vapor content resulting from rising air temperatures. In anticipation of further increases land and water managers, municipal planners, and researchers are looking to optimize extreme rainfall design methods that would allow adaptation of storm- and waste-water structures and in consequence protect human life and health, and the environment.

The research participant should have a good knowledge of extreme precipitation event dynamics due to changing climate and associated impacts on flooding dynamics. Under the guidance of a mentor, the research participant will have the opportunity to examine and analyze large data sets from long-term hydro-climatic monitoring and from regional climate model outputs to optimize precipitation-intensity-duration-frequency methodology. The research participant will have the opportunity to attend research team meetings and be involved in all aspects of the research.

Under the guidance of a mentor, research activities may include:

- Developing innovative methods using statistical probability distribution models at different spatial and temporal resolutions applied to historical



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and projected data.

- Evaluating and optimizing application of the extreme values theory methods on non-stationary and gridded datasets.
- Evaluating and comparing extreme events from observations and dynamically- and statistically-downscaled timeseries.
- Examining the projected impacts of regional climate change from dynamically- and statistically- downscaled projections on stormwater management, water quality and/or drought.
- Preparing data layers for dissemination through one or more of the EPA's visualization platforms, such as EnviroAtlas.
- Performing research where there are linkages to downstream water management tools and models, such as HEC-HMS, SWAT, SWMM, Stormwater Calculator.

**Learning Objectives:** The research participant will have the opportunity to present their research results through a combination of reports and technical presentations. The research participant will contribute to a peer-reviewed publication that could be led by the research participant.

**Mentor(s):** The mentor for this opportunity is Anna Jalowska ([jalowska.anna@epa.gov](mailto:jalowska.anna@epa.gov)). If you have questions about the nature of the research, please contact the mentor.

**Anticipated Appointment Start Date:** **October 2, 2023.** 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 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. A travel/training allowance will be provided to the candidate to present project-related research data and results at scientific meetings (e.g., conferences and workshops). 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

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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@oraui.org](mailto:ORISE.EPA.ORD@oraui.org) and include the reference code for this opportunity.

**Qualifications** The qualified candidate should have received a master's or doctoral degree in one of the relevant fields or be currently pursuing the degree with completion by the appointment start date. The degree must have been received within the past five years of the anticipated appointment start date.

Preferred skills/experience:

- Scientific background in: hydrology or engineering design, statistical methods (extreme value theory), climate change
- Statistical computing and methods skills that integrate large data sets from long-term field hydro-meteorological observations and regional modeling (e.g., WRF), to understand hydrologic (rainfall-runoff) and climatologic processes in the context of extreme events and climate change.
- Programming skills: R or Python
- Excellent oral and written communication skills
- Knowledge of Unix/Linux-based systems
- Evaluation of outputs from the regional meteorological and/or regional climate models
- Manipulating large data sets (i.e., terabytes) in standard formats (such as netCDF)
- Geographic Information System (GIS) data management, analysis and mapping (ArcGIS,R)
- Hydrologic modeling (e.g., HEC-HMS)

The participant will be part of an interdisciplinary team of physical scientists, geographers, economists, and social scientists at EPA. Attention to detail and record keeping is desired and prior experience or desire to collaborate with stakeholder groups would also be beneficial.

- 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):**
    - **Computer, Information, and Data Sciences** ([17](#))
    - **Earth and Geosciences** ([8](#))
    - **Engineering** ([2](#))
    - **Environmental and Marine Sciences** ([3](#))
    - **Mathematics and Statistics** ([11](#))

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- **Physics** ([2](#) 👁)