Opportunity Title: USFS Postdoctoral Fellowship in Hydrology
Opportunity Reference Code: USDA-USFS-2021-0199

Organization U.S. Department of Agriculture (USDA)

Reference Code USDA-USFS-2021-0199

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 package 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. Selected candidate must provide proof of completion of the degree before the appointment can start. All transcripts must be in English or include an official English translation. Click **Here** for detailed information about acceptable transcripts.
- A current resume/CV
- Two educational or professional recommendations. Applications need at least one recommendation submitted in order to be viewed by the mentor.

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

Application Deadline 9/21/2021 3:00:00 PM Eastern Time Zone

Description ***Applications will be reviewed on a rolling-basis.**

USFS Office/Lab and Location: A research opportunity is currently available in a collaboration between the US Forest Service (USFS), Center for Integrated Forest Science and Texas A&M University, and is located in College Station, Texas.

At the heart of the U.S. Forest Service's mission is their purpose. Everything they do is intended to help sustain forests and grasslands for present and future generations. Why? Because their stewardship work supports nature in sustaining life. This is the purpose that drives the agency's mission and motivates their work across the agency. It's been there from the agency's very beginning, and it still drives them. To advance the mission and serve their purpose, the U.S. Forest Service balances the short and long-term needs of people and nature by: working in collaboration with communities and our partners; providing access to resources and experiences that promote economic, ecological, and social vitality; connecting people to the land and one another; and delivering world-class science, technology and land management.

Research Project: Forest land use provides the most well-regulated and highest quality water among all other land uses. Climate change, invasive plants and pests, land use change, and population growth all have potential to exert extreme pressures on forested watersheds over the 21st century thereby limiting their ability to provide these ecosystem services. There are few places where these factors will

come together to affect water resources to a higher degree than in areas that lie in the transition between wet and dry hydroclimatic settings such as in the states of Texas, Oklahoma, and Arkansas. Here, water is already limited and shortages are becoming more frequent due to drought and increases in demand. In addition to shortages in the quantity of water, land use conversion from forest to other uses have degraded water quality and increased water treatment costs. It will be of critical importance to develop the capacity to examine and understand the linkage between multiple stressors and water resources at a range of scales through science-based modeling applications and tools.

Under the guidance of a mentor, the participant will conduct hydrological research on water quantity and quality issues, especially as they relate to forest land management, land use, and climate change. The participant will study the linkage between forests and water resources across the southeastern US (with emphasis in Texas, Oklahoma, and Arkansas) through data analysis and model development.

Learning Objectives:

- development of capabilities in hydrological modeling of forest management activities
- engaging with stakeholders representing various interests
- application of the scientific research process from hypothesis testing to publishing and presenting results in a management decision-support context

Mentor: The mentors for this opportunity are Peter Caldwell (peter.v.caldwell@usda.gov) and Dr. Georgianne Moore (gwmoore@tamu.edu). Please contact the mentor if you have questions about the nature of the research.

Anticipated Appointment Start Date: Now until September 15, 2021. Start date is flexible and negotiable, and will depend on a variety of factors.

Appointment Length: The appointment will initially be for one year, but may be extended upon recommendation of USFS and is contingent on the availability of funds.

Level of Participation: The appointment is full-time.

Participant Stipend: The participant will receive a monthly stipend of $6,250, partial coverage (66% of total premium) of individual health insurance, and a travel stipend for attendance at project meetings and presentations at scientific conferences.

Citizenship Requirements: This opportunity is available to U.S. citizens and Lawful Permanent Residents (LPR) only.

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 USFS. Participants do not become employees of USDA, USFS, DOE or the program administrator, and there

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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 visit our Program Website. After reading, if you have additional questions about the application process please email USForestService@orise.orau.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.

Preferred skills:

- Strong quantitative skills that integrate field observations with empirical and process-based modeling to understand the linkage between forest land management, land use change, and climate change and water quantity and quality
- Strong hydrology background, especially knowledge of water quantity and quality issues in the southeastern United States
- Strong analytical and programming capabilities and the ability to build, manage, and analyze large datasets of hydrologic information using programming and/or statistical software (e.g., SAS, Python, Matlab, R, Fortran)
- Knowledge of groundwater hydrology, especially surface and groundwater interactions
- Skilled in geospatial analysis, data, and associated tools (e.g., ArcGIS, GRASS GIS, etc.)
- Skills and experience in applying hydrologic and water quality models (e.g., SWAT, HSPF, MIKE SHE, SPARROW)

Eligibility Requirements

- **Citizenship:** LPR or U.S. Citizen
- **Degree:** Doctoral Degree.
- **Discipline(s):**
  - **Earth and Geosciences** (2 👁)
  - **Engineering** (3 👁)
  - **Environmental and Marine Sciences** (7 👁)
  - **Life Health and Medical Sciences** (3 👁)