

Opportunity Title: Postdoctoral Research Opportunity in Water Resources

Opportunity Reference Code: USDA-USFS-2019-0060

Organization	U.S. Department of Agriculture (USDA)
Reference Code	USDA-USFS-2019-0060
How to Apply	<p>A complete application package consists of:</p> <ul style="list-style-type: none"> • 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. Proof must be sent to ORISE directly from the academic institution including graduation date and degree awarded. 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

If you have questions, send an email to USForestService@orise.ora.gov. Please include the reference code for this opportunity in your email.

Application Deadline 7/15/2019 3:00:00 PM Eastern Time Zone

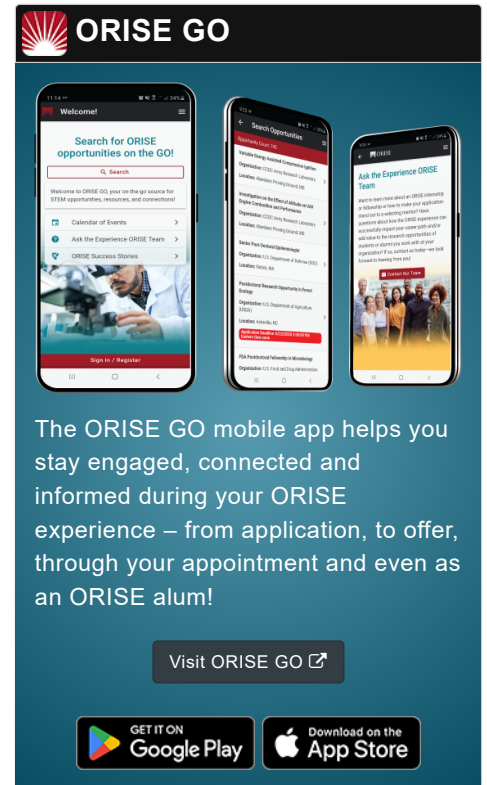
Description *Applications will be reviewed on a rolling-basis.

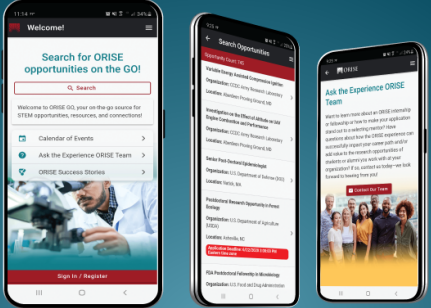
A research opportunity is available with the U.S. Department of Agriculture (USDA), U.S. Forest Service (USFS), Center for Integrated Forest Science in Cordesville, South Carolina.

Forest roads and associated stream crossing structures (e.g. relief culverts, bridges, etc) provide access for forest management. These essential infrastructures need to be properly designed, installed, and maintained for flooding resiliency and ecological benefits purposes. The U.S. Department of Agriculture Forest Service (USFS) manages approximately 370,000 miles of roads and at least 40,000 stream crossings along these roads. Undersized stream crossing structures (i.e. culvert) could cause significant economic losses and could affect stream connectivity, creating barriers to aquatic organisms. It is thus fundamentally important to conduct proper hydraulic design to accommodate extreme flow events impacting design life of these structures. Extreme precipitation events are growing more severe and more frequent in recent years due to increased atmospheric water vapor content resulting from rising air temperatures. As a result, land and water managers, planners, and researchers are increasingly concerned how such extreme precipitation events would affect design discharges and ultimately the road drainage facilities, culverts, bridges, stream crossings and water management structures.

We are looking for a research participant who has a good knowledge of extreme precipitation event dynamics due to changing climate and associated impacts on flooding dynamics, including design and risk analysis of road cross-drainage structures and stream crossings. Under the guidance of a mentor, the participant will study effects of extreme precipitation events on forest road cross drainage structures at three US Forest Service long-term experimental forest watersheds (Hubbard-Brook in New Hampshire, Frazier in Colorado, and H.J. Andrews in Washington).









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Anticipated Appointment Start Date: mid-August 2019

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. The initial appointment is for one year, but may be renewed for an additional year upon recommendation of USFS and is contingent on the availability of funds.

The participant will receive a monthly stipend in the range of \$5,500-6,500, commensurate with educational level and experience, as well as partial coverage (75% of total premium) of individual health insurance. The participant will also receive a travel stipend for attendance at project meetings and presentations at scientific conferences. Proof of health insurance is required for participation in this program. The appointment is full-time at USFS in the Cordesville, South Carolina, area. Participants do not become employees of USDA, USFS, DOE or the program administrator, and there are no employment-related benefits.

This opportunity is available to U.S. citizens, Lawful Permanent Residents (LPR), and foreign nationals. Non-U.S. citizen applicants should refer to the [Guidelines for Non-U.S. Citizens](#) Details page of the program website for information about the valid immigration statuses that are acceptable for program participation.


For more information about the USFS Research Participation Program, please visit the [Program Website](#).

Qualifications The qualified candidate should have received a doctoral degree in a physical science (water resources) or civil/agricultural engineering discipline related to environmental/engineering hydrology/hydraulics, or be currently pursuing the degree and will reach completion by the start date of the appointment.

Preferred Skills:

- Strong quantitative/statistical skills that integrate long-term field hydro-meteorologic observations and numerical modeling to understand hydrologic (rainfall-runoff) and climatologic processes and scaling effects, particularly in the context of climate variability and change including the downscaled ensemble model predictions.
- Background in engineering design and risk analysis that relates to flooding
- Skilled in Geospatial data acquisition from platforms like LiDAR, NexRad, and Satellite/aerial including Landsat, SPOT, and Quickbird, etc., pre-processing, and analysis using ArcGIS, ERDAS Imagine, and other related software
- Knowledgeable and skilled in various GIS-based hydrology/hydraulics modeling usage and application including ArcSWAT, RUSLE, ArcHydro, and others

Eligibility Requirements

- **Degree:** Doctoral Degree.
- **Discipline(s):**
 - **Engineering** (3 )

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- **Environmental and Marine Sciences** (1 )