

Opportunity Title: Postdoctoral Research Opportunity in Water Resources

Opportunity Reference Code: USDA-USFS-2019-0179

Organization U.S. Department of Agriculture (USDA)

Reference Code USDA-USFS-2019-0179

How to Apply 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. 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.orau.gov. Please include the reference code for this opportunity in your email.

Application Deadline 6/15/2020 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 Forest Watershed Research/Santee Experimental Forest 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 examine large data sets from long-term hydro-climatic monitoring to derive precipitation intensity duration and flood frequency analysis for associated peak discharges impacting 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 Oregon).


Anticipated Appointment Start Date: Summer/Fall 2020 (flexible)


This program, administered by ORAU through its contract with the U.S. Department of Energy




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(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 \$6,035, 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](#).

ABOUT THE AREA

USDA Forest Service Santee Experimental Forest (SEF) is located within the **Francis Marion National Forest (FMNF)** near the town of Huger in Cordesville, South Carolina. Located in coastal counties of Charleston and Berkeley, the 2600 ha SEF was established in 1937 by the USDA Forest Service with a mission of silvicultural and hydrological research, environmental monitoring, demonstration and educational activities in support of sustainable forest management practices. The four long-term gauged experimental watersheds of varying scales at the SEF on freshwater wetland forests has its unique location draining to tidally influenced Huger Creek, headwater of East Branch of the Cooper River which drains into Charleston Harbor.

The FMNF is subjected to significant urbanization issues, with numerous rapidly growing urban communities found within and adjacent to the proclamation boundary. It is situated between two major metropolitan areas: Myrtle Beach (60 km to the north) and historic Charleston (50 km to the south). This part of coastal South Carolina is a popular tourist destination well known for its freshwater and saltwater recreation, golf/tennis, beautiful coastal scenery and historical landmarks dating back to colonial America. The climate is hot and humid in the summer and typically mild in the winter. With a population of over 128,000 residents, Charleston is the largest nearby metropolitan area. However, the towns of Moncks Corner (25 km), Goose Creek (55 km), Mount Pleasant (36 km), and McClellanville (32 km) are nearby.

Clemson University's Baruch Research Institute of Coastal Ecology and Forest Science is located in Georgetown located about 60 km northeast from the SEF. Post-secondary education is available at the College of Charleston, Trident Technical College in North Charleston, Horry Georgetown Tech in Georgetown, Citadel in Charleston, and Charleston Southern.

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Air transportation is available at the Charleston International Airport. There is an Amtrak station in North Charleston. South Carolina has an income tax and a sales tax that is 7%.

Housing prices are variable depending on location, but are significantly higher in Charleston County than Berkeley and Georgetown counties where most of the Francis Marion employees live. Prices for lakefront or oceanfront property/housing are considerably higher than for off-water property, due to high demand and limited availability in some areas. Rentals can be difficult to obtain in some areas and prices vary by location.

Application Deadline is 6/15/2020 at 3:00 PM Eastern Time Zone

Qualifications The qualified candidate should have received a doctoral degree in a physical science (e.g., forest hydrology or water resources) or civil/agricultural engineering discipline related to environmental/water resources 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 large data sets from long-term field hydro 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 climate model predictions.
- Background in engineering design and risk that relates to flooding
- Skilled in Geospatial data acquisition from platforms like LiDAR, NexRad, and Satellite/aerial images, pre-processing, and modeling analysis using ArcGIS and related software

Guidelines for Non-U.S. Citizens Details

U.S. citizenship is not required for participation in the USFS Research Participation Program. All appointment offers are contingent upon having a valid immigration status. ORAU is an approved sponsor of an Exchange Visitor (J visa) Program and will work with participants and their families to obtain a valid immigration status. Recent graduates with an F-1 status may also be eligible for participation.

Lawful Permanent Residents

Lawful Permanent Residents (green card holders) may participate in the USFS Research Participation Program. ORAU does not sponsor green card applications, nor do we assist with the process.

J-1/J-2 Status

ORAU can sponsor J-1 status (research scholar and short-term scholar categories only) for selected, eligible participants who do not already have another appropriate authorization. If a candidate already has a J-1 status and is currently in the United States as a "research scholar," he/she may be eligible for a transfer from his/her current sponsor's program.

The maximum duration of a J-1 status depends on the category. ORISE participants generally fall under the category of research scholar. In this

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case, the J-1 duration can be for up to, but not to exceed, five years. ORISE also uses the short-term scholar category which allows for up to, but not to exceed, six months of participation.

A J-1 exchange visitor's spouse, and unmarried children under the age of 21 years, may be eligible to apply for J-2 status. A J-2 dependent (if age appropriate) is eligible to apply for authorization to work by requesting an Employment Authorization Document (EAD) from U.S. Citizenship and Immigration Services (USCIS). ORISE cannot help to obtain visas for other, non-immediate family members who wish to visit, but we can provide a letter that confirms the J-1 participant's association with our organization.

J-2 dependents with valid EAD cards are eligible to participate in this program, assuming all other requirements (degree, discipline, etc.) are met.

The J-1 program is a non-immigrant program and as such recipients are expected to return to their home country after completing their exchange visitor program. Many J-1 recipients are subject to the two-year home physical presence requirement. It is possible to request a waiver of this requirement. ORISE does not assist with that process. *If a participant receives a favorable recommendation for a waiver, he/she will **only** be eligible to finish the currently authorized J-1 time **without** extensions or transfers to a different J-1 program.*

Health insurance is required for the J-1 recipient and for all J-2 dependents. Failure to maintain the appropriate insurance would result in termination of J-1 authorization for the participant and dependents. Such circumstances would require leaving the program and the United States.

Travel outside the United States is permitted for J-1 recipients, subject to the following conditions:

- As the sponsoring organization, ORAU must validate your DS-2019 form, showing that you are currently in good standing in the Exchange Visitor (J-1) Program. We also prepare a letter that describes your association with our organization and includes approximate dates of departure and return.
- If the travel is for official program business (related to the research project), you will need to obtain ORISE/DOE approval of the trip. ORISE must receive notification of the trip at least 35 days before the travel begins. For more information, please refer to the ARS Research Participant Travel Guidelines.

F1 Status

Under certain circumstances, candidates with F-1 status may be eligible to participate. ORAU/ORISE will work with those participants to determine eligibility. *For candidates planning to use an F1 immigration status for participation in this program, pre or post completion F1-Optional Practical Training (OPT) is acceptable; however, candidates are not eligible for the 24 month STEM OPT extension because participants will not be entering into an employee/employment relationship with ORISE, DOE, or USDA.*

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H-1B Status

Because the Research Participation Programs are educational/training programs, and not employment programs, ORISE cannot sponsor participants with H-1B status. A selected participant who already holds H-1B status would need to apply and qualify to change to J-1 status in order to join the program. (H-1B status is employer- and site-specific.)

B-1/B-2 Status

B-1/B-2 statuses are not appropriate for these ORISE programs.

- Eligibility Requirements**

- **Degree:** Doctoral Degree.
 - **Discipline(s):**
 - **Engineering** (3👁)
 - **Environmental and Marine Sciences** (1👁)