zintellect
climb higher

Opportunity Title: USDA-FS Hydrologic/Biogeochemical Modeling: Effects of Longleaf Pine Restoration
Opportunity Reference Code: USDA-FS-SRS-2024-0337

Organization U.S. Department of Agriculture (USDA)

Reference Code USDA-FS-SRS-2024-0337

How to Apply ***To submit your application, scroll to the bottom of this opportunity and click APPLY.***

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. 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. At least one recommendation must be submitted in order for the mentor to view your application.
- A copy of an abstract or reprint of an article

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

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!

Application Deadline 12/20/2024 3:00:00 PM Eastern Time Zone

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

USDA Forest Service Office/Lab and Location: A fellowship opportunity is available with the US Department of Agriculture (USDA) Forest Service (FS) within the Forest Service Southern Research Station (SRS) located in Coweeta Hydrologic Laboratory, a USFS experimental forest in Otto, North Carolina. **Remote participation may be negotiable, but the ORISE fellow will be expected to make periodic visits to USFS offices in Otto, NC, Cordesville, SC, and/or Research Triangle Park, NC.**

At the heart of the USDA 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 USDA 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.

The mission of the Center for Forest Watershed Research is to is to

evaluate, explain, and predict the interactions of water, soil, vegetation, and aquatic and terrestrial organisms in response to management regimes, natural disturbances, climate change and atmospheric pollutants at the watershed scale, and to provide the technical basis to sustain, manage, and restore forested watersheds and their fauna. Our research provides information, methods, and guidelines to implement and evaluate ecosystem management concepts, practices, and effects on water, soil, and forest resources. We are also improving the knowledge, baseline data, and predictive methods that are required to evaluate effects of the atmospheric environment on forested watersheds in the southeastern U.S.

Research Project: We are seeking a well-qualified post-doctoral fellow with expertise in hydrologic modeling to apply these skills in an ongoing project focusing on effects of forest management and restoration on water resources.

Longleaf pine (Pinus palustris) was a dominant tree species throughout much of the southeastern US coastal plain and lower piedmont from Virginia to Texas. Nearly all longleaf-dominated stands have been lost, with many converted into short-rotation loblolly pine (Pinus taeda) plantations. However, as land managers consider ecosystem services, including wildlife habitat, fire suppression, biodiversity, carbon sequestration, and water resources, longleaf restoration is gaining in popularity. Additionally, tree- and stand-level characteristics of longleaf stands may make them more resilient to climate change than loblolly plantations. Because the geographical range of both species includes sandy, well-drained soils to loamy, frequently-saturated soils, we currently lack data and effective models to predict how longleaf and loblolly stands across the region will respond to a changing climate. Data from a network of eddy covariance towers and hydrologic monitoring stations will be used to refine several ecohydrological models that predict water yield and forest carbon sequestration based on site-specific characteristics and climate drivers. This project will advance scientific understanding of the complex biophysical processes and interactions affecting these pine ecosystems and provide tools for land managers to predict how ecosystem services will respond to a changing climate.

Scope of projects for the fellow:

- Conduct research on loblolly and longleaf pine-dominated watersheds to determine how vegetation structure and soil properties affect hydrologic and biogeochemical processes.
- Collabaorate with research team to compile data and parameters necessary to run and validate DRAINMOD-Forest, Wetland-DNDC, and Water Supply and Stress Index Model (WaSSI) for several research sites.
- Evaluate model performance for relevant output parameters among research sites; identify and, if feasible, make modifications to improve model performance.
- Prepare/submit at least one project journal paper and one offered presentation to a national meeting or conference.

Opportunity Title: USDA-FS Hydrologic/Biogeochemical Modeling: Effects of Longleaf Pine Restoration
Opportunity Reference Code: USDA-FS-SRS-2024-0337

- Prepare and appropriately store all documents regarding input data, metadata, programming scripts, simulation outputs.
- Prepare a model documentation manual and a final report.

Learning Objectives: The ORISE fellow will receive mentoring from scientists with the Southern Research Station's Center of Forest Watershed Research.

- Improve understanding of how vegetation structure and soil properties affect hydrologic cycle
- Learn about current field methods for measuring components of hydrologic cycle in terrestrial ecosystems
- Gain expertise in using and refining hydrologic and biogeochemical models: DRAINMOD-Forest, Wetland-DNDC, and WaSSI
- Develop data analysis and scientific writing skills

Mentor: The mentor for this opportunity is Chris Oishi (andrew.c.oishi@usda.gov). If you have questions about the nature of the research, please contact the mentor.

Anticipated Appointment Start Date: December 2024. Start date is flexible 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 USDA Forest Service 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 about $6,000 and a health insurance supplement to cover individual coverage.

Citizenship Requirements: 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.

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 USDA Forest Service. Participants do not become employees of USDA, USDA Forest Service, 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.

Questions: Please visit our Program Website. After reading, if you have additional questions about the application process please email ORISE.USFS.SRS@orau.org and include the reference code for this opportunity.

Opportunity Title: USDA-FS Hydrologic/Biogeochemical Modeling: Effects of Longleaf Pine Restoration
Opportunity Reference Code: USDA-FS-SRS-2024-0337

Qualifications

The qualified candidate should have received a doctoral degree in one of the relevant fields (hydrology, biogeochemistry, environmental science, or a closely related field). Degree must have been received within the past five years.

Preferred skills:

- Experience in use and refinement of hydrologic and/or biogeochemical models, preferably with applications in forest or wetland systems.
- Additional knowledge of interactions between vegetation, soil characteristics, and management activities is also preferred.

Eligibility Requirements

- **Degree:** Doctoral Degree received within the last 60 month(s).
- **Discipline(s):**
  - **Earth and Geosciences** (1 👁)
  - **Engineering** (1 👁)
  - **Environmental and Marine Sciences** (7 👁)