

Opportunity Title: USFS Stream Flow Permanence Mapping Internship

Opportunity Reference Code: USDA-USFS-2021-0148

Organization U.S. Department of Agriculture (USDA)

Reference Code USDA-USFS-2021-0148

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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.

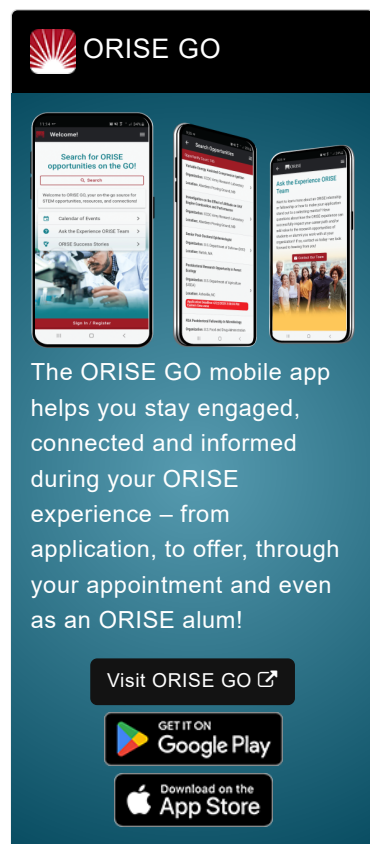
Application Deadline 7/27/2021 3:00:00 PM Eastern Time Zone

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

USFS Office/Lab and Location: A research opportunity is available with the US Forest Service (USFS) located across western Oregon and the Pacific Northwest.


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 managers in Oregon and in the Pacific Northwest are required to conduct stream surveys to understand the extent of perennially flowing streams to inform management practices, specifically, the size of stream-side harvest buffers which influence harvest methods as well as value estimates. Federal, state, and private entities spend thousands to millions of dollars to fund these surveys, yet the scope of monitoring is limited to a local project area and does not enhance the broader regional understanding of stream flow permanence. This interdisciplinary research project combines approaches to compile and analyze data derived from the National Hydrology Dataset (NHD) and high-




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resolution digital terrain models (DTMs) derived from Light Detection and Ranging (LIDAR) data compiled by Oregon Department of Geology and Mineral Industries (DOGAMI).

The goal of this research project is to develop a spatial model of stream flow permanence for the NHD flow line network for western Oregon by using flow permanence observations housed in an internally developed database, in conjunction with predictor variables derived from terrain, hydro-topographical, and environmental data. This research aims to improve the understanding of how climate, landscape, geological, and terrain conditions interact to influence stream flow permanence and will provide a state-of-the-art map of stream flow permanence for western Oregon at a very fine grain (<10 m).

The two month period of the internship will consist primarily of field work across western Oregon with another ORISE intern. Approximately two weeks of lab time will be allocated for planning, processing, and data synthesis. Due to the rural nature of the field work, lodging accommodations will primarily consist of dispersed camping.

With guidance from the mentor, the research participant may be involved in any or all of the following research activities:

- Collect observation data related to stream flow permanence in Western Oregon
- Use GIS to examine relationships among environmental, hydro-topographical, and observational data
- Using complex models in R and Python to examine the relationships between stream flow permanence observations and the covariates of interest
- Collaborating with federal partners on research and database improvement activities
- Conducting scientific synthesis, data analysis, manuscript preparation, and literature searches
- Testing new measurement methodologies for quantifying topographic features related to stream flow permanence

Learning Objectives: The research participant will be mentored by USDA Forest Service scientists and have the opportunity to collaborate along side USGS scientists as well as USFS and BLM managers as part of a regionally focused collaborative to better understand drivers and influential factors on stream flow permanence in geomorphic headwater channels. The research participant will have the opportunity to learn about USDA PNW Research station research, conduct research on national geospatial data sets, validate models based on locally sourced field observations, and apply these to develop maps and databases to inform forest management objectives. Over the course of the internship the participant will learn field sampling methodology, apply sample design theory, and gain experience making maps for planning designed research as well as maps for sharing research results.

Mentor(s): The mentor for this opportunity is Jonathan Burnett (jonathan.burnett@usda.gov). If you have questions about the nature of the research please contact the mentors.

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Anticipated Appointment Start Date: July 5, 2021. Start date is flexible and negotiable, and will depend on a variety of factors.

Appointment Length: The appointment will initially be for two months, 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 commensurate with educational level and experience.

Citizenship Requirements: This opportunity is available to U.S. citizens 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 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 bachelor's or master's degree in one of the relevant fields, or be currently pursuing one of the degrees with completion by June 1, 2023. Degree must have been received within the past five years.

Preferred skills:

- Experience with environmental science/studies and/or natural resources field work
- Academic course work in hydrology, forest management, remote sensing, and spatial modeling
- Experience using ArcGIS

Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Bachelor's Degree or Master's Degree received within the last 60 months or anticipated to be received by 6/1/2023 12:00:00 AM.
- **Overall GPA:** 3.00
- **Discipline(s):**
 - **Earth and Geosciences** ([4](#) 👁)
 - **Environmental and Marine Sciences** ([10](#) 👁)
 - **Life Health and Medical Sciences** ([4](#) 👁)
- **Veteran Status:** Veterans Preference, degree received within the last 120 month(s).

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