

**Opportunity Title:** USFS Postdoctoral Fellowship in Groundwater Modelling in Ridge-to-Reef Systems

**Opportunity Reference Code:** USDA-USFS-2022-0213

**Organization** U.S. Department of Agriculture (USDA)

**Reference Code** USDA-USFS-2022-0213

**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. 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

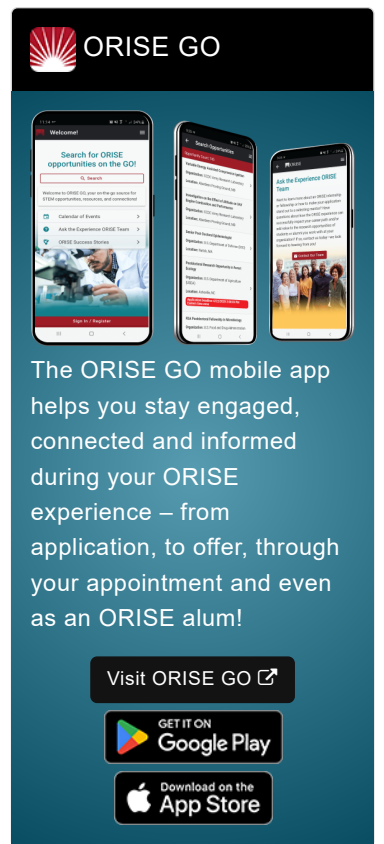
**Application Deadline** 7/4/2022 3:00:00 PM Eastern Time Zone

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

A research opportunity is currently available with the United States Department of Agriculture (USDA), U.S. Forest Service (USFS) located in Hilo, Hawaii.

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.

Climate change adaptation and mitigation are the stewardship issue of our time, especially for tropical islands, which are especially sensitive to direct effects of intensifying droughts, sea level rise, ocean acidification, rising temperatures, and coral die-off. Tropical islands are also highly sensitive to climate change's exacerbating ridge-to-reef effects on wildfire hazards, insect and disease impacts, and invasive species spread. As a result, small oceanic islands have been a central focus of diverse climate change syntheses because they provide unique opportunities for designing and implementing climate-smart adaptation and mitigation strategies. They: (i) are global hot spots of biological and cultural diversity; (ii) are especially vulnerable to short-term and chronic ridge to reef impacts; and (iii) function as compact living laboratories that can aid understanding larger interacting social and ecological systems and their responses to a changing environment. By focusing on small islands, our team of researchers can quickly understand drivers of social and ecological system resilience, design adaptation strategies to reduce threats, and model efforts to

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enhance socio-ecological resilience.

The project will focus on Hawai'i Island, a 10,000 km<sup>2</sup> tropical island that hosts numerous topo-edaphic, climatic, and management gradients. Our research team has explored and even established many of these gradients for understanding ridge-to-reef responses of ecosystem structure, function and dynamics. This body of science is foundational to tackling other pressing questions about climate and land use change impacts on ridge to reef conditions and functionality. Our goal in this proposal is to build on this large body of work by applying a biocultural stewardship and decision support framework to characterize and evaluate linkages and trade-offs between resources that sustain Hawaiian society. Freshwater supports native plant and animal communities and benefits people by providing clean, abundant water for municipal uses, agriculture and industry. Carbon sequestration in natural and working lands supports climate mitigation. Terrestrial, aquatic, and nearshore diversity supports Island functioning, ecology focused tourism, and commercial but also subsistence-based economies.

In this project, we will integrate hydrologic, biogeochemical, ecological, and cultural responses to: 1) declining rainfall, land use change, and changing disturbance regimes; 2) influences of vegetation change from development, active management, and non-native species invasions; and 3) effects of changing climatic and disturbance regimes, and stewardship practices. We address these areas by studying ecosystems organized across defined gradients of temperature, precipitation, community engagement, and land use in three key regions: south Kona, South Kohala, and the North Hilo/Hamakua. To do this, our project will address climate, fire, invasive species, and land-use effects on surface/groundwater supply, carbon sequestration, and ridge-to-reef health. We will engage these linkages and trade-offs through data synthesis; wildfire, hydrologic and ecosystem modeling; and community driven bioculturally-based decision support modeling. In close partnership with Hawai'i's Indigenous communities and agencies, we will combine western and Indigenous knowledge regarding important drivers of water quality and quantity, carbon sequestration, and ridge-to-reef health while developing tools necessary to sustain these outcomes. The ORISE fellow will focus on surface and ground water inputs.

**Anticipated Appointment Start Date:** Summer 2022. 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 commensurate with educational level and experience.

**Citizenship Requirements:** This opportunity is available to U.S. citizens, Lawful Permanent Residents (LPR), and foreign nationals. Non-U.S. citizen

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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 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](mailto: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:

- Experience in modelling ground and surface water flow, ideally through volcanic basalt rock that is characteristic of high volcanic islands
- Experience in synthesizing large data sets

- Eligibility Requirements**
- **Degree:** Doctoral Degree.
  - **Discipline(s):**
    - **Earth and Geosciences** (2/4)
    - **Environmental and Marine Sciences** (4/4)