

Postdoc in post-fire hydrological modeling

Position summary:

We're recruiting a postdoc to examine post-fire forest and hydrological dynamics and resilience to compounding stressors (drought, insect outbreaks) in forests of the northern U.S. Rockies and Pacific Northwest. The postdoc will work as part of a USGS NW CASC-funded project led by Dr. Cameron Naficy, Dr. Meg Krawchuk, and Dr. Kevin Bladon from Oregon State University, and collaborators at the University of Montana and USFS Rocky Mountain Research Station. We are looking for a candidate with a background in hydrology of mountain ecosystems to work at the nexus of fire-hydrology interactions. The postdoc will lead the calibration and application of an ecohydrological simulation model to generate soil moisture dynamic outputs and to evaluate hydrological (soil moisture and streamflow) responses to post-fire drought in the context of fire effects, surviving vegetation, and post-fire vegetation regrowth. The successful candidate will have a skillset appropriate for integration of remote sensing and field data into ecohydrological simulation models. This position will provide an opportunity to develop skills in managing large, multi-sourced data and simulation modeling, participate with a collaborative, interdisciplinary group of researchers and land managers, and engage in emerging frontiers in the intersectional field of fire-hydrology dynamics.

This is a 1-year, full-time position through the Department of Forest Ecosystems and Society at Oregon State University.

Position duties:

- Data compilation & simulation modeling (70%) — Preparation of calibration datasets and calibration routines for an ecohydrological model. Calibration datasets will consist of a combination of existing and new field data, as well as remote sensing data of energy balance, water fluxes, soil properties, and custom high-resolution reconstructions of vegetation composition and structure produced by other members of the team. Generation of simulated spatially explicit soil moisture time series as inputs into forest resiliency models. Simulation of soil and above-ground hydrological responses to fire effects, vegetation regrowth, and drought scenarios.
- Scholarship (20%) — Publication of manuscripts; communication with management partners and the scientific community.
- Field work (10%) — Planning and implementation of field data collection in unburned and burned study areas.

Minimum qualifications:

- PhD in the fields of hydrology, forest ecology, soil science or natural resources-related field (e.g., Geography, Geomorphology, Geosciences, or Natural Resources Management) by the start date of the position and received within five years.
- Ability to work independently and find creative solutions to aid the design of research projects and find answers to research questions.
- Advanced knowledge of hydrological dynamics in mountain systems.
- Working knowledge of simulation models.
- Thorough working knowledge of GIS and experience working with geospatial (raster and vector) data over broad regions.
- Field data collection experience in mountainous and remote conditions.
- Interest in science application and translation to management partners.

Preferred qualifications:

- Basic knowledge of fire and landscape ecology.
- Work experience with spatial ecohydrological simulation modeling (RHESSys, Ech2O, DHSVM).
- Experience in programming/scripting languages (e.g., Python, R, Google Earth Engine).
- Large database management and integration of data from multiple sources including hydrology, climate, vegetation and soils.
- Work experience with remote sensing data (especially MODIS/VIIRS, Landsat) and large-scale image processing.
- Demonstrated scholarship through peer-reviewed publications and presentations.
- A demonstrable commitment to promoting and enhancing diversity, equity, and inclusion.

Salary: \$53,760/year

Duration: one year

Start date: Start date as soon as possible, ideally January 2022

Position location: Corvallis, OR (remote work may be possible).

To apply, send cover letter, CV, list of 3 references with contact information, and a sample of scientific writing to cameron.naficy@oregonstate.edu. Review of applications will begin immediately.