

## **Opportunity Title:** USFS Postdoctoral Fellowship in Remote Sensing & Geospatial Analysis

Opportunity Reference Code: USDA-USFS-2021-0167

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

Reference Code USDA-USFS-2021-0167

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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. Click <u>Here</u> for detailed information about acceptable transcripts.
- A current resume/CV
- Two educational or professional recommendations. At least one recommendation must be submitted in order for the mentor to view your application.

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

#### Application Deadline 8/19/2021 3:00:00 PM Eastern Time Zone

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

**USFS Office/Lab and Location:** A research training opportunity is available at the USDA Forest Service (USFS), Pacific Southwest (PSW) Research Station, Riverside, California. Due to the ongoing pandemic, remote telework will be permitted until the Pacific Southwest Research Station Labs reopen.

The Pacific Southwest Research Station (PSW) is part of the research and development branch of the USDA Forest Service in the states of California and Hawaii and the U.S. affiliated Pacific Islands. Our mission is to develop and communicate science needed to sustain forest ecosystems and their benefits to society. The PSW's Urban Ecosystems and Social Dynamics Program explores the myriad relationships and interdependencies between communities and ecosystems, culture and biodiversity, humans and natural resources, all of which evolve in response to societal and environmental change. Its Fire and Fuels Program increases our understanding about how fire behavior affects fuel types and conditions and how physical properties of fuels influence fire severity and intensity.

**Research Project**: Across the globe, the social, economic, and ecological impacts of recent and unprecedented wildfires have increased dramatically over the past thirty years. News of these fires typically focuses on loss of forests and structures, but much less is known about their impacts to communities and landscapes in more urbanized environments. Information on the severity and distribution of impacts of recent fires in California's Wildland Urban Interface (WUI) and urban areas - home to 90% of its population - is needed to better understand the resilience of urban landscapes and communities as well as the effects on ecosystem services and socio-ecological trajectories following wildfires.

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The USDA Forest Service's PSW Research Station seeks a Postdoctoral Fellow in Remote Sensing and Geospatial Analysis to join a team studying the socio-economic and ecosystem service impacts of wildfires and fuel treatments in California's urban and WUI forests. This research will investigate: 1) the effects of urban landscaping practices and vegetation on fire severity, 2) the role of fuel treatments on fire behavior in urban and WUI forests, and 3) the development of an urban fuel typology. Under the guidance of a mentor, the Fellow will contribute to:

- Analyzing pre- and post-fire urban and WUI vegetation changes using a combination of remote sensing and cloud computing environments (i.e., Google Earth Engine)
- Developing a set of case studies and guidelines demonstrating the effects of fire on urban and WUI landscapes
- Application of remote sensing, GIS, and machine learning techniques to address management and planning problems related to California's ecosystems and vulnerable communities.

#### Learning Objectives:

- Gain experience in compiling and statistically analyzing large socioeconomic and ecological datasets
- Learn about the dynamics of wildfires, ecosystem services, and environmental justice in urban and WUI setting
- Use data sets to develop guidelines and best management practices for mitigating fire risk in urban areas

#### Professional development opportunities

- Network with social scientists, economists, ecologists, and other PSW scientists.
- Have a platform to demonstrate quantitative skills and to refine communication skills.
- Author and co-author peer-reviewed publications and management guidelines.
- Gain first-hand knowledge of Forest Service Research & Development science, State and Private Forestry, and National Forest System management

<u>Mentor</u>: The mentor for this opportunity is Dr. Francisco Escobedo (<u>Francisco.escobedo@usda.gov</u>). If you have questions about the nature of the research please contact the mentor.

<u>Anticipated Appointment Start Date</u>: Fall 2021. 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 for an additional year upon recommendation of USFS and is contingent on the availability of funds.

Level of Participation: The appointment is full-time.



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> **Participant Stipend:** The participant will receive a monthly stipend commensurate with educational level and experience. The participant will receive a monthly stipend of \$6,090. A health insurance supplement covering individual health and prescription coverage (excludes dental/vision), a computer, and some travel and supply funds will also be provided.

> **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 <u>Guidelines for Non-U.S. Citizens Details page</u> 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 <u>Program Website</u>. After reading, if you have additional questions about the application process please email <u>USForestService@orise.orau.gov</u> and include the reference code for this opportunity.

# Qualifications The qualified candidate should have received a doctoral degree in one of the relevant fields, or be currently pursuing the degree with completion by December 31, 2021. Degree must have been received within the past five years.

- Experience in remote sensing with pre-processing and classification of images and analyzing land cover, fire, vegetation, and US Census data sets
- Strong experience with GIS, numerical computing languages, and the use of cloud computing environments (Google Earth Engine)
- Geospatial data integration and analysis as well as statistical analysis and modelling (e.g. in R, ARCGIS, ERDAS) and coding skills to handle large datasets (e.g. in Python)
- Strong programming and statistical skills. Experience with Machine Learning methods is also a plus
- Interest in Wildland-Urban Interface, urban and/or fire ecology, socioecological systems

#### Eligibility • Degree: Doctoral Degree.

#### Requirements • Discipline(s):

- Computer, Information, and Data Sciences (<u>3</u>)
- Earth and Geosciences (2.)
- Engineering (<u>27</u> <sup>●</sup>)
- Environmental and Marine Sciences (5.)
- Life Health and Medical Sciences (1. )



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- Mathematics and Statistics (<u>3</u>)
- Social and Behavioral Sciences (4\_)
- Veteran Status: Veterans Preference, degree received within the last 120 month(s).
- Affirmation I have received a doctoral degree within the past 5 years, or am currently pursuing the degree and will reach completion by December 31, 2021.