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Opportunity Title: A Next-Generation Wildfire Risk Assessment System: Integrating Satellite Data with Deep Learning Insights
Opportunity Reference Code: 0320-NPP-JUL25-JPL-EarthSci

Organization National Aeronautics and Space Administration (NASA)

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How to Apply All applications must be submitted in Zintellect

Please visit the NASA Postdoctoral Program website for application instructions and requirements: How to Apply | NASA Postdoctoral Program (orau.org)

A complete application to the NASA Postdoctoral Program includes:

1. Research proposal
2. Three letters of recommendation
3. Official doctoral transcript documents

Application Deadline 7/1/2025 6:00:59 PM Eastern Time Zone

Description **About the NASA Postdoctoral Program**

The NASA Postdoctoral Program (NPP) offers unique research opportunities to highly-talented scientists to engage in ongoing NASA research projects at a NASA Center, NASA Headquarters, or at a NASA-affiliated research institute. These one- to three-year fellowships are competitive and are designed to advance NASA's missions in space science, Earth science, aeronautics, space operations, exploration systems, and astrobiology.

Description:

We are seeking a motivated researcher to join our team in developing a next-generation wildfire risk assessment system. Wildfires are an escalating threat to ecosystems, infrastructure, and public health, exacerbated by climate change and land-use transformations. Existing fire risk indices often fail to capture the complex and dynamic interactions among environmental, climatic, and human factors.

Our project aims to create a unified wildfire risk index that integrates observations and model data from NASA, including meteorological variables, fuel characteristics, topography, human influences, and advanced indicators such as lightning frequency, the Vegetation Temperature Condition Index, and human interventions. This framework will be adaptable to diverse ecosystems—forests, grasslands, and wildland-urban interfaces— across a wide range of climate conditions.

Using machine learning methods, we will optimize the weightings of each contributing factor and identify the key drivers of wildfire risk. Historical wildfire records from MODIS, VIIRS, and NOAA will validate the system, and results will be compared to established indices such as the Fire Weather Index, the Fire Danger Index, and the Fire Potential Index. Sensitivity analyses will further ensure the system's stability in varying environments.

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Responsibilities

- Develop and refine a novel wildfire risk assessment system using NASA satellite observations and model-based data.
- Apply machine learning techniques to optimize factor weightings and reveal critical wildfire drivers.
- Validate models using multi-source wildfire data (MODIS, VIIRS, and NOAA), and conduct robust comparisons with existing fire risk indices.
- Perform sensitivity analyses to ensure reliability in diverse climates and land-cover settings.
- Contribute to NASA's Earth science goals by improving satellite-derived and model-based hazard assessments for wildfire forecasting, climate resilience, and risk mitigation.

Field of Science: Earth Science

Advisors:

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Applications with citizens from Designated Countries will not be accepted at this time, unless they are Legal Permanent Residents of the United States. A complete list of Designated Countries can be found at: https://www.nasa.gov/oiir/export-control

Eligibility is currently open to:

- U.S. Citizens;
- U.S. Lawful Permanent Residents (LPR);
- Foreign Nationals eligible for an Exchange Visitor J-1 visa status; and,
- Applicants for LPR, asylees, or refugees in the U.S. at the time of application with 1) a valid EAD card and 2) I-485 or I-589 forms in pending status

This opportunity may require the following: 1-Mandatory drug testing; 2-Random drug testing; 3-Testing prior to initiation of fellowship appointment.

Questions about this opportunity? Please email npp@orau.org

Qualifications

- Strong background in remote sensing, satellite data analysis, and/or machine learning methods.

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- Familiarity with wildfire risk indices, fire behavior, and ecological processes.
- Proficiency with quantitative analysis tools and programming languages used for large datasets.
- Excellent communication skills and ability to work effectively in a collaborative research environment.

Point of Contact Mikeala

Eligibility Requirements

- **Degree:** Doctoral Degree.