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Opportunity Title: Improving our understanding of wildfire emissions through the synergistic use of DSCOVR EPIC products and other remote sensing data
Opportunity Reference Code: 0313-NPP-MAR26-JPL-EarthSci

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0313-NPP-MAR26-JPL-EarthSci

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 4/2/2026 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:

Black Carbon (BC), emitted mainly by high-temperature combustion processes, and Brown Carbon (BrC), emitted mainly by smoldering fires or low-temperature biomass combustion, are two of the most important light absorbing substances in atmospheric aerosols. The assessment of the nature and global-scale magnitude of biomass burning (BB) aerosol impacts is severely hindered by an inadequate understanding of the regionally-dependent atmospheric transformations of absorbing aerosol properties that occur during downwind transport of smoke plumes. This situation means that current climate models still largely ignore BrC radiative effects. Estimates of BrC radiative effects in many process-level models generally treat BrC similar to BC, with invariant properties with regard to atmospheric processing or aging. The Earth Polychromatic Imaging Camera (EPIC) sensor aboard the Deep Space Climate Observatory (DSCOVR) spacecraft provides aerosol information on a 10-km sinusoidal grid through the Multi-Angle Implementation of Atmospheric Correction (MAIAC) algorithm [Lyapustin, et al., 2021], and is capable of tracking smoke plumes from time scales of hours to days. This dataset provides important constraints on the behavior of smoke plumes as they age, while other remote sensing datasets from instruments such as the Multi-angle Imaging SpectroRadiometer (MISR) on the Terra satellite and the Cloud-Aerosol

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Lidar with Orthogonal Polarization (CALIOP) instrument on the CALIPSO satellite provide complementary information that can be used to assess and improve the MAIAC aerosol retrievals.

We have assembled a rich suite of data from multiple wildfire events in North America that contain observations from EPIC with coincident data from MISR or CALIPSO. The goal of the project is to evaluate relationships among these remote sensing datasets to better understand the evolution of BC and BrC as smoke plumes are transported in different environments.

The proposed student tasks are to: (1) become familiar with the different datasets that have already been collected; (2) explore potential relationships among retrieved variables, bringing in ancillary data such as weather or temperature profiles, as needed; (3) improve BC and BrC property evolution due to mixing and aging from these results.

Field of Science: Earth Science

Advisors:

Olga Kalashnikova
Olga.Kalashnikova@jpl.nasa.gov
(818) 393-0469

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

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

Qualifications Useful skills and experience needed include some background in Earth science, atmospheric chemistry, and basic knowledge of the R language and environment. Data science, statistics, and remote sensing classes are preferred, but not required.

Point of Contact Mikeala

Eligibility Requirements

- **Degree:** Doctoral Degree.