Opportunity Title: Advanced Aerosol Data Assimilation of the GEO-LEO Constellation
Opportunity Reference Code: 0311-NPP-NOV26-GSFC-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 11/1/2026 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:

This opportunity is closed to applicants who are Senior Fellows (5-years or more past PhD).

The Goddard Earth Observing System (GEOS), developed by NASA's Global Modeling and Assimilation Office (GMAO), is a comprehensive Earth system model and data assimilation system. The GMAO assimilates aerosol optical depth (AOD) observations from space-borne (e.g. MODIS, VIIRS) and ground-based (AERONET) instruments into the GEOS model for its near-real-time aerosol forecast known as the GEOS Forward Processing (GEOS-FP) system as well as in its various reanalysis systems (e.g. Modern-Era Retrospective Analysis for Research and Applications, Version 2 (MERRA-2)). Recent advances in the GEOS aerosol data assimilation capability allow for the assimilation of multi-spectral passive and active aerosol measurements. This improvement enables a more comprehensive and advanced analysis of atmospheric aerosols.

This project will focus on the integration of multi-wavelength AOD observations, ranging from the UV to visible to constrain the representation of aerosols in the NASA GEOS Earth System Model.

Activities that would be involved in this project include (but are not limited

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to):

- Implement machine learning transfer learning methods to homogenize AOD observations from the geostationary constellation of weather and atmospheric monitoring satellites (e.g. GEOS, HIMAWARI) utilizing well calibrated AOD observations from low earth orbit (LEO) sensors
- Integrate and test the impact of UV AOD observations from hyperspectral sensors in LEO and GEO orbits on the aerosol analysis and forecast utilizing the JCSDA-Joint Effort for Data assimilation Integration (JEDI) framework for atmospheric data assimilation
- Develop machine learning foundation models based on simulated observations from high fidelity atmospheric simulations for developing downstream tasks such as retrieving aerosol information in the presence of clouds, and utilizing multi-pixel spatial and temporal approaches

Field of Science: Earth Science

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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

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

Point of Contact Mikeala

Eligibility Requirements

- **Degree:** Doctoral Degree.