

**Opportunity Title:** Reducing greenhouse gas retrieval biases by improving aerosol representation

**Opportunity Reference Code:** 0332-NPP-MAR26-JPL-EarthSci

**Organization** National Aeronautics and Space Administration (NASA)

**Reference Code** 0332-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:**

Aerosols have a profound impact on climate, influencing the energy budget through their direct and indirect effects. These effects represent an important source of uncertainty in greenhouse gas retrievals from remote sensing data, particularly for near-infrared space-based observations. Consequently, retrieving greenhouse gases under high aerosol loading conditions remains a significant challenge.

To improve aerosol and greenhouse gas retrievals in regions with high aerosol loading such as the Sahel, volcanic areas, and megacities, we have been developing a methodology to enhance Aerosol Optical Depth (AOD) and Aerosol Layer Height (ALH) retrievals. These improved products can subsequently be used as a priori information in greenhouse gas retrievals. Initial results show that this methodology produces improved Orbiting Carbon Observatory-2/3 (OCO-2/3) AOD and ALH retrievals, resulting in more accurate subsequent greenhouse gas retrievals for the OCO instruments.

This project represents a continuous effort to retrieve improved greenhouse gas measurements, such as XCO<sub>2</sub>, from OCO-2 and OCO-3 satellites under challenging aerosol conditions including volcanic activity, megacities, deserts, and biomass burning. The retrieved greenhouse gases will be



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validated against other available XCO<sub>2</sub> datasets, and if the validation is successful, a global retrieval will be conducted to produce an enhanced greenhouse gas product for OCO-2. By enhancing greenhouse gas retrievals, this project aims to advance our understanding of global carbon cycle science.

**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/oior/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](mailto:npp@orau.org)

**Qualifications** Expertise in greenhouse gas remote sensing and/or retrievals

**Point of Contact** [Mikeala](#)

**Eligibility Requirements** • **Degree:** Doctoral Degree.