

Opportunity Title: Satellite Remote Sensing of Trace Gases from UV-Vis Spectrometers

Opportunity Reference Code: 0314-NPP-MAR26-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 \(oua.org\)](#).

A complete application to the NASA Postdoctoral Program includes:

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

Application Deadline 3/1/2026 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).

For multiple decades, spaceborne spectrometers that measure back-scattered solar radiation in the ultraviolet (UV) and visible (Vis) wavelength range, such as the Ozone Monitoring Instrument (OMI) and the TROPOspheric Monitoring Instrument (TROPOMI), have been providing global observations of ozone (O₃), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), formaldehyde (HCHO), and other trace gases that are critical for monitoring and understanding the ozone layer, volcanic eruptions, and smog and haze. In addition to these low-earth orbiting (LEO) instruments, newly launched geostationary (GEO) sensors including GEMS (Geostationary Environment Monitoring Spectrometer) and TEMPO (Tropospheric Emissions: Monitoring of Pollution) also offer similar measurements over regional scales but at significantly enhanced temporal resolution (hourly during daytime). There has also been progress in instrument miniaturization. Some prototype miniaturized instruments are currently making airborne measurements and have the potential to be deployed with a future constellation of SmallSats or CubeSats for high-resolution, high-cadence air quality monitoring.



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The advance in instrumentation also brings challenges in satellite remote sensing of trace gases. One such challenge is how to ensure timely delivery of retrieval products from more and increasingly capable instruments (for example, the TEMPO data volume is over an order of magnitude greater than OMI). Another challenge is how to produce coherent, long-term datasets from instruments that have significantly different characteristics (e.g., spectral and spatial resolution, signal-to-noise ratio, LEO vs. GEO). Additionally, aerosols and clouds are known to affect trace gas retrievals, but explicitly accounting for their effects remains a challenge especially for operational global retrievals.

The main goal of this opportunity is to explore and develop innovative methods that have the potential to significantly advance satellite remote sensing of trace gases. Efforts under this project will focus on, but are not limited to, one or more of the following topics: 1) new techniques, including those based on machine learning and artificial intelligence, to accelerate and/or improve physically-based trace gas retrievals; 2) efficient applications of advanced radiative transfer modeling tools to improve the accuracy of trace gas retrievals under relatively large aerosol loading (e.g., volcanic plumes, smoke and dust, and haze); 3) innovative methods to reduce inter-sensor biases in trace gas retrievals; and 4) new trace gas retrieval methods that exploit the information content from multi-spectral and/or multi-angle measurements.

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/oair/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

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

Point of Contact [Mikeala](#)

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