Opportunity Title: In-Situ and Satellite Trace Gas Observations: Data Analysis and Modeling

Opportunity Reference Code: 0169-NPP-NOV23-GSFC-EarthSci

Organization	National Aeronautics and Space Administration (NASA)
Reference Code	0169-NPP-NOV23-GSFC-EarthSci
Application Deadline	11/1/2023 6:00:59 PM Eastern Time Zone

Description

The general goal of our research is to understand processes regulating the distribution and trends of trace gases like ozone, nitrogen oxides, CO, and methane in the troposphere while improving satellite retrievals of these constituents. One activity consists of analysis and validation of satellite observations of atmospheric constituents from platforms like Aqua, Aura, Suomi-NPP, Sentinel-5P (and soon TEMPO). We also use models to compare to data, including Goddard chemistry-transport and chemistry-climate models that use GMI. Currently there is opportunity in particular for evaluation of in-situ and remotely-sensed measurements of air pollutants, with a focus on NO_2 and ozone, over coastal regions and oil and gas operations on the Outer Continental Shelf of the US. There will be an option to participate in field work as part of this project.

Overall, major emphasis is placed on interpreting data collected in ground-based networks, e.g., SHADOZ, NDACC, Pandora, AERONET, and from field experiments like DISCOVER-AQ, SEAC4RS, KORUS-AQ, and SCOAPE. Examples of analyses include (1) comparison of ground-based data with satellite retrievals, e.g., surface NO_2 and OMI/TROPOMI NO_2 (Reed et al., 2015; Thompson et al., 2019); (2) classification of vertical profiles from sondes and aircraft using self-organizing maps (Jensen et al., 2012; Stauffer et al., 2016; 2017; 2018), tracer correlations and laminar identification (Thompson et al., 2015); (3) analysis of processes affecting ozone and ozone trends, especially stratospheric intrusions and convection (Minschwaner et al., 2015; Ott et al., 2016; Thompson et al., 2021). The candidate should have experience working with satellite data and preferably have a desire to perform field work with ground-based instrumentation.

Location:
Goddard Space Flight Center
Greenbelt, Maryland

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.
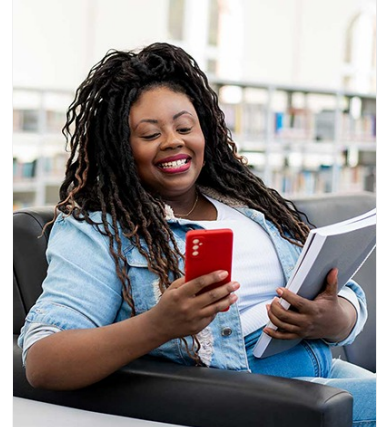
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Eligibility is currently open to:

- 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

Eligibility Requirements

- **Degree:** Doctoral Degree.