

Opportunity Title: Earth Science: Observations of Trace Species in the Upper Troposphere and Lower Stratosphere

Opportunity Reference Code: 0110-NPP-NOV23-GSFC-EarthSci

Organization National Aeronautics and Space Administration (NASA)

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Application Deadline 11/1/2023 6:00:59 PM Eastern Time Zone

Description The accurate description of the mechanisms that transport trace chemical species from the boundary layer to the upper troposphere (UT) and lower stratosphere (LS) is an essential part of understanding ozone photochemistry and its response to climate change. Several related questions are critical to the objectives of NASA's Atmospheric Composition Program and the NRC Decadal Survey.

“¿ What are the chemical fates of short-lived compounds transported from the tropical boundary layer into the Tropical Tropopause Layer (i.e., what is the chemical boundary condition for the stratosphere)?

“¿ What are the mechanisms that control ozone within the UT/LS?

“¿ What are the relative roles of large-scale transport and convective transport and how are these processes coupled?

“¿ How does urban pollution and biogenic emissions influence UT/LS photochemistry?

“¿ What is the impact of trace species, including volatile organics, on cirrus formation?

This research project addresses these questions through the in situ measurement of trace species such as formaldehyde (HCHO) from NASA high altitude aircraft (e.g., WB57, ER-2, and Global Hawk). The in situ measurements augment the capabilities of existing (AURA) and planned (e.g. GEO-CAPE, ACE) NASA satellites by providing high spatial and temporal resolution needed to test mechanisms that link the boundary layer with the global UT/LS and by providing validation with traceable laboratory calibrations.

Location:

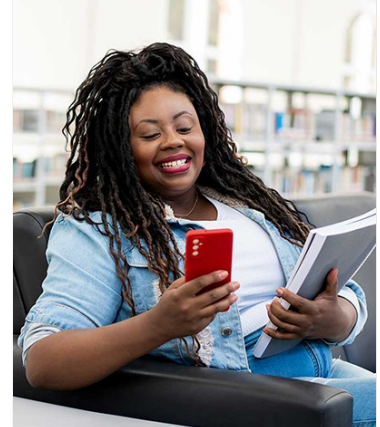
Goddard Space Flight Center
Greenbelt, Maryland

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



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the United States. A complete list of Designated Countries can be found at: <https://www.nasa.gov/oiiir/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

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