

Opportunity Title: Coupling between Stratospheric Variability and Tropical Convection

Opportunity Reference Code: 0019-NPP-NOV23-GISS-EarthSci

Organization: National Aeronautics and Space Administration (NASA)

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How to Apply: All applications must be submitted in [Zintellect](#)

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

Description Description:

Stratospheric variability impacts surface weather and climate on timescales ranging from days to decades. Over the tropics, the nature of this coupling is not well understood. In particular, Earth System Models consistently fail to reproduce the observed modulation of the Madden-Julian Oscillation (MJO) by the stratospheric Quasi-Biennial Oscillation (QBO), although the drivers of this missing relationship in models have not been clearly identified. This project is broadly oriented towards using the Goddard Institute for Space Studies (GISS) ModelE middle atmosphere climate model in concert with both NASA reanalyses and remote sensing (e.g., GPM, CloudSat, CALIPSO, CERES, COSMIC) to identify the mechanisms and timescales by which the stratosphere influences tropical convection. Sample topics include modulation of the MJO by the QBO, modulation of the QBO by the El-Nino Southern Oscillation, and possible interactions between variability in the stratospheric polar vortex and the QBO. The successful candidate will use NASA/GISS climate models and multiple sources of observed data to study the processes of coupling between the stratosphere and the troposphere with the goal of improving the GISS global climate model and make the model response to changes in stratospheric dynamical and compositional changes more coherent and more skillful. Research feeding back on model development (e.g., gravity-wave drag parameterizations) is strongly encouraged.

Preferred Qualifications:

- Successful applicants must have a PhD. in atmospheric dynamics or a similar field.
- Strong mathematics and programming skills are also a requirement.
- Strong candidates will have prior experience with stratospheric dynamical processes and datasets and will be interested in bridging the gap between observations and modeling in meaningful ways.
- Expertise in running global climate simulations is desirable.

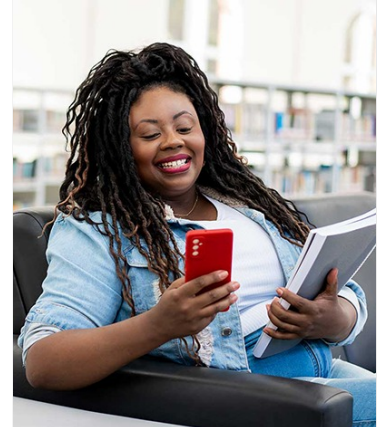
Field of Science: Earth Science

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Applications with citizens from Designated Countries will not be accepted at this time, unless they are Legal Permanent Residents of



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the United States. A complete list of Designated Countries can be found at:

<https://www.nasa.gov/oii/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.