zintellect
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Opportunity Title: Postdoctoral Research Positions on Cloud Forcing and Climate Tipping Points
Opportunity Reference Code: 0295-NPP-NOV24-JPL-EarthSci

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0295-NPP-NOV24-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 11/1/2024 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:

We invite postdoctoral applicants to join a cutting-edge research project aimed at advancing our understanding of climate tipping points and the irreversibility of temperature changes, with a specific focus on cloud forcing and its impact on these critical thresholds. This opportunity leverages advanced atmosphere-ocean-ice coupled models, including the NCAR Community Earth System Model (CESM) and/or the NASA Goddard Institute for Space Studies (GISS) Model E, to explore the dynamics of climate change under high greenhouse gas emission scenarios.

Research Focus:

Our research investigates the mechanisms driving climate tipping points and the conditions leading to irreversible temperature increases, essential for global climate policy and management. Key areas include:

• Mechanisms of Climate Tipping Points: Exploring how cloud forcing contributes to temperature irreversibility beyond critical thresholds and identifying potential mitigation strategies.

• Climate Vulnerabilities: Assessing critical tipping elements such as the collapse of the Atlantic Meridional Overturning Circulation (AMOC) and the loss of the Greenland ice sheet.

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• High Emission Scenarios: Analyzing the impact of sustained high emissions using the SSP5-8.5 scenario.

• Role of Clouds: Investigating the influence of clouds, particularly in the Southern Ocean, on temperature patterns under CO2 removal scenarios.

Research Objectives:

The core objective is to unravel the complexities behind the irreversibility of surface temperature increases and other tipping elements under high emission scenarios, focusing on cloud forcing impacts. This research is critical for informing policy and mitigation efforts, providing policymakers with the knowledge needed to frame effective climate action, and contributing to sustainable futures.

Methodology:

We will employ CESM and/or GISS Model E to investigate climate system reversibility. The research will include:

• Baseline Simulation: Running simulations from 2015 to 2115 using SSP5-8.5 CO2 concentrations

• Sensitivity Runs: Branching out every 20 years to gradually reduce CO2 concentrations to initial levels, with five ensemble members for each CO2 scenario to ensure robustness.

• Key Science Questions: Addressing the reversibility of the climate under CO2 removal scenarios, regional uncertainties in climate reversibility, and the role of clouds in shaping temperature patterns.

Impact:

This modeling effort will provide a comprehensive understanding of climate system reversibility under scenarios of both increasing and decreasing CO2 concentrations. The insights gained will inform climate policy and mitigation strategies, addressing the pressing need for robust and actionable information on climate tipping points. The dual¬ model approach leveraging both CESM and GISS capabilities will ensure robust and validated results, enhancing the overall reliability of our research findings.

Application:

We seek highly motivated postdoctoral researchers with a strong background in climate modeling, atmospheric science, or related fields. Applicants should have experience with climate models, particularly CESM and/or GISS Model E, and a keen interest in climate tipping points and cloud forcing.

Join us in this vital research endeavor to enhance our understanding of cloud forcing and its impact on climate tipping points, contributing to global efforts in climate change mitigation and policy development.

Field of Science: Earth Science

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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.

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

Qualifications PhD Earth Science, Atmospheric Science, Physics or related.

Eligibility Requirements

- **Degree:** Doctoral Degree.