Opportunity Title: 612 lab opportunity: Remote Sensing of Precipitation
Opportunity Reference Code: 0052-NPP-JUL25-GSFC-EarthSci

Organization	National Aeronautics and Space Administration (NASA)
Reference Code	0052-NPP-JUL25-GSFC-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

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Application Deadline	7/1/2025 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:

Precipitation is of great importance to life on Earth, and clouds and precipitation are crucial components in understanding global energy and water cycles and their variability. Due to the sparsity of available measurements at the surface, satellite platforms are the best current avenues for cloud and precipitation observation on the global scale. The Mesoscale Atmospheric Processes Laboratory at Goddard Space Flight Center leads research aimed at algorithm improvements to create state-of-the-art global measurements hand-in-hand with studies seeking to better understand cloud and precipitation processes, distribution, and extremes at all scales. We solicit postdoctoral research in these areas, with specific emphasis on the following topics:

- Passive microwave precipitation measurements over land surfaces that form the backbone of global precipitation products. Over oceans, measurements are fairly straightforward, but over land the surface contribution to upwelling microwave radiation is large, heterogeneous, and complex. We request research projects looking at algorithm enhancements in this area (including emissivity retrieval and modeling) as well as better understanding of precipitation processes particular to convection over land.
- Multi-satellite global precipitation datasets are key to numerous scientific studies and applications around the world. A key part of this work is validating these products and then applying them to summarize the global climatology of mean and extreme precipitation, examine its place in the global energy and water cycles, and apply it to critically examining climate model results. We continue to seek new approaches and refinements in all aspects of
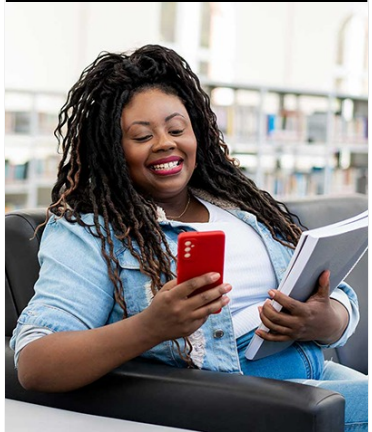
the current Multi-satellitE Retrievals for the Global Precipitation Measurement (GPM) mission (IMERG) and the Global Precipitation Climatology Project (GPCP) products.

- Falling snow and mixed-phase precipitation present unique challenges for active (radar) and passive (radiometer) satellite-based quantitative estimates. Scattering from complex snow morphologies and related liquid/ice mixtures is particularly difficult to model, and the limited vertical extent of many weather systems producing snow at the surface reduces the signal available to discriminate precipitation from the surface background. We require advanced methodologies for addressing these gaps given emerging observations, such as those coming from submillimeter-wave radiometers and spaceborne Doppler radars, that will elucidate ice- and mixed-phase processes for a range of precipitating conditions and systems.

- State-of-the-art dynamical models used to study cloud and precipitation processes and their role in the water and energy cycles, atmospheric circulations, and the climate system. Ranging from cloud-scale to mesoscale to global scale, the Goddard Cumulus Ensemble model (GCE), the NASA-Unified Weather Research and Forecasting model (NU-WRF), and Multiscale Modeling Framework (MMF) incorporate representations of physical process including various cloud physics packages, radiative transfer processes (including satellite simulator modules), land and ocean surface exchange processes, and chemical transport processes. We pursue continued refinement and application of these models and data analysis tools to improve our understanding of deep convective systems as well as tropical and extratropical weather systems.

- Studies of convective clouds systems, tropical cyclones, and extratropical cyclones using satellite, ground-based and airborne data sets. Observational analysis can be complemented by well-designed modeling studies using the models described above or other appropriate modeling approaches. Modeling research can focus on physical process studies or data impact (data assimilation) studies.

Candidates may contribute to development and coordination of current and future NASA missions, research projects, and field campaigns. Successful candidates will demonstrate a background in a related area, including meteorology, hydrometeorology, remote sensing, surface and atmospheric modeling, or related fields. Experience in machine learning techniques are highly desirable. Please see https://science.gsfc.nasa.gov/earth/mesoscale for more information about the Mesoscale Atmospheric Processes Laboratory.

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.

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

Point of Contact	Mikeala
Eligibility Requirements	• **Degree:** Doctoral Degree.