Opportunity Title: Pale Rainbow Dots: Modeling the Atmospheres, Habitability, and Biosignatures of Terrestrial-sized Planets in and Beyond the Solar System
Opportunity Reference Code: 0147-NPP-MAR26-GSFC-Astrobio

Organization National Aeronautics and Space Administration (NASA)

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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 3/1/2026 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:

From afar, all planets are pale dots of various colors. Determining whether any one of these single pixels of light represents a living planet is a serious technical and theoretical challenge. We are doing research that will help address the theoretical challenges, by modeling a variety of habitable terrestrial planetary atmospheres around different kinds of stars. This will give us a range of planetary environments against which to compare our future exoplanet observations, and versatile tools we can use to interpret those observations.

This opportunity presents multiple options to prospective postdocs to explore the potential for life on other planets, and to expand our capabilities to detect such life. We work with multiple atmospheric, oceanic, interior, ecological, spectral and instrument models to study the atmospheres, surface environments, and spectral features of terrestrial-sized planets. Our solar system planets act as templates to these strange new worlds. These include, but are not limited to, considering present and ancient histories of terrestrial planets in our solar system such as Venus, Earth, Mars and Titan. We simulate these planets with both 1-dimensional (1-D) and 3-dimensional (3-D) global climate models (GCM). 1-D modeling will self-consistently treat the photochemistry, climate, and spectroscopy of planets with a wide variety of parameters. Available 1-D photochemistry models include, but are not limited to, *Atmos* and *Photochem*. 3-D models include ExoCAM-CARMA, ROCKE3D, WACCM and will focus on planetary climate and gas/aerosol chemistry. The candidate should leverage the Planetary Spectrum Generator (PSG) developed in the Planetary Science Division to simulate exoplanet spectra and observables. These studies are designed to better describe the habitability of these planets, and to utilize our knowledge of solar system history to improve

future searches for life on extrasolar planets.

We are interested in self-sufficient, self-motivated applicants with good organization and time management skills who are interested in interdisciplinary research. The candidate must have a background in atmospheric modeling (climate and/or photochemistry). The position requires code development (in Fortran/Python) tailored to a specific science question to push the codes beyond their current capability. A desire to apply these talents to questions that lie at the intersection of planetary atmospheres and astrobiology is highly preferable. Experience in modeling the atmosphere of Earth or atmospheres of other planets is preferred. This opportunity draws on a broad range of atmospheric modeling techniques, parameters, and conditions. Thus, we will work with the prospective applicants to coordinate the proposed activities. If you are interested in applying to this opportunity, please contact the primary advisor (Ravi Kopparapu) in advance to coordinate your proposed activities.

Location:
Goddard Space Flight Center
Greenbelt, Maryland

Field of Science: Astrobiology

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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.