

**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-NOV23-GSFC-Astrobio

**Organization** National Aeronautics and Space Administration (NASA)

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

**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 the history of atmospheres of the terrestrial-sized planets in our solar system. This will give us a variety of planets 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 develop our capabilities to detect such life. We work with multiple atmospheric, oceanic, ecological, and instrument models to study the atmospheres, surface environments, and spectral features of terrestrial-sized planets. In the past, this has included research on ancient Earth, Mars, and extrasolar planets. In the future we will also apply these tools to Titan and Venus. We simulate each of these planets with 1-D and 3-D (GCM) models. 1-D modeling will self-consistently treat the photochemistry, climate, and spectroscopy of planets with a wide variety of parameters. 3-D modeling will utilize the ModelE GCM to focus on specific planets at specific points in their evolution. 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 applicants with the capacity for interdisciplinary research, a background in modeling, and a desire to apply these talents to questions that lie at the intersection of planetary atmospheres and astrobiology. Experience 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. Thus, if you are interested in applying to this opportunity, please contact the primary advisor (Shawn Domagal-Goldman) in advance to coordinate your proposed activities.

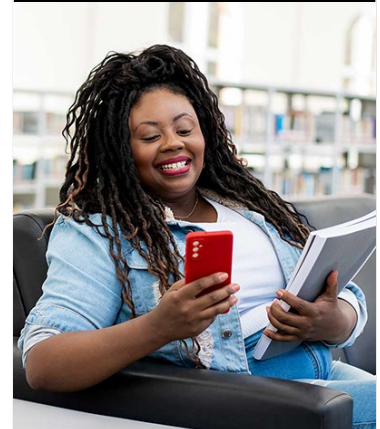
**Location:**

Goddard Space Flight Center  
Greenbelt, Maryland

**Field of Science:**Astrobiology

**Advisors:**

Alexander Anatolevich Pavlov



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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/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.