

**Opportunity Title:** Thermal Structure, Chemistry, and Habitability of Small Exoplanets

**Opportunity Reference Code:** 0130-NPP-NOV23-JPL-Astrophys

### Organization

National Aeronautics and Space Administration (NASA)

### Reference Code

0130-NPP-NOV23-JPL-Astrophys

### Application Deadline

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

### Description

Super-Earths and sub-Neptunes are common in our interstellar neighborhood. A handful of planets that belong to this class are among the most attractive targets for transit observations, and an inquiry into the small exoplanets is needed for planning direct imaging from both the space and the ground. Relevant science questions include: What does the atmosphere of a cold, water-rich planet look like? Will the water condense out, or maintain an atmosphere-ocean interface? Do we expect the clouds, if at all, to be just bright water clouds, or dyed with other constituents? The successful applicant will have the opportunity to work at the forefront of exoplanet atmosphere modeling, and is expected to develop a comprehensive tool to simulate the atmospheres of temperate super-Earths and sub-Neptunes, one of the most interesting classes of exoplanets. The fellow will have access to a state-of-the-art atmospheric chemistry and radiative transfer model (Hu & Seager 2014), and is welcomed, but not required, to build upon the existing model. The fellow will have the support to interact with planetary scientists and astrophysicists at both JPL and Caltech, and will fully enjoy and benefit from the intellectual environment in both institutions.

Renyu Hu and Sara Seager (2014), Photochemistry in Terrestrial Exoplanet Atmospheres III: Photochemistry and Thermochemistry in Thick Atmospheres on Super Earths, *ApJ*, 784, 63.

### Location:

Jet Propulsion Laboratory  
Pasadena, California

**Field of Science:** Astrophysics

### 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/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.

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# NPP

NASA Postdoctoral Program

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