

**Opportunity Title:** Postdoc in High Energy Atmospheric Science

**Opportunity Reference Code:** 0170-NPP-NOV23-JPL-PlanetSci

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

**Reference Code** 0170-NPP-NOV23-JPL-PlanetSci

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

**Description** The Jet Propulsion Laboratory (JPL), managed by the California Institute of Technology (Caltech) invites applications for a postdoctoral opportunity in high energy atmospheric studies, in particular the electrostatic environment at Mars and Venus. JPL scientists are currently involved in a unique ground-based monitoring program of the Martian atmosphere to detect and characterize electrostatic discharges on the red planet. These discharges are predicted to occur during convective dust storms, when large electric fields develop as a result of intense dust lifting deep in the upper atmosphere. The monitoring program has been underway since early in 2017 at the DSN Madrid complex in Spain. The scientific importance of this program has been highlighted by the recent NASA MEPAG report, which has identified the "electrical environment at Mars" to be a key science knowledge gap. The JPL radio monitoring program currently is the only such comprehensive program in the world with daily observations of Mars using telecommunication tracks on a completely non-interfering basis to operations. The presence of large E-fields on the surface of Mars will have important implications for both human and robotic exploration of Mars. Furthermore, electric fields and high energy discharges likely play an important role in the planet's chemistry, predicted to dissociate water vapor and methane producing large quantities of oxidants that are very relevant to sustaining life on the surface. Candidates should have a recent PhD in physics or astronomy with a strong background in high energy atmospheric science. Experience in high performance computing and space missions is highly desirable.

References:

Arabshahi, S., W. A. Majid, J. R. Dwyer, and H. K. Rassoul (2017), On production of gamma rays and relativistic runaway electron avalanches from Martian dust storms, *Geophys. Res. Lett.*, 44, 8182-8187  
Kok, J. F., and N. O. Renno (2009), Electrification of wind-blown sand on Mars and its implications for atmospheric chemistry, *Geophys. Res. Lett.*, 36, 5202

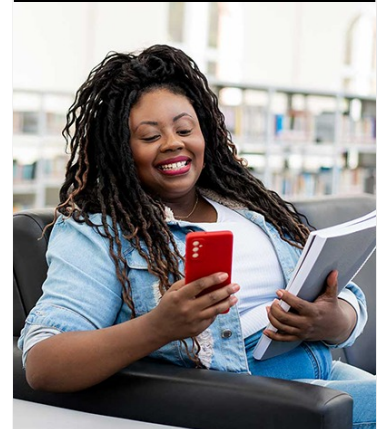
**Location:**

Jet Propulsion Laboratory  
Pasadena, California

**Field of Science:** Planetary 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/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.