Opportunity Title: Atmospheric Rivers
Opportunity Reference Code: 0215-NPP-NOV23-JPL-EarthSci

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0215-NPP-NOV23-JPL-EarthSci

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

Description Atmospheric rivers (ARs) are narrow, elongated, synoptic jets of water vapor that play important roles in the global water cycle, regional weather/hydrology, and global climate. In terms of climate, ARs account for over 90% of the total poleward water vapor transport across mid-latitudes, yet only cover ~10% of the earth‘s circumference. A typical AR may carry as much water as 7-15 Mississippi Rivers, and there are typically three to five ARs in each hemisphere at any given time. Enhanced precipitation may occur when the moisture-laden ARs hit major landmasses, penetrate inland, and interact with the topography. In the western US and other water-stressed areas, ARs produce beneficial rain and snow that form a crucial source of freshwater, and can often break existing drought conditions. On the other hand, extreme precipitation associated with ARs can lead to floods and related damages. There are many outstanding challenges and questions needing to be addressed concerning ARs, such as prediction and predictability studies, in-depth weather/climate model evaluation, and regional/global societal impact studies. **Our latest research involves extending the AR concept to extreme transports of aerosols and trace gases, and the associated role of these aerosol and trace gas rivers on climate and air quality.** This opportunity is to join our research group at JPL and undertake and lead new studies on ARs.

For Reference, see:

Chakraborty, S., Guan, B., Waliser, D. E., Da Silva, A., Uluatam, S., & Hess, P. (2021). Extending the Atmospheric River Concept to Aerosols: Climate and Air Quality Impacts. Geophysical Research Letters, 48, e2020GL091827. https://doi.org/10.1029/2020GL091827

Guan, B., and Waliser, D. E. (2015), Detection of atmospheric rivers: Evaluation and application of an algorithm for global studies, J. Geophys. Res. Atmos., 120, 12514- 12535, doi:10.1002/2015JD024257.

Ralph, F. Martin, Dettinger, M. D., Rutz, J. J., & Waliser, D. E. (n.d.). Atmospheric Rivers (2020th ed.). https://doi.org/10.1007/978-3-030-28906-5

Waliser, D., Guan, B. Extreme winds and precipitation during landfall of atmospheric rivers. Nature Geosci 10, 179-183 (2017). https://doi.org/10.1038/ngeo2894

Location:
Jet Propulsion Laboratory
Pasadena, California

Opportunity Title: Atmospheric Rivers
Opportunity Reference Code: 0215-NPP-NOV23-JPL-EarthSci

Field of Science: Earth Science

Advisors:
Duane Waliser
duane.waliser@jpl.nasa.gov
(818) 393-4094

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

Eligibility Requirements

- **Degree:** Doctoral Degree.