Opportunity Title: Thermal Modeling for Complex Terrains on Europa
Opportunity Reference Code: 0282-NPP-NOV26-JPL-PlanetSci

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0282-NPP-NOV26-JPL-PlanetSci

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 11/1/2026 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:

The NASA Europa Clipper mission will characterize the current and recent surface activity through the acquisition of a diverse set of observations. In particular, the Europa Thermal Emission Imaging System (E-THEMIS) will measure global, regional and local surface temperatures at three thermal infrared wavelengths under various conditions of local time and emission angles. These data will directly provide information on the size and distribution of active hotspots. But more subtle anomalies resulting from sub┐ resolution or dormant (but recently active) heat sources could be more difficult to identify because they may appear just a few Kelvin above the background environment. Yet they are of great interest because they will help understand activity integrated over several centuries or millennia (if remanent excess heat signatures can be identified near currently inactive hotspots) and small hard-to-resolve anomalies might also be present. In this context, new numerical needs are emerging for the analysis of the E┐ THEMIS data to analysis future observations at Europa, and to understand detection limits. In particular, quantifying the radiative effect of surface roughness and adjacent units along scarps, within troughs, canyons or other types of complex topographic assemblages (as on Enceladus) that would result in self-warming with and without the addition of geothermal heat is crucial, in order to discriminate active heat source

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from passive self-warming.

Field of Science:

- Planetary Science

Advisors:

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Applications from 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

Qualifications We seek a candidate who can improve exiting numerical tools already used to calculate surface temperatures at Europa. For this work, the successful candidate will incorporate roughness, beaming, self and projected shadows for regolith properties relevant to Europa. The resulting improved thermal model will be used to perform a sensitivity analysis for self-warming between surface units under realistic observational conditions and compare it with heating resulting from geothermal contributions. Outcome (modeling tools and new knowledge) will be shared with the E-THEMIS science team and the broader community.

This research opportunity would be most suitable for an individual:

with significant experience manipulating or developing scientific applications with programming languages for thermal modeling and planetary data analysis;

willing to work with preexisting scientific algorithm;

able to work independently, but in coordination with a broader science team;

interested in working at the interface between fundamental research and planetary mission work at JPL.

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Point of Contact Mikeala

Eligibility Requirements

- **Degree:** Doctoral Degree.