

Opportunity Title: Multiphysical modeling of silicic volcanoes with InSAR geodesy

Opportunity Reference Code: 0169-NPP-NOV23-JPL-EarthSci

Organization National Aeronautics and Space Administration (NASA)

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

Description Since the advent of satellite geodesy there has been widespread evidence that large scale silicic systems undergo transient periods of ground uplift followed by periods of either quiescence or slight ground subsidence. These signals have been interpreted as being produced by either magma intrusion, volatile exsolution, variations in shallow hydrothermal systems or a combination of all these mechanisms. If these uplift events are in turn produced by magma injection, how many injections and of what magnitude are required to actually trigger an eruption? The main tasks of this project are: 1) Analyze multiplatform InSAR data (COSMO-SkyMED, Sentinel, ALOS-2) to measure ground deformation at large scale silicic systems. 2) Run multiphysics numerical simulations that account for complex rheologies, thermodynamic properties of the magmas and non-linear mass fluxes to discriminate among several unrest mechanisms. 3) Invert time series data that shows cyclic and time dependent signals to constrain properties such as the geometry of the plumbing system, pressure and fluxes variations at depth. Such models will be benchmarked against well studied systems like Long Valley and Yellowstone and should prove useful to improve our understanding on both potential eruptive dynamics and the long-term evolution of magmatic systems.

References:

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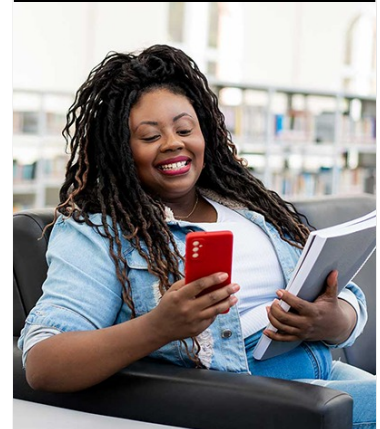
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Location:

Jet Propulsion Laboratory
Pasadena, California

Field of Science:Earth Science

Advisors:

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- 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.