

Opportunity Title: A Multi-Modular AI Agent for ISSM Modeling, Data Fusion, and Geophysical Analysis

Opportunity Reference Code: 0337-NPP-MAR26-JPL-EarthSci

Organization National Aeronautics and Space Administration (NASA)

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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 4/2/2026 6:00:59 PM Eastern Time Zone

Description About the [NASA Postdoctoral Program](#)

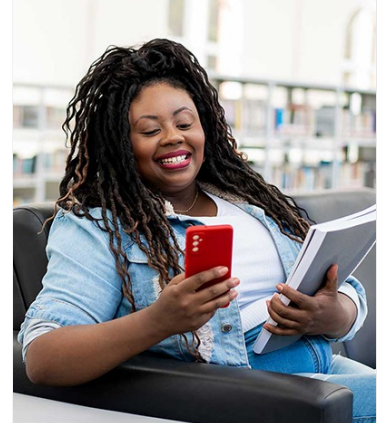
The [NASA Postdoctoral Program \(NPP\)](#) offers unique research opportunities to highly-talented scientists to engage in ongoing NASA research projects at a NASA Center, NASA Headquarters, or at a NASA-affiliated research institute. These one- to three-year fellowships are competitive and are designed to advance NASA's missions in space science, Earth science, aeronautics, space operations, exploration systems, and astrobiology.

Description:


The Ice Sheet and Sea Level System Model (ISSM) is an integral component of the Integrated Modeling Virtual Institute (IMVI), a recent NASA initiative aimed at synergizing models of the Earth system and its components. ISSM is a modular C++ codebase with MATLAB and Python interfaces, designed to simulate Cryosphere, Solid Earth, and Sea Level processes, either in coupled or standalone configurations. The software can assimilate large datasets and perform adjoint computations, inverse modeling, and uncertainty quantification. It has enabled breakthrough scientific discoveries and supported mission development as well as societal applications.

The overarching goal of this project is to enhance ISSM's capability, scalability, and accessibility by developing a multi-modular, agentic AI framework tailored to scientific modeling workflows. Rather than deploying AI as a black-box predictor, we propose a physics-aware AI agent architecture that interfaces directly with ISSM's modular components. The agent will operate at multiple levels.

- Infrastructure assistance: automating cross-platform installation, dependency management, compilation, and HPC/cloud optimization.
- Modeling intelligence: supporting adaptive mesh refinement, parameter



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selection/sampling, solver tuning, and convergence diagnostics.

- Computational acceleration: building emulator modules using neural operators and reduced-order models to approximate expensive forward and adjoint simulations while preserving underlying physics.
- Uncertainty-aware inference: combining physics-informed learning for regularization with probabilistic generative models to approximate posterior parameter distributions and guide efficient exploration of inversion problems.

Beyond workflow acceleration, we envision constructing an ISSM-specialized geospatial foundation layer built upon the NASA/IBM PRIVHVI Foundation Model, fine-tuned to Cryosphere, Solid Earth, and Sea Level applications. This layer will ingest heterogeneous remote sensing and in-situ observations, and transform them into structured, model-ready representations. Through embedding-based retrieval and semantic geophysical indexing, the AI system will organize and synthesize disparate datasets, identify physically consistent constraints, and recommend data assimilation configurations tailored to specific scientific objectives. All AI modules will be designed within a physics-constrained framework to enforce conservation laws, boundary conditions, and dimensional consistency, ensuring interpretability and scientific rigor. The resulting system will function as a scientific co-pilot, augmenting expert judgment, lowering barriers for early-career researchers, and expanding ISSM's role within the IMVI ecosystem.

Field of Science: Earth Science

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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/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,

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- 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@oraui.org

Point of Contact [Mikeala](#)

Eligibility Requirements

- **Degree:** Doctoral Degree.