NSF Geospace Update

Alan Liu and Tai-Yin Huang

Geospace Section

Division of Atmospheric and Geospace Sciences

National Science Foundation

Division of Atmospheric and Geospace Sciences

Geospace Section

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Division Director

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Geospace
Section Head

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Magnetospheric
Physics (MAG)

Tai-Yin Huang
Data Infrastructure

Roman Makarevich
Geospace Facilities (GF)

Shikha Raizada
Aeronomy (AER)

Mangala Sharma
Space Weather Research
(SWR)

Lisa Winter
Solar-Terrestrial
Research (STR)

Faculty Early Career Development 2022-2023

Jim Schroeder
MAG
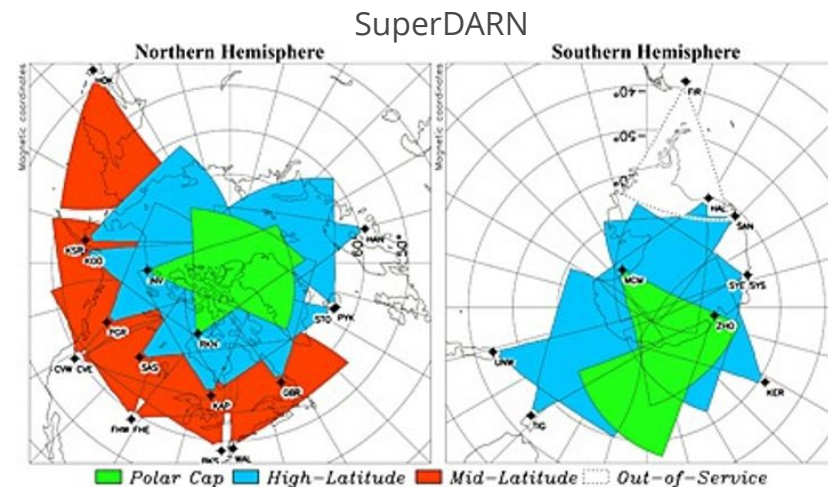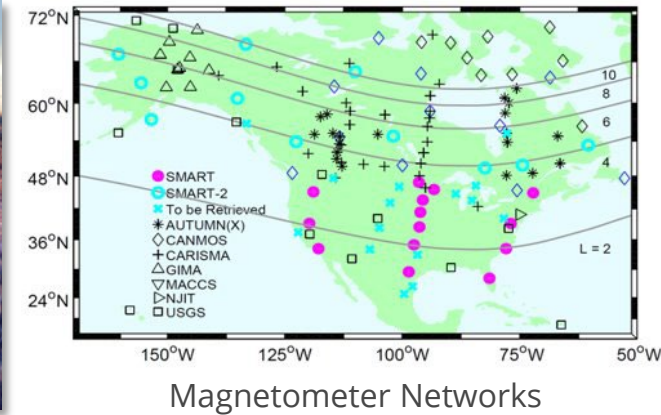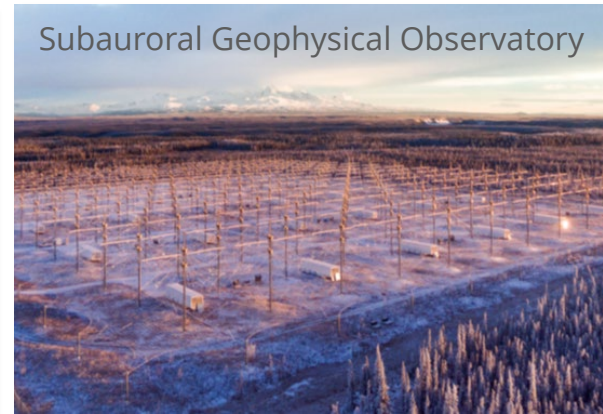

Soukaina Filali Boubrahimi
STR

Submit to one of the three core programs: AER, MAG, STR
Proposals on Space Weather Research are welcome!
Proposal due July 26, 2023

Geospace Facilities related to CEDAR

Millstone Hill Observatory

Jicamarca Radio Observatory

Subauroral Geophysical Observatory

Magnetometer Networks

Poker Flat ISR

Resolute Bay ISR-N

AMPERE iridium

SuperMAG

SuperDARN

Community Coordinated Modeling Center

Faculty Development in geoSpace Science (FDSS) NSF 23-577

Goal: Integrate topics in geospace science into natural sciences or engineering or related departments at U.S. institutions

- Salary, benefits, and training for newly recruited tenure-track FDSS faculty; up to five years and $1,500,000

- Track to support **minority-serving** institutions and **emerging research** institutions

- Past FDSS awardees are not eligible.

Contact Dr. Mangala Sharma MSharma@nsf.gov

AGS Postdoctoral Research Fellowships (AGS-PRF) NSF 22-639

- Supports highly qualified early career investigators independent research efforts

- Proposals are submitted to NSF directly by **individuals**, but need to identify a host institution
  - U.S. citizens or permanent residents
  - Graduate student or PhD for no more than 2 years at time of submission

- Provides two years of support: $100K in year 1 and $102K in year 2

- Proposals Accepted Anytime

Student Internship

NSF 21-013 DCL
Non-Academic Research Internships for Graduate Students (INTERN) Supplemental Funding Opportunity

NSF 21-029 DCL
Research Internships for Graduate Students at **Air Force Research Laboratory** (NSF-AFRL INTERN) Supplemental Funding Opportunity

NSF 23-112 DCL
GEO Opportunity for Graduate Students Supplemental Funding to **Link Geosciences and Human Health** (GeoHealth INTERN)

# GEO EMpowering BRoader Academic Capacity and Education (GEO-EMBRACE) Dear Colleague Letter

GEO seeks to expand access and participation of principal investigators (PIs) who are from

i. historically excluded groups in GEO disciplines (e.g., persons with disabilities, Black, Latino, Indigenous, LGBTQIA+, and other individuals from marginalized/minoritized groups), and/or

ii. tribal colleges and universities, historically black colleges and universities, other minority serving institutions, two-year colleges, primarily undergraduate institutions, and emerging research and masters level institutions.

Dear Colleague Letter: Great American Solar Eclipses of 2023 and 2024 NSF 23-014

Invites proposals and supplemental funding requests for science and outreach surrounding the 2023 and 2024 solar eclipses.
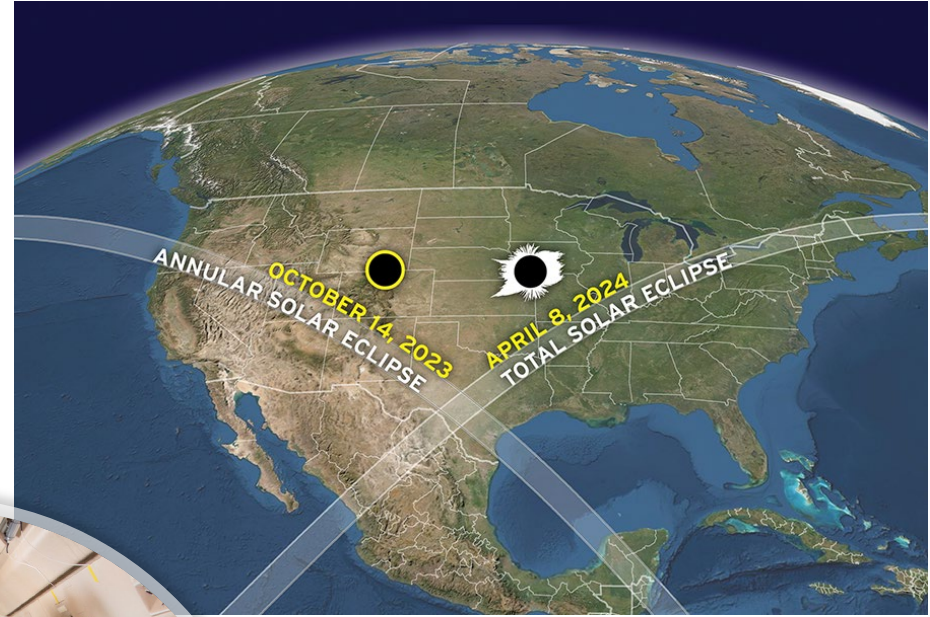
Contact Dr. Lisa Winter lwinter@nsf.gov

RAPID & EAGER

- RAPID - for proposals having a severe urgency with regard to availability of, or access to data, facilities or specialized equipment, including quick-response research on natural or anthropogenic disasters and similar unanticipated events. $150K, 1 year.

- EAGER - to support exploratory work in its early stages on untested, but potentially transformative, research ideas or approaches. This work may be considered especially "high risk-high payoff" in the sense that it, for example, involves radically different approaches, applies new expertise, or engages novel disciplinary or interdisciplinary perspectives. $300K, 2 years.

- PI(s) must contact the NSF program officer(s) whose expertise is most germane to the proposal topic prior to submission of a RAPID or EAGER proposal.

Funding Opportunity for Instrumentation

- **Major Research Instrumentation (MRI), NSF 23-519:** For **the development or acquisition** of multi-user research instruments that are critical to the advancement of science and engineering. **<=$4M,** Next submission window: **Oct 16-Nov 15, 2023.**
  - Consistent with the "CHIPS and Science Act of 2022", cost-sharing requirements for new awards in the MRI Program are waived for a period of 5 years, beginning with the FY 2023.
- **Mid-scale Research Infrastructure:** Supports the design and implementation of research infrastructure — including equipment, cyberinfrastructure, large-scale datasets and personnel
  - **MSRI-1 $4 to $20 M, NSF 22-637:** Full proposal submission is by invitation only. Deadline May 5, 2023.
  - **MSRI-2 $20 to $100 M, NSF 23-570:** Letter of Intent (May 15), preliminary proposal (June 20), full proposal by invitation (Dec 18).

Interagency Space Weather R2O2R MOA

- NSF has signed!
- Cycle of research and operations
- Includes space weather techniques/technologies and models

Contact Dr. Mangala Sharma MSharma@nsf.gov

Solar and Space Physics Decadal Survey 2024-2033

- Physics of the Sun and Heliosphere
- Physics of Ionospheres, Thermospheres
- Physics of Magnetospheres
- Space Weather Science and Applications
- State of the Profession

Acknowledging NSF Funding Support

4. Recipient Obligations

a. **Acknowledgement of Support**. Unless otherwise provided in the award, the recipient is responsible for assuring that an acknowledgment of NSF support is made:

(i) in any publication (including World Wide Web pages) of any material based on or developed under this project through use of the following language: "**This material is based upon work supported by the National Science Foundation under Award No. (NSF award number**)."

(ii) **NSF support also must be orally acknowledged** during all news media interviews, including popular media such as radio, television, and news magazines.

Each NSF award contains as part of the award general terms and conditions, an article implementing the recipient obligations regarding the acknowledgement of support.

NSF Agency Update

Division of Atmospheric and Geospace Sciences

- **AER Program & funding opportunities**
- **Data Infrastructure Community Workshop Proposals**
- **NSF Public Access Plan 2.0**

Dr. Tai-Yin Huang
Program Director, GEO/AGS
thuang@nsf.gov

CEDAR Workshop, San Diego, June 26-30

NSF Public Access

HamSCI 2023 Workshop

Forging Amateur-Professional Bonds

March 17-18, 2023

The University of Scranton

- To bring together the amateur radio community and professional scientists.
- Serve as a team meeting for the **HamSCI Personal Space Weather Station** project, a NSF-funded project to develop a citizen science instrument for studying space weather from their backyards.

The PSWS is led by the University of Scranton, and includes participation from TAPR, Case Western Reserve University/W8EDU, the University of Alabama, the New Jersey Institute of Technology CSTR, MIT Haystack Observatory, Dartmouth College, and the amateur radio community at large.

AER Awards & Funding Opportunities

Two MRI awards

➢ Development of a frequency agile multistatic radio system for geospace imaging (Fabiano Rodrigues, UT-Dallas).

➢Acquisition of a Fabry-Perot interferometer to measure upper atmosphere winds and temperatures for He, OH, and O nightglow and auroral emissions (John Meriwether, NJIT).

Supporting small Instrument Operation Proposals

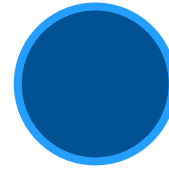**Data Infrastructure Workshop Proposals**

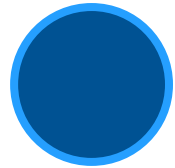# AER-Supporting Small Instrument Operation

The Aeronomy program is interested in supporting the continuing operation of small instruments beyond its award cycle through a competitive proposal review process. The proposals should be focusing on excellence in the following areas:
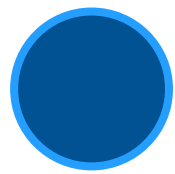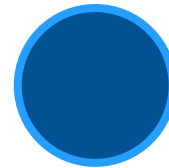
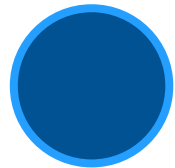- Proven scientific values to the aeronomy community (evidenced by past publications)

- Reliable operation with minimal O&M cost and repairs.

- Providing training opportunities for students and early career scientists on instrumentation

- Making data readily available to the community with minimal delay and no embargo period.

- Comprehensive documentation for easy user access.
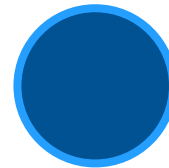
- Being responsive to additional user needs for special data processing.

# Accepting Conference Proposals on Data Infrastructure

- The Geospace section is accepting workshop proposals on Data Infrastructure.

- The workshops provide the community a space to discuss needs, best practices, and resources needed to address their data infrastructure needs.

- The budget of a conference proposal is generally limited to $50,000.

- Follow the guidelines in the *NSF Proposal & Award Policies & Procedures Guide* ([Chapter II: Proposal Preparation Instructions - Proposal & Award Policies & Procedures Guide (PAPPG) (NSF 23-1) | NSF - National Science Foundation](#))

Planning Your Workshop Proposals

- Identify critical needs for innovations in data infrastructure

- Can be for a broad community or for a specific community with a common theme (hubs)

- A report that summarizes the conclusions arrived at by the conference participants and addresses the identified gap

- Plans for the creation and dissemination of the written report, submitted to NSF no later than three months after the completion of the workshop.
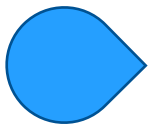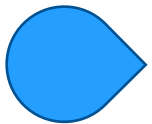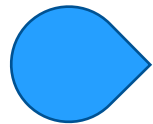
community engagement
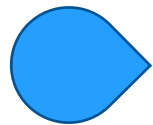
format of the conference

community buy-in

in-depth interactions
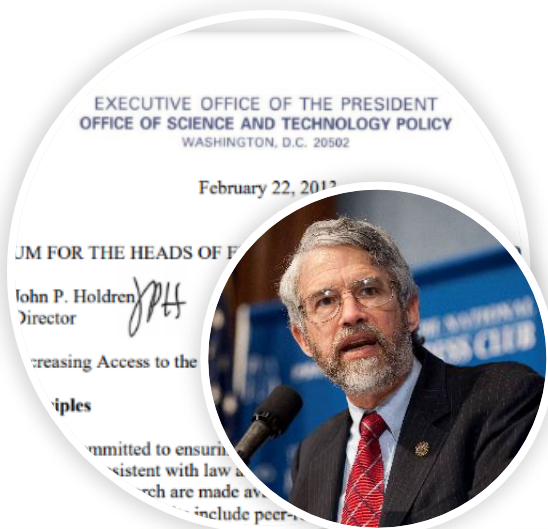
a written report for public access

gap analysis & recommendations

Public Access to Federally-Funded Research

2013: OSTP "Holdren" Memo

- agencies to develop Public Access plans

- research results to be made publicly available, including **peer-reviewed publications** and **digital data**
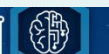
- allowed for a **1-year embargo**

current policy

2015: NSF 15-52

- Published, peer-reviewed articles are uploaded and publicly accessible through the **NSF PAR** (Public Access Repository); PI uploads them via annual reporting

- **AAM** (author accepted manuscript) *or* the **VOR** (version of record) satisfy the public access requirement

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY POLICY
WASHINGTON, D.C. 20502

February 22, 2013

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John P. Holdren
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YEAR OF
OPEN SCIENCE

Public Access to Federally-Funded Research

2022: OSTP "Nelson" Memo

- agencies to update Public Access plans

- calls for **Free**, **Immediate**, and **Equitable** public access

- default **zero-embargo** of peer-reviewed articles and underlying data

2023: NSF "Public Access 2.0"

- Updated plan for policy changes was submitted to OSTP at end of February

  - Expecting comments by end of April

  - Complex series of requirements with multi-step roll-out

  - Several critical implementation decisions are still under development

- **EQUITY concerns a primary driver** in NSF policy and implementation

Unpacking the 2022 memo guidance

	CURRENT: NSF15-52	Jan 2025	Jan 2027
WHAT	Peer-reviewed publications resulting from NSF funding	Peer-reviewed publication and conference proceedings resulting from NSF funding + Data undergirding above	Peer-reviewed publication and conference proceedings resulting from NSF funding Data undergirding above + PIDs and linkages to above
HOW	Submission to NSF-PAR via annual reporting by PI	Submission to NSF-PAR via annual reporting by PI + Deposition of data to an external repository and recording DOI in NSF-PAR by PI	Submission to NSF-PAR via annual reporting by PI Deposition of data to an external repository and recording DOI in NSF-PAR by PI + Additional PID information
AND	Recent NSF-PAR update allows documentation of datasets via digital object identifier (DOI)	Implementation plans for these policy changes in development now	Plans for these changes due to OSTP in 2026, for implementation in 2027

Open Science Funding Opportunities

- NSF Geospace section welcomes community workshop proposals on data infrastructure and open science/data.
- NSF 23-529: **Research Coordination Networks (RCN)**
- NSF 23-556: **Pathways to Enable Open-Source Ecosystems** (**POSE**) **Deadline Sept. 7, 2023**.
- NSF 23-046: Advancing Research in the Geosciences Using Artificial Intelligence (AI) and Machine Learning (ML).

The Interagency Heliophysics Data Working Group (IHDWG) Listening session

The IHDWG is planning a 2-hr virtual listening session to learn the state of the community's data infrastructure. The format will be a 5 to10-min presentation from each invited speaker in the first part of the session, followed by an open floor discussion in the second part of the session. Presenters are invited to address the below questions on the data infrastructure that you manage.

- What are your data systems?
- How do you distribute data?
- How do you register data?
- What file formats are supported?
- How does your community access data?
- What issues/barriers have you encountered in sharing data?
- How are you supporting Open Science?

Interested in this event as a speaker or participant? Contact Tai-Yin Huang at thuang@nsf.gov