Geoinformatics (GI) webinar
August 9, 2024

Program solicitation
NSF 23-594

Concept Outline due – for upcoming competition (Sustained Resources track only):

September 6, 2024

Full proposal target date – upcoming competition (Sustained Resources track only):

December 6, 2024

Raleigh Martin (ramartin@nsf.gov)

Luciana Astiz (lastiz@nsf.gov)

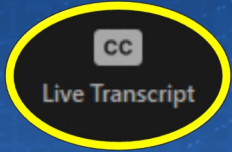**Alicia Armstrong** (aarmstro@nsf.gov)
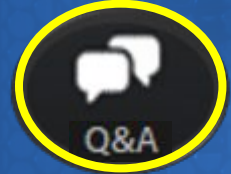
WEBINAR LOGISTICS

- We will start with an overview presentation for the Geoinformatics solicitation

- Following the presentation, time will be provided for general Q&A

- Proposal-specific questions may be directed to Program Contacts listed on the Geoinformatics program page

- Webinar (including Q&A) will be **recorded** and posted on the Geoinformatics program page:

  https://new.nsf.gov/funding/opportunities/geoinformatics-gi

WEBINAR LOGISTICS	2
PROGRAM OVERVIEW	4
PROPOSAL PREPARATION	11
OTHER CONSIDERATIONS	25

Zoom webinar set-up

- All attendees are muted, and webcams are disabled.

- To enable live transcript, click on the ⬜ CC Live Transcript feature.

- To ask a question, please use the 💬 Q&A feature.
  - You may submit questions at any time.
  - You may send questions anonymously:

  How can...|
  ☑ Send anonymously   Cancel   Send

PROGRAM OVERVIEW

Topics to be covered:

- Motivation
- Goals for Geoinformatics
- Scientific scope of Geoinformatics
- Relation to other programs
- Geoinformatics proposal tracks

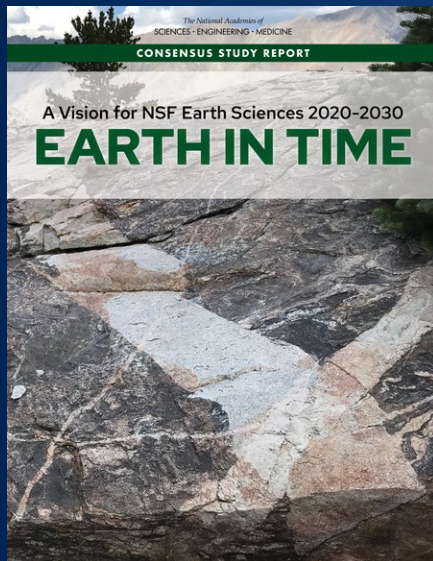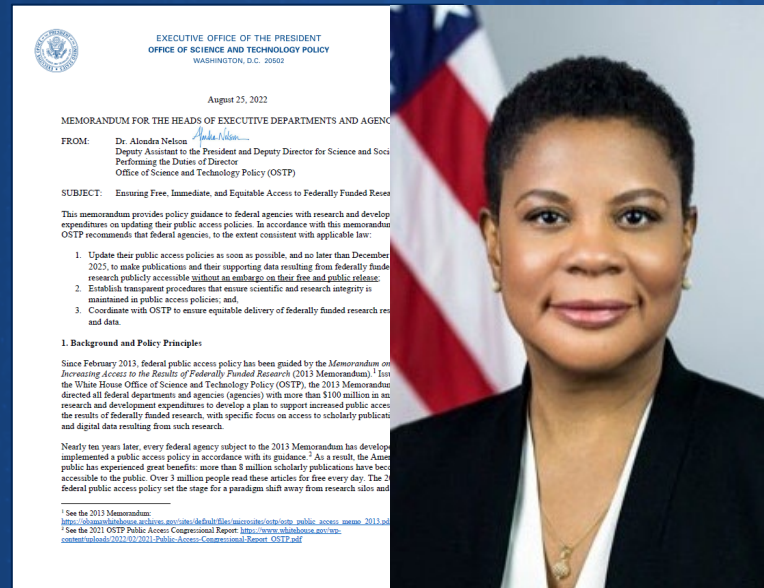|	
WEBINAR LOGISTICS	2
PROGRAM OVERVIEW	4
PROPOSAL PREPARATION	11
OTHER CONSIDERATIONS	25

Motivation

Providing advanced data analysis, modeling, and computation capabilities for addressing priority Earth Sciences questions

Enabling management and sharing of data, physical samples, and other research objects per federal, NSF, and EAR requirements

Supporting cyberinfrastructure (CI) that enables open, inclusive, and transparent research practices in the Earth Sciences

National Academies of Science, Engineering, and Medicine, 2020

Office of Science and Technology Policy "Nelson Memo," 2022
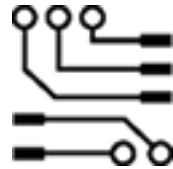

https://www.gida-global.org/care

- **TRUST** Principles for digital repositories
- Reproducibility & Replicability

Geoinformatics program goals

Enable the management of and access to data, physical samples, and other research products in the Earth Sciences

Facilitate use and development of open-source models and software, preferably leveraging shared resources and collaborative approaches

Foster reproducible and transparent modes of research and education in the Earth Sciences

Increase the capacity of Earth Scientists to utilize cyber-infrastructure (CI) resources

Scientific scope of Geoinformatics

Geoinformatics (GI) focuses on deployment and operation of CI that advances research and education in the **Earth Sciences**

"Earth Sciences" refers to the academic research communities supported by NSF's Division of Earth Sciences (EAR) *https://www.nsf.gov/funding/programs.jsp?org=EAR*

GI does **not** support:

- Standard research projects
- Computer hardware development or major acquisition

- Curation, management, and accessibility of physical samples / collections (but associated CI is supported)

GI in relation to EAR programs

- ***Geoinformatics (GI)*** *(NSF 23-594) focuses on the deployment and operation of cutting-edge CI capabilities that serve Earth Scientists*

- **EAR Instrumentation & Facilities (EAR/IF)** (*NSF 22-577*) supports instrument-based and human research infrastructure, including acquisition of computer hardware

- Proposals to **EAR Disciplinary Programs** may include CI development in the context of advancing science research objectives (check with Cognizant POs prior to submission)

GI in relation to other NSF programs

Directorate for Geosciences (GEO) Research, Innovation, Synergies, and Education (RISE)

- GEO Open Science Ecosystem (NSF 23-534) supports improvement and democratization of access to open science resources in the geosciences (expected solicitation revision with early 2025 deadline TBD)

Office of Advanced Cyberinfrastructure (OAC)

- Cyberinfrastructure for Sustained Scientific Innovation (CSSI) (NSF 22-632): Supports projects primarily focused on technical innovation for CI tools and services (upcoming deadline Dec. 1, 2024)

Directorate for Technology, Innovation, and Partnerships (TIP)

- Pathways to Enable Open-Source Ecosystems (POSE) (NSF 23-556) supports ecosystems of open-source products (e.g., software) (upcoming deadline Sep. 5, 2024)

GEO Cyberinfrastructure Opportunities

https://www.nsf.gov/geo/geo-ci/

Geoinformatics proposal tracks

Future competition (FY26)

Innovative Resources

- *Early-stage* development, deployment, and community-building for CI resources that serve Earth Sciences research and education

- **Up to 3 years duration**

- **$200,000 / year budget limit** per project

Upcoming competition (FY25)

Sustained Resources

- *Sustained operations* and user community support for mature CI resources that serve Earth Sciences research and education

- **3 years duration** (for December 2024 target date)

- **No specific budget limit**, but budget should be commensurate with size and scope

PROPOSAL PREPARATION

Topics to be covered:

- Submission eligibility
- Concept Outlines
- Merit review criteria
- Leveraging shared computing
- Budget preparation
- Other supplementary documents

WEBINAR LOGISTICS	2
PROGRAM OVERVIEW	4
PROPOSAL PREPARATION	11
OTHER CONSIDERATIONS	25

Submission eligibility

Organizations eligible to submit proposals:
- Institutions of Higher Education (IHEs)
- Non-profit, non-academic organizations

Partnerships with other organizations:
- Proposers are encouraged to pursue partnerships between academia, industry, and others, e.g., via subawards and/or unfunded collaborations.

For the Sustained Resources track a Concept Outline must be submitted by September 6, 2024, in advance of the full proposal.

Concept Outline

- **Sustained Resources** track proposers **must** submit a "Concept Outline" in advance of full proposal submission

- The **Concept Outline** must be submitted **at least 3 months in advance** of the target date (by September 6, 2024, for the upcoming competition)

- Lead PI submits a single Concept Outline on behalf of the entire project

  - Via email to cognizant Program Officer *or*

  - Via the Program Suitability and Proposal Concept Tool (**ProSPCT**) website (https://suitability.nsf.gov/s/)

- An NSF Program Officer (PO) will review the Concept Outline and will provide feedback within 1 month of its submission

  - Upload this PO response email as a "Single Copy Document" with full proposal

Concept Outline (cont'd)

Concept Outline contents:

1. **Submission Title.** Expected title of the proposal.

2. **Project Personnel.** Names and organizational affiliations of all expected senior personnel.

3. **Concept Outline Text** (up to 6,000 characters with spaces):
   - Expected user community for the proposed cyberinfrastructure (CI)
   - Expected scope of major activities for the project
   - Expected budget size (total budget and budget per major activity) to achieve the expected project scope

*The **NSF PO response email** will provide a **preliminary** assessment of appropriateness and potential for support of proposed activities.*

This input may be incorporated into the development of the full proposal.

Concept Outline tips

1. Expected user community for the proposed cyberinfrastructure (CI)

*Successful proposals will enable science research/education in response to demonstrated needs of the EAR research community. **Who would use the proposed CI**?*

2. Expected scope of major activities for the project

*The Concept Outline should describe the distinctive (typically ~3-5) high-level major activities that would be pursued through the proposal. **What major activities would you propose?***

3. Expected budget size (total budget and budget per major activity) to achieve the expected project scope

*The estimated budget should be <u>by major activity</u> (**not** by Form 1030 category).*

***How much do you expect each major activity to cost?** The sum of expected major activity budgets should equal the expected total project budget (including all collaboratives).*

Concept Outline example (not real)

1. **Submission Title.** Cyberinfrastructure for cat photos (Cat-CI)

2. **Project Personnel.** Puss E. Cat (Feline U.), Tab E. Cat (Fur Institute)

3. **Concept Outline Text:**

   - **Expected user community:** Expected users for Cat-CI would be cat enthusiasts seeking to classify cat photos by breed, color, and size. Cat-CI users would include both experts and non-experts on cat analysis.

   - **Expected scope of major activities for the project**: Development of Cat-CI would include 3 major activities: (1) Creation of cat photo database; (2) Implementation of ML tools for cat photo classification; (3) User training and outreach. *[Elaborate further on these]*

   - **Expected budgets (total over 3 years):**

Major Activity	Amount
(1) Creation of cat photo database	$500,000
(2) Implementation of ML tools	$250,000
(3) User training and outreach	$300,000
TOTAL	**$1,050,000**

Solicitation specific review criteria (1)

Metrics and Assessment:

- How well do proposed metrics and/or other assessment mechanisms provide effective approaches to evaluating success?

- Are appropriate plans in place to monitor progress throughout the project to inform CI development that is responsive to user needs?

Solicitation specific review criteria (2)

Sustainable Management:

- How well do proposed plans for project management, governance, scalability, and sustainability articulate effective mechanisms to adapt to user needs and to ensure continuity of outcomes beyond project completion?

- Are appropriate plans in place for partnerships?

- For the Sustained Resources track, is each proposed major activity achievable based on the description of expected personnel roles and responsibilities, timeline of work, and breakdown of work commitments, costs, and deliverables?

Ways to leverage NSF-supported shared computing

- Advanced computing support available via the **ACCESS (Advanced Cyberinfrastructure Coordination Ecosystem: Services & Support) program** - https://access-ci.org/

- **High-Throughput Computing (HTC) resources** available via the PATh (Partnership to Advance Throughput Computing) project - https://path-cc.io/

- Commercial **cloud computing resources** available via CloudBank Cloud Access - https://www.cloudbank.org/faq

Proposal Budget preparation

- **Innovative Resources:** $200,000 / year budget limit per project, up to 3 years duration (Dec. 2025 target date)

- **Sustained Resources:** for December 6, 2024, target date the budget has no upper limit, but duration is limited to 3 years

- **CloudBank.org**: Costs count toward budget limit but should *not* be listed on budget page; rather, specify this in associated supplementary document

Data management and sharing plan (DMSP)

The DMSP should describe...

1. The **types of data and samples** expected to result from the proposed work

   - See the EAR Data & Sample Policy for definitions of "data" (includes software) and "samples"

2. How each type of data or sample will be **deposited, made accessible, and preserved:**

   - For each **data / sample type**, the DMP should identify appropriate **long-lived FAIR-aligned repository(ies)** for data (& sample metadata) deposit, access, and preservation

   - **Data (& sample metadata) underlying publications** must be available *upon publication*

   - **Other project data (& sample metadata)** must be made available *no later than 2 years after collection/generation* (*exceptions must be justified*)

Mentoring Plan

- The Mentoring Plan is required if funding is requested to support postdoctoral scholars and/or graduate students (single document across collaborative proposals - max 1 page).

- The Plan should describe mentoring activities provided to postdoctoral scholars or graduate students supported on the project.

- Examples of mentoring activities include but are not limited to:

  - *Career counseling; training in preparation of proposals, publications and presentations; guidance on ways to improve teaching and mentoring skills; guidance on how to effectively collaborate with researchers from diverse backgrounds and disciplinary areas; and training in responsible professional practices.*

Other supplementary documents

1. **Letters of Collaboration (if applicable):** To demonstrate collaborative arrangements

2. **High-Throughput Computing Resources (if applicable):** Required if requesting HTC resources

3. **Cloud Computing Resources (if applicable):** Required if requesting cloud credits through CloudBank

Other Important Proposal Reminders

- **Title:** Please note that titles should be preceded with "Innovative Resources:" or "Sustained Resources:"

- **Project Description:** 15-page limit for Innovative Resources, 20-page limit for Sustained Resources

- Updated PAPPG (Proposal & Award Policies & Procedures Guide) effective May 20, 2024
  - This includes updates to the Biographical Sketch, Current & Pending Support, and Mentoring Plan

Timeline

- **<u>September 6, 2024</u>** (*Sustained Resources* track only) – Deadline for ***required*** submission of Concept Outline
  - Program feedback provided within 30 days

- **<u>December 6, 2024</u>** (*Sustained Resources* track only) – Target date for proposal submissions
  - *Limited* exceptions will be made for proposals received after the target date

- **<u>April–August 2025</u>** – expected notification of award/decline decisions

- **Future competitions**:
  - ***Innovative Resources:*** Target date **<u>December 5, 2025</u>**
  - **<u>**Subsequent competitions not expected until 2027-2028**</u>**

OTHER CONSIDERATIONS

Topics to be covered:

- Resources for proposers

- Q&A session

|	
WEBINAR LOGISTICS	2
PROGRAM OVERVIEW	4
PROPOSAL PREPARATION	11
OTHER CONSIDERATIONS	25

Resources for proposers

- Read the solicitation <u>carefully</u> (NSF 23-594)

- This presentation will be posted on the Geoinformatics program page

- Proposers are encouraged to reach out to Program Contacts with specific questions.

  - *SUGGESTION: To facilitate well-informed advice from NSF, it is helpful to provide a 1-page project summary when reaching out*
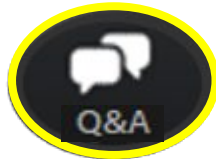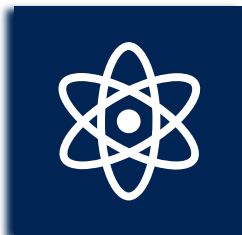
Geoinformatics Q&A

Please direct further questions to any of the below program contacts:
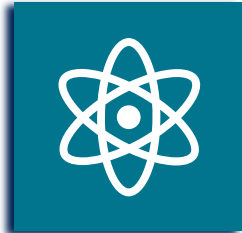
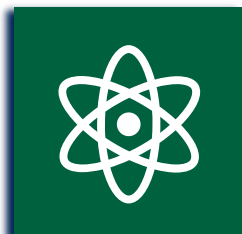To ask a question, please use the ![Q&A] feature.

You may submit questions at any time. You may send questions anonymously:

How can...

☑ Send anonymously   Cancel   Send

Webinar / Q&A will be **recorded** and posted on the Geoinformatics program page
https://new.nsf.gov/funding/opportunities/geoinformatics-gi

Raleigh Martin
Program Officer
ramartin@nsf.gov

Luciana Astiz
Program Officer
lastiz@nsf.gov

Alicia Armstrong
Program Specialist
aarmstro@nsf.gov

Geoinformatics long-term plan

The Geoinformatics program seeks to balance sustaining existing cyberinfrastructure (CI) resources with enabling new CI innovation for the Earth Sciences.