Antarctic Research Requiring U.S. Antarctic Program (USAP) Support for Fieldwork

PROGRAM SOLICITATION
NSF 23-509

REPLACES DOCUMENT(S):
NSF 21-567

Full Proposal Deadline(s) (due by 5 p.m. submitter’s local time):
June 01, 2023

Prior to submission of full proposals, investigators are required to submit a Concept Outline, which is due January 17, 2023.

IMPORTANT INFORMATION AND REVISION NOTES

1. This solicitation is one of two solicitations that replace the current Antarctic Research solicitation. This solicitation specifically covers proposals that require U.S. Antarctic Program (USAP) logistical support for fieldwork. Proposers that do not require logistical support should consult NSF 23-508.

2. This solicitation specifies a revised timeline and new deadlines for proposals that require field sample collection or deployments. A proposal deadline has been added to the solicitation of June 1, 2023.

3. Prior to submission of full proposals, investigators are required to submit a Concept Outline, which is due January 17, 2023, describing needed logistical support for proposals submitted under this solicitation.

4. For Projects proposed through other NSF programs or as part of other governmental Agencies or other funding entities, PIs are encouraged to complete a Concept Outline before developing a full proposal.

Innovating and migrating proposal preparation and submission capabilities from FastLane to Research.gov is part of the ongoing NSF information technology modernization efforts, as described in Important Notice No. 147. In support of these efforts, proposals submitted in response to this program solicitation must be prepared and submitted via Research.gov or via Grants.gov and may not be prepared or submitted via FastLane.

Any proposal submitted in response to this solicitation should be submitted in accordance with the NSF Proposal & Award Policies & Procedures Guide (PAPPG) that is in effect for the relevant due date to which the proposal is being submitted. The NSF PAPPG is regularly revised and it is the responsibility of the proposer to ensure that the proposal meets the requirements specified in this solicitation and the applicable version of the PAPPG. Submitting a proposal prior to a specified deadline does not negate this requirement.

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:
Antarctic Research Requiring U.S. Antarctic Program (USAP) Support for Fieldwork

Synopsis of Program:
The Antarctic Sciences Section (ANT) of the Office of Polar Programs (OPP) supports cutting-edge research that:

- Improves understanding of interactions among the Antarctic region and global systems;
- Expands fundamental knowledge of Antarctic systems, biota, and processes;
- Utilizes the unique characteristics of the Antarctic region as a science observing platform; and
- Builds capacity and enhances diversity in the US workforce for polar-related science.

The U.S. Antarctic Program (USAP) supports scientific research in Antarctica and the Southern Ocean with logistics provided by OPP's Antarctic Infrastructure and Logistics Section (AIL). Antarctic fieldwork is supported only for research that must be performed, or is best performed, in Antarctica. Proposals that do not require USAP support for field work can be submitted anytime using solicitation NSF 23-508, Antarctic Research Not Requiring U.S. Antarctic Program (USAP) Support for Fieldwork.
Diversifying and broadening participation is a priority for the Antarctic Sciences Section. ANT encourages the leadership, partnership, and contributions of individuals who are members of groups underrepresented and/or underserved in all opportunities in STEM education programs and careers. ANT promotes and expects that all individuals, including those from groups that are underrepresented and/or underserved in STEM are treated equitably and inclusively throughout the Foundation's proposal and award process.

The Antarctic Sciences Section coordinates with programs across NSF and with other federal and international partners to co-review and co-fund Antarctic-related proposals as appropriate.

Cognizant Program Officer(s):

Please note that the following information is current at the time of publishing. See program website for any updates to the points of contact.

- Kelly M. Brunt, Program Director, Antarctic Glaciology & Oceans and Atmospheric Sciences, W7100, telephone: (703) 292-8457, email: kbrunt@nsf.gov
- Paul M. Cutler, Program Director, Glaciology, Ice Core Science & Geomorphology, W7217, telephone: (703) 292-4961, email: pcutler@nsf.gov
- Rebecca Gast, Program Director, Antarctic Organisms and Ecosystems, W7100, telephone: (703) 292-2356, email: rgast@nsf.gov
- Michael E. Jackson, Program Director, Earth Science, Geodesy & Geophysics, W7239, telephone: email: mejackso@nsf.gov
- Vladimir O. Papitashvili, Program Director, Astrophysics and Geospace Sciences & Antarctic Instrumentation, W7118, telephone: (703) 292-7425, email: vpapita@nsf.gov
- Allen J. Pope, Program Director, Polar Cyberinfrastructure, W7100, telephone: (703) 292-2858, email: apope@nsf.gov
- Maria Vernet, Program Director, Antarctic Organisms and Ecosystems, W7100, telephone: (703) 292-5308, email: mvernet@nsf.gov
- Elizabeth L. Rom, Program Director, Polar Education, W8164, telephone: (703) 292-7709, email: elrom@nsf.gov
- Jessie L. Crain, Antarctic Research Logistics Support Manager, W7457, telephone: (703) 292-7457, email: jlcrain@nsf.gov
- Timothy M. McGovern, Oceans Logistics Project Manager, W7124, telephone: (703) 292-4248, email: tmcgover@nsf.gov

Applicable Catalog of Federal Domestic Assistance (CFDA) Number(s):

- 47.050 --- Geosciences

A. Proposal Preparation Instructions

- Letters of Intent: Not required
- Preliminary Proposal Submission: Not required
- Full Proposals:

B. Budgetary Information
Cost Sharing Requirements:
Inclusion of voluntary committed cost sharing is prohibited.

Indirect Cost (F&A) Limitations:
Not Applicable

Other Budgetary Limitations:
Not Applicable

C. Due Dates

- Full Proposal Deadline(s) (due by 5 p.m. submitter's local time):
  June 01, 2023

Prior to submission of full proposals, investigators are required to submit a Concept Outline, which is due January 17, 2023.

Proposal Review Information Criteria

Merit Review Criteria:
National Science Board approved criteria. Additional merit review criteria apply. Please see the full text of this solicitation for further information.

Award Administration Information

Award Conditions:
Additional award conditions apply. Please see the full text of this solicitation for further information.

Reporting Requirements:
Additional reporting requirements apply. Please see the full text of this solicitation for further information.

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I. INTRODUCTION

The Antarctic Sciences Section, as part of the U.S. Antarctic Program (USAP), supports scientific research related to Antarctica and the Southern Ocean with logistics provided by OPP’s Antarctic Infrastructure and Logistics Section (AIL). Antarctic fieldwork is supported only for research that must be performed, or is best performed, in Antarctica.

Protection of the Antarctic environment is a fundamental consideration in all Antarctic field activities as described in the Protocol on Environmental Protection to the Antarctic Treaty (https://www.ats.aq/e/protocol.html). Antarctic fieldwork must be planned to minimize adverse impacts on the environment.
Diversifying and broadening participation is a priority for the Antarctic Sciences Section. ANT encourages the leadership, partnership, and contributions of individuals who are members of groups underrepresented and/or underserved in all opportunities in STEM education programs and careers. ANT promotes and expects that all individuals, including those from groups that are underrepresented and/or underserved in STEM are treated equitably and inclusively throughout the Foundation’s proposal and award process.

The Antarctic Sciences Section also supports proposals that leverage international and interagency collaborations. The ANT Section coordinates with programs across NSF and with other federal and international partners to co-review and co-fund Antarctic-related proposals, as appropriate.

The COVID-19 Pandemic has caused a backlog of USAP’s ability to support new field deployments in certain sectors as described in NSF 22-078, Dear Colleague Letter: Update on Science Support and Infrastructure in Antarctica (https://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf22078). PIs are encouraged contact the cognizant Program Officer during the concept formation stage to discuss plans for field proposals.

Proposals that do not require fieldwork can be submitted under Program Solicitation NSF 23-508. For projects that have field work but deploy solely with another Antarctic program or other non-USAP entity, the PI must reach out to contact the cognizant Program Officer during the concept formation stage to discuss deployment details. The Program Officer will provide guidance on the most appropriate ANT solicitation to use.

II. PROGRAM DESCRIPTION

The Antarctic continent remains a frontier for exploration and discovery. As such, NSF investments in Antarctic Science support a broad portfolio of cutting-edge or transformative research across a spectrum of interlinked disciplinary areas. This research advances understanding of biota and physical systems operating in the Antarctic region and adjacent seas through field, laboratory, modeling, and theoretical work encompassing terrestrial, marine, cryospheric, atmospheric, and space settings. The Antarctic Section supports a broad base of research programs across all major areas of Antarctic and Southern Ocean science to understand the wide range of environments, organisms, and processes that currently shape, and have shaped in the past, this unique continent, its surrounding continental shelves, and adjacent ocean basins. A key component of Antarctic Sciences-supported research is the identification and characterization of processes, feedbacks, and responses of the Antarctic system to physical, geochemical, and biological drivers. Antarctic Sciences also supports transformative, and emerging astrophysical and geospace research that uses Antarctica as an observing platform.

Core Program

The core Antarctic Science program supports research that:

- Improves understanding of interactions among the Antarctic region and global systems.
- Improves understanding of the dynamic linkages among processes operating in the Antarctic and Southern Ocean and linkages to global Earth systems, which helps inform decision making regarding environmental change.
- Advances fundamental understanding of Earth systems and the biological, geochemical, and physical processes in the Antarctic and Southern Ocean as drivers and responders to changes on a global scale.
- Expands fundamental knowledge of Antarctic systems, biota, and processes
- Utilizes the unique characteristics of the Antarctic region as a science observing platform

Program Priority Areas

Research investments are guided, in part, by the National Academies of Sciences August 2015 report entitled "A Strategic Vision for NSF Investments in Antarctic and Southern Ocean Research" (https://www.nap.edu/catalog/21741/a-strategic-vision-for-nsf-investments-in-antarctic-and-southern-ocean-research). This report affirmed the need to maintain strong core research programs and identified the following three major themes as drivers for Antarctic Research Priority Areas:

- The Changing Antarctic Ice Sheets Initiative - How fast, and by how much, will sea level rise
- Decoding the genomic and transcriptomic bases of biological adaptation and response across Antarctic organisms and ecosystems - How have Antarctic biota evolved and adapted to the polar environment, and how might changing systems impact their populations?
- A next-generation cosmic microwave background program - How did the Universe begin and what are the underlying physical laws that govern its evolution and ultimate fate?

Antarctic Sciences also supports field proposals that promote effective collaboration between Polar and cyberinfrastructure researchers. Such proposals should provide significant benefit to the Antarctic research community including (i) cost-effective transfer of data from remote field locations; (ii) long-term sustainable curatorialship, standardization, management and discovery of data and metadata; (iii) visualization, manipulation, and analysis, particularly for understanding complexity; (iv) access and interoperability across scientific disciplines; (v) promotion of effective use of High Performance Computing (HPC) for direct and sustainable advances in current Antarctic research; and (vi) e-learning and educational tools based on cyberinfrastructure components. Proposals that establish or enhance Virtual Organizational resources for Antarctic research, and its broader impacts, are also encouraged. The Program works collaboratively with NSF’s Office of Advanced Cyberinfrastructure and NSF’s EarthCube program for reviewing and funding purposes.

Instrumentation and Research Facilities

Antarctic Sciences encourages and supports development and field testing of scientific instrumentation for use in polar regions to: (1) enable multi-disciplinary research; (2) reduce the on-ice footprint of research and/or operations in Antarctica; and (3) enhance capabilities for in situ observing on the continent and in the surrounding ice-covered waters.

There are specific proposal preparation requirements for instrument development (see Section V, Proposal Preparation and Submission Instructions) and additional merit review criteria apply (see Additional Solicitation Specific Review Criteria in Section VI). It is recommended that investigators contact a relevant Antarctic Sciences Program Director prior to submission. It is also recommended that investigators contact ANT to determine whether work to be proposed is suitable for submission to that program.

Education and Outreach

The integration of research and education is essential to NSF’s mission, and NSF strives to broaden participation in science and to make the results of research
projects widely accessible to students and the public. ANT seeks to meet these objectives by supporting the engagement of diverse students, educators, and the public in Antarctic research projects.

In an effort to increase the diversity of the polar workforce, ANT encourages the inclusion of support for diverse students and early-career researchers. ANT encourages the leadership, partnership, and contributions of individuals who are members of groups underrepresented and/or underserved in all opportunities in STEM education programs and careers. ANT promotes and expects that all individuals, including those from groups that are underrepresented and/or underserved in STEM are treated equitably and inclusively throughout the Foundation's proposal and award process. Proposals can take advantage of existing sample/data collections to offer opportunities for graduate or undergraduate thesis work and/or Postdoctoral researchers to provide a means to expose under-represented groups to Antarctic research. Teams may also consider submitting proposals under this general theme to NSF’s Research Experiences for Undergraduates (REU) program solicitation.

Investigators who wish to propose projects that are primarily education and outreach efforts are encouraged to contact the Polar Education Program Director for the Office of Polar Programs and to submit proposals via other relevant solicitations in the Directorate of Geosciences and the Directorate of Education and Human Resources. ANT encourages scientists to partner with education researchers when submitting proposals focused primarily on education, and to consider efforts that make use of innovative technologies and pedagogies to provide large groups of students, educators, and the public remote access to research in the Antarctic. Proposals that engage audiences with long-term investments in Antarctic research and logistics, with databases that have extended lifespans, or with public participation in scientific research, such as crowdsourcing or citizen science related to the Antarctic, are also encouraged.

### III. AWARD INFORMATION

The Antarctic Sciences Section anticipates committing up to approximately $60 million annually across the full Antarctic Program (to include both field and non-field-based projects and activities) as either standard or continuing awards, contingent on the availability of funds. In addition, and separate from these awards to organizations, field and laboratory support will be available in Antarctica for those projects for which fieldwork has been proposed and approved.

### IV. ELIGIBILITY INFORMATION

**Who May Submit Proposals:**

The categories of proposers eligible to submit proposals to the National Science Foundation are identified in the *NSF Proposal & Award Policies & Procedures Guide* (PAPPG), Chapter I.E. Unaffiliated individuals are not eligible to submit proposals in response to this solicitation.

**Who May Serve as PI:**

There are no restrictions or limits.

**Limit on Number of Proposals per Organization:**

There are no restrictions or limits.

**Limit on Number of Proposals per PI or co-PI:**

There are no restrictions or limits.

### V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

#### A. Proposal Preparation Instructions

**Full Proposal Preparation Instructions:** Proposers may opt to submit proposals in response to this Program Solicitation via Research.gov or Grants.gov.

- Full Proposals submitted via Research.gov: Proposals submitted in response to this program solicitation should be prepared and submitted in accordance with the general guidelines contained in the *NSF Proposal and Award Policies and Procedures Guide* (PAPPG). The complete text of the PAPPG is available electronically on the NSF website at: [https://www.nsf.gov/publications/pub_summ.jsp?ods_key=pappg](https://www.nsf.gov/publications/pub_summ.jsp?ods_key=pappg). Paper copies of the PAPPG may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-8134 or by e-mail from nsfpubs@nsf.gov. The Prepare New Proposal setup will prompt you for the program solicitation number.

- Full proposals submitted via Grants.gov: Proposals submitted in response to this program solicitation via Grants.gov should be prepared and submitted in accordance with the *NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov*. The complete text of the NSF Grants.gov Application Guide is available on the Grants.gov website and on the NSF website at: [https://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsovguide](https://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsovguide). To obtain copies of the Application Guide and Application Forms Package, click on the Apply tab on the Grants.gov site, then click on the Apply Step 1: Download a Grant Application Package and Application Instructions link and enter the funding opportunity number, (the program solicitation number without the NSF prefix) and press the Download Package button. Paper copies of the Grants.gov Application Guide also may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-8134 or by e-mail from nsfpubs@nsf.gov.

In determining which method to utilize in the electronic preparation and submission of the proposal, please note the following:
Collaborative Proposals. All collaborative proposals submitted as separate submissions from multiple organizations must be submitted via Research.gov. PAPPG Chapter II.D.3 provides additional information on collaborative proposals.

See PAPPG Chapter II.C.2 for guidance on the required sections of a full research proposal submitted to NSF. Please note that the proposal preparation instructions provided in this program solicitation may deviate from the PAPPG instructions.

Concept Outline (required)

- Prior to submission of a full proposal, prospective proposers of programs that require US Antarctic Program support for fieldwork must submit a Concept Outline using the Program Suitability and Proposal Concept Tool (ProSPCT) website (https://suitability.nsf.gov/s/) by January 17, 2023. This allows for a preliminary assessment of the logistics feasibility of the proposed activities and for feedback to the PI about potential supportability for proposed activities prior to the development of a full proposal. For questions regarding the Program Suitability and Proposal Concept Tool (ProSPCT) for this solicitation please contact Dr. Allen Pope (apope@nsf.gov).
- The Concept Outline form requests a project title, list of team members, a summary of the project science and logistic concept (up to 6000 characters), and a short description of why the research can only be done, or is best done, in Antarctica. To ensure proper processing, the submitter should select "Other Proposal" from the Select Proposal Type dropdown and enter "USAP Support for Fieldwork" as the Other Proposal Name. Then, be sure to identify Directorate for Geosciences and Office of Polar Programs as the Target Unit. To get started, users are required to provide their Login.gov credentials to complete and submit the form.
- The Concept Outline requires the same information as the Logistics Requirement and Field Plan described below under Additional Information for Full Proposals. Prospective PIs or teams are strongly encouraged to contact a cognizant program officer if they have questions prior to submission of the Concept Outline.
- Concept Outlines will be reviewed by Program Officers and logistics staff with relevant expertise. Program feedback will occur no later than 4 weeks after the Concept Outline deadline. Once reviewed, the prospective PIs will receive an email from the cognizant NSF Program Officer with written feedback. Feedback will help inform the development of the required full proposal Logistics Requirement and Field Plan component.

Additional Instructions for Full Proposal Submission:

Proposals must adhere strictly to the specified page limitations. Proposals that are not compliant with the guidelines will be returned without review. The submitting organization is responsible to ensure compliance with the guidelines.

Fieldwork proposals must follow specific instructions NSF 23-508 found at: https://www.nsf.gov/geo/opp/ant/ant_research_solit.jsp.

1. The statement "This proposal requires fieldwork in the Antarctic." must be included as the last line of the Project Summary.
2. A Logistics Requirement and Field Plan must be included as a Supplementary Document and will be subject to peer review. This document must be responsive to NSF feedback received from the required Concept Outline review. This document is limited to two pages including text and figures, and must contain:
   - A brief statement of research objectives and why the research can only be done, or is best done, in Antarctica;
   - A description of the geographic region and field sites to be investigated, including GPS coordinates of sites, where possible;
   - A deployment schedule, team size, and a justification for the requested number of field team members;
   - A description of field and laboratory activities, including types of samples to be collected and needs for specialized sample collection that require scientific diving;
   - A description of resources needed including facility use, field camps, modifications, or field installation requirements;
   - A description of instrumentation to be deployed on aircraft, autonomous platforms, scientific instruments, or equipment with special support requirements;
   - A description of utility (power, water, heat, etc.) and data communications/network requirements beyond routine email and telephone services;
   - An estimate of the amount of cargo and gear, associated with the project, including a description of traverse or other specialty equipment needs from USAP;
   - A summary of any education or outreach activities requiring support from the field or main stations;
   - Inclusion of the following statement "This Logistics Requirement and Field Plan incorporates NSF feedback from the Concept Outline submission".

   NSF reserves the right to seek institutional verification for appropriate qualifications of all field participants. NSF encourages projects that require additional field labor to add students who come from historically underrepresented groups to the field team. USAP maintains a web portal with information about research stations, ships, field camp support, and logistics (https://www.usap.gov/). Information about the science support process, and associated timeline is available at (https://www.usap.gov/proposalinformation/).

   For further information, investigators may contact their cognizant Program Director or the Research Support or Ocean Projects Managers in the Antarctic Infrastructure and Logistics Section.
   - Projects requiring research vessel support must submit a UNOLS ship request form as a Supplementary Document.
   - Projects requesting services from NSF-supported research support facilities (such as IRIS, UNAVCO, PGC, IDP, NCALM, etc.) must include a letter from the facility as a Supplemental Document indicating feasibility and additional costs needed to support the proposed research.

USAP maintains a web portal with information about research stations, ships, field camp support, and logistics (https://www.usap.gov/). Information about the science support process, and associated timeline is available at (https://www.usap.gov/proposalinformation/).


4. Revised Proposals: Programs will not accept proposal resubmissions that have not been substantially revised in accordance with policy outlined in the current PAPPG. Investigators are encouraged to contact a Program Director in Antarctic Sciences for guidance on their revised proposal prior to resubmission.

5. Project Management: Proposals must articulate how activities will be managed toward a successful conclusion of the project. Proposers should carefully consider the project management needs of research activities and should include an appropriate management plan in the proposal with appropriate resources in the budget to support this plan. Complex projects may require dedicated project management expertise as part of the proposing team.

6. Instrument Development Proposals: Proposals for instrument development as part of the field proposal must demonstrate that project management
best practices will be used to manage the activity. This includes defining milestones for development and testing, establishing criteria for evaluating whether milestones are met, and conducting readiness reviews prior to deployment. Proposals must also demonstrate that the design is optimized to reduce operations and maintenance costs, and maximize logistical efficiencies, during deployment, servicing, and recovery.

### B. Budgetary Information

**Cost Sharing:**

Inclusion of voluntary committed cost sharing is prohibited.

**Budget Preparation Instructions:**

Budgets with field work components must follow specific ANT solicitation instructions found at: https://www.nsf.gov/geo/opp/ant/ant_research_solit.jsp.

### C. Due Dates

- **Full Proposal Deadline(s) (due by 5 p.m. submitter's local time):**
  - June 01, 2023

Prior to submission of full proposals, investigators are required to submit a Concept Outline, which is due January 17, 2023.

### D. Research.gov/Grants.gov Requirements

**For Proposals Submitted Via Research.gov:**

To prepare and submit a proposal via Research.gov, see detailed technical instructions available at: https://www.research.gov/research-portal/appmanager/base/desktop?rfpb=true&_pageLabel=research_node_display&_nodePath=/researchGov/Service/Desktop/ProposalPreparationandSubmission.html. For Research.gov user support, call the Research.gov Help Desk at 1-800-673-6188 or e-mail rgov@nsf.gov. The Research.gov Help Desk answers general technical questions related to the use of the Research.gov system. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this funding opportunity.

**For Proposals Submitted Via Grants.gov:**

Before using Grants.gov for the first time, each organization must register to create an institutional profile. Once registered, the applicant's organization can then apply for any federal grant on the Grants.gov website. Comprehensive information about using Grants.gov is available on the Grants.gov Applicant Resources webpage: https://www.grants.gov/web/grants/applicants.html. In addition, the NSF Grants.gov Application Guide (see link in Section V.A) provides instructions regarding the technical preparation of proposals via Grants.gov. For Grants.gov user support, contact the Grants.gov Contact Center at 1-800-518-4726 or by email: support@grants.gov. The Grants.gov Contact Center answers general technical questions related to the use of Grants.gov. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this solicitation.

**Submitting the Proposal:** Once all documents have been completed, the Authorized Organizational Representative (AOR) must submit the application to Grants.gov and verify the desired funding opportunity and agency to which the application is submitted. The AOR must then sign and submit the application to Grants.gov. The completed application will be transferred to the NSF FastLane system for further processing.

Proposers that submitted via Research.gov may use Research.gov to verify the status of their submission to NSF. For proposers that submitted via Grants.gov, until an application has been received and validated by NSF, the Authorized Organizational Representative may check the status of an application on Grants.gov. After proposers have received an e-mail notification from NSF, Research.gov should be used to check the status of an application.

### VI. NSF PROPOSAL PROCESSING AND REVIEW PROCEDURES

Proposals received by NSF are assigned to the appropriate NSF program for acknowledgement and, if they meet NSF requirements, for review. All proposals are carefully reviewed by a scientist, engineer, or educator serving as an NSF Program Officer, and usually by three to ten other persons outside NSF either as ad hoc reviewers, panelists, or both, who are experts in the particular fields represented by the proposal. These reviewers are selected by Program Officers charged with oversight of the review process. Proposers are invited to suggest names of persons they believe are especially well qualified to review the proposal and/or persons they would prefer not review the proposal. These suggestions may serve as one source in the reviewer selection process at the Program Officer's discretion. Submission of such names, however, is optional. Care is taken to ensure that reviewers have no conflicts of interest with the proposal. In addition, Program Officers may obtain comments from site visits before recommending final action on proposals. Senior NSF staff further review recommendations for awards. A flowchart that depicts the entire NSF proposal and award process (and associated timeline) is included in PAPPG Exhibit III-1.

A comprehensive description of the Foundation's merit review process is available on the NSF website at: https://www.nsf.gov/bfa/dias/policy/merit_review.

Proposers should also be aware of core strategies that are essential to the fulfillment of NSF's mission, as articulated in Leading the World in Discovery and Innovation, STEM Talent Development and the Delivery of Benefits from Research - NSF Strategic Plan for Fiscal Years (FY) 2022 - 2026. These strategies are integrated in the program planning and implementation process, of which proposal review is one part. NSF's mission is particularly well-implemented through the integration of research and education and broadening participation in NSF programs, projects, and activities.
A. Merit Review Principles and Criteria

The National Science Foundation strives to invest in a robust and diverse portfolio of projects that creates new knowledge and enables breakthroughs in understanding across all areas of science and engineering research and education. To identify which projects to support, NSF relies on a merit review process that incorporates consideration of both the technical aspects of a proposed project and its potential to contribute more broadly to advancing NSF’s mission “to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense; and for other purposes.” NSF makes every effort to conduct a fair, competitive, transparent merit review process for the selection of projects.

1. Merit Review Principles

These principles are to be given due diligence by PIs and organizations when preparing proposals and managing projects, by reviewers when reading and evaluating proposals, and by NSF program staff when determining whether or not to recommend proposals for funding and while overseeing awards. Given that NSF is the primary federal agency charged with nurturing and supporting excellence in basic research and education, the following three principles apply:

- All NSF projects should be of the highest quality and have the potential to advance, if not transform, the frontiers of knowledge.
- NSF projects, in the aggregate, should contribute more broadly to achieving societal goals. These "Broader Impacts" may be accomplished through the research itself, through activities that are directly related to specific research projects, or through activities that are supported by, but are complementary to, the project. The project activities may be based on previously established and/or innovative methods and approaches, but in either case must be well justified.
- Meaningful assessment and evaluation of NSF funded projects should be based on appropriate metrics, keeping in mind the likely correlation between the effect of broader impacts and the resources provided to implement projects. If the size of the activity is limited, evaluation of that activity in isolation is not likely to be meaningful. Thus, assessing the effectiveness of these activities may best be done at a higher, more aggregated, level than the individual project.

With respect to the third principle, even if assessment of Broader Impacts outcomes for particular projects is done at an aggregated level, PIs are expected to be accountable for carrying out the activities described in the funded project. Thus, individual projects should include clearly stated goals, specific descriptions of the activities that the PI intends to do, and a plan in place to document the outputs of those activities.

These three merit review principles provide the basis for the merit review criteria, as well as a context within which the users of the criteria can better understand their intent.

2. Merit Review Criteria

All NSF proposals are evaluated through use of the two National Science Board approved merit review criteria. In some instances, however, NSF will employ additional criteria as required to highlight the specific objectives of certain programs and activities.

The two merit review criteria are listed below. Both criteria are to be given full consideration during the review and decision-making processes; each criterion is necessary but neither, by itself, is sufficient. Therefore, proposers must fully address both criteria. (PAPPG Chapter II.C.2.d(i)); contains additional information for use by proposers in development of the Project Description section of the proposal). Reviewers are strongly encouraged to review the criteria, including PAPPG Chapter II.C.2.d(i), prior to the review of a proposal.

When evaluating NSF proposals, reviewers will be asked to consider what the proposers want to do, why they want to do it, how they plan to do it, how they will know if they succeed, and what benefits could accrue if the project is successful. These issues apply both to the technical aspects of the proposal and the way in which the project may make broader contributions. To that end, reviewers will be asked to evaluate all proposals against two criteria:

- Intellectual Merit: The Intellectual Merit criterion encompasses the potential to advance knowledge; and
- Broader Impacts: The Broader Impacts criterion encompasses the potential to benefit society and contribute to the achievement of specific, desired societal outcomes.

The following elements should be considered in the review for both criteria:

1. What is the potential for the proposed activity to a. Advance knowledge and understanding within its own field or across different fields (Intellectual Merit); and b. Benefit society or advance desired societal outcomes (Broader Impacts)?
2. To what extent do the proposed activities suggest and explore creative, original, or potentially transformative concepts?
3. Is the plan for carrying out the proposed activities well-reasoned, well-organized, and based on a sound rationale? Does the plan incorporate a mechanism to assess success?
4. How well qualified is the individual, team, or organization to conduct the proposed activities?
5. Are there adequate resources available to the PI (either at the home organization or through collaborations) to carry out the proposed activities?

Broader impacts may be accomplished through the research itself, through the activities that are directly related to specific research projects, or through activities that are supported by, but are complementary to, the project. NSF values the advancement of scientific knowledge and activities that contribute to achievement of socially relevant outcomes. Such outcomes include, but are not limited to: full participation of women, persons with disabilities, and other underrepresented groups in science, technology, engineering, and mathematics (STEM); improved STEM education and educator development at any level; increased public scientific literacy and public engagement with science and technology; improved well-being of individuals in society; development of a diverse, globally competitive STEM workforce; increased partnerships between academia, industry, and others; improved national security; increased economic competitiveness of the United States; and enhanced infrastructure for research and education.
Proposers are reminded that reviewers will also be asked to review the Data Management Plan and the Postdoctoral Researcher Mentoring Plan, as appropriate.

Additional Solicitation Specific Review Criteria

1. Justification for access to Antarctica: SF supports fieldwork in Antarctica for research that can only be done, or is best done, in Antarctica. Proposals must include an explanation that justifies fieldwork in the Antarctic. This statement will be evaluated to determine if it represents a compelling rationale that fieldwork in the Antarctic is required to accomplish the goals of the proposed investigation.

2. Operational feasibility: Proposals involving Antarctic fieldwork will be evaluated for operational feasibility, safety, and environmental impacts using the Logistic Requirement and Field Plan, the Concept Outline and Program Director feedback, an NSF environmental review, and an NSF safety review.

3. Instrumentation and technology development: The quality of development and testing plans, including milestones and criteria for acceptance, will be considered as an important criterion in the evaluation of proposals involving instrument development, or modification of instruments for polar work.

B. Review and Selection Process

Proposals submitted in response to this program solicitation will be reviewed by Ad hoc Review and/or Panel Review.

Reviewers will be asked to evaluate proposals using two National Science Board approved merit review criteria and, if applicable, additional program specific criteria. A summary rating and accompanying narrative will generally be completed and submitted by each reviewer and panel. The Program Officer assigned to manage the proposal’s review will consider the advice of reviewers and will formulate a recommendation.

After scientific, technical and programmatic review and consideration of appropriate factors, the NSF Program Officer recommends to the cognizant Division Director whether the proposal should be declined or recommended for award. NSF strives to be able to tell applicants whether their proposals have been declined or recommended for funding within six months. Large or particularly complex proposals or proposals from new awardees may require additional review and processing time. The time interval begins on the deadline or target date, or receipt date, whichever is later. The interval ends when the Division Director acts upon the Program Officer’s recommendation.

After programmatic approval has been obtained, the proposals recommended for funding will be forwarded to the Division of Grants and Agreements or the Division of Acquisition and Cooperative Support for review of business, financial, and policy implications. After an administrative review has occurred, Grants and Agreements Officers perform the processing and issuance of a grant or other agreement. Proposers are cautioned that only a Grants and Agreements Officer may make commitments, obligations or awards on behalf of NSF or authorize the expenditure of funds. No commitment on the part of NSF should be inferred from technical or budgetary discussions with a NSF Program Officer. A Principal Investigator or organization that makes financial or personnel commitments in the absence of a grant or cooperative agreement signed by the NSF Grants and Agreements Officer does so at their own risk.

Once an award or declination decision has been made, Principal Investigators are provided feedback about their proposals. In all cases, reviews are treated as confidential documents. Verbatim copies of reviews, not including the identity of the reviewer, are sent to the Principal Investigator/Project Director by the Program Officer. In addition, the proposer will receive an explanation of the decision to award or decline funding.

VII. AWARD ADMINISTRATION INFORMATION

A. Notification of the Award

Notification of the award is made to the submitting organization by an NSF Grants and Agreements Officer. Organizations whose proposals are declined will be advised as promptly as possible by the cognizant NSF Program administering the program. Verbatim copies of reviews, not including the identity of the reviewer, will be provided automatically to the Principal Investigator. (See Section VI.B. for additional information on the review process.)

B. Award Conditions

An NSF award consists of: (1) the award notice, which includes any special provisions applicable to the award and any numbered amendments thereto; (2) the budget, which indicates the amounts, by categories of expense, on which NSF has based its support (or otherwise communicates any specific approvals or disapprovals of proposed expenditures); (3) the proposal referenced in the award notice; (4) the applicable award conditions, such as Grant General Conditions (GC-1); or Research Terms and Conditions* and (5) any announcement or other NSF issuance that may be incorporated by reference in the award notice. Cooperative agreements also are administered in accordance with NSF Cooperative Agreement Financial and Administrative Terms and Conditions (CA-FATC) and the applicable Programmatic Terms and Conditions. NSF awards are electronically signed by an NSF Grants and Agreements Officer and transmitted electronically to the organization via e-mail.

*These documents may be accessed electronically on NSF’s Website at https://www.nsf.gov/awards/managing/award_conditions.jsp?org=NSF. Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-8134 or by e-mail from nsfpubs@nsf.gov.


Administrative and National Policy Requirements

Build America, Buy America

As expressed in Executive Order 14005, Ensuring the Future is Made in All of America by All of America’s Workers (86 FR 7475), it is the policy of the executive branch to use terms and conditions of Federal financial assistance awards to maximize, consistent with law, the use of goods, products, and materials produced in, and services offered in, the United States.
Consistent with the requirements of the Build America, Buy America Act (Pub. L. 117-58, Division G, Title IX, Subtitle A, November 15, 2021), no funding made available through this funding opportunity may be obligated for an award unless all iron, steel, manufactured products, and construction materials used in the project are produced in the United States. For additional information, visit NSF’s Build America, Buy America webpage.

Special Award Conditions:

Principal investigators are required to comply with NSF 22-106, Dear Colleague Letter: Office of Polar Programs Data, Code, and Sample Management Policy (https://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf22106) and evidence of compliance is required in all annual and final project reports. Within the first year of the award, investigators must register their projects with the USAP-DC website (USAP-DC) at https://www.usap-dc.org/ and include the project USAP-DC website in the first annual report under the "Other Products" or "Website" sections. In all project reports submitted to NSF, principal investigators must address the status of storing metadata files, physical/biological samples, full data sets, and derived data products into long-lived and publicly accessible archives. Collaborative proposals can have a single website entry, but it must be referenced in each collaborative final report. USAP-DC personnel can assist with this step (info@usap-dc.org.)

Projects receiving U.S. Antarctic Program (USAP) support for fieldwork in the Antarctic are subject to the Antarctic Conservation Act (ACA), as amended, 16 U.S.C. § 2401, et seq. Violations of the ACA may result in civil penalties up to approximately $32,000 per occurrence, imprisonment for up to one year, and, where appropriate, administrative sanctions up to and including debarment. Please refer to https://www.nsf.gov/geo/opp/antarct/aca/aca.jsp for general guidance.

Projects receiving USAP support for fieldwork in the Antarctic shall include the following acknowledgement in publications resulting from the project (in addition to acknowledging NSF grant support as described in the NSF Proposal & Award Policies & Procedures Guide Chapter XI.E.4): "Logistical support for this project in Antarctica was provided by the U.S. National Science Foundation through the U.S. Antarctic Program."

The Antarctic Program has zero tolerance for harassment of any kind. Participants are required to acknowledge receipt, acceptance and full understanding of the terms and expectations of the Polar Code of Conduct and to abide by its terms and expectations. As noted in the Code, violations "may be shared with current and future Antarctic or Arctic program support contractors, federal agency partners, or grantee institutions" and "may result in adverse consequences to the individual, including, but not limited to, removal from a USAP or Arctic station, field camp, other facility, ship, or aircraft; termination of employment (by the employer); or other administrative, civil, or criminal enforcement actions, as appropriate." The Antarctic Program has zero tolerance for harassment of any kind.

Investigators are also expected to specifically address progress on activities related to proposed Broader Impacts in annual and final reports.

C. Reporting Requirements

For all multi-year grants (including both standard and continuing grants), the Principal Investigator must submit an annual project report to the cognizant Program Officer no later than 90 days prior to the end of the current budget period. (Some programs or awards require submission of more frequent project reports). No later than 120 days following expiration of a grant, the PI also is required to submit a final project report, and a project outcomes report for the general public.

Failure to provide the required annual or final project reports, or the project outcomes report, will delay NSF review and processing of any future funding increments as well as any pending proposals for all identified PIs and co-PIs on a given award. PIs should examine the formats of the required reports in advance to assure availability of required data.

PIs are required to use NSF's electronic project-reporting system, available through Research.gov, for preparation and submission of annual and final project reports. Such reports provide information on accomplishments, project participants (individual and organizational), publications, and other specific products and impacts of the project. Submission of the report via Research.gov constitutes certification by the PI that the contents of the report are accurate and complete. The project outcomes report also must be prepared and submitted using Research.gov. This report serves as a brief summary, prepared specifically for the public, of the nature and outcomes of the project. This report will be posted on the NSF website exactly as it is submitted by the PI.


See Special Award Conditions in previous section.

VIII. AGENCY CONTACTS

Please note that the program contact information is current at the time of publishing. See program website for any updates to the points of contact.

General inquiries regarding this program should be made to:

- Kelly M. Brunt, Program Director, Antarctic Glaciology & Oceans and Atmospheric Sciences, W7100, telephone: (703) 292-8457, email: kbrunt@nsf.gov
- Paul M. Cutler, Program Director, Glaciology, Ice Core Science & Geomorphology, W7217, telephone: (703) 292-4961, email: pcutler@nsf.gov
- Rebecca Gast, Program Director, Antarctic Organisms and Ecosystems, W7100, telephone: (703) 292-2356, email: rgast@nsf.gov
- Michael E. Jackson, Program Director, Earth Science, Geodesy & Geophysics, W7239, telephone: email: mejackson@nsf.gov
- Vladimir O. Papitashvili, Program Director, Astrophysics and Geospace Sciences & Antarctic Instrumentation, W7118, telephone: (703) 292-7425, email: vpapit@nsf.gov
- Allen J. Pope, Program Director, Polar Cyberinfrastructure, W7100, telephone: (703) 292-2858, email: apope@nsf.gov
- Maria Vernet, Program Director, Antarctic Organisms and Ecosystems, W7100, telephone: (703) 292-5308, email: mvernet@nsf.gov
- Elizabeth L. Rom, Program Director, Polar Education, W8164, telephone: (703) 292-7709, email: elrom@nsf.gov
- Jessie L. Crain, Antarctic Research Logistics Support Manager, W7457, telephone: (703) 292-7457, email: jcrain@nsf.gov
IX. OTHER INFORMATION

The NSF website provides the most comprehensive source of information on NSF Directorates (including contact information), programs and funding opportunities. Use of this website by potential proposers is strongly encouraged. In addition, "NSF Update" is an information-delivery system designed to keep potential proposers and other interested parties apprised of new NSF funding opportunities and publications, important changes in proposal and award policies and procedures, and upcoming NSF Grants Conferences. Subscribers are informed through e-mail or the user's Web browser each time new publications are issued that match their identified interests. "NSF Update" also is available on NSF's website.

Grants.gov provides an additional electronic capability to search for Federal government-wide grant opportunities. NSF funding opportunities may be accessed via this mechanism. Further information on Grants.gov may be obtained at https://www.grants.gov.

ABOUT THE NATIONAL SCIENCE FOUNDATION

The National Science Foundation (NSF) is an independent Federal agency created by the National Science Foundation Act of 1950, as amended (42 USC 1861-75). The Act states the purpose of the NSF is "to promote the progress of science; [and] to advance the national health, prosperity, and welfare by supporting research and education in all fields of science and engineering."

NSF funds research and education in most fields of science and engineering. It does this through grants and cooperative agreements to more than 2,000 colleges, universities, K-12 school systems, businesses, informal science organizations and other research organizations throughout the US. The Foundation accounts for about one-fourth of Federal support to academic institutions for basic research.

NSF receives approximately 55,000 proposals each year for research, education and training projects, of which approximately 11,000 are funded. In addition, the Foundation receives several thousand applications for graduate and postdoctoral fellowships. The agency operates no laboratories itself but does support National Research Centers, user facilities, certain oceanographic vessels and Arctic and Antarctic research stations. The Foundation also supports cooperative research between universities and industry, US participation in international scientific and engineering efforts, and educational activities at every academic level.

Facilitation Awards for Scientists and Engineers with Disabilities (FASED) provide funding for special assistance or equipment to enable persons with disabilities to work on NSF-supported projects. See the NSF Proposal & Award Policies & Procedures Guide Chapter II.E.6 for instructions regarding preparation of these types of proposals.

The National Science Foundation has Telephonic Device for the Deaf (TDD) and Federal Information Relay Service (FIRS) capabilities that enable individuals with hearing impairments to communicate with the Foundation about NSF programs, employment or general information. TDD may be accessed at (703) 292-5090 and (800) 281-8749, FIRS at (800) 877-8339.

The National Science Foundation Information Center may be reached at (703) 292-5111.

The National Science Foundation promotes and advances scientific progress in the United States by competitively awarding grants and cooperative agreements for research and education in the sciences, mathematics, and engineering.

To get the latest information about program deadlines, to download copies of NSF publications, and to access abstracts of awards, visit the NSF Website at https://www.nsf.gov

Location: 2415 Eisenhower Avenue, Alexandria, VA 22314

For General Information (NSF Information Center): (703) 292-5111

TDD (for the hearing-impaired): (703) 292-5090

To Order Publications or Forms:

Send an e-mail to: nsfpubs@nsf.gov

or telephone: (703) 292-8134

To Locate NSF Employees: (703) 292-5111
PRIVACY ACT AND PUBLIC BURDEN STATEMENTS

The information requested on proposal forms and project reports is solicited under the authority of the National Science Foundation Act of 1950, as amended. The information on proposal forms will be used in connection with the selection of qualified proposals; and project reports submitted by awardees will be used for program evaluation and reporting within the Executive Branch and to Congress. The information requested may be disclosed to qualified reviewers and staff assistants as part of the proposal review process; to proposer institutions/grantees to provide or obtain data regarding the proposal review process, award decisions, or the administration of awards; to government contractors, experts, volunteers and researchers and educators as necessary to complete assigned work; to other government agencies or other entities needing information regarding applicants or nominees as part of a joint application review process, or in order to coordinate programs or policy; and to another Federal agency, court, or party in a court or Federal administrative proceeding if the government is a party. Information about Principal Investigators may be added to the Reviewer file and used to select potential candidates to serve as peer reviewers or advisory committee members. See System of Record Notices, NSF-50, "Principal Investigator/Proposal File and Associated Records," and NSF-51, "Reviewer/Proposal File and Associated Records." Submission of the information is voluntary. Failure to provide full and complete information, however, may reduce the possibility of receiving an award.

An agency may not conduct or sponsor, and a person is not required to respond to, an information collection unless it displays a valid Office of Management and Budget (OMB) control number. The OMB control number for this collection is 3145-0058. Public reporting burden for this collection of information is estimated to average 120 hours per response, including the time for reviewing instructions. Send comments regarding the burden estimate and any other aspect of this collection of information, including suggestions for reducing this burden, to:

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