This solicitation has been archived and replaced by NSF 19-595.

Antarctic Research

PROGRAM SOLICITATION
NSF 18-530

REPLACES DOCUMENT(S):
NSF 17-543

National Science Foundation

Directorate for Geosciences
Office of Polar Programs

Full Proposal Deadline(s) (due by 5 p.m. submitter's local time):

Proposals Accepted Anytime

For proposals seeking to utilize USAP logistics support, proposals should be submitted with sufficient lead time to allow for full peer review, logistics evaluation and planning, as well as resource allocations, within the capacities of the USAP program.

IMPORTANT INFORMATION AND REVISION NOTES

Proposal submission deadlines are removed for all programs in Antarctic Science (ANT).

Revised description of the Antarctic Integrated System Science (AISS) Program.

Any proposal submitted in response to this solicitation prior to January 29, 2018, should be submitted in accordance with the *NSF Proposal & Award Policies & Procedures Guide* (PAPPG) (NSF 17-1). Proposals submitted on or after January 29, 2018 should be submitted in accordance with the revised NSF PAPPG (NSF 18-1), which is effective for proposals submitted, or due, on or after January 29, 2018.

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Antarctic Research (ANT)
Antarctic Astrophysics & Geospace Sciences (AAGS), Antarctic Earth Sciences (AES), Antarctic Glaciology (AG), Antarctic Integrated System Science (AISS), Antarctic Ocean & Atmospheric Sciences (AOAS), Antarctic Organisms & Ecosystems (AOE), Antarctic Instrumentation and Research Facilities (AIRF)

Synopsis of Program:

The U.S. Antarctic Program (USAP) supports scientific research in Antarctica and the Southern Ocean, and NSF's Office of Polar Programs (OPP) provides operational research support for these projects. OPP's Antarctic Sciences Section (ANT) supports research to 1) expand fundamental knowledge of the Antarctic region, 2) improve understanding of interactions between the Antarctic region and global Earth systems, and 3) utilize unique characteristics of the Antarctic continent as an observing platform. Antarctic fieldwork is supported for research that can only be performed, or is best performed, in Antarctica. ANT encourages research, using existing samples, data, and models, that does not require fieldwork. ANT also encourages research that crosses and combines, disciplinary perspectives and approaches.

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.

- Jennifer Burns, Program Director, Antarctic Integrated System Science, W7178, telephone: (703) 292-2120, email: jmmburns@nsf.gov

- Jessie L. Crain, Antarctic Research Support Manager, W7126, telephone: (703) 292-7457, email: jlcrain@nsf.gov
- Paul M. Cutler, Program Director, Antarctic Glaciology, W7217, telephone: (703) 292-4961, fax: (703) 292-9025, email: pcutler@nsf.gov
- Christian H. Fritsen, Program Director, Antarctic Organisms & Ecosystems, W7213, telephone: (703) 292-7437, email: cfritsen@nsf.gov
- Alexandra R. Isern, Program Director, Antarctic Research and Logistics Integration, W7253, telephone: (703) 292-7581, email: aisern@nsf.gov
- Michael E. Jackson, Program Director, Research Facilities & Special Projects, W7239, telephone: (703) 292-7120, email: mejackso@nsf.gov
- Doug E. Kowalewski, Program Director, Antarctic Earth Sciences, W7157, telephone: 703-292-7706, email: dkowalew@nsf.gov
- Timothy M. McGovern, Oceans Project Manager, W7124, telephone: (703) 292-4248, email: tmcgover@nsf.gov
- Peter Milne, Program Director, Antarctic Ocean & Atmospheric Sciences, W7116, telephone: (703) 292-4714, fax: (703) 292-9079, email: pmilne@nsf.gov
- Vladimir Papitashvili, Program Director, Antarctic Astrophysics & Geospace Sciences, W7118, telephone: (703) 292-7425, fax: (703) 292-9079, email: vpapita@nsf.gov
- Elizabeth L. Rom, Program Director, Education & Outreach, W8164, telephone: (703) 292-7709, email: elrom@nsf.gov

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

- 47.050 --- Geosciences

Award Information

Anticipated Type of Award: Standard Grant or Continuing Grant

Estimated Number of Awards: 50

Anticipated Funding Amount: $55,000,000

The Antarctic Sciences Section anticipates committing up to approximately $55 million as either standard or continuing awards made in response to this solicitation contingent on the availability of funds.

Eligibility Information

Who May Submit Proposals:

Proposals may only be submitted by the following:

- Institutions of Higher Education (IHEs) - Two- and four-year IHEs (including community colleges) accredited in, and having a campus located in the US, acting on behalf of their faculty members. Special Instructions for International Branch Campuses of US IHEs: If the proposal includes funding to be provided to an international branch campus of a US institution of higher education (including through use of subawards and consultant arrangements), the proposer must explain the benefit(s) to the project of performance at the international branch campus, and justify why the project activities cannot be performed at the US campus.
- Non-profit, non-academic organizations: Independent museums, observatories, research labs, professional societies and similar organizations in the U.S. associated with educational or research activities.

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.

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- **Letters of Intent:** Not required

- **Preliminary Proposal Submission:** Not required
- **Full Proposals:**
    - Full Proposals submitted via FastLane: *NSF Proposal and Award Policies and Procedures Guide* (PAPPG) guidelines apply. 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.
    - Full Proposals submitted via Grants.gov: *NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov* guidelines apply (Note: 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=grantsgovguide).

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):

  Proposals Accepted Anytime

  For proposals seeking to utilize USAP logistics support, proposals should be submitted with sufficient lead time to allow for full peer review, logistics evaluation and planning, as well as resource allocations, within the capacities of the USAP program.

Proposal Review Information Criteria

Merit Review Criteria:

National Science Board approved criteria. Additional merit review considerations 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:

Standard NSF reporting requirements apply.

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I. INTRODUCTION

The U.S. Antarctic Program (USAP) supports scientific research in Antarctica and the Southern Ocean, and NSF's Office of Polar Programs (OPP) provides operational research support for these projects. OPP's Antarctic Sciences Section (ANT) supports research to 1) expand fundamental knowledge of the Antarctic region, 2) improve understanding of interactions between the Antarctic region and global Earth systems, and 3) utilize unique characteristics of the Antarctic continent as an observing platform. Antarctic fieldwork is supported for research that can only be performed or is best performed, in Antarctica.

ANT encourages research, using existing samples, data, and models, that does not require fieldwork, as well as research that crosses, and combines, disciplinary perspectives and approaches. ANT strongly encourages proposals from researchers that are under-represented in science (e.g., women, minorities, those with disabilities) and from investigators new to Antarctic research, with the goal of broadening participation. ANT also strongly encourages international collaborations and research-related education and outreach as part of the broader impacts of proposals.

Protection of the Antarctic environment is a fundamental consideration in all Antarctic activities as described in the Protocol on Environmental Protection to the Antarctic Treaty. To this end, research should be planned to limit adverse impact on the Antarctic environment.

The National Academies of Sciences, Engineering, and Medicine (NAS) released a report in August 2015 entitled "A Strategic Vision for NSF Investments in Antarctic and Southern Ocean Research" that offered recommendations for USAP research priorities. Recommendations in this report will be considered in decisions on future research investments (https://www.nap.edu/catalog/21741/a-strategic-vision-for-nsf-investments-in-antarctic-and-southern-ocean-research). This report affirmed the maintenance of strong core research programs, and identified the following three major themes as drivers for Antarctic research:

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

Proposals for workshops to advance, coordinate, or synthesize research in these areas are encouraged.

II. PROGRAM DESCRIPTION

RESEARCH AREAS

Data rescue and re-use proposals:

ANT encourages proposals that seek to address pressing Antarctic science questions through rescue, re-sampling, or re-processing of data and samples. These data and samples may reside in forms such as old aerial photographs, satellite images, radar transects, rock samples, sediments, ice cores, and biological samples. Data and samples may be currently housed in formal or informal archives. Data rescue and re-use proposals offer opportunities for graduate or undergraduate thesis work and may present a means of providing the first exposure of under-represented groups to Antarctic research. Teams may also consider submitting a proposal with this general theme to NSF's Research Experiences for Undergraduates (REU) solicitation (https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5517).

Proposers should investigate the utility of existing samples available from individual researchers and sample/data repositories such as the Polar Rock Repository, Antarctic Marine Geology Research Facility, National Ice Core Laboratory, Antarctic and Southern Ocean Data Portal, Antarctic Meteorological Research Center, Antarctic Glaciology Data Center, IRIS, and UNAVCO.

Antarctic Astrophysics and Geospace Sciences (AAGS)

The AAGS Program sponsors cutting-edge, transformative, and emerging research that uses Antarctica as an observing platform, or

investigates the role of the Antarctic upper atmosphere in global environmental processes. Interdisciplinary studies that focus on how solar activity influences the properties and dynamics of the polar atmosphere and the global geospace system are especially encouraged.

Emphasis areas include but are not limited to:

- Geospace:
  - Solar wind interaction with Earth's magnetic field;
  - Upper atmosphere coupling with the mesosphere and lower thermosphere;
  - Dissociation and ionization processes affecting atmospheric temperature change and dynamics of neutral winds, particularly in the context of planetary atmospheric waves and tides.

- Astrophysics (including cosmic rays and solar physics):
  - Fundamental physics and evolution of the universe;
  - Cosmic microwave background radiation;
  - Galactic astronomy;
  - Solar and cosmic-ray physics, and high-energy neutrino physics.

Proposals to the AAGS Program are often co-reviewed with related programs in the Division of Atmospheric and Geospace Sciences (GEO/AGS), Division of Astronomical Sciences (MPS/AST), and Division of Physics (MPS/PHY). It is recommended that prospective Principal Investigators contact the AAGS Program Director prior to proposal submission to determine whether the submission should be targeted solely to AAGS, or should be submitted jointly to AAGS and another related program.

Antarctic Earth Sciences (AES)

The AES program supports research to understand the geologic history and geodynamics of Antarctica, and to study the wide range of environments and processes that shape this unique continent and surrounding continental shelves and ocean basins. AES supports field, laboratory, and theoretical work in both terrestrial and marine settings in the fields of geology, geophysics, geochemistry, and other areas of earth sciences.

Emphasis areas include but are not limited to:

- Identifying and reconstructing geological controls on ice sheet stability and the rate and magnitude of past ice sheet changes;
- Using paleoenvironmental proxies to reconstruct past changes in global climate and ocean circulation;
- Investigating the Antarctic fossil record and paleoenvironments to understand the evolutionary history of life;
- Documenting volcanism, rifting, and orogenesis from the breakup of Gondwana to the present-day;
- Investigating drivers for unique Antarctic processes from evolution of the Transantarctic Mountains to modern earth surface processes in ice-free zones.

Antarctic Glaciology (AG)

The AG program supports projects to understand the dynamics and evolution of the Antarctic ice sheet and records of environmental change contained in the ice sheet.

Emphasis areas include but are not limited to:

- Analyzing newly drilled or existing Antarctic ice-cores to advance knowledge of global environmental change;
- Using ground-based measurements, remotely sensed data, and numerical modeling of ice sheets, shelves, glaciers, and ice streams to advance understanding of ice-sheet dynamics and subglacial hydrology;
- Studying the evolution of glacial activity over the last few million years, as preserved in land-based sediments and exposed in outcrops;
- Organizing planning activities for future ice-core drilling programs.

Antarctic Integrated System Science (AISS)

The AISS Program focuses on the interactions among ocean, ice, land, atmosphere, and/or biological systems. The program works closely with all other programs in ANT to support research that contributes to understanding local and regional systems, the Antarctic system as a whole, and Antarctica’s role in the broader Earth system.

A key aspect of AISS-supported projects is the integration of results across disciplines to achieve a better understanding of these systems and their dynamics across space and through time. Most successful AISS projects do one or more of the following:

- Investigate important relationships among components of the Antarctic system;
- Identify key processes, feedbacks, or non-linear responses of the Antarctic system to physical, geochemical, or biological drivers;
- Advance understanding of the Antarctic system and its behavior through synthesis or modeling, including the development of predictive tools;
- Address linkages between the Antarctic and the broader Earth system.

Proposals that rely on system-level approaches to address Antarctic-based questions that cut across disciplines or programs (whether within or outside OPP) can be submitted to AISS, which will coordinate review. Projects that rest primarily within one discipline but include a systems perspective can list AISS as a secondary program.

Antarctic Ocean and Atmospheric Sciences (AOAS)

The AOAS Program seeks proposals that increase understanding of the physics, chemistry, dynamics, and energetics of the oceans, atmosphere and cryosphere at high southern latitudes.

Emphasis areas include but are not limited to:

- Atmospheric dynamics, transport, and chemistry;
- Physical and chemical oceanography;
- Biogeochemical cycles and controls on marine productivity;
- Sea ice and ice shelf/ocean interactions;
- Energy budgets and climate dynamics.

The AOAS Program supports observational fieldwork in Antarctica and the Southern Ocean utilizing a range of land-based, shipboard, airborne, and autonomous platforms. The Program supports instrumentation development, data synthesis, and modeling.

Antarctic Organisms and Ecosystems (AOE)

The AOE Program supports research at all levels of biological organization, from molecular, cellular, and organismal to communities and ecosystems. The program welcomes interdisciplinary approaches to address fundamental questions in biological and environmental science.

Emphasis areas include, but are not limited to:

- Ecosystems: food webs, primary and secondary production, interplay between ecology and biogeochemistry, and the relationship between environmental change and ecosystems in Antarctica's terrestrial and marine settings;
- Organismal physiological ecology, population dynamics and adaptations: metabolic, physiological and behavioral adaptations of marine and terrestrial organisms, population dynamics and diversity;
- Evolution and adaptation: genomes and transcriptomes of key species as well as metagenomes and transcriptomes from environmental samples from ice sheets, lakes, and oceans that advance understanding of the bases of biological adaptation and response by Antarctic organisms and ecosystems.

The AOE program is specifically seeking proposals for Research Coordination Networks (RCNs) that will significantly advance the robustness and accessibility of “omic” information and analysis of data that will lead to greater synthesis efforts for *decoding the genomic and transcriptomic bases of biological adaptation and response across Antarctic organisms and ecosystems.*

Antarctic Instrumentation and Research Facilities (AIRF)

The AIRF Program supports development and field testing of scientific instrumentation for use in polar regions as encouraged in the Blue Ribbon Panel Report "More and Better Science in Antarctica Through Increased Logistical Effectiveness." The program seeks to support the development and field testing of instrumentation to:

- Enable broad, multi-disciplinary community use of field instrumentation;
- Reduce the on-ice footprint of research and/or operations in Antarctica;
- Enhance capabilities for in situ observing on the continent and in the surrounding ice-covered waters.

AIRF does not provide support for technique development, model development, or operations and maintenance of existing instrumentation. EAGER funds may be requested to support initial conceptual designs for instrumentation where proof-of-concept work is needed to determine the feasibility and cost of a full-scale instrument development proposal. Instrumentation and technology development may also be included in proposals submitted to ANT disciplinary programs. There are specific proposal preparation requirements for instrument development (see Proposal Preparation and Submission Instructions) and additional merit review criteria apply (see Merit Review Criteria). It is recommended that investigators contact the Program Director for Antarctic Instrumentation and Research Facilities or other ANT Program Director(s) relevant to the instrumentation or technology prior to submission.

ADDITIONAL OPPORTUNITIES

Other NSF Funding Opportunities

Paleo Perspectives on Climate Change (P2C2; NSF Solicitation 17-582 or subsequent solicitations): Antarctic research proposals should be submitted to P2C2 if they utilize proxy records of climate system variability to provide insights into Earth's past climate variability, climate sensitivity, and the response of key components of the Earth system to past climate change. Such proposals will be evaluated by Program Directors from the relevant Antarctic program and, if successful, supported with ANT funds.

EarthCube (NSF Solicitation 16-514 or subsequent solicitations): The GEO-wide EarthCube solicitation supports activities that engage the geosciences, cyberinfrastructure, computer science, and associated communities. See the Amendments section of the EarthCube solicitation for details on the most current parameters, scope, conditions, and requirements. Antarctic Program Directors participate in the evaluation of proposals submitted to the EarthCube solicitation.

Major Research Instrumentation (MRI; NSF Solicitation 18-513 or subsequent solicitations): The MRI program serves to increase access to shared scientific and engineering instruments for research and research training in our Nation's institutions of higher education, not-for-profit museums, science centers and scientific/engineering research organizations. The program provides organizations with opportunities to acquire major instrumentation that supports the research and research training goals of the organization and that may be used by other researchers regionally or nationally.

Research Coordination Networks (RCN; NSF Solicitation 17-594 or subsequent solicitations): Research Coordination Network proposals support groups of investigators to communicate and coordinate their research and associated training and educational activities across disciplinary, organizational, geographic, and international boundaries.

Education and Outreach: Investigators who wish to propose projects that are primarily education and outreach efforts are encouraged to contact the Program Director for Polar Special Initiatives, and to submit proposals via other solicitations in the Directorate of Geosciences and Directorate of Education and Human Resources such as:

- Research Experiences for Undergraduates (REU; NSF Solicitation 13-542)
- Improving Undergraduate STEM Education (IUSE; NSF Solicitation 17-590)
- Advancing Informal STEM Learning (AISL; NSF Solicitation 17-573)
- Discovery Research PreK-12 (DRK-12; NSF Solicitation 17-584)

III. AWARD INFORMATION

The Antarctic Sciences Section expects each year to fund approximately 50 new standard or continuing research grants with durations of 1 to 5 years.

In FY 2018, the Office of Polar Programs anticipates committing up to approximately $55 million over the duration of the awards in all programmatic areas in response to this solicitation, subject to 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:

Proposals may only be submitted by the following:

- Institutions of Higher Education (IHEs) - Two- and four-year IHEs (including community colleges) accredited in, and having a campus located in the US, acting on behalf of their faculty members. Special Instructions for International Branch Campuses of US IHEs: If the proposal includes funding to be provided to an international branch campus of a US institution of higher education (including through use of subawards and consultant arrangements), the proposer must explain the benefit(s) to the project of performance at the international branch campus, and justify why the project activities cannot be performed at the US campus.
- Non-profit, non-academic organizations: Independent museums, observatories, research labs, professional societies and similar organizations in the U.S. associated with educational or research activities.

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 Grants.gov or via the NSF FastLane system.

- Full proposals submitted via FastLane: Proposals submitted in response to this program solicitation should be prepared and submitted in accordance with the general guidelines contained in the *NSF Proposal & Award Policies & 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. Paper copies of the PAPPG may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from nsfpubs@nsf.gov. Proposers are reminded to identify this program solicitation number in the program solicitation block on the NSF Cover Sheet For Proposal to the National Science Foundation. Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.

- 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=grantsgovguide). 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) 292-7827 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 the NSF FastLane system. 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.

Additional instructions:

1. **Revised Proposals:** Programs will not accept resubmitted proposals that have not been substantially revised in accordance with policy outlined in the current NSF Proposal & Award Policies & Procedures Guide (PAPPG). As the number of proposals the research community is asked to review has increased, reviewers have become increasingly reluctant to return comments, or comprehensively consider multiple submissions. As a result, NSF must be more critical when accepting revised and resubmitted proposals and will return those that fall short of the substantial revision guideline.

   For first re-submissions of a proposal, investigators are encouraged to include in the Project Description a brief statement of how their proposal was revised in response to reviewer and program feedback. Any subsequent submissions of a proposal must be accompanied by a letter to the program, submitted as a single-copy document of no more than two pages. The letter must state how the proposal revisions are substantial, and detail how concerns raised by the previous reviewer and program input have been addressed. The program will review this letter carefully to determine if a resubmission is appropriate. If the program deems that a resubmission is not appropriate, the proposal will be returned without review per NSF policy.

2. **Data Management Plan:** All proposals must include a Data Management Plan, as a Supplementary Document, that describes how the project will provide open and rapid access to quality-controlled and fully documented data and information during and after the project. This Data Management Plan must be compliant with the OPP Data Management Policy. This Plan must also be consistent with NSF's policy on dissemination and sharing of research results (https://www.nsf.gov/bfa/dias/policy/dmp.jsp) and NSF's PAPPG. The Data Management Plan must specifically discuss the following:

   A. **Data archiving**: OPP policy requires that metadata files, full data sets, and derived data products, must be deposited in a long-lived and publicly accessible archive. Information regarding appropriate data centers can be found on the Office of Polar Programs website or through contact with the cognizant Program Officer. All data and derived data products must be provided to a data center within two years of collection or by the end of the award, whichever comes first. Any limitation on access to the information beyond these dates that is anticipated at proposal submission must be based on a compelling justification and documented in the Data Management Plan. Any such limitation on access that arises following award is subject to Program Officer approval with documentation in NSF record systems.

      Metadata for all Antarctic supported datasets and derived data products must be submitted to the Antarctic Master Directory, via the USAP Data Coordination Center (http://www.usap-data.org/) in the form of a Directory Interchange Format (DIF) entry. Information on DIF generation can be found on the Global Change Master Directory website (http://gcmd.gsfc.nasa.gov/). This metadata submittal is a requirement of U.S. Antarctic Program obligations under the Antarctic Treaty; proof of submission must be included in the Final Project Report to NSF in the form of a link to the metadata and data archive.

   B. **Reporting requirements**: Principal Investigators are required to provide updates on the status of metadata and data archival in annual project reports. Compliance with the project Data Management Plan must be documented in the final project report. URL's for archived metadata and data should be included in these reports in the section entitled "Products-Websites."

3. **Facilities, Logistics, and Support:** Proposals involving fieldwork in the Antarctic must describe the field activities and include a schedule of proposed work in the Project Description of the proposal. 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.

4. **International Collaboration and Cooperation Involving Non-U.S. Field Support:** Proposals involving international collaborations must include letters from the foreign investigators acknowledging their role in the proposed collaboration, providing the name and contact details, as applicable, for the national Antarctic program or funding agency that will support the foreign investigators. These letters should be uploaded as Supplementary Documents. The U.S. Antarctic Program welcomes proposals from U.S. scientists involving collaboration and cooperation with scientists from other nations, and/or logistical support from other national Antarctic programs. U.S. scientists considering such projects are strongly advised to contact an Antarctic Sciences Program Director prior to proposal submission. Note that U.S. investigators cannot commit USAP logistical resources to international projects. Such commitments are only made via direct communication between USAP and other national Antarctic programs.

5. **Project Management:** Proposals must articulate how activities will be managed toward a successful conclusion of the project. Complex projects may require dedicated project management expertise as part of the proposing team. 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.

6. **Instrument Development Proposals:** Proposals for instrument development 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.

7. **Proposals Involving No Fieldwork:** The statement "This proposal does not require fieldwork in the Antarctic" must be included as the last line of the Project Summary.

8. **Proposals Involving Fieldwork:** The statement "This proposal requires fieldwork in the Antarctic" must be included as the last line of the Project Summary. The Project Description should document 1) the scientific need for fieldwork, 2) field readiness (including testing instrumentation prior to deployment), 3) requested number of field team members (including foreign collaborators) with the expected role and a qualification statement for their role of each member. Please note that NSF does not allow minors (age 18 and under) to participate in fieldwork in the Antarctic. 4) logistical support resources requested, and 5) evidence that the proposed activities can only be done, or are best done, in Antarctica. Requests to conduct laboratory analyses in Antarctica rather than at the home institution must be justified. 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 to the field team.

9. **Logistics Requirements and Field Plan:** The Logistics Requirement and Field Plan must be included as a Supplementary Document and will be subject to peer review. Proposals with fieldwork lacking this plan may be returned without review. This document is limited to one page of text and one page of figures, and must contain the following: 1) brief statement of research objectives; 2) list of geographic regions and field sites (for remote sites, a map with coordinates is recommended); 3) description of proposed field activities; 4) logistical resources required; 5) deployment schedule and justification; 6) number of field personnel requested: 7) facility construction, modification, or installation requirements (including instrument installation); and 8) aircraft instrumentation, autonomous platforms, scientific instruments or equipment with special support requirements, field sampling, or diving plans that are essential to the proposed work.

10. **Research vessel support:** Projects requiring research vessel support must submit a UNOLS ship request form as a Supplementary Document.

11. **Use of NSF-supported research facilities:** Projects requesting services from NSF-supported research support facilities (such as IRIS, UNAVCO, PGC, IDDO, NCALM, etc.) must include a letter from the facility as a Supplemental Document indicating feasibility and additional costs needed to support the proposed research.

12. **Unmanned Aircraft Systems (UAS), Unmanned Aerial Vehicles (UAV) and Remotely Piloted Aircraft (RPA):** Field use of autonomous platforms, regardless of size, weight or form, requires explicit approval by NSF prior to use in the USAP. For further information, investigators should contact their cognizant Program Director or the Research Support Manager in the Antarctic Infrastructure and Logistics Section. Use of UAV requires operators with an FAA certified UAV pilot license.

13. **Environmental Stewardship:** The U.S. Antarctic Conservation Act (ACA) requires an environmental impact assessment (EIA) in advance of USAP research and operational activities. Permits are required for the taking of fauna and flora, entry into protected areas, introduction of non-native species, waste disposal, use of designated pollutants, and other actions. For further information contact the ACA Permit Officer at acapermits@nsf.gov or visit the U.S. Antarctic Environmental Stewardship web page. Permits are not required at the time of proposal submission, but investigators are responsible for obtaining the necessary permits if an award is made.

14. **Transshipment/importation of scientific samples:** Transshipment and importation of Antarctic samples are governed by regulations of the countries involved (e.g., New Zealand, Chile, and the U.S.). Permits are not required at the time of proposal submission, but investigators are responsible for obtaining the necessary permits if an award is made. Further information is available at USAP.gov.

B. Budgetary Information

Cost Sharing:

Inclusion of voluntary committed cost sharing is prohibited.

Budget Preparation Instructions:

Budget Preparation Instructions for projects with field work:

Costs for the following items must be included in the proposal budget. Questions regarding budget preparation for projects with fieldwork should be directed to the cognizant Program Director or Research Support Managers in the Antarctic Infrastructure and Logistics Section.

- Physical and dental examinations, including blood work, for all persons deploying to Antarctica. NSF funding cannot be used to support additional medical or dental treatments that may be required to meet USAP physical qualification requirements or in support of a request for a waiver of physical qualification requirements.

- Per diem for travel to the departure point to Antarctica (Christchurch, NZ, Punta Arenas, Chile or elsewhere) as "Foreign Travel." Do not include airfare costs to the departure point. NSF does not support airfare and travel expenses for foreign field participants to the departure point unless a compelling rationale exists for an exception.

- Laboratory consumables and supplies above those normally stocked in reasonable quantities by the contractor, project-specific equipment, field supplies that the contractor does not have in inventory, batteries to operate remote equipment, and equipment and supplies required at home organizations. A list of available lab materials, supplies, and chemicals can be found at http://www.usap.gov/usapgov/proposalInformation/.

- Non-recoverable, and potentially non-recoverable, equipment, such as moorings (except for the anchor mass), drifters, XCTDs, and satellite tracking tags.

- Mountaineer/field safety personnel for research teams working in terrain requiring enhanced field skills to ensure the safety of the field party.
- Technical support for measurement of nutrients on research cruises.
- Certified explosives blaster support required for the detonation of explosives.
- Equipment dedicated to a project for multiple years, including UNAVCO and IRIS/PASCAL equipment, that cannot be supplied from the core equipment pool.
- Cargo and sample shipping within the continental United States to/from the U.S. Antarctic Program cargo center in Pt. Hueneme, CA. Funds for shipment of temperature-sensitive samples from Antarctica to Pt. Hueneme should not be requested in the proposal.
- Accompanied excess baggage costs required for transport of research-related equipment.
- Specialized packaging or preparation of equipment needed for transport of project-specific equipment to and/or from Antarctica.
- Private medical evacuation insurance if a tour ship or other private transportation will be part of the field plan.

The USAP issues, at no charge to the award, limited amounts of basic polar clothing as described in the USAP Participant Guide.

Insurance: NSF does not provide insurance for grantee personnel in Antarctica, and NSF funding, as a direct cost, cannot be used for the acquisition of insurance for health care, property loss, workers compensation or survivor benefits. Persons needing hospital care beyond the limited capabilities in Antarctica will be transported to the nearest appropriate health care facilities in New Zealand, South America, or the United States, at which point they will be responsible for medical costs. Investigators are encouraged to ensure that their health and life insurance policies cover flights aboard scheduled military aircraft. Investigators are also encouraged to ensure that their medical insurance covers medical transportation cost for return to the U.S. from health care facilities in New Zealand, South America, or other Antarctic access points that may be utilized for medical evacuation, if that service is needed.

C. Due Dates

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

  Proposals Accepted Anytime

  For proposals seeking to utilize USAP logistics support, proposals should be submitted with sufficient lead time to allow for full peer review, logistics evaluation and planning, as well as resource allocations, within the capacities of the USAP program.

D. FastLane / Grants.gov Requirements

For Proposals Submitted Via FastLane:

To prepare and submit a proposal via FastLane, see detailed technical instructions available at: https://www.fastlane.nsf.gov/a1/newstan.htm. For FastLane user support, call the FastLane Help Desk at 1-800-673-6188 or e-mail fastlane@nsf.gov. The FastLane Help Desk answers general technical questions related to the use of the FastLane 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: http://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 FastLane are strongly encouraged to use FastLane 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 *Investing in Science, Engineering, and Education for the Nation's Future: NSF Strategic Plan for 2014-2018*. 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.

One of the strategic objectives in support of NSF's mission is to foster integration of research and education through the programs, projects, and activities it supports at academic and research institutions. These institutions must recruit, train, and prepare a diverse STEM workforce to advance the frontiers of science and participate in the U.S. technology-based economy. NSF's contribution to the national innovation ecosystem is to provide cutting-edge research under the guidance of the Nation's most creative scientists and engineers. NSF also supports development of a strong science, technology, engineering, and mathematics (STEM) workforce by investing in building the knowledge that informs improvements in STEM teaching and learning.

NSF's mission calls for the broadening of opportunities and expanding participation of groups, institutions, and geographic regions that are underrepresented in STEM disciplines, which is essential to the health and vitality of science and engineering. NSF is committed to this principle of diversity and deems it central to the programs, projects, and activities it considers and supports.

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 societally relevant outcomes. Such outcomes include, but are not limited to: full participation of women, persons with disabilities, and underrepresented minorities 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:** NSF supports fieldwork in Antarctica for research that can only be done, or is best done, in Antarctica. Proposals must make a compelling case that fieldwork in Antarctica is needed 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.

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/or 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 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, excluding the names of the reviewers or any

reviewer-identifying information, 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 a Grants Officer in the Division of Grants and Agreements. 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) 292-7827 or by e-mail from nsfpubs@nsf.gov.

More comprehensive information on NSF Award Conditions and other important information on the administration of NSF awards is contained in the NSF *Proposal & Award Policies & Procedures Guide* (PAPPG) Chapter VII, available electronically on the NSF Website at https://www.nsf.gov/publications/pub_summ.jsp?ods_key=pappg.

Special Award Conditions:

1. ***Data Management (to be included in all ANT awards)*:**

   Principal investigators are required to comply with the OPP Data Management Policy (NSF 16-055) and evidence of compliance is required in final project reports. Principal investigators must also address in the final project report the status of archival, accessibility, and metadata related to physical/biological samples collected during the project.

2. ***Acknowledgement of USAP logistics support (ANT awards with fieldwork only)*:**

   Projects receiving U.S. Antarctic Program 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”.

3. ***Antarctic Conservation Act (ANT awards with fieldwork only)*:**

   This award is 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 $28,000 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/plr/antarct/aca/aca.jsp for general guidance.

4. ***Code of Conduct (ANT awards with fieldwork only)*:**

   The Office of Polar Program’s U.S. Antarctic Program (USAP) Code of Conduct alerts participants to the National Science Foundation’s expectations for professional conduct and acceptable behavior while deployed in Antarctica (https://www.nsf.gov/geo/opp/documents/policy/AIL-POL_1000%2003%20Code%20of%20Conduct.pdf). Participants in research supported by the USAP are required to comply with this Code of Conduct. All USAP participants are required to acknowledge in writing, the receipt, acceptance, and full understanding of its terms and expectations. Violations may result in adverse actions or consequences to the individual including, but not limited to, removal from Antarctica (i.e. USAP stations, field camps, aircraft, or vessels), loss of grant, referral to the home institution for disciplinary action, and referral to law enforcement authorities for criminal prosecution, as appropriate.

   Violations of this Code of Conduct may be shared with current and future USAP or NSF Arctic program support contractors, federal agency partners, or grantee institutions.

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.

More comprehensive information on NSF Reporting Requirements and other important information on the administration of NSF awards is contained in the *NSF Proposal & Award Policies & Procedures Guide* (PAPPG) Chapter VII, available electronically on the NSF Website at https://www.nsf.gov/publications/pub_summ.jsp?ods_key=pappg.

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:

- Jennifer Burns, Program Director, Antarctic Integrated System Science, W7178, telephone: (703) 292-2120, email: jmmburns@nsf.gov
- Jessie L. Crain, Antarctic Research Support Manager, W7126, telephone: (703) 292-7457, email: jlcrain@nsf.gov
- Paul M. Cutler, Program Director, Antarctic Glaciology, W7217, telephone: (703) 292-4961, fax: (703) 292-9025, email: pcutler@nsf.gov
- Christian H. Fritsen, Program Director, Antarctic Organisms & Ecosystems, W7213, telephone: (703) 292-7437, email: cfritsen@nsf.gov
- Alexandra R. Isern, Program Director, Antarctic Research and Logistics Integration, W7253, telephone: (703) 292-7581, email: aisern@nsf.gov
- Michael E. Jackson, Program Director, Research Facilities & Special Projects, W7239, telephone: (703) 292-7120, email: mejackso@nsf.gov
- Doug E. Kowalewski, Program Director, Antarctic Earth Sciences, W7157, telephone: 703-292-7706, email: dkowalew@nsf.gov
- Timothy M. McGovern, Oceans Project Manager, W7124, telephone: (703) 292-4248, email: tmcgover@nsf.gov
- Peter Milne, Program Director, Antarctic Ocean & Atmospheric Sciences, W7116, telephone: (703) 292-4714, fax: (703) 292-9079, email: pmilne@nsf.gov
- Vladimir Papitashvili, Program Director, Antarctic Astrophysics & Geospace Sciences, W7118, telephone: (703) 292-7425, fax: (703) 292-9079, email: vpapita@nsf.gov
- Elizabeth L. Rom, Program Director, Education & Outreach, W8164, telephone: (703) 292-7709, email: elrom@nsf.gov

For questions related to the use of FastLane, contact:

- FastLane Help Desk, telephone: 1-800-673-6188; e-mail: fastlane@nsf.gov.

For questions relating to Grants.gov contact:

- Grants.gov Contact Center: If the Authorized Organizational Representatives (AOR) has not received a confirmation message from Grants.gov within 48 hours of submission of application, please contact via telephone: 1-800-518-4726; e-mail: support@grants.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 http://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) 292-7827
- **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 Systems of Records, NSF-50, "Principal Investigator/Proposal File and Associated Records," 69 Federal Register 26410 (May 12, 2004), and NSF-51, "Reviewer/Proposal File and Associated Records," 69 Federal Register 26410 (May 12, 2004). 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:

Suzanne H. Plimpton
Reports Clearance Officer
Office of the General Counsel
National Science Foundation
Alexandria, VA 22314