Antarctic Research

PROGRAM SOLICITATION
NSF 15-529

REPLACES DOCUMENT(S):
NSF 13-527

National Science Foundation

Directorate for Geosciences
Division of Polar Programs

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

April 15, 2015

April 15, Annually Thereafter

IMPORTANT INFORMATION AND REVISION NOTES

Important information has been added to this solicitation concerning the following topics:

- **National Academy of Sciences (NAS) study:** In FY2014, the Antarctic Sciences Section (ANT) of the Division of Polar Programs supported the NAS study "Development of a Strategic Vision and Implementation Plan for the U.S. Antarctic Program (USAP) at the National Science Foundation." A National Research Council report on the study will be published in spring 2015. NSF anticipates that the report will include recommendations for prioritizing Antarctic research for the next decade and will be an important consideration for future research programs.
- **Project management requirements:** Complex projects may require dedicated project management expertise. Proposers should carefully consider the needs of the research activities and include an appropriate description of the management plan in the proposal and appropriate resources in the budget.
- **Instrument development:** As recommended by the National Research Council's report "Future Science Opportunities in Antarctica and the Southern Ocean" and by the USAP Blue Ribbon Panel, ANT is encouraging the development of instrumentation and technologies for broad multi-disciplinary community use; instrument development that reduces the on-ice footprint in Antarctica; and development of instrumentation and technologies that will enhance current capabilities for *in situ* observing on the continent and the surrounding ice-covered waters. Project management best practices should be used to manage the activity, including appropriate plans, milestones, and success criteria for pre-deployment testing and readiness reviews. The proposal must also demonstrate that the design is optimized to reduce operations and maintenance costs and maximize logistical efficiencies during deployment, servicing, and recovery.
- **Unmanned Aircraft Systems (UAS), Unmanned Aerial Vehicles (UAV) and Remotely Piloted Aircraft (RPA):** These systems can provide substantial benefits to scientific observations and thus contribute significantly to advancing knowledge of the Antarctic. However, use of these systems in Antarctica can lead to unanticipated loss of equipment to the environment. In addition, use in the context of the USAP's sometimes high tempo of air operations, including fixed wing and helicopter flights, requires careful consideration and appropriate controls. Consequently, their use for USAP science purposes must be specifically approved, considering factors such as safety of planned operations, environmental hazard, and risk mitigation strategies. These considerations include all aspects of unmanned aircraft operations as well as potential activities to recover or repair these systems once deployed. Requests must be accompanied by a Concept of Operations (CONOPS) document that lays out operational plans and considers appropriate risks. The CONOPS document will evaluated as part of the normal USAP planning process.

Any proposal submitted in response to this solicitation should be submitted in accordance with the revised NSF Proposal & Award Policies & Procedures Guide (PAPPG) (NSF 15-1), which is effective for proposals submitted, or due, on or after December 26, 2014. The PAPPG is consistent with, and, implements the new Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards (Uniform Guidance) (2 CFR § 200).

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Antarctic Research
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 Technology Development, Polar Cyberinfrastructure

Synopsis of Program:

Scientific research, along with operational support of that research, is the principal activity of the U.S. Antarctic Program in Antarctica. The National Science Foundation's Antarctic Sciences Section (ANT), Division of Polar Programs, fosters research on globally and regionally important scientific problems. In particular, the Antarctic Sciences Section supports research that expands fundamental knowledge of the region as well as research that relies on the unique characteristics of the Antarctic continent as a platform from which to support research. Antarctic fieldwork will only be supported for research that can only be performed or is best performed in Antarctica. The Antarctic Sciences Section strongly encourages research using existing samples, models, and data as well as research at the intersection between disciplines.

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.

- Vladimir Papitashvili, Program Director, Antarctic Astrophysics & Geospace Sciences, telephone: (703) 292-7425, fax: (703) 292-9079, email: vpapita@nsf.gov
- Paul Cutler, Program Director, Antarctic Glaciology, 785 S, telephone: (703) 292-4961, fax: (703) 292-9025, email: pcutler@nsf.gov
- Julie M. Palais, Program Director, Antarctic Glaciology (on detail until March 2015), telephone: (703) 292-8033, fax: (703) 292-9079, email: jpalais@nsf.gov
- Peter Milne, Program Director, Antarctic Ocean & Atmospheric Sciences, telephone: (703) 292-4714, fax: (703) 292-9079, email: pmilne@nsf.gov
- Jessie L. Crain, Research Support Manager, PLR/AIL, telephone: (703) 292-7457, fax: (703)292-9080, email: jlcrain@nsf.gov
- Timothy M. McGovern, Oceans Projects Manager, PLR/AIL, 755S, telephone: (703) 292-4248, fax: (703)292-9080, email: tmcgover@nsf.gov
- Michael E. Jackson, telephone: (703) 292-8033, email: mejackso@nsf.gov
- Sonya Lyatsky, telephone: (703) 292-4706, email: slyatsky@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

approximately

Anticipated Funding Amount: $55,000,000

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

Eligibility Information

Who May Submit Proposals:

The categories of proposers eligible to submit proposals to the National Science Foundation are identified in the Grant Proposal Guide, Chapter I, Section E.

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, Part I: Grant Proposal Guide (GPG) Guidelines apply. The complete text of the GPG is available electronically on the NSF website at: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg.

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: http://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. proposer's local time):

  April 15, 2015

  April 15, Annually Thereafter

  or the first business day after this date

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.

TABLE OF CONTENTS

Summary of Program Requirements

I. Introduction

II. Program Description

III. Award Information

IV. Eligibility Information

V. Proposal Preparation and Submission Instructions
- A. Proposal Preparation Instructions
- B. Budgetary Information
- C. Due Dates
- D. FastLane/Grants.gov Requirements

VI. NSF Proposal Processing and Review Procedures
- A. Merit Review Principles and Criteria
- B. Review and Selection Process

VII. Award Administration Information
- A. Notification of the Award
- B. Award Conditions
- C. Reporting Requirements

VIII. Agency Contacts

IX. Other Information

I. INTRODUCTION

Scientific research, along with operational support of that research, is the principal activity of the U.S. Antarctic Program in Antarctica. The National Science Foundation's Antarctic Sciences Section, Division of Polar Programs, fosters research on globally and regionally important scientific problems. In particular, the Antarctic Sciences Section supports research that expands fundamental knowledge of the region as well as research that relies on the unique characteristics of the Antarctic continent as a platform from which to support research. Antarctic fieldwork will only be supported for research that can only be performed or is best performed in Antarctica. The Antarctic Sciences Section strongly encourages research using existing samples, models, and data as well as research at the intersection between disciplines.

NSF has supported a National Academy of Sciences study titled "Development of a Strategic Vision and Implementation Plan for the

U.S. Antarctic Program at the National Science Foundation." A National Research Council report on this study is expected in Spring 2015. The Foundation anticipates that this report will include recommendations for prioritization of Antarctic research topics for the next decade or more. The Antarctic Sciences Section expects that the ideas in this report will be important considerations in future years.

The Antarctic Sciences Section strongly encourages proposals from persons under-represented in science and from investigators new to Antarctic research with the goal of broadening participation of both individuals and institutions. Antarctic Sciences also strongly encourages international collaborations and research-related education and outreach.

II. PROGRAM DESCRIPTION

RESEARCH AREAS

Antarctic Astrophysics and Geospace Science

The Antarctic Astrophysics and Geospace Sciences (AAGS) Program sponsors cutting-edge, transformative, and emerging research areas that either use Antarctica as an observing platform, or contribute to an understanding of the role played by the Antarctic upper atmosphere in global environmental processes. Interdisciplinary studies that might help improve our understanding of potential solar activity forcing on properties and dynamics of the polar atmosphere are especially encouraged.

Emphasis areas include but are not limited to:

- **Antarctic aeronomy** that focuses on the polar mesosphere and thermosphere where processes of dissociation and ionization are important for studies of: (a) atmospheric temperature changes and dynamics of neutral winds at altitudes from 30 to a few hundred kilometers, particularly in the context of planetary atmospheric tides and climate change dynamics, and (b) interactions of the middle and upper atmosphere with the stratosphere and Antarctic ozone layer.
- **Antarctic geospace research** that focuses on deriving characteristics and physical mechanisms from the interplay of the solar wind's energetic charged particles with and within the Earth's magnetic field.
- **Antarctic astrophysical studies, including cosmic rays and solar physics** that focus on fundamental physics and evolution of the Universe. Cosmic Microwave Background radiation studies, galactic astronomy, solar and cosmic-ray physics, and high-energy neutrino physics research are primarily conducted at the South Pole Station and with NASA's long-duration balloon flights launched from McMurdo Station.

Antarctic Earth Sciences

Antarctica is a dynamic and diverse continent with mountains, volcanoes, deserts, fossils, and some of the Earth's most ancient crust. The continental shelves and ocean basins surrounding Antarctica record ice-sheet histories as well as unique geodynamic processes and other geologic phenomena. Much of this geology is hidden beneath thick ice sheets or beneath the sea; therefore, innovative approaches are needed to decipher its history. Projects supported by the Antarctic Earth Sciences (AES) Program provide insights into Antarctica's rich history and lead to increased understanding of the processes that shape it today.

AES encourages and supports field, laboratory, and theoretical work in both terrestrial and marine settings in the fields of geology, geophysics, and other areas of earth sciences.

Emphasis areas include but are not limited to:

- **Understanding the evolution of Antarctic ice sheets** using remote sensing and sediment records from continental margins to reconstruct their history and determine the geologic controls on their stability;
- **Deciphering paleoenvironmental and paleobiological records** to understand global climate, ocean circulation, and the evolution of life;
- **Exploring Antarctica's tectonic evolution,** from its central role in Gondwana's breakup to the present-day processes driving volcanism, rifting, and orogenesis; and
- **Investigating unique Antarctic processes,** such as the landscape evolution of the Transantarctic Moutains and formation of subglacial lakes.

Antarctic Glaciology

The Antarctic Glaciology (AG) Program supports interdisciplinary research concerned with the history and dynamics of the Antarctic ice sheet and its surrounding ice shelves. Studies of the processes controlling the mass balance and dynamics of the Antarctic ice sheet are also an important component of the Program. The Program supports both field and laboratory based research as well as remote sensing and modeling studies to better understand the East and West Antarctic ice sheets, and the glaciers draining the interior of the continent. Work on previously collected ice core samples and data is also encouraged. Proposers should investigate the availability of existing samples through individual researchers and existing data and sample repositories such as the National Ice Core Laboratory (NICL).

Emphasis areas include but are not limited to:

- The study of global climate change from newly drilled Antarctic ice cores (including development of new ice-core processing and analysis methods) and analysis of existing archived ice samples from the National Ice Core Lab (NICL);
- The study of ice sheet dynamics (including its sub-glacial hydrology) from ground-based measurements and from remote sensing data obtained from aircraft and satellites, as well as numerical modeling of the ice sheet, glaciers and ice streams around the continent;
- The study of the recent (last few million year) Antarctic glacial geologic record preserved in land-based sediments and exposed in outcrops around the continent; and
- The study of subglacial lakes and the mechanisms that form and sustain them.

The Center for Remote Sensing of Ice Sheets (CReSIS), a Science and Technology Center established by the NSF in 2005, has developed new tools to measure and predict the response of sea-level change to the mass balance of ice sheets in Greenland and Antarctica. CReSIS scientists collaborate extensively with others in the U.S. (including scientists at other agencies) as well as internationally. Proposals that exploit these tools are encouraged.

Antarctic Integrated System Science

Proposals submitted to the Antarctic Integrated System Science (AISS) Program will focus on critical elements of i) an Antarctic

system (such as the McMurdo Dry Valleys, or a subglacial lake system) or ii) the Antarctic system as a whole, or iii) the Antarctic system's interactions with the broader Earth system. AISS proposals must demonstrate how the research will contribute to a broad system understanding, and proposers are encouraged to include at least one conceptual or detailed system diagram within the project description. In addition to programs that require interdisciplinary field work, AISS supports efforts that synthesize existing knowledge, often through modeling, of how the Antarctic system operates across appropriate spatial and temporal scales. NSF and the Antarctic community are expecting release of an NRC report in spring 2015, which should include prioritization of Antarctic research topics for the next decade. The AISS program anticipates drawing on those priorities for this, and future, solicitations.

Projects that can be co-reviewed between disciplinary programs should not list AISS as the primary submitting program, although AISS can be listed as a secondary program as appropriate. AISS will not support projects that recast disciplinary questions into a form requiring minimal expertise from other disciplines or projects that simply combine separate disciplinary questions without attention to the integration of results. In addition, projects that are overly broad in scope, and for which tractable research and logistical strategies are impractical, are discouraged.

Those considering submission to AISS are strongly encouraged to contact the Program Director in advance.

Antarctic Ocean and Atmospheric Sciences

The Antarctic atmosphere and surrounding oceans play a major role in global transport of heat, momentum, and biogeochemical cycles. They are key components of global ocean circulation as well as in planetary climate dynamics. As a coupled system they serve both as indicators and determinants of climate and ecosystem variability and change. The Antarctic Ocean and Atmospheric Sciences (AOAS) Program is intended to foster advances in understanding of the physics and chemistry of both oceanic and lower atmospheric processes, and environments at high southern latitudes and their links at local, regional and global scales across the Antarctic continent and Southern Ocean. Innovative approaches involving field and/or remotely sensed observations and modeling are particularly encouraged.

Emphasis areas include but are not limited to:

- Physical oceanography
- Meteorology
- Climate dynamics
- Marine and atmospheric chemistry
- Sea ice studies

Antarctic Organisms and Ecosystems

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

Emphasis areas include but are not limited to:

- **Marine ecosystems.** Studies that examine food webs, primary and secondary production, the interplay between ecology and biogeochemistry, and the relationship between environmental change and ecosystems are welcomed.
- **Terrestrial and freshwater ecosystems.** The McMurdo Dry Valleys of southern Victoria Land are of particular interest due to the large body of data available through ongoing research programs, including the McMurdo Dry Valleys LTER, but other locations can be proposed. Research in support of future field exploration of subglacial lakes will also be considered.
- **Population dynamics, physiological ecology, and adaptation.** Research concerning metabolic, physiological and behavioral adaptations of marine and terrestrial organisms, their population dynamics, and their diversity is supported. Long-term observations are also supported, with the goal of understanding the impact of environmental change on organismic and ecological processes.

Antarctic Instrumentation and Technology Development

As encouraged in the National Research Council's report "Future Science Opportunities in Antarctica and the Southern Ocean" and the Blue Ribbon Panel Report "More and Better Science in Antarctica Through Increased Logistical Effectiveness", the Antarctic Instrumentation and Technology Development Program supports development of instrumentation for use in the polar regions, as well as focused field-tests needed to commission an instrument for its intended use.

EAGER funds may be requested to support initial conceptual designs for complex instrumentation where proof-of-concept work is needed to estimate the costs and feasibility of a full-scale development proposal. Instrumentation development does not provide support for technique development, model development, or operations and maintenance of existing instrumentation.

Emphasis areas include but are not limited to:

- Development of instrumentation and technologies for broad, multi-disciplinary community use;
- Instrument development that will result in reduction of the on-ice footprint in Antarctica; and
- Development of instrumentation and technologies that will enhance current capabilities for *in situ* observing on the continent and in the surrounding ice-covered waters as recommended by the NRC and BRP reports highlighted above.

Instrumentation and technology development may also be included in proposals submitted to disciplinary programs in the Antarctic Sciences Section. However, investigators are reminded that such proposals must be for development and/or acquisition of instrumentation needed for research in the Antarctic. It is recommended that investigators contact their cognizant Program Director to discuss possible funding pathways prior to any instrumentation and technology submission. Specific proposal preparation instructions and additional review criteria are outlined below that apply to all Antarctic Instrumentation and Technology Development proposals.

Investigators are also encouraged to participate in NSF's annual Major Research Instrumentation (MRI) program (http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5260), conducted through the Office of International and Integrative Activities (IIA).

Polar Cyberinfrastructure

NSF's concept of cyberinfrastructure (CI) encompasses high-performance computing (HPC), stewardship and use of scientific data, and virtual organizations (VOs). The Antarctic Sciences Section works in partnership with the Arctic Sciences Section in this area and will consider proposals that promote effective collaboration between polar and cyberinfrastructure researchers. Priority for Antarctic Sciences funds will be given to proposals that provide significant benefit to the Antarctic research community including:

1. cost-effective transfer of data from remote field locations,

2. long-term sustainable curatorship, standardization, management and discovery of data and metadata,
3. visualization, manipulation, and analysis, particularly for understanding complexity,
4. access and interoperability across scientific disciplines,
5. promote effective use of HPC for direct and sustainable advances in current polar research and
6. e-learning and educational tools based on cyberinfrastructure components.

Proposals that establish or enhance VO resources for polar research, and its broader impacts, are also encouraged. It is anticipated that the Program will work collaboratively with NSF's Division of Advanced Cyberinfrastructure and NSF's EARTHCUBE Program for reviewing and funding purposes. Interested proposers are encouraged to visit the web site for NSF's Division of Advanced Cyberinfrastructure (http://www.nsf.gov/div/index.jsp?div=ACI) to obtain current reports that explain NSF's expectations for the various components of CI. Researchers are also encouraged to visit the website (http://www.nsf.gov/geo/earthcube/) for NSF's EARTHCUBE activities and initiatives.

U. S. ANTARCTIC PROGRAM NOTES:

Facilities, Logistics, and Support

The U.S. Antarctic Program (USAP) maintains a web portal (http://www.usap.gov/) with research, logistics, and operational information about U.S. activities in the Antarctic. In addition to information regarding USAP stations, ships, and related field support, the web site provides descriptions of research support provided by other organizations. The "Information for Proposers" page (http://www.usap.gov/proposalInformation/) provides links to resources that will be useful during proposal preparation, as well as information detailing the science support process and associated timeline. Investigators may contact the Antarctic Research and Logistics Integration Associate Program Director (Nature McGinn, nmcginn@nsf.gov) or the Research Support Manager (Jessie Crain, jlcrain@nsf.gov) or the Oceans Project Manager (Tim McGovern, tmcgover@nsf.gov) in the Antarctic Infrastructure and Logistics Section for information on logistical support. In addition, NSF's prime Antarctic logistics contractor, Lockheed-Martin Antarctic Support Contractor (ASC) coordinates research support and field operations in Antarctica and has a planning group that can assist investigators with questions about field or logistical support.

International Collaboration and Cooperation (Non-U.S. facilities)

The U.S. Antarctic Program welcomes proposals from U.S. scientists that involve collaboration and cooperation with scientists from other nations. Such proposals are usually the result of scientist-to-scientist discussions of potential collaborations. When discussing such projects with foreign colleagues, remember that individuals cannot commit USAP resources. Your acceptance of a generous offer from another nation's Antarctic program could inadvertently be construed as commitment of U.S. resources for some later project. U.S. scientists wishing to do research with other nations' Antarctic programs are asked to contact an appropriate Antarctic Sciences Program Director before submitting a formal proposal.

U.S. ANTARCTIC PROGRAM ENVIRONMENTAL STEWARDSHIP

The Antarctic Treaty System, with its Agreed Measures for the Conservation of Fauna and Flora (1964) and its Protocol on Environmental Protection (1991), prescribes comprehensive environmental protection measures. The U.S. implements these environmental protection agreements through the *Antarctic Conservation Act of 1978* (Public Law 95- 541), as amended by the Antarctic Science, Tourism, and Conservation Act of 1996 (PL 104-227).

In accordance with the Act, all activities within the U.S. Antarctic Program, including scientific research, science support, construction, operations, logistics, and facilities maintenance, are subjected to an environmental impact assessment (EIA) process conducted by the Division of Polar Programs. No activity may go forward until the EIA process is complete.

The regulations issued under the Act govern the taking of fauna and flora, entry into protected areas, introduction of non-native species, deployment of permanent and retrievable instrumentation, material management and waste disposal, and use of designated pollutants. Scientists may apply for an Antarctic Conservation Act (ACA) permit which is required to collect specimens, interact with seabirds and mammals, and enter protected areas for compelling scientific purposes. The permit review process provides for public comment on each application.

Transshipment and importation of Antarctic samples is governed by regulations of the countries involved (e.g., New Zealand, Chile, and the United States). Consult "Information for Proposers" on USAP.gov web site (http://www.usap.gov/proposalInformation/) for details on ACA permits and those required for transshipment and importation (http://www.usap.gov/USAPgov/proposalInformation/documents/Permit%20Guide.pdf).

For questions as to whether a permit is required, contact the Program Director relevant to the proposed research or the Permit Officer (acapermitsnsf.gov).

Environmental impact research. Investigators who wish to conduct research to help reduce the environmental impact of activities in Antarctica are encouraged to contact the appropriate Program Director in the Antarctic Sciences Section (Antarctic Sciences staff roster).

III. AWARD INFORMATION

In the U.S. Antarctic Program, NSF expects each year to fund approximately 50 new standard or continuing research grants with durations of 1 to 5 years.

In FY 2015, the Division anticipates committing approximately $55M 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:

The categories of proposers eligible to submit proposals to the National Science Foundation are identified in the Grant Proposal Guide, Chapter I, Section E.

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 Grant Proposal Guide (GPG). The complete text of the GPG is available electronically on the NSF website at: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg. Paper copies of the GPG 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: (http://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. Chapter II, Section D.5 of the Grant Proposal Guide provides additional information on collaborative proposals.

See Chapter II.C.2 of the GPG 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 GPG instructions.

Antarctic research proposal preparation:
Supplemental instructions

1. **Page limit:** Proposals must not exceed 15 pages in the project description section (see NSF GPG or NSF Grants.gov Application Guide for details). The normal 15-page limit for the Project Description will be enforced, according to the NSF GPG, Chapter II, C., 2.dii. A proposer can request a waiver from the ANT Section Head, if a sufficiently compelling reason exists. However, they must first consult the appropriate Program Director before beginning this process, which is described in the NSF GPG, Chapter II, A.

2. **Reporting on prior support:** Proposals submitted to this solicitation must report on prior support from NSF. The GPG requires that reporting on prior support is limited to a single award within the last 5 years for each PI and co-PI named on the cover sheet. Furthermore, when an investigator has received more than one award, the report on prior support must cover the one award most closely related to the new proposal (NSF GPG, Section II.C.2.d.iii.).

3. **Data and sample disposition:** NSF and Polar Programs policy requires that investigators make samples and data available to other researchers at no more than incremental cost and within a reasonable time (Guidelines and Award Conditions for Scientific Data). In the Data Management Plan all proposals must describe how data will be managed, shared and archived. This plan must be included as a Supplementary Document (See NSF's GPG Chapter II.C.2.j) and must address requirements of Polar Programs Guidelines and Award Conditions for Scientific Data. Unless otherwise justified, samples and data should be made publicly available no more than two years after collection.

4. **Project Management:** Proposals must articulate how the various activities will be managed toward a successful conclusion to the project. Complex projects may require dedicated project management expertise. Proposers should carefully consider the needs of the research activities and include an appropriate description of the management plan in the proposal and appropriate resources in the budget.

5. **Proposals for instrument development** must demonstrate that project management best practices will be used to manage the activity, including appropriate plans, milestones, and success criteria for pre-deployment testing and readiness reviews. The proposal must also demonstrate that the design is optimized to reduce operations and maintenance costs and maximize logistical efficiencies during deployment, servicing and recovery.

6. **Proposals Involving No Fieldwork:** Proposals should be clear about whether or not fieldwork in Antarctica is needed. If no fieldwork is required, the statement "This proposal does not require fieldwork in the Antarctic" must be included as the

last line of the Project Summary.

7. **Proposals Involving Fieldwork:**

    - If fieldwork is required, the statement "This proposal requires fieldwork in the Antarctic" must be included as the last line of the Project Summary.
    - Project Descriptions must contain sufficient information for reviewers and NSF staff to judge the scientific need for fieldwork, field readiness, and whether the resource levels requested are appropriate. Investigators must justify the need to conduct laboratory analyses in Antarctica rather than analyzing samples in their home laboratory. All instrumentation used in Antarctic fieldwork must be tested and considered operational prior to deployment.
    - Proposers must submit a **Logistical Requirements and Field Plan**, which will be subject to peer review, outlining the PI's logistical requests associated with the proposed field work. This statement must be included as a Supplementary Document. Proposals with fieldwork that lack this Plan are subject to return without review. The Logistical Requirements and Field Plan must include the following elements and should be limited to one page of text and one page of figures (if needed):
        - Brief statement of research objectives
        - List of field sites and the geographic region in which they are located. For remote sites investigators should consider providing a map of proposed field sites with coordinates included.
        - Description of proposed field activities including major logistical resources required (e.g., fixed-wing aircraft, vessels, helicopter support, laboratory, and aquarium facilities).
        - Description and justification of the desired deployment schedule.
        - Projected numbers of deploying personnel.
        - Description of any needs for facility construction, alteration, or instrument installation. Investigators should consider providing a design and/or instrument plan as part of this description or referencing the proposal section in which details are discussed.
        - Provide references to any proposal text that describes aircraft instrumentation, unmanned aerial vehicle or drone use, scientific instruments or equipment with special support requirements, and field sampling or diving plans.

    - Investigators who require vessel support must fill out a UNOLS ship request form (https://strs.unols.org/Public/diu_login.aspx) and submit the completed form as a Supplementary Document.
    - Proposals involving international collaborations must include letters from the foreign investigator acknowledging their role in the proposed collaboration and providing the name and contact details, as applicable, for the foreign Antarctic program or foreign funding agency that will support the foreign investigator. These letters should be uploaded as Supplementary Documents.
    - Projects requiring support from PASSCAL, UNAVCO, PGC, and IDDO must include a letter of support from the facility, outlining supportability and any additional costs that will be incurred by the proposed work.

The Logistical Requirements and Field Plan will assist reviewers in assessing the readiness of the project and alert the USAP logistics team to the support requirements of the possible upcoming project. Additional information and descriptions of logistical support capabilities at all three U.S. Antarctic stations and on the two USAP research vessesl can be found on the USAP web portal on the Information for Proposers web site at http://www.usap.gov/proposalInformation/contentHandler.cfm?id=2796.

Investigators unsure of the logistics requirements necessary to accomplish their research goals should contact their cognizant Program Director, the Antarctic Research and Logistics Integration Associate Program Director (Nature McGinn, nmcginn@nsf.gov), the Research Support Manager (Jessie Crain, jlcrain@nsf.gov), or the Oceans Project Manager (Tim McGovern, tmcgover@nsf.gov) in the Antarctic Infrastructure and Logistics Section as ideas for research proposals are being developed.

8. **Unmanned Aircraft Systems (UAS), Unmanned Aerial Vehicles (UAV) and Remotely Piloted Aircraft (RPA)** are revealing themselves to be versatile platforms for scientific research and observation. Use of such systems in the harsh Antarctic environment can lead to unanticipated loss of equipment to the environment. In addition, use of these systems in the context of the USAP's sometimes high tempo of air operations including fixed wing and helicopter flights requires careful consideration and appropriate controls. Consequently, their use for USAP science purposes must be specifically approved following consideration of factors such as: i) safety, notably to other aviation, ship and vehicle operations and associated ground personnel, ii) environmental hazard, including existing treaty obligations and known or forseeable impacts, and iii) risk mitigation strategies, agreed upon ahead of time and associated with their operational and scientific use. These considerations include all aspects of unmanned aircraft including potential activities to recover or repair these systems once they have been deployed in the field.

    It is a USAP guideline that any PI requests for permission to use these vehicles or aircraft be subject to current USAP aircraft, environmental and safety requirements. Requests for use of these systems must be accompanied by a Concept of Operations Document (CONOPS) that lays out operational (safety & environment) plans and considers appropriate risks. This CONOPS document will be considered and evaluated as part of the normal USAP planning process (proposal, Support Information Package, Research Support Plan). This requirement applies to all unmanned or remotely piloted systems, regardless of size, weight or form, although the detailed content of CONOPS documents for each request will be tailored on a case-by-case basis based on risks associated with the system.

B. Budgetary Information

Cost Sharing: Inclusion of voluntary committed cost sharing is prohibited

Budget Preparation Instructions:

Budget provisions for field services in Antarctica: Costs for the following items must be included in your funding request. Questions related to this list should be directed to your 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 medical or dental treatment that may be required to meet physical qualification requirements established for the U.S Antarctic Program or in support of a request for a waiver of the physical qualification requirements.
- *Per diem for travel to the departure point to Antarctica* (itemized under "Foreign Travel"). Do not include airfare costs to this departure point. If foreign scientists are part of the field team, NSF expects that these individuals will provide their airfare and travel expenses and these funds should not be requested in the proposal.
- *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/sea ice safety* support for research teams that will be in the field for two weeks or longer working in technical terrain requiring enhanced field skills to ensure the safety of the field party.
- *Technical support for the measurement of nutrients* on research cruises.
- *Certified explosives blaster* support required for 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 pools
- *Cargo and sample shipping within the continental United States* to the U.S. Antarctic Program cargo center in Pt. Hueneme CA. Funds for shipment of temperature-sensitive samples from Antarctica 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 (http://www.usap.gov/travelAndDeployment/contentHandler.cfm?id=541).

Insurance: NSF does not provide insurance for grantee personnel in Antarctica, and NSF funding cannot be used for the acquisition of insurance. Persons traveling to Antarctica are expected to have insurance appropriate to their normal life situations so that any needed health care, compensation for property loss, worker's compensation, or survivor benefit will be provided for. Persons who need hospital care will be transported to health care facilities in New Zealand, South America, or the United States, at which time 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. in the event that service is needed.

C. Due Dates

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

  April 15, 2015

  April 15, Annually Thereafter

  or the first business day after this date

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 the GPG as Exhibit III-1.

A comprehensive description of the Foundation's merit review process is available on the NSF website at: http://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. (GPG 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 GPG 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

Rationale 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.

Antarctic Instrumentation and Technology Development

For proposals involving instrument development or modification of instruments for polar work, the proposed development and testing plans, including milestones and criteria for acceptance, will be considered in decisions for award or declination.

Operational feasibility

Proposals involving Antarctic fieldwork will be evaluated for operational feasibility, including safety and environmental aspects. This feasibility will be considered in decisions for award or declination.

Antarctic Integrated System Science Additional Review Criteria

External reviewers and panel will be asked to comment on whether the proposal will advance knowledge of relationships among critical elements of the Antarctic system or of the Antarctic system as a whole and whether the proposal defines and demonstrates how the research will contribute to a broad system understanding.

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 be completed and submitted by each reviewer. 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 http://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 *Award & Administration Guide* (AAG) Chapter II, available electronically on the NSF Website at http://www.nsf.gov/publications/pub_summ.jsp?ods_key=aag.

Special Award Conditions:

Metadata. Principal Investigators of Antarctic Science awards are required to submit metadata files for all data sets and derived data products in the form of a Directory Interchange Format (DIF) entry, to the Antarctic Master Directory, via the USAP Data Coordination Center (http://www.usap-data.org/). Further information on DIF generation can be found on the Global Change Master Directory website (http://gcmd.gsfc.nasa.gov/). This metadata requirement is needed to meet U.S. Antarctic Program obligations under the Antarctic Treaty. Proof of the metadata entry must be included in the Final Project Report to NSF in the section entitled: Publications - Internet Dissemination.

PLR policy ("Guidelines and Award Conditions for Scientific Data") also requires that the full data sets and sets of derived data products be transferred to a nationally recognized or program officer-approved data repository. Investigators also are expected to submit their metadata (DIF) at the time that they submit their final reports to NSF.

Acknowledgement of US Antarctic Program support. In addition to the acknowledgement of NSF support, projects receiving US Antarctic Program support for field work in the Antarctic shall include the following acknowledgement in publications resulting from the project:

> *Logistical support for this project in Antarctica was provided by the U.S. National Science Foundation through the U.S. Antarctic Program.*

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 at least 90 days prior to the end of the current budget period. (Some programs or awards require submission of more frequent project reports). Within 90 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 *Award & Administration Guide* (AAG) Chapter II, available electronically on the NSF Website at http://www.nsf.gov/publications/pub_summ.jsp?ods_key=aag.

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:

- Vladimir Papitashvili, Program Director, Antarctic Astrophysics & Geospace Sciences, telephone: (703) 292-7425, fax: (703) 292-9079, email: vpapita@nsf.gov
- Paul Cutler, Program Director, Antarctic Glaciology, 785 S, telephone: (703) 292-4961, fax: (703) 292-9025, email: pcutler@nsf.gov
- Julie M. Palais, Program Director, Antarctic Glaciology (on detail until March 2015), telephone: (703) 292-8033, fax: (703) 292-9079, email: jpalais@nsf.gov
- Peter Milne, Program Director, Antarctic Ocean & Atmospheric Sciences, telephone: (703) 292-4714, fax: (703) 292-9079, email: pmilne@nsf.gov
- Jessie L. Crain, Research Support Manager, PLR/AIL, telephone: (703) 292-7457, fax: (703)292-9080, email: jlcrain@nsf.gov
- Timothy M. McGovern, Oceans Projects Manager, PLR/AIL, 755S, telephone: (703) 292-4248, fax: (703)292-9080, email: tmcgover@nsf.gov

- Michael E. Jackson, telephone: (703) 292-8033, email: mejackso@nsf.gov
- Sonya Lyatsky, telephone: (703) 292-4706, email: slyatsky@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 provide funding for special assistance or equipment to enable persons with disabilities to work on NSF-supported projects. See Grant Proposal Guide Chapter II, Section D.2 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 http://www.nsf.gov

- **Location:** 4201 Wilson Blvd. Arlington, VA 22230
- **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
Arlington, VA 22230