

This solicitation has been archived and replaced by [NSF 21-526](#).

Arctic Research Opportunities

Arctic Natural Sciences; Arctic Social Sciences; Arctic System Science; Arctic Observing Network

PROGRAM SOLICITATION

NSF 16-595

REPLACES DOCUMENT(S):

NSF 14-584



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

Arctic Natural Sciences; Arctic Social Sciences; Arctic System Science; Arctic Observing Network

IMPORTANT INFORMATION AND REVISION NOTES

- The Arctic Sciences Section is no longer explicitly soliciting proposals for Arctic cyberinfrastructure.
- Conference proposals under \$50k are welcome and can be submitted at any time to any of the above programs.
- Proposal submission deadlines are removed for all programs.
- Individual PIs may be listed as PI, co-PI, or senior personnel on no more than a total of two proposals under consideration at any one time by ARCSS and ANS combined.
- Proposals for Research Networking Activities and Research Project Overview proposals can now be submitted.
- Resubmitted proposals no longer require a separate letter to program directors but should identify, in the Project Description, how they have responded to prior review.

Any proposal submitted in response to this solicitation should be submitted in accordance with the revised *NSF Proposal & Award Policies & Procedures Guide* (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:

Arctic Research Opportunities

Synopsis of Program:

The National Science Foundation (NSF) invites investigators at U.S. organizations to submit proposals to the Arctic Sciences Section, Office of Polar Programs (OPP) to conduct research about the Arctic region.

The goal of this solicitation is to attract research proposals that advance a fundamental, process, and systems-level understanding of the Arctic's rapidly changing natural environment and social and cultural systems, and, where appropriate, to improve our capacity to project future change. The Arctic Sciences Section supports research focused on the Arctic region and its connectivity with lower latitudes. The scientific scope is aligned with, but not limited to, research challenges outlined in the Interagency Arctic Research Policy Committee (<https://www.nsf.gov/geo/opp/arctic/iarpc/start.jsp>) five-year plans.

The Arctic Sciences Section coordinates with programs across NSF and with other federal and international partners to co-review and co-fund Arctic proposals as appropriate. The Arctic Sciences Section also maintains Arctic logistical infrastructure and field support capabilities that are available to enable research.

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.

- Gregory J. Anderson, Program Director, Arctic System Sciences, W7134, telephone: (703) 292-4693, email: greander@nsf.gov
- Renee D. Crain, Research Support & Logistics Manager, W7154, telephone: (703) 292-4482, email: rcrain@nsf.gov
- Roberto Delgado, Program Director, Arctic Observing Network, W7246, telephone: (703) 292-2397, email: robdelga@nsf.gov
- Colene M Haffke, Program Director, Arctic Natural Sciences, W7100, telephone: (703) 292-8030, email: cohaffke@nsf.gov
- Patrick R. Haggerty, Research Support & Logistics Program Manager, W7249, telephone: (703) 292-8577, email: phaggert@nsf.gov
- Erica Hill, Program Director, Arctic Social Sciences, W7176, telephone: (703) 292-4521, email: erhill@nsf.gov
- Jennifer L. Mercer, Research Support and Logistics Manager, W7159, telephone: (703) 292-7453, email: jmercer@nsf.gov
- Frank R. Rack, Research Support and Logistics Manager, W7189, telephone: (703) 292-2684, email: frack@nsf.gov
- Elizabeth L. Rom, OPP Education Liaison, W8164, telephone: (703) 292-7709, email: elrom@nsf.gov
- Simon Stephenson, Section Head, W7164, telephone: (703) 292-7435, email: sstephen@nsf.gov
- Marc Stieglitz, Program Director, Arctic Natural Sciences, W7244, telephone: (703) 292-4354, email: mstiegli@nsf.gov
- Colleen Strawhacker, Program Director, Arctic Social Sciences, W7178, telephone: (703) 292-7432, email: colstraw@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 or Cooperative Agreement

Estimated Number of Awards: 75

per year, pending availability of funds.

Anticipated Funding Amount: \$40,000,000

per year approximately, pending 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.
- For-profit organizations: U.S. commercial organizations, especially small businesses with strong capabilities in scientific or engineering research or education.
- Foreign organizations: For cooperative projects involving U.S. and foreign organizations, support will only be provided for the U.S. portion.
- Other Federal Agencies and Federally Funded Research and Development Centers (FFRDCs): Contact the appropriate program before preparing a proposal for submission.
- Alaska Native serving and Tribal organizations

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:

For the Arctic Natural Sciences and Arctic System Science programs, individual PIs may be listed as PI, co-PI, or senior personnel on no more than a combined total of two proposals under consideration for funding at any given time.

For the Arctic Observing Network and Arctic Social Sciences programs there is no limitation on the number of proposals per PI.

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 Research.gov: *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:**

Other budgetary limitations apply. Please see the full text of this solicitation for further information.

C. Due Dates

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

Proposals Accepted Anytime

Arctic Natural Sciences; Arctic Social Sciences; Arctic System Science; Arctic Observing Network

Proposal Review Information Criteria

Merit Review Criteria:

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

Award Administration Information

Award Conditions:

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

Reporting Requirements:

Standard NSF reporting requirements apply.

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I. INTRODUCTION

The Arctic Sciences Section (ARC) in the Office of Polar Programs (OPP) funds scientific research about the Arctic region and provides operational support for Arctic research activities. Science programs provide support for disciplinary, multidisciplinary, and interdisciplinary investigations directed at understanding the Arctic region and its connectivity with lower latitudes.

A geographic definition of the Arctic region is provided by the United States Arctic Research and Policy Act (ARPA) of 1984 Section 112 (https://www.nsf.gov/od/opp/arctic/iarpc/arc_res_pol_act.jsp). Because this solicitation includes research on phenomena that link the Arctic to lower latitudes, the ARPA definition should not be viewed as strictly constraining the location of the work proposed. Proposals conducting research outside the Arctic geographic region should contain a clear statement of how the proposed research will increase our knowledge of the Arctic.

II. PROGRAM DESCRIPTION

The Arctic Sciences Section solicits proposals for research to enhance our understanding of the Arctic, from advancing fundamental disciplinary understanding of important Arctic processes, to complex interdisciplinary studies of couplings among social, biological, physical, and geochemical components of the Arctic system and the changing connections between the Arctic and lower latitudes. Of special interest is research focused on understanding processes relevant to social and environmental change. All proposals should discuss explicitly how their results would contribute to increasing our understanding of the Arctic region or its interaction with global systems. Research supported by the Arctic Section is supported by the following programs:

Arctic Social Science:

The Arctic Social Sciences Program (ASSP) supports research on Arctic social and cultural systems, present and past, and research relevant to understanding these systems. Areas of interest to the ASSP include, but are not limited to: resources and economic change; globalization; governance systems and self-determination; migration; knowledge systems, including digital information systems; gender; Arctic youth; Arctic urban systems; the social and cultural construction of food security; coupled human-ecodynamic systems past and present; linking science and humanities research; and heritage language documentation. The program has a special interest in a wide range of indigenous scholarship, e.g. indigenous science and traditional knowledge systems; community participatory-based research models and knowledge coproduction; indigenous conceived and led research projects; decolonizing research methods and institutions; research sovereignty; and more. In addition, ASSP welcomes research from all social science disciplines that are funded by the NSF Directorate of Social, Behavioral and Economic Sciences.

Arctic Natural Sciences:

The Arctic Natural Sciences (ANS) Program serves as the program that supports relatively unconstrained novel and creative research that is focused on disciplinary and interdisciplinary investigation related to understanding Arctic processes, including how those processes are changing in the rapidly changing Arctic system. The Program encourages proposals that test hypotheses leading to new understanding of the Arctic. The program also welcomes proposals that synthesize and analyze historical data. Areas of special interest to the ANS program include marine and terrestrial ecosystems, terrestrial hydrology, Arctic atmospheric and oceanic dynamics and climatology, and Arctic glaciological processes. Proposals submitted to the ANS program should focus on processes that are important to understanding the Arctic. If there is doubt as to the appropriate "home" for a proposal, prospective PIs are encouraged to contact the ANS program directors prior to proposal submission.

Where ANS participates in cross-Agency competitions, such as the [Paleo Perspectives on Climate Change](#) program, proposals that are suitable for review within these competitions must be submitted directly to these competitions rather than to ANS.

Arctic System Science:

The Arctic System Science Program (ARCSS) funds proposals or groups of proposals that advance our understanding of the Arctic as a coupled system, and how the Arctic system interacts with the Earth System. ARCSS projects are often interdisciplinary and focus on the relationships among physical, chemical, biological, and human processes with emphasis on the interactions among system components. The cycles of carbon, water, and energy are important to consider in investigating the functioning of the Arctic system. Research that seeks to understand how humans drive or respond to environmental change are also encouraged.

As discussed above in ANS, where ARCSS participates in cross-Agency competitions, proposals that are suitable for review within these competitions must be submitted directly to these competitions rather than to ARCSS

Most successful ARCSS projects do one or more of the following:

- Investigate important relationships among the various components of the Arctic system
- Identify key processes, feedbacks, or non-linear responses of the Arctic system to physical or biogeochemical drivers
- Advance understanding of the Arctic system and its behavior through synthesis or modeling, including the development of predictive tools
- Explore the consequences of environmental change on the Arctic system on society and ecosystems through approaches such as impact

- assessment scenarios or vulnerability assessments
- Address linkages between the Arctic and the Earth system

ARCSS proposals must identify explicitly how the results of the research will contribute to improvements in system-level understanding. PIs should ask themselves if their work addresses interactions among several components of the Arctic system, explores emergent behavior in linked subsystems, or otherwise provides essential knowledge, and they should apply that knowledge to system-level understanding.

ARCSS enthusiastically seeks proposals, or groups of proposals, that directly advance system level understanding. ARCSS program directors are always keen to speak with prospective PIs about their research ideas.

Arctic Observing Network

The Arctic Observing Network program supports proposals to make field observations to detect and understand Arctic system change occurring on time scales longer than the duration of a typical NSF research grant. These projects should address major drivers and/or impacts of system change and generate data that are intended for wider use by the scientific research community in understanding the changing Arctic system. Data analysis may be included as part of the proposed work. These may be single investigator or collaborative proposals for up to 5 years of observations. Continuation of observations beyond 5 years requires a successful new proposal, which must demonstrate that the previously-collected data are used by the scientific research community. Proposals to develop new sensors/sensing platforms or to design/optimize observing strategies will also be considered. There are specific requirements for AON data reporting, as stated in the Office of Polar Programs Data Management policy ([NSF 16-055](#)).

This solicitation encourages submission of the following types of proposals.

1. **General Arctic Science proposals** - Research proposals, either single investigator or collaborative, typically requesting up to 3 years of support for research requiring field observations, process studies, modeling, synthesis, etc.
2. **Arctic Observing Network proposals** – Research proposals, either single investigator or collaborative, requesting up to 5 years of initial support to make field observations that detect and understand Arctic system change occurring on time scales longer than the duration of a typical NSF research grant.
3. **Research Networking Activities (RNAs)** – RNA awards support collaboration by groups of investigators to advance our knowledge by aggregating research results across disciplinary, organizational, or international boundaries. Such proposals may support activities such as synthesis of research results, inter-comparison of existing data or models, developing networks of connections among existing research projects, exploration of new theory and efforts to establish best practices for data collection, observations, models, or data management. These activities are meant to support efforts that are more complicated and larger in scope than are appropriate for a Research Coordination Network (RCN: [NSF solicitation 15-527](#)); for example RNA activities might include modeling and large-scale data analysis that are beyond the budgetary scope of RCNs. RNAs are encouraged to engage, as appropriate to the proposal theme, with international partners that have funding from their own sources and with activities, centers and networks supported by other federal agencies, state, local, or tribal governments or the private sector. Proposals should identify an initial network of likely participants, but there should be mechanisms identified to maintain openness and promote participation in the proposed network by interested parties outside of the initial group. The inclusion of new researchers, post-docs, graduate students, and undergraduates is strongly encouraged. Proposals should present a clear management plan that includes a description of the roles and responsibilities of the PIs and a steering committee. Mechanisms for assessing progress and the effectiveness of the networking activities should be part of the management plan. RNA projects may be up to 5 years in duration. The size and scope of a RNA are expected to vary depending on the theme and the needs of the proposed activity. RNA proposals should be submitted to the program most appropriate for their subject matter. RNA proposals submitted to ARCSS and ANS are counted towards the proposal limits in those programs. Proposers are encouraged to discuss plans with a program director prior to submission.
4. **Conferences** - Proposals to bring scientists together for focused interactions to analyze or synthesize past or ongoing research, or to discuss future research priorities or strategies. These are typically one-time events with budgets under \$50k, but may be larger if needed. Normally those larger than \$50k are peer reviewed. Consultation with a program director from the relevant program prior to submission is strongly recommended. Conference proposals should be prepared and submitted in accordance with the guidance in the PAPPG. Conference proposals may be submitted to any of the Arctic Sciences programs throughout the year and will not count against the ANS/ARCSS limit for proposals under consideration from a single individual.
5. **Research Project Overview proposals (RPO)** -RPO awards assist the research community to develop large and complex projects that may require agency-to-agency or international agreements. In some cases, NSF may provide an early conditional commitment of logistical resources. Funding for planning and the development of, where applicable, interagency and international partnerships is provided. RPO proposals allow NSF to review the overall science goals and objectives and conditionally commit to a large project. The usual model will be that this commitment will be followed by the submission of a set of individual proposals to support components that will contribute to the goals of overall project. These will usually be reviewed by one panel. Final commitment of the resources is dependent on the Arctic Section, along with their international and interagency partners, supporting a viable set of sub-projects. RPO proposals will not count against the ANS/ARCSS limit for proposals under consideration from a single individual.
6. **Doctoral Dissertation Research Improvement Grants** - The Arctic Social Sciences program accepts proposals for dissertation research. These grants can support field research, data collection and sample surveys, specialized research equipment or services, supplies, and travel to access specialized collection or facilities. Proposals are limited to requests of up to \$30,000 for one year; in special cases the research may require more than 12 months and \$30,000, in these exceptional cases the PI and CoPI (student researcher) should contact the Program Director prior to submission of a proposal. In such cases the maximum time allowable is 24 months and \$50,000 in combined research funds and logistics. For detailed information regarding eligibility, proposal format, and budget contact the Arctic Social Sciences Program Director.

ADDITIONAL OPPORTUNITIES

Other NSF Funding Opportunities

Arctic research is also supported under the following solicitations:

Paleo Perspectives on Climate Change competition (P2C2 in [NSF Solicitation 13-576](#) or subsequent solicitations) - Arctic research proposals should be submitted to that competition 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. Arctic proposals submitted to this solicitation will be evaluated by Program Directors from the Arctic Sciences Section and, if successful, supported with funds from the Arctic Sciences Section.

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. Arctic program directors will participate in evaluation of proposals submitted to the EarthCube solicitation ([NSF Solicitation 16-514](#)). PIs should contact the cognizant Arctic or EarthCube Program Directors prior to submission.

Research Coordination Networks (RCN; [NSF solicitation 15-527](#) or subsequent solicitations) – Proposals to support groups of investigators in communicating and coordinating their research and associated training and educational activities across disciplinary, organizational, geographic, and international boundaries may be submitted to the RCN solicitation.

Documenting Endangered Languages ([NSF solicitation 16-576](#) or subsequent solicitations) - Arctic research proposals on endangered languages, which will be co-reviewed by ASSP, should be submitted to the Documenting Endangered Languages solicitation. This solicitation supports fieldwork and other activities relevant to the digital recording, documenting, and archiving of endangered languages, including the preparation of lexicons, grammars, text samples, and databases.

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

- Improving Undergraduate STEM Education (https://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf15585)
- Advancing Informal STEM Learning (AISL) (https://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf15593)

The Arctic Sciences Section encourages investigators from Alaska Tribal Colleges and Universities Program-eligible (TCUP-eligible) institutions to submit either single investigator research proposals or collaborative proposals from consortia of any TCUP-eligible institutions and/or partnering universities with educational or research ties to Alaska TCUP-eligible (https://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf16531) institutions' faculty or students. Each institution will independently manage its award. Such collaborations may include, for example, attracting, retraining, and supporting TCU students in independent research endeavors and non-TCU institutions providing research training to enable the successful transition of TCU students to major research universities. It is strongly recommended that proposers contact an Arctic Sciences Section Program Director to discuss the appropriateness of their ideas prior to preparing a proposal.

III. AWARD INFORMATION

Pending availability of funds, \$40,000,000 may be available for proposals to this solicitation. This does not include logistics support that may be provided through the Arctic Research Support and Logistics program. NSF estimates 75 awards per year as standard or continuing grants, or cooperative agreements. The number of awards and average award size and duration are subject to the availability of funds.

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.
- For-profit organizations: U.S. commercial organizations, especially small businesses with strong capabilities in scientific or engineering research or education.
- Foreign organizations: For cooperative projects involving U.S. and foreign organizations, support will only be provided for the U.S. portion.
- Other Federal Agencies and Federally Funded Research and Development Centers (FFRDCs): Contact the appropriate program before preparing a proposal for submission.
- Alaska Native serving and Tribal organizations

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:

For the Arctic Natural Sciences and Arctic System Science programs, individual PIs may be listed as PI, co-PI, or senior personnel on no more than a combined total of two proposals under consideration for funding at any given time.

For the Arctic Observing Network and Arctic Social Sciences programs there is no limitation on the number of proposals per PI.

Additional Eligibility Info:

Only U.S. organizations are eligible to submit proposals under this solicitation.

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 FastLane, Research.gov, or Grants.gov.

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

In determining which method to utilize in the electronic preparation and submission of the proposal, please note the following:

Collaborative Proposals. All collaborative proposals submitted as separate submissions from multiple organizations must be submitted via 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.

Proposals may be returned without review for failing to comply with the PAPPG or NSF Grants.gov Application Guide, this solicitation, or the instructions that supplement the PAPPG and NSF Grants.gov Application Guide.

Additional required information in the section “Results from Prior Research”

Under the section of Results from Prior Research, PIs must indicate where metadata and data from the award discussed are archived.

Revised Proposals

Revised proposals must include a brief description of how the resubmitted proposal has been revised in response to reviewer and panel comments as part of the body of the Project Description section of the proposal.

Principles for the Conduct of Research in the Arctic

Researchers should conform to the *Principles for the Conduct of Research in the Arctic*, approved by the U.S. Interagency Arctic Research Policy Committee (IARPC) in 1990 (<https://www.nsf.gov/geo/opp/arctic/conduct.jsp>). Proposers may also find the “Guidelines for Improved Cooperation between Northern Communities and Arctic Researchers” helpful (<https://www.arcus.org/>).

Proposals Involving Human Subjects

The NSF PAPPG provides procedural information for projects with human subjects in the section Projects Involving Human Subjects. Investigators must ensure that human subjects are protected from research risks in conformance with the relevant federal policy known as the Common Rule (*Federal Policy for the Protection of Human Subjects*, 45 CFR 690). Additional information is available at <https://www.nsf.gov/bfa/dias/policy/human.jsp>

Proposals Involving Arctic Field Work or Ship Time

Proposals involving field work in the Arctic must describe the field activities in the body of the proposal and include a schedule of proposed work. Logistics costs may be included directly in the proposal budget if the proposer plans to make the logistics arrangements. Alternatively, investigators may utilize third-party logistics providers paid for directly by the Arctic Research Support and Logistics program (RSL). Investigators requesting third-party field support or services must include in the proposal a 1-2 page Supplementary Document describing the scope and cost estimate for support. Please allow service providers 4-6 weeks to prepare Supplementary Document information for the proposal by initiating the request far in advance of proposal submission. All proposals will be evaluated for total logistics costs and feasibility prior to funding, regardless of whether the logistics costs are in the proposal budget or provided directly by NSF to a third-party provider. The scope and cost estimate must include the demobilization or property transfer of instrumentation or infrastructure deployed to support the project.

Proposals requesting support for field work should expect to go to the field no sooner than one year after proposal submission to allow time to plan, budget, and complete environmental compliance documentation. Per the NSF PAPPG, awardees are responsible for acquiring and complying with permits necessary for their work and are responsible for all activities conducted under the award. NSF is not responsible for costs associated with medical

evacuations or other interruptions to scheduled fieldwork and reserves the right seek reimbursement for costs incurred. Proposers should ensure all members of the field team are covered by institutional medical evacuation insurance or request funds to purchase medical evacuation insurance, which is an allowable grant cost.

NSF's prime contractor for Arctic field research support is CH2M HILL Polar Services (CPS; <http://cpspolar.com>). For assistance from CPS in planning field support, email planning@polarfield.com. The CPS website (<http://cpspolar.com>) provides more information on services available for researchers. Additional field support and service contractors include UNAVCO for geodesy, IRIS for seismology, IDPO/IDDO for ice core drilling and drill development, NICL for ice core archival and storage, and the Polar Geospatial Center for satellite imagery. Investigators requesting ice cores from NICL or other repositories should include with their proposal a letter detailing the request and approval from the repository authority. To request support from IDPO/IDDO, investigators should contact IDPO/IDDL (<https://icedrill.org/>). Investigators should include with their proposal the letter provided by IDPO/IDDO describing the equipment, services and a cost estimate (budget and justification) for the equipment or drilling support that would be required if the project is funded. Contact information for these and other services is provided on the RSL website (https://www.nsf.gov/od/opp/arctic/res_log_sup.jsp).

Proposals requesting ship time on U.S. Coast Guard (USCG; <http://icefloe.net>) or University-National Oceanographic Laboratory System (UNOLS; <https://www.unols.org>) vessels should include the UNOLS Ship Time Request form (<https://strs.unols.org>) as Supplementary Documentation. Please contact the ship operator for more information during proposal development. If requesting ship time on foreign research vessels, include Supplementary Documentation describing scope, cost, and outlining the partnership arrangement and email Frank Rack at frack@nsf.gov to coordinate with NSF. Research cruises in the Bering, Beaufort and Chukchi seas should plan to coordinate with coastal communities and to avoid local subsistence hunting activities. Information is available through the [Arctic Icebreaker Coordinating Committee](#) and on the USCG icebreaker planning website (<http://icefloe.net>).

For work in Greenland, follow the process laid out by the Government of Greenland (<http://naalakkersuisut.gl/en/About-government-of-greenland/Travel-activities-in-remote-parts-of-Greenland>). In response to the requirement that researchers in remote parts of Greenland carry DKK 1,000,000 in Search and Rescue insurance payable to the Danish State (<http://naalakkersuisut.gl/en/About-government-of-greenland/Travel-activities-in-remote-parts-of-Greenland/Procedure-and-forms>), NSF made an agreement to cover Search and Rescue costs as a self-insured government agency. NSF provides the names of each traveler under the auspices of NSF to the Government of Greenland. NSF would coordinate SAR activities with the Government of Greenland and reserves the right to seek reimbursement for costs incurred.

Communication with Arctic Communities

Projects working near Arctic communities are strongly encouraged to discuss the proposed work with those communities while the project is being developed. Researchers should coordinate their field activities with nearby communities and are expected to share results with the community following each field season and/or at the end of the project. Investigators should include travel funds for this in their proposal budget. Some projects may require consultation with tribal or subsistence co-management organizations. Time for consultation should be included in the project schedule and travel funds for these consultations should be included in the proposal budget. The RSL program may also support requests to visit communities on an *ad hoc* basis to support communication with local communities. These visits are anticipated to be limited to a few days and do not include additional funds for fieldwork or salaries. Please contact the RSL Program Directors for information about these opportunities.

Proposals submitted to the Arctic Social Sciences program that propose research in communities must attach a letter or email that confirms community collaboration, or at a minimum community awareness, from the relevant community organizations (e.g., Alaska Native corporations or non-profits, tribal councils, municipal governments, and/or school authorities) as a Supplementary Document.

Environmental Policy Considerations of Field Work

Federal agencies must comply with the National Environmental Policy Act (NEPA) and other applicable laws and policies. Projects will be assessed for environmental impacts prior to award and additional consultations or mitigation efforts may be required. Pls should expect to be involved in the assessment and environmental compliance process for their projects. Most NSF awards support individual scientific research projects and are not considered 'major Federal actions significantly affecting the quality of the human environment' but must nevertheless be documented. All federal agencies are regulated under acts such as the Endangered Species Act, the Marine Mammal Protection Act, and the National Historic Preservation Act. Researchers proposing work that may affect cultural or historic properties, or whose work involves tribal lands must cooperate with NSF in complying with the consultation requirements of section 106 of the National Historic Preservation Act and the Native American Graves Protection and Repatriation Act (NAGPRA). For additional information on cultural or historic preservation issues, see the Advisory Council on Historic Preservation's web site at <http://www.achp.gov/work106.html>; for information concerning NAGPRA see <http://www.nps.gov/nagpra/>. Contact the Environmental Officer of the Office of Polar Programs, Dr. Polly Penhale (ppenhale@nsf.gov) for guidance on environmental consultations, permitting, and NSF's obligations under existing environmental laws.

Identify this Solicitation Number on the Proposal Cover Sheet.

B. Budgetary Information

Cost Sharing:

Inclusion of voluntary committed cost sharing is prohibited.

Other Budgetary Limitations:

Doctoral Dissertation Research Improvement Grants in the Arctic Social Sciences Program are normally limited to requests of up to \$30,000 for one year. In special cases the research may require more than 12 months and \$30,000. In these exceptional cases the PI and CoPI (student researcher) should contact the Program Director prior to submission of a proposal. In such cases the maximum time allowable is 24 months and \$50,000 in combined research funds and logistics.

C. Due Dates

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

Proposals Accepted Anytime

D. FastLane/Research.gov/Grants.gov Requirements

For Proposals Submitted Via FastLane or Research.gov:

To prepare and submit a proposal via FastLane, see detailed technical instructions available at: <https://www.fastlane.nsf.gov/a1/newstan.htm>. To prepare and submit a proposal via Research.gov, see detailed technical instructions available at: https://www.research.gov/research-portal/appmanager/base/desktop?_nfpb=true&_pageLabel=research_node_display&_nodePath=/researchGov/Service/Desktop/ProposalPreparationandSubmission.html. For FastLane or Research.gov user support, call the FastLane and Research.gov Help Desk at 1-800-673-6188 or e-mail fastlane@nsf.gov or rgov@nsf.gov. The FastLane and Research.gov Help Desk answers general technical questions related to the use of the FastLane and Research.gov systems. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this funding opportunity.

For Proposals Submitted Via Grants.gov:

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

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

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

VI. NSF PROPOSAL PROCESSING AND REVIEW PROCEDURES

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

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

Proposers should also be aware of core strategies that are essential to the fulfillment of NSF's mission, as articulated in *Building the Future: Investing in Discovery and Innovation - NSF Strategic Plan for Fiscal Years (FY) 2018 – 2022*. 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

- Priority will be given to proposals that contribute to understanding the Arctic region or its impact on global systems.
- Proposals to the AON program must demonstrate that the data collected will be of value to the scientific community.
- ARCSS proposals must identify explicitly how the results of the research will contribute to improvements in system-level understanding.
- Proposals conducting research outside the Arctic geographic region must contain a clear statement of how the proposed research will increase our knowledge of the Arctic.

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.

In order to coordinate funding actions among various agencies considering similar proposals, NSF may, at the point of decision, share information about the existence and general content of proposals with Federal agencies with which it has a Memorandum of Understanding (MOU). If another Federal agency is willing to consider co-funding proposals, NSF may also share proposals and review content with and/or may invite Federal employees of that agency to attend review panels as observers for the purpose of determining whether the agency may provide funding.

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) 292-8134 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:

Principles for the Conduct of Research in the Arctic

Principal Investigators are expected to follow the Principles for the Conduct of Research in the Arctic, prepared by the Social Science Task Force of the U.S. Interagency Arctic Research Policy Committee (IARPC) and approved by IARPC in 1990. These principles are listed at <https://www.nsf.gov/geo/opp/arctic/conduct.jsp>. Investigators may find useful the Guidelines for Improved Cooperation between Arctic Researchers and Northern Communities (<https://www.arcus.org/>).

Data Management Policy

Proposals submitted under this solicitation are required to include a Data Management Plan compliant with the Office of Polar Programs Data management Policy (NSF 16-055; https://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf16055). This policy establishes requirements for the archiving of metadata and data in long-lived and publicly accessible, unrestricted archives. Questions concerning this policy should be directed to the cognizant Program Director in the Arctic Sciences Section.

Policies Related to Arctic Fieldwork

Participants in NSF-sponsored Arctic fieldwork are required to comply with the following NSF policies: Code of Conduct, Field Safety Risk Management, Physical Qualifications for Arctic Fieldwork, and IT Security Rules of Behavior. Failure to comply can result in removal from the field or from NSF facilities, retraction of funding, debarment, and referral to law enforcement as appropriate. These policies are available on the Arctic Research Support and Logistics program website (https://www.nsf.gov/geo/opp/arctic/res_log_sup.jsp) and the NSF prime Arctic logistics contractor website (<http://cpspolar.com/>).

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:

- Gregory J. Anderson, Program Director, Arctic System Sciences, W7134, telephone: (703) 292-4693, email: greander@nsf.gov
- Renee D. Crain, Research Support & Logistics Manager, W7154, telephone: (703) 292-4482, email: rcrain@nsf.gov
- Roberto Delgado, Program Director, Arctic Observing Network, W7246, telephone: (703) 292-2397, email: robdelga@nsf.gov
- Colene M Haffke, Program Director, Arctic Natural Sciences, W7100, telephone: (703) 292-8030, email: cohaffke@nsf.gov
- Patrick R. Haggerty, Research Support & Logistics Program Manager, W7249, telephone: (703) 292-8577, email: phaggert@nsf.gov
- Erica Hill, Program Director, Arctic Social Sciences, W7176, telephone: (703) 292-4521, email: erhill@nsf.gov
- Jennifer L. Mercer, Research Support and Logistics Manager, W7159, telephone: (703) 292-7453, email: jmercer@nsf.gov
- Frank R. Rack, Research Support and Logistics Manager, W7189, telephone: (703) 292-2684, email: frack@nsf.gov
- Elizabeth L. Rom, OPP Education Liaison, W8164, telephone: (703) 292-7709, email: elrom@nsf.gov
- Simon Stephenson, Section Head, W7164, telephone: (703) 292-7435, email: sstephen@nsf.gov
- Marc Stieglitz, Program Director, Arctic Natural Sciences, W7244, telephone: (703) 292-4354, email: mstiegli@nsf.gov
- Colleen Strawhacker, Program Director, Arctic Social Sciences, W7178, telephone: (703) 292-7432, email: colstraw@nsf.gov

For questions related to the use of FastLane or Research.gov, contact:

- FastLane and Research.gov Help Desk: 1-800-673-6188
FastLane Help Desk e-mail: fastlane@nsf.gov.
Research.gov Help Desk e-mail: rgov@nsf.gov
- Linda Izzard, Program Coordination Specialist, W7236A, telephone: (703) 292-7430, fax: (703) 292-9082, email: lizzard@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 <https://www.grants.gov>.

ABOUT THE NATIONAL SCIENCE FOUNDATION

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

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

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

Facilitation Awards for Scientists and Engineers with Disabilities (FASSED) 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: nspubs@nsf.gov
 - or telephone: (703) 292-8569
- **To Locate NSF Employees:** (703) 292-5111

PRIVACY ACT AND PUBLIC BURDEN STATEMENTS

The information requested on proposal forms and project reports is solicited under the authority of the National Science Foundation Act of 1950, as amended. The information on proposal forms will be used in connection with the selection of qualified proposals; and project reports submitted by awardees will be used for program evaluation and reporting within the Executive Branch and to Congress. The information requested may be disclosed to qualified reviewers and staff assistants as part of the proposal review process; to proposer institutions/grantees to provide or obtain data regarding the

proposal review process, award decisions, or the administration of awards; to government contractors, experts, volunteers and researchers and educators as necessary to complete assigned work; to other government agencies or other entities needing information regarding applicants or nominees as part of a joint application review process, or in order to coordinate programs or policy; and to another Federal agency, court, or party in a court or Federal administrative proceeding if the government is a party. Information about Principal Investigators may be added to the Reviewer file and used to select potential candidates to serve as peer reviewers or advisory committee members. See [System of Record Notices](#), NSF-50, "Principal Investigator/Proposal File and Associated Records," and NSF-51, "Reviewer/Proposal File and Associated Records." Submission of the information is voluntary. Failure to provide full and complete information, however, may reduce the possibility of receiving an award.

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

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

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