# LIFE IN EXTREME ENVIRONMENTS (LExEn)

## *Program Announcement*
## *NSF 00-37*

**(Replaces NSF 99-43)**

**DIRECTORATE FOR BIOLOGICAL SCIENCES**
**DIRECTORATE FOR GEOSCIENCES**
**DIRECTORATE FOR MATHEMATICAL AND PHYSICAL SCIENCES**
**OFFICE OF POLAR PROGRAMS**
**OFFICE OF SPACE SCIENCE, NASA**

***DEADLINE DATE: APRIL 10, 2000***


**NATIONAL SCIENCE FOUNDATION**


**NATIONAL AERONAUTICS AND SPACE ADMINISTRATION**


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| **For General Information (NSF Information Center):** | (703) 306-1234 |
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| or telephone: | (301) 947-2722 |
| **To Locate NSF Employees:** | (703) 306-1234 |

# SUMMARY OF PROGRAM REQUIREMENTS

## GENERAL INFORMATION

**Program Name: Life in Extreme Environments (LExEn)**

**Short Description/Synopsis of Program:**

The Directorates for Biological Sciences (BIO), Geosciences (GEO), Mathematical and Physical Sciences (MPS), and the Office of Polar Programs (OPP) of the National Science Foundation (NSF) and the National Aeronautic and Space Administration (NASA) announce an opportunity to enhance knowledge about "Life in Extreme Environments" (LExEn) through a highly interdisciplinary, integrated research program.

The LExEn research program will explore the relationships between organisms and the environments within which they exist, with a strong emphasis upon those life-supporting environments that exist near the extremes of planetary conditions. In addition, the LExEn program will explore planetary environments in our own solar system and beyond to help identify possible sites for life.

**Cognizant Program Officer:**
**Polly Penhale**, Office of Polar Programs, (703) 306-1033, ppenhale@nsf.gov
**To contact a specific Division or Office see page 11.**

**Applicable Catalog of Federal Domestic Assistance (CFDA) No.:** Geosciences, 47.050; Biological Sciences, 47.074; Polar Programs, 47.078; Mathematical and Physical Sciences, 47.049

## ELIGIBILITY

- Limitation on the categories of organizations that are eligible to submit proposals: **None**

- PI eligibility limitations:
  Proposals submitted in response to this Program Announcement will be accepted from colleges, universities, other not-for-profit institutions in the United States, as well as U.S. Federal labs. U.S. Federal labs will be eligible only for the LExEn Sites for Long-term Interdisciplinary Studies (LSLIS) part of this Announcement.

- Limitation on the number of proposals that may be submitted by an organization: **None**
  However, a Principal Investigator may not submit the same proposal or proposals that significantly overlap with the NSF Microbial Observatories competition.

## AWARD INFORMATION

- Type of award anticipated: **Standard and Continuing Grants**

- Number of awards anticipated as a result of this competition: **25-35 awards**

- Amount of funds available: **Approximately $12 million will be available for awards made as a result of this initiative in FY 2000**

- Anticipated date of award: **October, 2000**

## PROPOSAL PREPARATION & SUBMISSION INSTRUCTIONS

- **Proposal Preparation Instructions**
  - Letter of Intent requirements: **None**
  - Preproposal requirements: **None**
  - Proposal preparation instructions: **Standard NSF Grant Proposal Guide instructions**
  - Supplemental proposal preparation instructions: **None**
  - Deviations from standard (GPG) proposal preparation instructions: **None**
- **Budgetary Information**
  - Cost sharing/matching requirements: **None**
  - Indirect cost (F&A) limitations: **None**
  - Budget requirement: Each proposal should include sufficient funds in its budget request to cover the costs of the Principal Investigator and Co-Principal Investigator(s) attendance at the LExEn annual meeting.
- **FastLane Requirements**
- FastLane proposal preparation requirements: **FastLane use is mandatory**
- FastLane point of contact: **Kandy Binkley, FastLane Project Officer, telephone: 703.306.1580, e-mail: ocefl@nsf.gov**
- **Deadline/Target Dates**

  Full Proposal Deadline **5:00 PM, submitter's local time, April 10, 2000**

## PROPOSAL REVIEW INFORMATION

- Merit Review Criteria: **Standard National Science Board approved criteria, with additional criterion detailed in this announcement for interdisciplinary proposals**

## AWARD ADMINISTRATION INFORMATION

- Grant Award Conditions: **GC-1 or FDP III**
- Special grant conditions anticipated: **Awards to Federal labs will be made by NASA and some additional information may be required before such awards can be made. NASA grant or cooperative agreement awards made as a result of this notice will be**

**administered in accordance with the NASA Grant and Cooperative Agreement Handbook (NHB5800.1).**

- Special reporting requirements anticipated: Attendance of Principal Investigator and Co-Principal Investigator(s) at annual meeting of awardees.

## INTRODUCTION

Life flourishes on Earth in an incredibly wide range of environments, from high-salt deserts to volcanoes to polar ice. These environments may be analogous to the harsh conditions that exist now, or have existed, on other planets. The study of microbial life forms and the extreme environments in which they exist here on Earth can provide important new insights into how organisms form and adapt to diverse environments. This knowledge will provide the basis for detecting and understanding the life forms that may exist beyond our own planet, and for developing useful new products and processes.

The Directorates for Biological Sciences (BIO), Geosciences (GEO), Mathematical and Physical Sciences (MPS), and the Office of Polar Programs (OPP) of the National Science Foundation (NSF) and the National Aeronautic and Space Administration (NASA) announce an opportunity to enhance knowledge about "Life in Extreme Environments" (LExEn) through highly interdisciplinary, integrated research activities. There are three areas of emphasis for the fiscal year 2000 competition. First, the interdisciplinary research program will explore relationships between microbial organisms and extreme environments within which they exist. Secondly, this announcement will stress the need for the development of methods and capabilities to facilitate LExEn research. Thirdly, in cooperation with the National Aeronautic and Space Administration (NASA), there will be a focus on long term studies at representative examples of significant extreme environments.

## PROGRAM DESCRIPTION

For the purposes of this announcement "extreme" refers to environments found today on Earth which have attributes that are similar to those that exist now or that may have existed in the past on other planetary bodies, or to those that are postulated to have existed on Earth at the dawn of life. Such environments might include those associated with hydrothermal systems, high radiation fields, sea ice and ice sheets, anoxic habitats, hypersaline lakes, high altitude or polar deserts, or man-made environments such as those created for industrial processes.

Because of the importance of the interactions between microbial organisms and the extreme environments within which they exist, studies are particularly encouraged that cross disciplinary boundaries and foster collaborative investigations. Proposals involving multiple investigators from different disciplines will be the most competitive. **It is anticipated that there will not be a LExEn Special Competition in FY2001.**

The LExEn special competition for fiscal year 2000 and the NSF competition for Microbial Observatories (MO) are complementary programs. Investigators may not submit the same proposal, or proposals that are substantially similar, to these two competitions in the same year. The Microbial Observatories competition is a broad opportunity for investigators to propose activities directed at the discovery and characterization of microbes in any environment on earth. The LExEn competition is focused upon interdisciplinary studies of microbial life-forms in extreme environments, with emphases upon understanding the processes that determine the characteristics of the environments, and upon gaining knowledge to provide the basis for detecting and understanding life forms that may exist beyond our own planet. Given the potential for overlap between proposals submitted to these complementary competitions, NSF plans to coordinate the review processes.

The NSF Directorate for Biological Sciences will host an annual meeting of all LExEn and MO awardees who are engaged in microbial discovery activities. The purpose of this meeting will be to facilitate an exchange of ideas and information, to promote interaction among investigators and sites, and to build links between research programs with related or complementary objectives. Each proposal should include sufficient funds in its budget request to cover the costs of attending this meeting for the Principal Investigator and co-Principal Investigators.

In order to provide specific guidance concerning the content of proposals suitable for submission to this competition, this announcement of opportunity is presented in three separate but closely related sections:

- **The LExEn Interdisciplinary Research Program**
- **Methods and Capabilities for LExEn Research**
- **LExEn Sites for Long-term Interdisciplinary Studies (LSLIS)**

However, the three areas that are described in the present Program Announcement comprise a *single* Special Competition, and all proposals received in response to this Announcement will be reviewed together. The three components of the fiscal year 2000 competition are described in detail below:

- **LExEn Interdisciplinary Research Program**

The LExEn interdisciplinary research program will explore the relationships between microbial organisms and the environments within which they exist, with a strong emphasis upon those life-supporting environments that exist near the extremes of planetary conditions. In addition, the LExEn program will explore planetary environments in our own solar system and beyond to help identify possible sites for life elsewhere.

The scope of the LExEn Interdisciplinary research program is described in terms of three broad themes below. Strong emphasis will be given to the support of interdisciplinary research proposals. For this component of the LExEn competition, research projects of 2-5 years duration are appropriate.

***Microbial Systems:***

Research is required to enhance understanding of the microbial systems on Earth, particularly with respect to their diversity and the mechanisms that allow microbes to survive and alter extreme environments. Examples of relevant topics include:

* studies to discover, quantify, culture, preserve, and analyze microorganisms from extreme environments;
* research on the diversity, ecology, physiology, biochemistry, genetics and evolutionary history of microbes from extreme environments within the context of the diversity of conditions found in those environments and/or their possible utility in biotechnology;
* the identification of unusual or even unique chemical compounds and their specific roles in survival strategies; and
* paleobiological studies of microbial life on Earth, including efforts which improve understanding of the products of life that are preserved in the geological record.

***Extreme Environments on Earth:***

Because of the importance of the interactions between living organisms and their habitats, it is necessary to achieve improved understanding of present-day or past extreme environments that support or have supported life. Examples of relevant topics include:

* studies designed to discover, explore and fully characterize significant examples of extreme environments; and
* field, laboratory, and theoretical studies designed to understand the active physical, chemical, biological, and geological processes that determine the characteristics of present-day or past extreme environments on Earth and which result in their ability to support unusual microbial life.

***Planetary Environments:***

In order to provide insights into the possibility of life beyond our own planet, research is also needed to characterize the environments of planets in the solar system and beyond and to understand the commonalties of their formation and evolution. Examples of relevant topics include:

* studies of the formation of Earth, other planets and their satellites;
* remote sensing of planets and their atmospheres;
* studies of interstellar grains and meteorites to establish criteria for the presence of biogenic substances;
* studies of interstellar and cometary chemistry, particularly of biologically relevant molecules;
* the relationship between interstellar organic molecules and the origin of life; and
* research on the biogeochemical effects of microbes on their environments on Earth to better design tests for life on other planets.

- **Methods and Capabilities for LExEn Research**

In several areas of LExEn research, progress is limited by lack of effective methods, capabilities, or technologies. To address this issue, this second component of the fiscal year 2000 LExEn program is targeted at the support of research projects to develop or apply one or more of the following:

* methods to isolate and culture microbes found in extreme environments;
* methods to study these microbes in their natural habitats and to describe their adaptive strategies from the molecular to the ecological level;
* technologies for non-contaminating sample recovery;
* sensors and sensing techniques to probe extreme environments on Earth or other planets;
* methods to study ancient microbial life and paleo-environmental conditions on Earth; and
* methods to investigate the potential for habitable environments on other planets (including theory and modeling).

For this component of the LExEn competition, research projects of 2-5 years duration are appropriate. Proposals that are predominantly for the purchase of available equipment or instrumentation are not appropriate for this competition.

- **LExEn Sites for Long-term Interdisciplinary Studies (LSLIS)**

Because of the dynamic nature of many of the processes that control the interactions of microorganisms with their environments, substantial insights can be gained by programs of sustained observation and sampling targeted at understanding the biological, chemical, and physical variability of these systems. Therefore this component of the LExEn competition, to be supported by NSF and NASA if suitable proposals are received, will establish a small number of research programs targeted at the study of representative examples of extreme environments and the life they support. NASA's interest in extreme environments is related to the broader study of life in the Universe (see http://astrobiology.arc.nasa.gov/). It is intended that through this program a small number of diverse study sites will be selected that will be the target of long duration multidisciplinary observation and research. The following paragraphs describe important characteristics of LSLIS proposals. Competitive proposals will address most of these issues:

* A well-designed program of measurement, observation, and sampling focused upon a site that is representative of a class of extreme environments, with the objective of gaining fundamental new understanding of the biological, chemical, and physical characteristics, variability, and processes.
* A research plan that balances exploratory and hypothesis-driven investigative strategies and that is cognizant of the need to modify and shape the data-collection approaches as insight is gained concerning the controlling processes.
* An effective research program that combines studies of the natural ecosystem with the development of new technologies and missions for the exploration of extreme environments in our Solar System.
* A multidisciplinary team of investigators with an integrated investigative strategy that balances appropriately studies of life with studies of the characteristics of the supporting environment.
* An education component that stresses the training of graduate students in highly interdisciplinary research activities and broadens the participation of underrepresented groups.
* A demonstrated interest in the application and continued development of improved instrumentation and technology.
* An innovative plan for the archiving and broad dissemination of the collected samples and data.

Proposals to this component of the LExEn program should be of a 3-5 year duration. The appropriate level of support for each site is expected to range from $0.5 to $1M per year. We anticipate being able to support one or two such proposals through this competition.

## ELIGIBILITY INFORMATION

Proposals under the LExEn competition will be accepted from U.S. institutions that are eligible for awards from the National Science Foundation, including colleges, universities, and other nonprofit research institutions. Reference the Grant Proposal Guide (GPG), NSF 00-2, Chapter I, Section D. The GPG is located at http://www.nsf.gov/cgi-bin/getpub?nsf002. The NSF encourages collaborations with scientists at foreign institutions; however, primary support for any foreign participants/activities must be secured through their own national programs.

## AWARD INFORMATION

Funds available from both NSF and NASA to support projects under this Special Competition are expected to total approximately $12 million. Approximately 25-35 awards are anticipated as a result of this competition, depending on the quality of the proposals received and the availability of funds. Anticipated date of awards: October, 2000.

## PROPOSAL PREPARATION & SUBMISSION INSTRUCTIONS

**Proposal Preparation Instructions.**

Proposals submitted in response to this program announcement should be prepared and submitted in accordance with the general guidelines contained in the *Grant Proposal Guide* (GPG), NSF 00-2. The complete text of the GPG (including electronic forms) is available electronically on the NSF Web site at: http://www.nsf.gov/. Paper copies of the GPG may be obtained from the NSF Publications Clearinghouse, telephone 301.947.2722 or by e-mail from pubs@nsf.gov.

Proposers are reminded to identify the program announcement number (NSF00-37) in the program announcement/solicitation block on the NSF Form 1207, "*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.

For proposals involving field work in Antarctica, guidelines described in the Antarctic Research Program Announcement NSF 99-93 should be followed. This is available electronically on the NSF Web site at: http://www.nsf.gov/cgi-bin/getpub?nsf9993.

Proposers requiring the use of a UNOLS ship or submersible must submit a ship request form to NSF's Division of Ocean Sciences as well as the UNOLS office and the operator of any requested ship or ships. Electronic ship request forms are available on the UNOLS Home Page (http://www.gso.uri.edu/unols/experiments/experiments.html). Printed copies of the form may be obtained from the UNOLS office (tel: 401-874-6825; email: unols@gsosun1.gso.uri.edu).

- **Cover Sheet (NSF Form 1207): Begin project title with "LEXEN:"**

1. In the NSF FastLane system read the proposal preparation instructions located at http://www.fastlane.nsf.gov/a1/newstan.htm. When completing the Cover Sheet make sure to select "LIFE IN EXTREME ENVIRONMENTS" as the NSF program to consider your proposal.

   Multi-institutional proposals must identify a lead institution and must be submitted as a single proposal. Be sure to check the group proposal box on the cover. Only the lead institution should submit the proposal cover sheet (NSF Form 1207) via FastLane.

2. For the "Program Announcement/Solicitation No." make sure to indicate NSF 00-37 as the program announcement/solicitation number.

3. In addition to the Principal Investigator (PI) NSF allows up to 4 individuals to be listed as Co-Principal Investigators (Co-PIs) on a proposal. Some proposals may involve more than 5 researchers, however. In this case, the additional researchers can be listed in the Senior Personnel category. (On the FastLane FORM PREPARATION screen, click on 'Add/Delete Non Co-PI Senior Personnel').

**Proposal Due Dates.**

The proposal **MUST** be submitted via FastLane by 5:00 PM, submitter's local time, APRIL 10, 2000.

A proposal may not be processed until the complete proposal (including the signed Cover Sheet) has been received by NSF. A proposal is considered complete when the proposal, including the Project Description, has been submitted to NSF. The receipt date will be the date the sponsored projects office transmits the proposal to NSF.

*Submission of Signed Cover Sheets.* The signed copy of the proposal Cover Sheet (NSF Form 1207) must be postmarked (or contain a legible proof of mailing date assigned by the carrier) within five working days following proposal submission and be forwarded to the following address:

NSF 00-37
National Science Foundation
DIS-FastLane Cover Sheet
4201 Wilson Blvd.
Arlington, VA 22230

**FastLane Requirements.**

Proposers are required to prepare and submit all proposals for this Program Announcement through the FastLane system. Detailed instructions for proposal preparation and submission via FastLane are available at: https://www.fastlane.nsf.gov/al/newstan.htm.

## PROPOSAL REVIEW INFORMATION

**NSF Proposal Review Process.**

Reviews of proposals submitted to NSF are solicited from peers with expertise in the substantive area of the proposed research or education project. These reviewers are selected by Program officers charged with the oversight of the review process. NSF invites the proposer to suggest, at the time of submission, the names of appropriate or inappropriate reviewers. Care is taken to ensure that reviewers have no conflicts with the proposer. Special efforts are made to recruit reviewers from non-academic institutions, minority serving institutions or adjacent disciplines to that principally addressed in the proposal.

Proposals will be reviewed against the following general merit review criteria established by the National Science Board. Following each criterion are potential considerations that the reviewer may employ in the evaluation. These are suggestions and not all will apply to any given proposal. Each reviewer will be asked to address only those that are relevant to the proposal and for which he/she is qualified to make judgments.

**What is the intellectual merit of the proposed activity?**

How important is the proposed activity to advancing knowledge and understanding within its own field or across different fields? How well qualified is the proposer (individual or team) to conduct the project? (If appropriate, the reviewer will comment on the quality of prior work.) To what extent does the proposed activity suggest and explore creative and original concepts? How well conceived and organized is the proposed activity? Is there sufficient access to resources?

**What are the broader impacts of the proposed activity?**

How well does the activity advance discovery and understanding while promoting teaching, training, and learning? How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)? To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships? Will the results be disseminated broadly to enhance scientific and technological understanding? What may be the benefits of the proposed activity to society?

PIs should address the following elements in their proposal to provide reviewers with the information necessary to respond fully to both NSF merit review criteria. NSF staff will give these factors careful consideration in making funding decisions.

***Integration of Research and Education***

One of the principal strategies in support of NSF's goals is to foster integration of research and education through the programs, projects and activities it supports at academic and research institutions. These institutions provide abundant opportunities where individuals may concurrently assume responsibilities as researchers, educators, and students and where all can engage in joint efforts that infuse education with the excitement of discovery and enrich research through the diversity of learner perspectives.

***Integrating Diversity into NSF Programs, Projects, and Activities***

Broadening opportunities and enabling the participation of all citizens -- women and men, underrepresented minorities, and persons with disabilities – 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.

In addition, proposals that are responsive to the two interdisciplinary components of this Program Announcement (i.e. the LExEn Interdisciplinary Research Program and LExEn Sites for Long-term Interdisciplinary Studies) will be reviewed for the potential interdisciplinary synergism among the various research components.

A summary rating and accompanying narrative will be completed and signed by each reviewer. In all cases, reviews are treated as confidential documents. Verbatim copies of reviews, excluding the names of the reviewers, are mailed to the Principal Investigator/Project Director by the Program Director. In addition, the proposer will receive an explanation of the decision to award or decline funding.

**Review Protocol and Associated Customer Service Standard.**

All proposals are carefully reviewed by at least three other persons outside NSF who are experts in the particular field represented by the proposal. Proposals submitted in response to this announcement will be reviewed by mail and panel.

Reviewers will be asked to formulate a recommendation to either support or decline each proposal. A program officer assigned to manage the proposal's review will consider the advice of reviewers and will formulate a recommendation. In most cases, proposers will be contacted by the program officer after his or her recommendation to award or decline funding has been approved by his or her supervisor, the division director. This informal notification is not a guarantee of an eventual award. NSF will be able to tell applicants whether their proposals have been declined or recommended for funding within six months for 95 percent of proposals. The time interval begins on the proposal deadline or target date or from the date of receipt, if deadlines or target dates are not used by the program. The interval ends when the division director accepts the program officer's recommendation.

In all cases, 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 and

the processing and issuance of a grant or other agreement. Proposers are cautioned that only a Grants 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 an 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 Officer does so at its own risk.

## AWARD ADMINISTRATION INFORMATION

**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 Officer administering the competition. Verbatim copies of reviews, not including the identity of the reviewer, will be provided automatically to the Principal Investigator.

**Grant Award Conditions.**

An NSF grant consists of: (1) the award letter, which includes any special provisions applicable to the grant 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 letter; and (4) the applicable grant conditions, such as Grant General Conditions (NSF GC-1)* or Federal Demonstration Partnership Phase III (FDP) Terms and Conditions* and (5) any NSF brochure, program guide, announcement or other NSF issuance that may be incorporated by reference in the award letter. Electronic mail notification is the preferred way to transmit NSF grants to organizations that have electronic mail capabilities and have requested such notification from the Division of Grants and Agreements.

*****These documents may be accessed electronically on NSF's Web site at: http://www.nsf.gov/. Paper copies may be obtained from the NSF Publications Clearinghouse, telephone 301.947.2722 or by e-mail from pubs@nsf.gov.

More comprehensive information on NSF Award Conditions is contained in the NSF *Grant Policy Manual* (GPM) Chapter II, (NSF 95-26) available electronically on the NSF Web site. The GPM also is available in paper copy by subscription from the Superintendent of Documents, Government Printing Office, Washington, DC 20402. The GPM may be ordered through the GPO Web site at: http://www.gpo.gov. The telephone number at GPO for subscription information is 202.512.1800.

**Reporting Requirements.**

For all multi-year grants (including both standard and continuing grants), the PI must submit an annual project report to the cognizant Program Officer at least 90 days before the end of the current budget period.

Within 90 days after expiration of a grant, the PI also is required to submit a final project report. Approximately 30 days before expiration, NSF will send a notice to remind the PI of the requirement to file the final project report. Failure to provide final technical reports delays NSF review and processing of pending proposals for that PI. PIs should examine the formats of the required reports in advance to assure availability of required data.

NSF has implemented a new electronic project reporting system, available through FastLane, which permits electronic submission and updating of project reports, including information on: project participants (individual and organizational); activities and findings; publications; and, other specific products and contributions. Reports will continue to be required annually and after the expiration of the grant, but PIs will not need to re-enter information previously provided, either with the proposal or in earlier updates using the electronic system.

PIs are required to use the new reporting system for submission of annual and final project reports.

## CONTACTS FOR ADDITIONAL INFORMATION

**Division of Environmental Biology**
Matthew Kane, (703) 306-1481, mkane@nsf.gov

**Division of Molecular and Cellular Biosciences**
Philip Harriman, (703) 306-1439, pharrima@nsf.gov

**Division of Astronomical Sciences**
Vernon Pankonin, (703) 306-1826, vpankoni@nsf.gov

**Division of Earth Sciences**
Richard Lane, (703) 306-1551, hlane@nsf.gov

**Division of Ocean Sciences**
Phillip Taylor, (703) 306-1587, prtaylor@nsf.gov

**Office of Polar Programs**
Polly Penhale, (703) 306-1033, ppenhale@nsf.gov

**Office of Space Science, NASA**
Michael Meyer, (202) 358-0307, mmeyer@hq.nasa.gov

## OTHER PROGRAMS OF INTEREST

The NSF Guide to Programs is a compilation of funding for research and education in science, mathematics, and engineering. General descriptions of NSF programs, research areas, and eligibility information for proposal submission are provided in each chapter. Many NSF programs offer announcements concerning specific proposal requirements. To obtain additional information about these requirements, contact the appropriate NSF program offices listed in Appendix A of the GPG. Any changes in NSF's fiscal year programs occurring after press time for the Guide to Programs will be announced in the NSF Bulletin, available monthly (except July and August), and in individual program announcements. The Bulletin is available electronically via the NSF Web Site at **http://www.nsf.gov**. The direct URL for recent issues of the Bulletin is

**http://www.nsf.gov/od/lpa/news/publicat/bulletin/bulletin.htm.** Subscribers can also sign up for NSF's Custom News Service to find out what funding opportunities are available.

## ABOUT THE NATIONAL SCIENCE FOUNDATION

The National Science Foundation (NSF) funds research and education in most fields of science and engineering. Grantees are wholly responsible for conducting their project activities and preparing the results for publication. Thus, the Foundation does not assume responsibility for such findings or their interpretation.

NSF welcomes proposals from all qualified scientists, engineers and educators. The Foundation strongly encourages women, minorities, and persons with disabilities to compete fully in its programs. In accordance with federal statutes, regulations, and NSF policies, no person on grounds of race, color, age, sex, national origin, or disability shall be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving financial assistance from NSF (unless otherwise specified in the eligibility requirements for a particular program).

Facilitation Awards for Scientists and Engineers with Disabilities (FASED) provide funding for special assistance or equipment to enable persons with disabilities (investigators and other staff, including student research assistants) to work on NSF-supported projects. See the program announcement or contact the program coordinator at (703) 306-1636.

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 regarding NSF programs, employment, or general information. TDD may be accessed at (703) 306-0090 or through FIRS on 1-800-877-8339.

## 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; 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 review process; to applicant 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 needing information as part of the review process or in order to coordinate programs; 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," 63 Federal Register 267 (January 5, 1998), and NSF-51, "Reviewer/Proposal File and Associated Records," 63 Federal Register 268 (January 5, 1998). Submission of the information is voluntary. Failure to provide full and complete information, however, may reduce the possibility of receiving an award.

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 this burden estimate and any other aspect of this collection of information, including suggestions for reducing this burden, to: Suzanne H. Plimpton, Reports Clearance Officer; Division of Administrative Services; National Science Foundation; Arlington, VA 22230.

## YEAR 2000 REMINDER

In accordance with Important Notice No. 120 dated June 27, 1997, Subject: Year 2000 Computer Problem, NSF awardees are reminded of their responsibility to take appropriate actions to ensure that the NSF activity being supported is not adversely affected by the Year 2000 problem. Potentially affected items include: computer systems,

databases, and equipment. The National Science Foundation should be notified if an awardee concludes that the Year 2000 will have a significant impact on its ability to carry out an NSF funded activity. Information concerning Year 2000 activities can be found on the NSF web site at http://www.nsf.gov/oirm/y2k/start.htm.

The National Science Foundation is committed to making all of the information we publish easy to understand. If you have a suggestion about how to improve the clarity of this document or other NSF-published materials, please contact us at plainlanguage@nsf.gov.

**Catalogue of Federal Domestic Assistance (CFDA) No.:**
This program is described in the Catalog of Federal Domestic Assistance (CFDA) categories: Geosciences, 47.050; Biological Sciences, 47.074; Polar Programs, 47.078; Mathematical and Physical Sciences, 47.049

OMB# 3145-0058

NSF 00-37 (Replaces NSF 99-43)