



Geoscience Education (GeoEd)

Program Solicitation NSF 02-45

Directorate for Geosciences
Directorate for Education and Human Resources

Full Proposal Deadline(s):
March 19, 2002 7 p.m. EST

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Geoscience Education (GeoEd)

Synopsis of Program:

The program offers two tracks. Track 1 considers proposals that integrate geoscience research and education. Awards are intended to facilitate the initiation or piloting of highly innovative educational activities by geoscience researchers and educators when support may not otherwise be available. Awards are intended to provide start-up or proof of concept funding to enable projects to reach a level of maturity to compete for long-term funding from other sources. Awards are expected to complement, but not replicate, awards provided by NSF's Directorate for Education and Human Resources. Proposals may target any educational level: 1) graduate and postdoctoral education and training (outside the framework of NSF basic research grants), 2) undergraduate education, 3) elementary and secondary education, and 4) education outside the classroom. Attention should be given to proposed dissemination and evaluation plans. Awardees will be strongly encouraged to include the products of their projects in the Digital Library for Earth System Education (DLESE) collection if appropriate.

Track 2 for this competition includes proposals that support comprehensive undergraduate faculty professional development and faculty enhancement in the geosciences. Proposals submitted under this track will be reviewed and funded in collaboration with the Education and Human Resources Directorate's Division of Undergraduate Education. Awards will link research universities and institutions with other universities, colleges or research institutions. Activities that will be supported under this track must include either faculty preparation for graduate students and postdocs or enhancement of current faculty.

Cognizant Program Officer(s):

- Jewel C. Prendeville, Primary Contact, 705 N, telephone: (703) 292-8521, fax: (703) 292-9042, email: jprendev@nsf.gov
- David M. Fountain, Program Director, Division of Earth Sciences, Tectonics Program, 785 S, telephone: (703) 292-8552, fax: (703) 292-9025, email: dfountai@nsf.gov
- Roddy R. Rogers, Program Director, Division of Atmospheric Sciences, Physical Meteorology Program, 775 S, telephone: (703) 292-8524, fax: (703) 292-9022, email: rrogers@nsf.gov
- Elizabeth L. Rom, Program Director, Division of Ocean Sciences, Oceanographic Technology and Interdisciplinary Coordination Program, 725 N, telephone: (703) 292-8583, fax: (703) 292-9085, email: erom@nsf.gov
- Jill Singer, Program Director, Division of Undergraduate Education, Course, Curriculum And Laboratory Improvement (CCLI) Program, 835 N, telephone: (703) 292-4651, fax: (703) 292-9015, email: jsinger@nsf.gov

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

- 47.076 --- Education and Human Resources

Eligibility Information

- **Organization Limit:** None Specified.
- **PI Eligibility Limit:** Individuals may be Principal Investigator on no more than one proposal.
- **Limit on Number of Proposals:** None Specified.

Award Information

- **Anticipated Type of Award:** Standard or Continuing Grant
- **Estimated Number of Awards:** 19 - an estimated 12 awards in Track 1 and 7 awards in Track 2.
- **Anticipated Funding Amount:** \$2,500,000.00 pending availability of funds. This is the maximum amount if Track 2 is fully funded. (The minimum amount is \$1.5 million).

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- **Full Proposal Preparation Instructions:** Supplemental Preparation Guidelines
 - The program announcement/solicitation contains supplements to the standard Grant Proposal Guide (GPG) proposal preparation guidelines. Please see the full program announcement/solicitation for further information.

B. Budgetary Information

- **Cost Sharing Requirements:** Cost Sharing is not required.
- **Indirect Cost (F&A) Limitations:** Not Applicable.
- **Other Budgetary Information:** Other budgetary limitations apply. Please see the full program announcement/solicitation for further information.

C. Due Dates

- **Full Proposal Deadline Date(s):**
March 19, 2002 7 p.m. EST

D. FastLane Requirements

- **FastLane Submission:** Full proposal submission is required.
- **FastLane Contact(s):**
 - Brian E. Dawson, Computer Specialist, 785 S, telephone: (703) 292-4727, fax: (703) 292-9025, email: bdawson@nsf.gov

Proposal Review Information

- **Merit Review Criteria:** National Science Board approved criteria. Additional merit review considerations apply. Please see the full program announcement/solicitation for further information.

Award Administration Information

- **Award Conditions:** Additional award conditions apply. Please see the full program announcement/solicitation for further information.
- **Reporting Requirements:** Standard NSF reporting requirements apply.

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I. INTRODUCTION

The comprehensive scope of the Geosciences Education (GeoEd) Program and the emphasis on the integration of research and education follow the recommendations of the report of the Geoscience Education Working Group, "Geoscience Education: A Recommended Strategy" (NSF 97-171). The report is available at <http://www.geo.nsf.gov/adgeo/education.htm>. The Directorate for Geosciences (GEO) initiated a special competition entitled "Awards to Facilitate Geoscience Education" in 1998. That program developed into the Geoscience Education Program, or GeoEd, now in its fifth year. The program funds projects that are in their start-up or proof of concept phase and that will ultimately seek funding from other programs. In FY 2002 GeoEd contains a second element or track that will be co-reviewed and co-funded with the Directorate of Education and Human Resources' Division of Undergraduate Education. The objective of this track is to improve geoscience instruction and education by improving faculty development in undergraduate geoscience institutions and by training postdocs and upper level graduate students to become more effective geoscience faculty.

Projects funded under this program should be grounded in scientific disciplines funded by the Directorate for Geosciences (GEO). These are identified on the GEO web site at <http://www.nsf.gov/home/geo/>. The term "geosciences" as used in this program announcement refers collectively to those disciplines supported by GEO.

II. PROGRAM DESCRIPTION

In FY 2002 the Geoscience Education Program will fund proposals submitted in two tracks. Proposal cover sheets should state clearly whether the proposal is being submitted in either Track 1 or Track 2.

I. Track 1 will consider proposals that integrate geoscience research and education. Proposals in this track may target any educational level: 1) graduate and postdoctoral education and training (outside the framework of NSF basic research grants), 2) undergraduate education, 3) elementary and secondary education, and 4) education outside the classroom.

Projects should be highly innovative. Awards are intended to facilitate the initiation or piloting of inventive educational activities that involve leading geoscience researchers when support may not otherwise be available. Awards are intended to provide start-up or proof of concept funding to enable projects to reach a level of maturity needed to compete for long-term funding from other sources. Proposals should include a discussion of plans for, and potential sources of follow-on funding. Letters of support from participating institutions are critical factors in the evaluation of proposals submitted in this competition.

Projects are expected to complement, but not duplicate, projects funded by NSF's Directorate for Education and Human Resources. Projects that promote active linkages and collaborations between researchers and educators, either currently in place or to be developed, are particularly encouraged. Awards may be made by supplementing active NSF research grants where appropriate. Experience has shown that major facilities such as ships, aircraft, museums or aquariums, analytical or computational facilities, national centers, and repositories of samples or data can be particularly successful foundations for linking research and education and use of these facilities is encouraged.

In the proposal, attention should be given to dissemination and evaluation plans. The use of the Digital Library for Earth System Education (DLESE) for project dissemination is encouraged.

Funding for projects considered in this track averages around \$75,000 annually for periods up to two years. An individual may be Principal Investigator on only one proposal submitted in this competition.

The proposal project description for Track 1 should include the following:

- A description of previous educational efforts of the investigators. Such evidence might include how the investigator has: 1) influenced his or her research discipline; 2) incorporated or integrated contemporary

research questions, processes, and results into educational experiences; 3) contributed to the literature of teaching and learning; 4) mentored others to conduct research and to educate students; or 5) demonstrated leadership among colleagues in promoting the above.

- A clearly outlined plan in which the Principal Investigator describes the activities to be undertaken related to geosciences research and to exploring and experimenting with ways to integrate education and research. A description of how the funds will be used to support these activities should be included.
- A plan to evaluate the effectiveness of the project's activities.
- A plan to disseminate those activities that are found to be effective.
- Evidence of the institution's commitment to supporting the project, including supporting letters from key academic officers. These documents may be submitted via FastLane in the "Supplementary Docs" section

It is anticipated that approximately 12 awards may be made in Track 1.

II. Track 2 of this competition addresses comprehensive faculty professional development in the geosciences. Projects funded under this track are intended to bring together faculty at predominantly undergraduate institutions with faculty at research universities and institutions. (Undergraduate institutions include two-year or community colleges, baccalaureate degree granting liberal arts colleges, Historically Black Colleges and Universities, Hispanic Serving Institutions, and Tribal Colleges.) Projects on this track are directed toward improving the quality of undergraduate geoscience education by creating faculty who are up-to-date in geoscience fields and experienced in effective teaching of the geosciences. Faculty professional development is critical in preparing current geoscience faculty members to bring newly developed course and laboratory materials, pedagogical methods, and technologies into the geoscience learning environment.

Track 2 encourages preparation of graduate students, post-doctoral fellows and others aspiring to become faculty members in the geosciences, and seeks to expand the presence in the classroom of geoscience researchers.

This track will be reviewed and funded in collaboration with the Education and Human Resources Directorate's Division of Undergraduate Education. Funds will support collaborations that link research universities, institutions and facilities with undergraduate institutions. The collaboration may include a number of undergraduate institutions and involve more than one research university or institution. The PI may be staff of any collaborating institution or department, and co-PIs should be members of the collaboration.

Efforts to be supported must include at least three of the following activities:

- A. Faculty Preparation -- Preparation and implementation of research and education plans by senior geoscience graduate students and post-docs. The education plan should include a substantial teaching experience at the undergraduate level (that is, substantial responsibility for the course management and implementation). Teaching experiences may be at a location other than the home or collaborating institutions.
- B. Faculty Enhancement -- Collaborative opportunities for activities that will allow geosciences faculty to strengthen their knowledge of the latest innovations in promoting/improving student learning and allow faculty who primarily teach geosciences to update their knowledge of the latest research developments in geosciences.
- C. Curriculum Development - Within the context of either Faculty Preparation or Faculty Enhancement (A or B above), translation of appropriate geosciences research findings into the undergraduate geosciences curriculum (courses and/or laboratories) within one or more participating institutions and colleges.
- D. Student Investigative Learning - Within the context of either Faculty Preparation or Faculty Enhancement (A or B above), building programs to engage a substantial number of students from collaborating institutions in

geosciences research or other investigative learning opportunities either on their home campus or with collaborating partners.

Proposed activities submitted under Track 2 should involve the targeted geosciences educational and other professional groups in activities that are undertaken under A through D above. Proposers are urged to be creative in developing programs that include these activities.

Examples are given below to illustrate the types of activities that would be considered for funding under these awards. These are meant for guidance only, and should not constrain the types of activities suggested. If clarification is necessary the PI is requested to contact one of the program officers listed at the end of this announcement.

- Faculty in a state university department with a heavy undergraduate teaching load want to collaborate with education-minded staff at a geoscience research institute to offer a single-term enrichment semester at the research institute with staff of both working together on teaching and research. The collaboration would translate geosciences research findings into an undergraduate geosciences curriculum that could be disseminated to other institutions. In addition to student-focused coursework, the curriculum would provide hands-on research opportunities for rising juniors as well as professional collaborations and enhancement opportunities for faculty. The collaboration also includes demonstrations of innovative teaching methods by College of Education faculty. Students and faculty from a local community college also participate. Assessment is built into the project.
- A geoscience laboratory with an experienced, creative video production department wants to collaborate on the production of curriculum resources with scientists who have cutting edge expertise in several areas of great interest to students, and with undergraduate faculty who can ensure that that the materials to be developed are truly useful for undergraduate students and will promote student investigative learning. Technologists, scientists and instructors from several different institutions across the U.S. plan to work together designing, producing and testing high quality resource modules that would be pilot-tested with undergraduates for use in a variety of courses. Assessment is built into the project.

All proposals in this track should include a thorough budget justification. It is anticipated that projects in Track 2 that involve a substantial number of collaborating faculty and students may be funded up to \$200,000; however, the average amount of awards in this category may be substantially less. The maximum period of the award is three years.

It is anticipated that approximately seven awards may be made in this track. An individual may be principal investigator on only one proposal submitted in this competition.

No equipment may be purchased with funding provided on this track.

The proposal project description for Track 2 should include the following:

- A description of previous educational efforts of the investigators. Such evidence might include how the investigator has: 1) influenced his or her research discipline; 2) incorporated or integrated contemporary research questions, processes, and results into educational experiences for undergraduate students; 3) contributed to the literature of teaching and learning; 4) mentored others to conduct research and educate undergraduates; or 5) demonstrated leadership among colleagues in promoting the above.
- A clearly outlined plan in which the principal investigator describes the activities to be undertaken related to geosciences research and the education of undergraduates, and to exploring and experimenting with ways to integrate education and research. Include a description of how the funds will be used to support these activities.

- A plan to evaluate the effectiveness of the project's activities.
- A plan to disseminate those activities that are found to be effective in increasing the learning of undergraduate students in geoscience courses and in improving the teaching ability of geosciences faculty. Dissemination efforts should include activities to promote better undergraduate instruction or research opportunities within and beyond the awardee's institution.
- Evidence of the institution's commitment to supporting the project, including supporting letters from key academic officers. These documents may be submitted via FastLane in the "Supplementary Docs" section

III. ELIGIBILITY INFORMATION

The categories of proposers identified in the [Grant Proposal Guide](#) are eligible to submit proposals under this program announcement/solicitation.

IV. AWARD INFORMATION

The award budget is \$1.5 million in GEO funds with an additional \$1 million in EHR funding if Track 2 is fully funded

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

Full Proposal Instructions:

Proposals submitted in response to this program announcement/solicitation should be prepared and submitted in accordance with the general guidelines contained in the NSF *Grant Proposal Guide* (GPG). The complete text of the GPG is available electronically on the NSF Web Site at: <http://www.nsf.gov/cgi-bin/getpub?gpg>. 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. Supplemental Preparation Guidelines Proposers are reminded to identify the program announcement/solicitation number (02-45) in the program announcement/solicitation block on the proposal Cover Sheet (NSF Form 1207). Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.

Projects are expected to be focused as well as to have potentially broad impact that may lead to innovative intellectual developments or involve innovative partnerships. Proposals should therefore contain plans for dissemination of project results and evaluation of project impact appropriate to the project scope.

Evaluation plans aimed at gauging the quality and impact of a project may also take a variety of forms, for example the application of formal mechanisms for assessing student learning. Evaluation plans should be appropriate to the scope of projects funded under this solicitation, which in Track 1 are intended to be largely exploratory and short term in nature. A solid evaluation process of appropriate scale will bring strength to a follow-up proposal to another competition for longer-term support. The following references may be helpful in designing an evaluation plan:

- User Friendly Handbook for Project Evaluation: Science, Mathematics, Engineering, and Technology Education (NSF 93-152, revised 2/96) <http://www.nsf.gov/cgi-bin/getpub?nsf93152>
- User Friendly Handbook for Mixed Method Evaluation (NSF 97-153) <http://www.nsf.gov/cgi-bin/getpub?nsf97153>
- Online Evaluation Resource Library (<http://oerl.sri.com>)

- Field-tested Learning Assessment Guide (FLAG) (<http://www.wcer.wisc.edu/nise/CL1/flag>)
- Evaluation Handbook, W.K. Kellogg Foundation (<http://www.wkkf.org/Publications/evalhdbk/default.htm>)
- American Geophysical Union 2000 Fall Meeting Abstracts Volume, Measuring Success: Evaluating Geoscience Education Programs, I and II, Eos, vol. 81, no. 48, November 28, 2000, pp. F301-F303.

Awardees should plan to include an evaluation report with their final project report.

B. Budgetary Information

Cost Sharing:

Cost Sharing is not required in proposals submitted under this Program Solicitation.

Other Budgetary Information:

No equipment may be purchased with funding from Track 2.

C. Due Dates

Proposals must be submitted by the following dates(s):

Full Proposal Deadline(s) :

March 19, 2002 7 p.m. EST

D. FastLane Requirements

Proposers are required to prepare and submit all proposals for this Program Solicitation through the FastLane system. Detailed instructions for proposal preparation and submission via FastLane are available at: <http://www.fastlane.nsf.gov/a1/newstan.htm>. For FastLane user support, call 1-800-673-6188 or e-mail fastlane@nsf.gov.

Submission of Electronically Signed Cover Sheets. The Authorized Organizational Representative (AOR) must electronically sign the proposal Cover Sheet to submit the required proposal certifications (see [Chapter II, Section C](#) of the Grant Proposal Guide for a listing of the certifications). The AOR must provide the required certifications within five working days following the electronic submission of the proposal. Further instructions regarding this process are available on the FastLane website at: <http://www.fastlane.nsf.gov>

VI. PROPOSAL REVIEW INFORMATION

A. 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 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. Proposers are reminded that both the intellectual merit and the broader impacts of the work to be accomplished should be addressed. While reviewers are expected to

address both merit review criteria, each reviewer will be asked to address only considerations 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 the 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?

Principal Investigators should address the following elements in their proposal to provide reviewers with the information necessary to respond fully to both of the above-described NSF merit review criteria. NSF staff will give these elements 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 learning 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.

Additional Review Criteria

Geoscience Education awards are intended to integrate geoscience research and geoscience education. Reviewers will evaluate whether the proposed project team has expertise in both areas.

Proposals will be evaluated on whether funds provided through a Geoscience Education award will be catalytic. That is, will the award enable a project to reach a level of maturity that will enable it to compete successfully for long-term funding from other sources?

Proposals for Track 1 will be evaluated based on evidence of the institution's commitment to supporting the project, including supporting letters from key academic officers.

A summary rating and accompanying narrative will be completed and submitted by each reviewer. In all cases, reviews are treated as confidential documents. Verbatim copies of reviews, excluding the names of the reviewers, are sent 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.

B. 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/solicitation will be reviewed by Ad Hoc and/or panel review.

Reviewers will be asked to formulate a recommendation to either support or decline each proposal. The Program Officer assigned to manage the proposal's review will consider the advice of reviewers and will formulate a recommendation.

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 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 its own risk.

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 Division 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.A. for additional information on the review process.)

B. Award Conditions

An NSF award consists of: (1) the award letter, 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 letter; (4) the applicable award conditions, such as Grant General Conditions (NSF-GC-1); * or Federal Demonstration Partnership (FDP) Terms and Conditions * and (5) any announcement or other NSF issuance that may be incorporated by reference in the award letter. Cooperative agreement awards also are administered in accordance with NSF Cooperative Agreement Terms and Conditions (CA-1). Electronic mail notification is the preferred way to transmit NSF awards 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/home/grants/grants_gac.htm. 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, available electronically on the NSF Web site at <http://www.nsf.gov/cgi-bin/getpub?gpm>. The GPM is also for sale through the Superintendent of Documents, Government Printing Office (GPO), Washington, DC 20402. The telephone number at GPO for subscription information is (202) 512-1800. The GPM may be ordered

through the GPO Web site at <http://www.gpo.gov>.

Special Award Conditions:

For awards that involve working with students in grades K-12, additional award conditions may be included addressing the pilot testing and evaluation of materials on pre-college students. For projects involving commercial publication, additional award conditions may be included addressing the pilot testing and evaluation of materials or pre-college students and the distribution or commercial publication of materials developed, a license for government use, and program income.

C. 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 the expiration of an award, 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 an electronic project reporting system, available through FastLane. This system 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. PIs will not be required to re-enter information previously provided, either with a proposal or in earlier updates using the electronic system.

VIII. CONTACTS FOR ADDITIONAL INFORMATION

General inquiries regarding this program should be made to:

- Jewel C. Prendeville, Primary Contact, 705 N, telephone: (703) 292-8521, fax: (703) 292-9042, email: jpredev@nsf.gov
- Roddy R. Rogers, Program Director, Division of Atmospheric Sciences, Physical Meteorology Program, 775 S, telephone: (703) 292-8524, fax: (703) 292-9022, email: rrogers@nsf.gov
- Elizabeth L. Rom, Program Director, Division of Ocean Sciences, Oceanographic Technology and Interdisciplinary Coordination Program, 725 N, telephone: (703) 292-8583, fax: (703) 292-9085, email: erom@nsf.gov
- David M. Fountain, Program Director, Division of Earth Sciences, Tectonics Program, 785 S, telephone: (703) 292-8552, fax: (703) 292-9025, email: dfountai@nsf.gov
- Jill Singer, Program Director, Division of Undergraduate Education, Course, Curriculum And Laboratory Improvement (CCLI) Program, 835 N, telephone: (703) 292-4651, fax: (703) 292-9015, email: jsinger@nsf.gov

For questions related to the use of FastLane, contact:

- Brian E. Dawson, Computer Specialist, 785 S, telephone: (703) 292-4727, fax: (703) 292-9025, email: bdawson@nsf.gov

IX. OTHER PROGRAMS OF INTEREST

The NSF *Guide to Programs* is a compilation of funding for research and education in science, mathematics, and engineering. The NSF *Guide to Programs* is available electronically at <http://www.nsf.gov/cgi-bin/getpub?gp>. General descriptions of NSF programs, research areas, and eligibility information for proposal submission are provided in each chapter.

Many NSF programs offer announcements or solicitations concerning specific proposal requirements. To obtain additional information about these requirements, contact the appropriate NSF program offices. Any changes in NSF's fiscal year programs occurring after press time for the *Guide to Programs* will be announced in the NSF *E-Bulletin*, which is updated daily on the NSF web site at <http://www.nsf.gov/home/ebulletin>, and in individual program announcements/solicitations. Subscribers can also sign up for NSF's *Custom News Service* (<http://www.nsf.gov/home/cns/start.htm>) to be notified of new funding opportunities that become available.

The Geoscience community is urged to explore the following opportunities within NSF:

Opportunities for Enhancing Diversity in the Geosciences. This program is directed to underrepresented groups and integrates research and education. Information about the program may be found at <http://www.geo.nsf.gov/geo/diversity>.

Research Experiences for Undergraduates (REU) The long-standing NSF-wide Research Experiences for Undergraduates (REU) Program has been an effective vehicle for the integration of research and education by supporting the substantive involvement of undergraduate students in research projects. As part of its effort to enhance the quality of geoscience education, GEO is encouraging submission of proposals in this area. These REU Sites projects provide opportunities for small groups of undergraduate students to work on specially formulated research projects. In providing this REU Site funding, GEO is especially interested in supporting innovative multidisciplinary projects, increasing the involvement of K-12 teachers, exploring innovative educational approaches, and significantly increasing the participation of minority students in the geosciences. GEO also is interested in supporting the innovative involvement of undergraduates as members of research teams through the use of REU supplements to existing awards. REU proposals directed to GEO will continue to be reviewed in the GEO divisions as in the past. Proposal submission should follow the REU guidelines, as outlined in the REU program announcement (NSF 01-121). More information about the REU Program is available from the NSF Web site (<http://www.nsf.gov/pubs/2001/nsf01121/nsf01121.htm>)

Related Opportunities for Support from NSF's Directorate for Education and Human Resources (EHR) Division of Undergraduate Education (DUE). This Division supports curriculum and faculty development at the undergraduate level through the following programs:

- Advanced Technological Education,
- Course, Curriculum, and Laboratory Improvement, and
- NSF Computer Science, Engineering, and Mathematics Scholarship Program
- Federal Cyber Service: Scholarship for Service
- National SMETE Digital Library

These programs are described at the DUE Web site (<http://www.ehr.nsf.gov/ehr/ue/programs/>).

Division of Elementary, Secondary, and Informal Education (ESIE). This Division offers the following programs to promote student and teacher development at the K-12 level and public science literacy through activities outside the classroom:

- Informal Science Education,
- Instructional Materials Development,
- Teacher Enhancement, and

- Advanced Technological Education.

These programs are described at the ESIE Web site (<http://www.ehr.nsf.gov/ehr/esie/>). The Informal Science Education Program operates a program to competitively provide supplements of up to \$50,000 to active NSF research grants "to assist in the broader dissemination of current research results and to promote science literacy for the general public in an out-of-school setting." The announcement of opportunity describing this activity is "Informal Science Education: Supplements to Active Research Awards" (NSF 97-70). Information is also available from the ESIE Web site. Division of Research, Evaluation, and Communication (REC). REC coordinates the Interagency Education Research Initiative (IERI). The goal of the IERI is to improve preK-12 student learning and achievement in reading, mathematics, and science by supporting rigorous, interdisciplinary research on large-scale implementations of promising educational practices and technologies in complex and varied learning environments. Information is available at the REC Web site (<http://www.ehr.nsf.gov/EHR/rec/>).

Some Related NSF-Wide Programs include Integrative Graduate Education and Research Training Program (IGERT). This program replaces the Graduate Research Traineeship (GRT) and Research Training Group (RTG) Programs. It supports innovative multidisciplinary graduate programs which integrate education and research, and which provide graduate students with access to state-of-the-art instrumentation and experience in both academic and non-academic research settings. Its objective is to enhance the broad competency and flexibility of doctoral professionals as part of an increasingly dynamic workforce. The program announcement is NSF 00-78; information is also available at <http://www.nsf.gov/pubs/2000/nsf0078/nsf0078.htm>

Faculty Early-Career Development Program (CAREER). This program supports new faculty in launching a career which balances educational and research pursuits and seeks to fully integrate the two. The program announcement is NSF 00-89; additional information is available from the NSF Web site (<http://www.nsf.gov/pubs/2000/nsf0089/nsf0089.htm>).

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