

METHODS AND MODELS FOR INTEGRATED ASSESSMENT

**Research Opportunity Related to the
NSF Global Change Research Program**

*Announcement of Special Funding
Opportunity*

SUBMISSION DEADLINE: *May 21, 1999*



NATIONAL SCIENCE FOUNDATION



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Methods and Models For Integrated Assessment

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Submission Deadline:

May 21, 1999

INTRODUCTION

Methods and Models for Integrated Assessment (MMIA) is a funding opportunity for global change research at the National Science Foundation (NSF). Assessing the combined influence of multiple systems is central to understanding important issues such as global environmental change, large-scale technological change, and international socio-political evolution. Integrated assessment refers to approaches for examining the complex interactions among Earth's physical, biological, and human systems. The integrated assessment approach involves the use of quantitative models and other methods to understand individual component systems and their interactions, with particular emphasis on how changes in one or more component systems will impact other systems. The goal of the MMIA competition is to support methodological research that will advance the design and conduct of integrated assessments.

Federal agencies participating in the U.S. Global Change Research Program (US/GCRP) have identified integrated assessment as an important approach for providing information to policy and decision makers. In addition to providing information about the dynamics of change, integrated assessments will assist policy makers by providing a framework for identifying and evaluating likely consequences of different environmental policies.

PROGRAM DESCRIPTION

In concert with other US/GCRP agencies, NSF has established MMIA to sponsor high-quality, fundamental and methodological research that advances the development of methodologies and models that will integrate or couple multiple component systems. NSF encourages participation and

collaboration of researchers from all appropriate scientific and engineering disciplines, including the mathematical sciences. In FY 1997, NSF awarded approximately \$3.4 M through the special MMIA competition. Funding in FY 1999 is anticipated at approximately the same level, depending on availability of funds.

A review of MMIA proposals will be conducted in the Spring of 1999. Evaluation of proposals for this special competition will include reviews by external experts and by a multidisciplinary panel. Evaluation of proposals will be based on the standard NSF evaluation criteria noted below. Proposals submitted for this competition must be received no later than May 21, 1999.

Proposals should describe research intended to improve methods for integrated assessment. Because of the nature of this research, NSF expects most awards in this category to be interdisciplinary in scope and to focus on the linkages among multiple human and natural systems with reference to high priority global change policy issues (such as national economic welfare, international technological change, or regional ecological impacts). Examples of research in this category include rigorous modeling methods and algorithms that link or couple atmospheric, ecological, and socio-economic systems; validation of the models and sensitivity analysis of the data; statistical approaches to combining information, including substantive knowledge, models, and data; treatment of uncertainty and risk in integrated systems; development of integrated assessment model building and validation techniques; approaches to prediction for large-scale, complex, and stochastic systems; and development and testing of methods that integrate formal analysis and modeling with deliberation such as gaming, policy exercises, and simulation exercises.

Proposals addressing the integration or coupling of multiple systems are expected to indicate the scientific merit of the proposed research, and the policy relevance of the anticipated results. They may also propose specific activities, such as workshops and briefings, to foster interactions and communications between the policy and research communities. Although participation by researchers in specific disciplines is not required, the Foundation encourages investigators to demonstrate substantial contributions from the mathematical, statistical, natural, and social sciences in their research plans.

MMIA projects that will produce data and information that can be used by other global change researchers must include a special information and supplementary documentation section (Proposal Section I) titled "Data and Information Availability." Section I, described on page 13 of the *Grants Proposal Guide* (GPG), NSF 99-2, is not counted in the 15-page Project Description limitation. This discussion, not to exceed four pages, should describe the data and information products, the management plans for their validation, quality control and archiving, and the costs for these activities.

ELIGIBILITY

The MMIA program will consider research proposals from all approved categories of proposers as described in the *Grants Proposal Guide*. Proposers from For-profit organizations and other Federal Agencies (including Federally Funded Research and Development Centers), however, should contact one of the program representatives listed at the end of this announcement before preparing a proposal for submission. Collaborative proposals can be submitted by two or more institutions. One institution should serve as the lead institution and should include copies of all budgets, cover sheets, and information for all investigators. Twenty copies of the proposal are needed.

AWARD INFORMATION

Under this announcement, NSF solicits proposals for up to three years and expects to make grants at a wide variety of award size and duration. It expects to fund approximately 10 to 15 awards depending on the quality of submissions and availability of funds. Approximately \$3 million will be available for this initiative in FY1999. Anticipated date of awards: September 1999.

PROPOSAL PREPARATION & SUBMISSION INSTRUCTIONS

A. *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 99-2. 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 (703)-292-7827 or by e-mail from pubs@nsf.gov.

Proposers are reminded to identify the program announcement number (NSF 99-86) 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.

B. *Proposal Due Dates.*

For paper submission of proposals, the paper copies of the proposal **MUST** be received by 5:00 PM, Eastern Standard Time, May 21, 1999. Copies of the proposal must be made and submitted to NSF according to the normal procedures for paper proposals identified in the GPG.

For electronic submission of proposals, the proposal **MUST** be submitted by 5:00 PM, local time, May 21, 1999. Copies of the signed proposal cover sheet must be submitted in accordance with the instructions identified below.

Submission of Signed Cover Sheets. For proposals submitted electronically via the NSF FastLane Project, the signed proposal Cover Sheet (NSF Form 1207) should be forwarded to the following address and received by NSF by May 28, 1999:

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

A proposal may not be processed until the complete proposal (including signed cover sheet) has been received by NSF. Proposals received after the deadline will not be considered for this competition.

C. *FastLane Requirements.*

The NSF FastLane system is available for electronic preparation and submission of a proposal through the Web at the FastLane Web site at <http://www.fastlane.nsf.gov>. The Sponsored Research Office (SRO or equivalent) must provide a FastLane Personal Identification Number (PIN) to each Principal Investigator (PI) to gain access to the FastLane "Proposal Preparation" application. PIs that have not submitted a proposal to NSF in the past must contact their SRO to be added to the NSF PI database. This should be done as soon as the decision to prepare a proposal is made.

In order to use NSF FastLane to prepare and submit a proposal, the following are required:

Browser (must support multiple buttons and file upload)

- Netscape 3.0 or greater
- Microsoft Internet Explorer 4.0 or greater

PDF Reader (needed to view/print forms)

- Adobe Reader 3.0 or greater

PDF Generator (needed to create project description)

- Adobe Acrobat 3.01 or greater
- Aladdin Ghostscript 5.10 or greater

A list of registered institutions and a FastLane registration form are located on the FastLane Web page.

For paper submission of proposals, the delivery address **must clearly identify the NSF announcement number** under which the proposal is being submitted. For FastLane submission of proposals the **Directorate for Geosciences** should be indicated as the NSF Organizational Unit.

PROPOSAL REVIEW INFORMATION

A. *Merit Review Criteria.*

Review 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, adjacent disciplines to that principally addressed in the proposal, etc.

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?

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

Integrating Diversity into NSF Program, Projects, and Activities

Broadening opportunities and enabling the participation of all citizens -- women and men, underrepresented minorities, and persons with disabilities -- are 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. PIs should address this issue in their proposal to provide reviewers with the information necessary to respond fully to both NSF merit review criteria. NSF staff will give it careful consideration in making funding decisions.

Additional Review Criteria

Proposals are expected to indicate the scientific merit of the proposed research and the policy relevance, if any, of the anticipated results. Supplementary documentation is requested for projects that will produce data and information useful for other global change research.

B. Merit Review Process.

Most of the proposals submitted to NSF are reviewed by mail review, panel review, or some combination of mail and panel review. Proposals submitted in response to this announcement will be reviewed by mail and panel review.

All proposals are carefully reviewed by at least three other persons outside NSF who are experts in the particular field represented by the proposal. 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 in this category. In those cases where a proposal is being considered for joint funding by separate divisions, directorates, or agencies, NSF will be able to inform applicants within nine months in 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 final programmatic approval has been obtained, award recommendations are then 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

A. Notification of the Award.

Notification of the award is made *to the submitting organization* by a Grants and Agreements Officer in the Division of Grants and Agreements (DGA). 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.

B. 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; (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 703.292.7827 or by e-mail from pubs@nsf.gov.

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 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.

Effective October 1, 1998, PIs are required to use the new reporting format for annual and final project reports. PIs are strongly encouraged to submit reports electronically via FastLane. For those PIs who cannot access FastLane, paper copies of the new report formats may be obtained from the NSF Clearinghouse as specified above. NSF expects to require electronic submission of all annual and final project reports via FastLane beginning in October, 1999.

D. New Awardee Information.

If the submitting organization has never received an NSF award, it is recommended that the organization's appropriate administrative officials become familiar with the policies and procedures in the *NSF Grant Policy Manual* which are applicable to most NSF awards. The "Prospective New Awardee Guide" (NSF 97-100) includes information on: Administration and Management Information; Accounting System Requirements and Auditing Information; and Payments to Organizations with Awards. This information will assist an organization in preparing documents that NSF requires to conduct administrative and financial reviews of an organization. The guide also serves as a means of highlighting the accountability requirements associated with Federal awards. This document is available electronically on NSF's Web site at: <http://www.nsf.gov/cgi-bin/getpub?nsf97100>.

CONTACTS FOR ADDITIONAL INFORMATION

General inquiries about MMIA may addressed to:

Dr. Thomas Spence
Project Coordinator
Directorate for Geosciences
Phone: 703.306.1502, e-mail:
tspence@nsf.gov

or a representative of one of the participating directorates:

Dr. Keith Crank
Mathematical and Physical Sciences
703.306.1885, e-mail: kcrank@nsf.gov

Dr. Cheryl Eavey
Social, Behavioral, and Economic
Sciences
703.306.1729, e-mail: ceavey@nsf.gov

Dr. Edward T. Elliott
Biological Sciences
703.306.1479, e-mail: eelliott@nsf.gov

Dr. Jay Fein
Geosciences
Division of Atmospheric and Earth
Sciences
703.306.1527, e-mail: jfein@nsf.gov

Dr. Janie Fouke
Engineering
703.306.1320,
e-mail: jfouke@nsf.gov

Dr. Richard Lambert
Geosciences
Division of Ocean Sciences
703.306.1583,
e-mail: rlambert@nsf.gov.

Dr. Michael Ledbetter
Office of Polar Programs
703.306.1029,
e-mail: mledbett@nsf.gov

Identical information on the MMIA funding opportunity is available on the NSF homepage. The direct address is <http://www.nsf.gov/strata/egch/mmia.htm>. Awards lists for the FY 1995, FY 1996, and FY 1997 and other related information are also available at this address.

NSF also maintains an electronic mailing list of individuals interested in MMIA and other related funding opportunities. Additions, deletions, or changes should be sent by e-mail: mmia-ext-request@nsf.gov.

Other Federal agencies (e.g., Department of Energy, National Oceanic and Atmospheric Administration, etc.) have been working with NSF to advance research on integrated assessments related to global change. Potential investigators may wish to obtain information about related funding opportunities in these agencies.

For questions related to use of FastLane, contact Brian Dawson, FastLane Project Officer, 703.306.1553, e-mail: mmia@nsf.gov.

OTHER PROGRAMS OF INTEREST

The NSF Guide to Programs is a compilation of funding opportunities 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. Beginning in fiscal year 1999, the NSF Guide to Programs only will be available electronically. 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 E-Bulletin, available electronically on the NSF Web site at: <http://www.nsf.gov/>. The direct URL for recent issues of the Bulletin is <http://www.nsf.gov/cgi-bin/getpub?gp>. Subscribers can also sign up for NSF's Custom News Service to find out what funding opportunities are available.

SUMMARY OF PROGRAM REQUIREMENTS

GENERAL INFORMATION

Program Name: Methods and Models for Integrated Assessment

Short Description/Synopsis of Program:

This initiative is intended to enhance interdisciplinary and cooperative activities and research leading to sound and scientifically based integrated assessments of the impacts of global change. Assessing the combined influence of multiple systems is central to understanding important issues such as global environmental change, large-scale technological change, and international socio-political evolution. Integrated assessment refers to the complex interactions among Earth's physical, biological, and human systems. Integrated assessments use quantitative models and other methods to understand individual component systems and their interactions with particular emphasis on how changes in one or more component systems will impact other systems.

Cognizant Program Officer: Dr Thomas Spence, Directorate for Geosciences, Room 705, telephone 703.306.1502, e-mail: tspence@nsf.gov

Applicable Catalog of Federal Domestic Assistance (CFDA) No.: 47.050, Geosciences; 47.049, Mathematical and Physical Sciences; 47.074, Biological Sciences; 47.075, Social, Behavioral, and Economic Sciences; and 47.078, Polar Programs.

ELIGIBILITY

The Program will consider proposals from all categories of proposers as described in the *NSF Grants Proposal Guide* (NSF 99-2).

AWARD INFORMATION

Type of award anticipated:	Standard Grant
Number of awards anticipated in FY 99:	10-15 awards
Amount of funds available:	Approximately \$3 million will be available in FY 99
Anticipated date of award:	September 1999

PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

Proposal Preparation Instructions

Letter of Intent requirements:	None
Preproposal requirements:	None
Proposal preparation instructions:	Standard NSF Grants Proposal Guide instructions

Supplemental proposal preparation instructions: **Proposals addressing integration or coupling of multiple systems should indicate the policy relevance of the anticipated results, and should include supplementary information related to the data and information resulting from the proposal.**

Deviations from standard (GPG) proposal preparation instructions:	None
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Budgetary Information

Cost sharing/matching requirements: **Standard GPG requirements**

Indirect cost (F&A) limitations: **None**

Other budgetary limitations: **None**

FastLane Requirements

FastLane proposal preparation requirements: **FastLane use encouraged**

FastLane point of contact: **Brian Dawson, FastLane Project Officer, telephone 703.306.1553, e-mail: mmia@nsf.gov**

Deadline/Target Dates

Full Proposal Deadline: **5:00 PM,ET, May 21, 1999**

PROPOSAL REVIEW INFORMATION

Merit Review Criteria: **Standard National Science Board approved criteria**

AWARD ADMINISTRATION INFORMATION

Grand Award Conditions **GC-1**

Special grants conditions anticipated: **None anticipated**

Special reporting requirements anticipated: **None**

ABOUT 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 on behalf of all qualified scientists, engineers and educators. The Foundation strongly encourages women, minorities and persons with disabilities to participate 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 (some programs may have special requirements that limit eligibility).

Facilitation Awards for Scientists and Engineers with Disabilities provide funding for special assistance or equipment to enable persons with disabilities to work on NSF-supported projects. (For more information, see Section V.G.)

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 or (800) 281-8749, FIRS at 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; 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 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:

Reports Clearance Officer
Information Dissemination Branch
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>.

Catalog of Federal Domestic Assistance (CFDA) No.: 47.050, Geosciences; 47.049, Mathematical and Physical Sciences; 47.074, Biological Sciences; and 47.075, Social, Behavioral, and Economic Sciences, and 47.078, Polar Programs.

NATIONAL SCIENCE FOUNDATION

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