

METHODS AND MODELS FOR INTEGRATED ASSESSMENT

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

*Announcement of Special Funding
Opportunity*

SUBMISSION DEADLINE: *February 14, 1997*



NATIONAL SCIENCE FOUNDATION

Methods and Models for Integrated Assessment (MMIA)

Announcement of a Research Funding Opportunity

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.

Description

In concert with other US/GCRP agencies, **NSF has established MMIA to sponsor high-quality, fundamental and methodological research in two related categories: (1) research that advances the development of methodologies and models that will integrate or couple multiple component systems; and (2) research that develops and enhances the scientific components of the integrated approach.** For both research categories, NSF encourages participation and collaboration of researchers from all appropriate scientific and engineering disciplines, including the mathematical sciences. In FY 1996, NSF awarded approximately \$3.4 M through the special MMIA competition. Funding in FY 1997 is anticipated at approximately the same level, depending on availability of funds.

A special competition for MMIA proposals will be conducted in the Spring of 1997. 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 four standard NSF evaluation criteria: (1) research performance competence; (2) intrinsic merit of the research; (3) utility or relevance of the research; and (4) effect of the research on the infrastructure of science and engineering. Proposals submitted for this competition must be received no later than **February 14, 1997.**

Research to Integrate Multiple Components

Proposals addressing the overall analytical approach 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; and approaches to prediction for large-scale, complex, and stochastic systems.

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.

Enhancement of Scientific Components

MMIA will also support more focused research in disciplinary methods and components of the global change research program that contribute to the objectives of this special funding opportunity. This research will emphasize improved understanding of the topical and methodological components of integrated assessments. For example, MMIA will support research expected to reduce uncertainty about critical processes, to fill knowledge gaps, and to improve the validity and reliability of the component science. Examples of research in this category include further analysis of environmental change variables; modeling of physical, biogeochemical, and human processes related to global change; modeling ecosystem function and value; modeling adaptive behavioral and social responses to environmental change; computational and modeling methods to address uncertainty, vulnerabilities, surprise scenario forecasts, and simulation; and modeling international growth, competitiveness, and security in the context of resource sustainability.

MMIA also seeks to support research on higher-dimensional statistical inference techniques. Examples include extensions of inferential technologies to the dimensions needed to construct bridges between Earth-system-data and policy relevant questions regarding global change and evaluation of the efficacy of methods for integrated assessment through analyses of their use in actual assessments.

Proposals that emphasize component science topics must include a statement demonstrating how the proposed research responds to the science needs of integrated assessments for global change research.

Proposal Submission Information

All institutions eligible to receive support from the NSF research directorates may submit proposals in response to this announcement. The Foundation also has express statutory authority to support research performed by other Federal agencies and Federally Funded Research and Development Centers (FFRDCs). The Foundation ordinarily does not encourage research proposals from other Federal agencies or FFRDCs; however, for this particular announcement the Foundation will consider proposals for research and logistic support activities of other Federal agencies or FFRDCs directed to the goals of special national and international research programs for which the Foundation bears special responsibility. Scientists from other federal agencies or FFRDCs are encouraged to participate by developing collaborations with university scientists. Any proposals under this category should not include costs related to Civil Service salaries for federal scientists.

Preparation and submission of proposals must follow the guidelines given in the *Grant Proposal Guide* (GPG) (NSF 95-27). Note especially that there is a limit of 15 pages for the Project Description section, including text as well as visual materials. In general, letters of endorsement and other appendices are disallowed. Proposals will be reviewed in accordance with established Foundation procedures and the four general criteria described in GPG. GPG also includes all required NSF forms. To obtain a copy contact:

NSF Forms and Publications Unit
4201 Wilson Boulevard
Arlington, VA 22230
Tel: (703) 306-1130
FAX: (703) 644-4278
Internet: pubs@nsf.gov

Special Reporting Requirements

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 is described in detail on page 10 of the GPG and is not counted in the 15-page Project Description limitation. This discussion, not to exceed four additional pages, should describe the data and information products, the management plans for

their validation, quality control and archiving, and the costs for these activities.

Submitted proposals must clearly identify the number of this NSF announcement. Proposals should be mailed to:

Announcement No. NSF 96-154
Proposal Processing Unit, Rm. P-60
National Science Foundation
4201 Wilson Blvd.
Arlington, VA 22230

For more information on this program, please contact:

Dr. Keith Crank, MMIA Program Coordinator
Directorate for Mathematical and Physical Sciences
PH: (703) 306-1885
FAX: (703) 306-0555
Internet: kcrank@nsf.gov

Dr. Cheryl Eavey
Directorate for Social, Behavioral, and Economic Sciences
PH: (703) 306-1729
FAX: (703) 306-0485
Internet: ceavey@nsf.gov

Dr. Jay Fein
Directorate for Geosciences
PH: (703) 306-1527
FAX: (703) 306-0377
Internet: jfein@nsf.gov

Dr. Richard Lambert
Division of Ocean Sciences
PH: (703) 306-1583
FAX: (703) 306-0390
Internet: rlambert@nsf.gov

Dr. J. Thomas Callahan
Directorate for Biological Sciences
PH: (703) 306-1479
FAX: (703) 306-0367
Internet: jcallaha@nsf.gov

Dr. Carole Seyfrit
Office of Polar Programs
PH: (703) 306-1029
FAX: (703) 306-0648
Internet: cseyfrit@nsf.gov

Dr. Janie Fouke
Directorate for Engineering
PH: (703) 306-1320
FAX: (703) 306-0312
Internet: jfouke@nsf.gov

Related Funding Opportunities

Other Federal agencies have been working with NSF to advance research on integrated assessments related to global

change. Investigators may wish to obtain information about the following related funding opportunity:

Department of Energy

The Environmental Sciences Division of the Office of Energy Research in the U.S. Department of Energy expects to solicit applications on Integrated Assessment of Global Climate Change Research, subject to availability of funds. The notice of this solicitation is expected to appear in the Federal Register late in 1996; applications will be due early in 1997. For further information, contact John Houghton; Environmental Sciences Division, Office of Energy Research; ER-74; U.S. Department of Energy, Washington D.C., 20585; Phone: (301) 903-8288; Internet: john.houghton@oer.doe.gov.

For Further Information

Identical information on the Methods and Models for Integrated Assessment funding opportunity is available on the NSF homepage. The direct address is <http://www.nsf.gov/stratare/egch/mmia.htm>. Awards lists for the FY 1995 and FY 1996 opportunities 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 for the list should be sent to mmia-ext-request@nsf.gov.

NSF Grant Administration

NSF provides awards for research in the sciences and engineering. The awardee is wholly responsible for the conduct of such research and preparation of the results for publication. The Foundation, therefore, does not assume responsibility for the research findings or the interpretation.

Grants are administered in accordance with the terms and conditions of NSF GC-1 (5/94), Grant General Conditions, or

FDP-II, Federal Demonstration Project General Terms and Conditions, copies of which may be requested from the NSF Forms and Publications Unit, telephone (703) 306-1130. More comprehensive information is contained in the NSF Grant Policy Manual (NSF 88-47) available through a subscription offered by the Superintendent of Documents, Government Printing Office, Washington, D.C. 20420.

The Foundation welcomes proposals from all qualified scientists and engineers, and strongly encourages women, minorities, and persons with disabilities to compete fully in any of the research and related programs described here.

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, denied the benefits of, or be subject to discrimination under any program or activity receiving financial assistance from the National Science Foundation.

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

For Further Information

Programs described in this publication are included in the Catalog of Federal Domestic Assistance under the following categories: 47.050, Geosciences; 47.049, Mathematical and Physical Sciences; 47.074, Biological Sciences; and 47.075, Social, Behavioral, and Economic Sciences.

Copies of most program announcements are available electronically using the Science and Technology Information System (STIS). The full text can be searched on-line, and copied from the system. Instructions for use of the system are in NSF 91-10 "STIS Flyer." A printed copy is available from the Forms and Publications Unit. An electronic copy may be requested by sending a message to "stis@nsf.gov" Internet.

Privacy Act and Public Burden

Information requested on NSF application materials is solicited under the authority of the National Science Foundation Act of 1950, as amended. It will be used in connection with the selection of qualified proposals and may be used and disclosed to qualified reviewers and staff assistants as part of the review process; to provide or obtain data regarding the application review process, award decisions, or the administration of awards; to government contactors, experts, volunteers, and researchers as necessary to complete assigned work; and to other government agencies in order to coordinate programs. See Systems of Records NSF-50, "Principal Investigator/ Proposal File and Associated Records," and NSF 51, "Reviewer/ Proposals File and Associated Records," 60 Federal Register 4449 (January 23, 1995). Reviewer/ Proposal File and Associated Records, 59 Federal Register 8031 (February 17, 1994). Submission of the information is voluntary. Failure to provide full and complete information, however, may reduce the possibility of your receiving an award.

The public reporting burden for this collection of information is estimated to average 120 hours per response, including time for reviewing instructions. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to:

Herman G. Fleming
Reports Clearance Officer
Division of CPO, NSF
4201 Wilson Blvd.
Arlington, VA 22230

The National Science Foundation has TDD (Telephonic Device for the Deaf) capability which enables individuals with hearing impairment to communicate with the Foundation about NSF programs, employment, or general information. To access NSF TDD dial (703) 306-0090; for FIRS, 1-800-877-8339.

OMB 3145-0058
PT 34

KW0404000, 0411009, 1000000, 1013000, 1010000,
1010017, 0740405, 0408000, 0411000, 0412000, 1004117,
0411004, 0408012, 0411005, 0411015
NSF 96-154 (Replaces NSF 96-22)