



**National Aeronautics and  
Space Administration**

**October 15, 2001**

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**NRA-2001-OES-04**

# **RESEARCH ANNOUNCEMENT**

**New Investigator Program (NIP) in Earth Science**

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**Proposals due January 15, 2002**

**OMB Approval No. 2700-0087**

**New Investigator Program (NIP) in Earth Science**

**NASA Research Announcement  
NRA 2001-OES-04  
Issued October 15, 2001  
Proposals due January 15, 2002**

**Office of Earth Science  
National Aeronautics and Space Administration  
Washington, DC 20546**

## I. Introduction

The mission of NASA's Earth Science Enterprise is to develop understanding of the total Earth system and the effects of natural and human-induced changes on the global environment. Through research, applications, and technology development programs, the Office of Earth Science (OES) seeks to provide scientific answers to the overarching question -

*How is the Earth changing and what are the consequences for life on Earth?*

The scope and complexity of this question lead to the following questions that constitute the conceptual approach taken by the Office of Earth Science to improve our knowledge of the Earth system.

- *How is the global Earth system changing?*
- *What are the primary forcing functions of the Earth system?*
- *How does the Earth system respond to natural and human-induced changes?*
- *What are the consequences of change in the Earth system for human civilization?*
- *How well can we predict future changes to the Earth system that will take place in the future?*

These five questions define a pathway of "variability, forcing, response, consequences, and prediction" that is taken to further enumerate more specific questions (see Table 1) which provide direction and focus to the basic and applied research programs supported by the Office of Earth Science. More details may be found at <http://www.earth.nasa.gov/>.

The New Investigator Program (NIP) in Earth Science was established in Fiscal Year 1996 to encourage integrated environments for research and education for scientists and engineers at the early stage of their professional careers. The program, designed for investigators at academic institutions and non-profit organizations, emphasizes the importance the Office of Earth Science places on the early development of professional careers of faculty members or researchers as educators. The excitement of research leads to inspired teaching by enhancing the skills, knowledge and ability of these investigators in both research and education (formal or informal). The Office of Earth Science also places particular emphasis on the investigators' ability to promote and increase the use of Earth remote sensing through the proposed research and education projects. The NIP proposals are openly solicited approximately every one and a half years. The awards average \$80,000-\$120,000 per year for a period of up to three years subject to satisfactory progress and availability of funds. Proposals submitted in response to this announcement will be competing for approximately \$2.0 million per year beginning in Fiscal Year 2002.

Each year, NASA selects its nominees for Presidential Early Career Awards for Scientists and Engineers (PECASE) from the exceptionally meritorious awardees sponsored by its five strategic enterprises. PECASE awards recognize outstanding scientists and engineers who, early in their career, show exceptional potential for leadership at the frontiers, of knowledge. Each Presidential Award is of five-year duration. NASA does not issue a special announcement for this award. The awardees of the New Investigator Program constitute a primary, but not the only, source of

nominations for the PECASE by the Office of Earth Science. If an NIP awardee is selected for the PECASE award, the duration for the combined honor is five years.

Table 1. Hierarchy of Earth Science Enterprise Science Questions

Overall: *How is the Earth changing and what are the consequences for life on Earth?*

- *How is the global Earth system changing? (Variability)*
  - How are global precipitation, evaporation, and the cycling of water changing?
  - How is the global ocean circulation varying on interannual, decadal, and longer time scales?
  - How are global ecosystems changing?
  - How is stratospheric ozone changing, as the abundance of ozone-destroying chemicals decreases and new substitutes increases?
  - What changes are occurring in the mass of the Earth's ice cover?
  - What are the motions of the Earth and the Earth's interior, and what information can be inferred about Earth's internal processes?
- *What are the primary forcings of the Earth system? (Forcing)*
  - What trends in atmospheric constituents and solar radiation are driving global climate?
  - What changes are occurring in global land cover and land use, and what are their causes?
  - How is the Earth's surface being transformed and how can such information be used to predict future changes?
- *How does the Earth system respond to natural and human-induced changes? (Response)*
  - What are the effects of clouds and surface hydrologic processes on Earth's climate?
  - How do ecosystems respond to and affect global environmental change and the carbon cycle?
  - How can climate variations induce changes in the global ocean circulation?
  - How do stratospheric trace constituents respond to change in climate and atmospheric composition?
  - How is global sea level affected by climate change?
  - What are the effects of regional pollution on the global atmosphere, and the effects of global chemical and climate changes on regional air quality?
- *What are the consequences of change in the Earth system for human civilization? (Consequences)*
  - How are variations in local weather, precipitation and water resources related to global climate variation?
  - What are the consequences of land cover and land use change for the sustainability of ecosystems and economic productivity?
  - What are the consequences of climate and sea level changes and increased human activities on coastal regions?
- *How well can we predict future changes in the Earth system? (Prediction)*
  - How can weather forecast duration and reliability be improved by new space-based observations, data assimilation, and modeling?
  - How well can transient climate variations be understood and predicted?
  - How well can long-term climatic trends be assessed or predicted?
  - How well can future atmospheric chemical impacts on ozone and climate be predicted?
  - How well can cycling of carbon through the Earth system be modeled, and how reliable are predictions of future atmospheric concentrations of carbon dioxide and methane by these models?

(<http://www.earth.nasa.gov/visions/researchstrat/Research-Strategy.htm>)

## II. Program Characteristics

The New Investigator Program (NIP) in Earth Science encompasses all areas of research and development in Earth system science and applications and associated activities in education, science communication, and interdisciplinary endeavors. The proposed research project must be led by a single eligible (see Section III for eligibility) principal investigator (PI); however, the research project itself may be collaborative. In particular, interdisciplinary or educational collaborations with partners from institutions other than the submitting institution are encouraged. International collaborations are also encouraged. Access to unique research equipment, facilities, and/or geographical locations, and the opportunity to collaborate with outstanding foreign researchers and educators may provide substantial benefits to the research proposed; note that U.S. funds cannot be used to support participation of foreign partners.

## III. Eligibility

The proposed principal investigators must be U.S. citizens or legal permanent residents. They must be recent Ph.D. recipients, graduating on or after January 1 of the year that is no more than five years before the issuance date of this NRA.

Institutions and organizations are encouraged to apply for support under the NIP on behalf of their outstanding new faculty who intend to develop academic careers involving research and education in Earth system science and associated applications. All investigators are required to identify education and outreach activities and/or interdisciplinary endeavors from which the community of practitioners in Earth and environmental sciences can benefit. To be eligible for an NIP award, proposed PI's must meet the following requirements:

- Be employed at an institution in the U.S., its territories or possessions, or the Commonwealth of Puerto Rico, which awards a baccalaureate or advanced degree in a field supporting the objectives of NASA Earth Science Enterprise, or be employed at a research institution or other organization which performs significant amount of work in fields of research supporting the objectives of NASA Earth Science Enterprise. Such organizations could include museums, observatories, government or non-profit research laboratories, as well as entities in the private sector.
- Be in their initial tenure-track or equivalent appointment and within the first five years of that appointment at the time of proposal submission. Note that the equivalency refers to continuing appointments at institutions or in departments that do not offer tenure, or continuing research appointments with substantial educational responsibilities. Note, also, that non-tenured faculty members (or equivalent) more than five years beyond their initial appointment who have interrupted their careers for substantive reasons such as family leave or serious health problems are also eligible, although the nature of the interruption should be clearly stated in the proposals.
- Not hold or have held tenure on or before the submission deadline of this NRA.
- Not be a current or former recipient of the NIP or PECASE award.

NASA encourages the participation of PI's who are women, under-represented minorities, or persons with disabilities.

#### IV. Proposal preparation

The NIP proposals should be prepared in accordance with the instructions given in Appendices A, B and C with the following exceptions:

- Project Description, which constitutes the main body of the proposal, should be a detailed statement of the Research and Education Plans. The length of the proposal should not exceed 20 single-spaced pages, including figures, tables, and references. The type size must be clear and readily legible, in standard font of 12 points; no smaller than 12-point font size will be accepted.
- The Education Plan should be a section distinct from the Research Plan in the Project Description, addressing the educational goal of the Earth Science Enterprise, - "*to stimulate public interest in and understanding of Earth system science and encourage young scholars to consider careers in science and technology*" (see page 26 of Earth Science Enterprise Strategic Plan, <http://www.earth.nasa.gov/visions/stratplan/index.html>). The activities proposed may be in informal or formal education, or in professional development, but not necessarily in all three components. See Appendix D for examples of educational activities, guidelines for preparation, as well as evaluation criteria.

#### V. Budget requirements

The NIP awards are typically three years in duration; the award amount for each is judged according to the scope of the proposed work and the overall competition. Salary for up to three months of PI time is acceptable. Funds may be used for graduate student and/or postdoctoral fellows, for equipment and supply purchase, computing, travel, etc. in a manner consistent with NASA rules on grants and contracts (see Appendix E). Salary costs for other senior personnel or consultants, and subcontracts are not allowed except in support of the proposed educational activities accompanied by appropriate justification. Civil service salary costs are not reimbursable.

NASA strongly encourages the submitting institution to contribute to the cost of the proposed project. Of special interest is cost-sharing in which the employing institution would provide release time to enable the applicant to more fully concentrate on the activities related to the proposal. Institutional support of equipment purchase and co-funding of student and/or postdoctoral support would also be recognized as valuable cost sharing. Hardware purchased through start-up funds for a recently hired investigator or salary support provided through other federally sponsored research may not count as cost sharing for the purpose of an NIP proposal.

#### VI. Proposal review and evaluation

Proposals will be evaluated by a combined mail and panel review. Depending on the response to this solicitation, the panel review may be accomplished by a single panel or by two or more discipline-oriented panels as appropriate.

The general evaluation factors in Appendix A apply to the NIP proposals with the following clarifications:

- The elements in Paragraph (i) of Appendix A apply to the Research Plan. Long-term commitment to the applicant's career development by the employing institution will contribute positively to the evaluation, and will be considered as part of the relevance to NASA's objectives.
- Appendix D contains an expansion of the evaluation elements applicable to the Education Plan.
- The evaluation of the two Plans will be combined for the final selection and the Research Plan will carry approximately double the weight of the Education Plan.

## VII. Proposal submission and selection schedule

Submit proposals to:

NRA 2001-OES-04  
NASA Peer Review Services, Code Y  
500 E Street, SW, Suite 200  
Washington, DC 20024-2760  
TEL: 202/479-9030  
FAX: 202/479-0511

Submission deadline and timing: by 5 p.m., January 15, 2002.

Copies required: 20

Selecting officials: Director of Research Division and Director of Applications Division  
Office of Earth Science

Inquiries: Dr. Ming-Ying Wei  
Code YO  
NASA Headquarters  
300 E Street, SW  
Washington, DC 20546-0001  
TEL: 202/358-0771  
FAX: 202/358-2770  
Email: ming-ying.wei@hq.nasa.gov

Announcement of selections: June 2002

Your interest and cooperation in participating in this opportunity are appreciated.

Ghassem R. Asrar  
Associate Administrator  
Office of Earth Science

Enclosures:

- Appendix A "Instructions for Responding to NASA Research Announcements"
- Appendix B "Proposal Cover Sheet and Required Certifications"
- Appendix C "Required Proposal Cover Pages"
- Appendix D "Examples, Preparation Guidelines, and Evaluation Criteria for the Education Plan"
- Appendix E "Budget Summary"

Appendix A  
**INSTRUCTIONS FOR RESPONDING TO NASA RESEARCH ANNOUNCEMENTS**

**NASA Federal Acquisition Regulation (FAR), Supplement (NFS)  
Part 1852.235-72, Effective JANUARY 2000**

**(a) General.**

(1) Proposals received in response to a NASA Research Announcement (NRA) will be used only for evaluation purposes. NASA does not allow a proposal, the contents of which are not available without restriction from another source, or any unique ideas submitted in response to an NRA to be used as the basis of a solicitation or in negotiation with other organizations, nor is a preaward synopsis published for individual proposals.

(2) A solicited proposal that results in a NASA award becomes part of the record of that transaction and may be available to the public on specific request; however, information or material that NASA and the awardee mutually agree to be of a privileged nature will be held in confidence to the extent permitted by law, including the Freedom of Information Act.

(3) NRAs contain programmatic information and certain requirements which apply only to proposals prepared in response to that particular announcement. These instructions contain the general proposal preparation information which applies to responses to all NRAs.

(4) A contract, grant, cooperative agreement, or other agreement may be used to accomplish an effort funded in response to an NRA. NASA will determine the appropriate instrument. Contracts resulting from NRAs are subject to the Federal Acquisition Regulation and the NASA FAR Supplement. Any resultant grants or cooperative agreements will be awarded and administered in accordance with the NASA Grant and Cooperative Agreement Handbook (NPG 5800.1).

(5) NASA does not have mandatory forms or formats for responses to NRAs; however, it is requested that proposals conform to the guidelines in these instructions. NASA may accept proposals without discussion; hence, proposals should initially be as complete as possible and be submitted on the proposers' most favorable terms.

(6) To be considered for award, a submission must, at a minimum, present a specific project within the areas delineated by the NRA; contain sufficient technical and cost information to permit a meaningful evaluation; be signed by an official authorized to legally bind the submitting organization; not merely offer to perform standard services or to just provide computer facilities or services; and not significantly duplicate a more specific current or pending NASA solicitation.

**(b) NRA-Specific Items.** Several proposal submission items appear in the NRA itself: the unique NRA identifier; when to submit proposals; where to send proposals; number of copies required; and sources for more information. Items included in these instructions may be supplemented by the NRA.

**(c)** The following information is needed to permit consideration in an objective manner. NRAs will generally specify topics for which additional information or greater detail is desirable. Each proposal copy shall contain all submitted material, including a copy of the transmittal letter if it contains substantive information.

**(1) Transmittal Letter or Prefatory Material.**

(i) The legal name and address of the organization and specific division or campus identification if part of a larger organization;

- (ii) A brief, scientifically valid project title intelligible to a scientifically literate reader and suitable for use in the public press;
- (iii) Type of organization: e.g., profit, nonprofit, educational, small business, minority, women-owned, etc.;
- (iv) Name and telephone number of the principal investigator and business personnel who may be contacted during evaluation or negotiation;
- (v) Identification of other organizations that are currently evaluating a proposal for the same efforts;
- (vi) Identification of the NRA, by number and title, to which the proposal is responding;
- (vii) Dollar amount requested, desired starting date, and duration of project;
- (viii) Date of submission; and
- (ix) Signature of a responsible official or authorized representative of the organization, or any other person authorized to legally bind the organization (unless the signature appears on the proposal itself).

(2) **Restriction on Use and Disclosure of Proposal Information.** Information contained in proposals is used for evaluation purposes only. Offerors or quoters should, in order to maximize protection of trade secrets or other information that is confidential or privileged, place the following notice on the title page of the proposal and specify the information subject to the notice by inserting an appropriate identification in the notice. In any event, information contained in proposals will be protected to the extent permitted by law, but NASA assumes no liability for use and disclosure of information not made subject to the notice.

#### Notice

#### **Restriction on Use and Disclosure of Proposal Information**

The information (data) contained in *[insert page numbers or other identification]* of this proposal constitutes a trade secret and/or information that is commercial or financial and confidential or privileged. It is furnished to the Government in confidence with the understanding that it will not, without permission of the offeror, be used or disclosed other than for evaluation purposes; provided, however, that in the event a contract (or other agreement) is awarded on the basis of this proposal the Government shall have the right to use and disclose this information (data) to the extent provided in the contract (or other agreement). This restriction does not limit the Government's right to use or disclose this information (data) if obtained from another source without restriction.

(3) **Abstract.** Include a concise (200-300 word if not otherwise specified in the NRA) abstract describing the objective and the method of approach.

(4) **Project Description.**

(i) The main body of the proposal shall be a detailed statement of the work to be undertaken and should include objectives and expected significance; relation to the present state of knowledge; and relation to previous work done on the project and to related work in progress elsewhere. The statement should outline the plan of work, including the broad design of experiments to be undertaken and a description of experimental methods and procedures. The project description should address the evaluation factors in these instructions and any specific factors in the NRA. Any substantial collaboration with individuals not referred to in the budget or use of consultants should be described. Subcontracting significant portions of a research project is discouraged.

(ii) When it is expected that the effort will require more than one year, the proposal should cover the complete project to the extent that it can be reasonably anticipated. Principal emphasis

should be on the first year of work, and the description should distinguish clearly between the first year's work and work planned for subsequent years.

(5) **Management Approach.** For large or complex efforts involving interactions among numerous individuals or other organizations, plans for distribution of responsibilities and arrangements for ensuring a coordinated effort should be described.

(6) **Personnel.** The principal investigator is responsible for supervision of the work and participates in the conduct of the research regardless of whether or not compensated under the award. A short biographical sketch of the principal investigator, a list of principal publications and any exceptional qualifications should be included. Omit social security number and other personal items which do not merit consideration in evaluation of the proposal. Give similar biographical information on other senior professional personnel who will be directly associated with the project. Give the names and titles of any other scientists and technical personnel associated substantially with the project in an advisory capacity. Universities should list the approximate number of students or other assistants, together with information as to their level of academic attainment. Any special industry-university cooperative arrangements should be described.

(7) **Facilities and Equipment.**

(i) Describe available facilities and major items of equipment especially adapted or suited to the proposed project, and any additional major equipment that will be required. Identify any Government-owned facilities, industrial plant equipment, or special tooling that are proposed for use. Include evidence of its availability and the cognizant Government points of contact.

(ii) Before requesting a major item of capital equipment, the proposer should determine if sharing or loan of equipment already within the organization is a feasible alternative. Where such arrangements cannot be made, the proposal should so state. The need for items that typically can be used for research and non-research purposes should be explained.

(8) **Proposed Costs (U.S. Proposals Only).**

(i) Proposals should contain cost and technical parts in one volume: do not use separate "confidential" salary pages. As applicable, include separate cost estimates for salaries and wages; fringe benefits; equipment; expendable materials and supplies; services; domestic and foreign travel; ADP expenses; publication or page charges; consultants; subcontracts; other miscellaneous identifiable direct costs; and indirect costs. List salaries and wages in appropriate organizational categories (e.g., principal investigator, other scientific and engineering professionals, graduate students, research assistants, and technicians and other non-professional personnel). Estimate all staffing data in terms of staff-months or fractions of full-time.

(ii) Explanatory notes should accompany the cost proposal to provide identification and estimated cost of major capital equipment items to be acquired; purpose and estimated number and lengths of trips planned; basis for indirect cost computation (including date of most recent negotiation and cognizant agency); and clarification of other items in the cost proposal that are not self-evident. List estimated expenses as yearly requirements by major work phases.

(iii) Allowable costs are governed by FAR Part 31 and the NASA FAR Supplement Part 1831 (and OMB Circulars A-21 for educational institutions and A-122 for nonprofit organizations).

(iv) Use of NASA funds – NASA funding may not be used for foreign research efforts at any level, whether as a collaborator or a subcontract. The direct purchase of supplies and/or services, which do not constitute research, from non-U.S. sources by U.S. award recipients is permitted. Additionally, in accordance with the National Space Transportation Policy, use of a non-U.S. manufactured launch vehicle is permitted only on a no-exchange-of-funds basis.

(9) **Security.** Proposals should not contain security classified material. If the research requires access to or may generate security classified information, the submitter will be required to comply with Government security regulations.

(10) **Current Support.** For other current projects being conducted by the principal investigator, provide title of project, sponsoring agency, and ending date.

(11) **Special Matters.**

(i) Include any required statements of environmental impact of the research, human subject or animal care provisions, conflict of interest, or on such other topics as may be required by the nature of the effort and current statutes, executive orders, or other current Government-wide guidelines.

(ii) Proposers should include a brief description of the organization, its facilities, and previous work experience in the field of the proposal. Identify the cognizant Government audit agency, inspection agency, and administrative contracting officer, when applicable.

**(d) Renewal Proposals.**

(1) Renewal proposals for existing awards will be considered in the same manner as proposals for new endeavors. A renewal proposal should not repeat all of the information that was in the original proposal. The renewal proposal should refer to its predecessor, update the parts that are no longer current, and indicate what elements of the research are expected to be covered during the period for which support is desired. A description of any significant findings since the most recent progress report should be included. The renewal proposal should treat, in reasonable detail, the plans for the next period, contain a cost estimate, and otherwise adhere to these instructions.

(2) NASA may renew an effort either through amendment of an existing contract or by a new award.

**(e) Length.** Unless otherwise specified in the NRA, effort should be made to keep proposals as brief as possible, concentrating on substantive material. Few proposals need exceed 15-20 pages. Necessary detailed information, such as reprints, should be included as attachments. A complete set of attachments is necessary for each copy of the proposal. As proposals are not returned, avoid use of "one-of-a-kind" attachments.

**(f) Joint Proposals.**

(1) Where multiple organizations are involved, the proposal may be submitted by only one of them. It should clearly describe the role to be played by the other organizations and indicate the legal and managerial arrangements contemplated. In other instances, simultaneous submission of related proposals from each organization might be appropriate, in which case parallel awards would be made.

(2) Where a project of a cooperative nature with NASA is contemplated, describe the contributions expected from any participating NASA investigator and agency facilities or equipment which may be required. The proposal must be confined only to that which the proposing organization can commit itself. "Joint" proposals which specify the internal arrangements NASA will actually make are not acceptable as a means of establishing an agency commitment.

**(g) Late Proposals.** Proposals or proposal modifications received after the latest date specified for receipt may be considered if a significant reduction in cost to the Government is probable or if there are significant technical advantages, as compared with proposals previously received.

**(h) Withdrawal.** Proposals may be withdrawn by the proposer at any time before award. Offerors are requested to notify NASA if the proposal is funded by another organization or of other changed circumstances which dictate termination of evaluation.

**(i) Evaluation Factors.**

(1) Unless otherwise specified in the NRA, the principal elements (of approximately equal weight) considered in evaluating a proposal are its relevance to NASA's objectives, intrinsic merit, and cost.

(2) Evaluation of a proposal's relevance to NASA's objectives includes the consideration of the potential contribution of the effort to NASA's mission.

(3) Evaluation of its intrinsic merit includes the consideration of the following factors of equal importance:

(i) Overall scientific or technical merit of the proposal or unique and innovative methods, approaches, or concepts demonstrated by the proposal.

(ii) Offeror's capabilities, related experience, facilities, techniques, or unique combinations of these which are integral factors for achieving the proposal objectives.

(iii) The qualifications, capabilities, and experience of the proposed principal investigator, team leader, or key personnel critical in achieving the proposal objectives.

(iv) Overall standing among similar proposals and/or evaluation against the state-of-the-art.

(4) Evaluation of the cost of a proposed effort may include the realism and reasonableness of the proposed cost and available funds.

**(j) Evaluation Techniques.** Selection decisions will be made following peer and/or scientific review of the proposals. Several evaluation techniques are regularly used within NASA. In all cases proposals are subject to scientific review by discipline specialists in the area of the proposal. Some proposals are reviewed entirely in-house, others are evaluated by a combination of in-house and selected external reviewers, while yet others are subject to the full external peer review technique (with due regard for conflict-of-interest and protection of proposal information), such as by mail or through assembled panels. The final decisions are made by a NASA selecting official. A proposal which is scientifically and programmatically meritorious, but not selected for award during its initial review, may be included in subsequent reviews unless the proposer requests otherwise.

**(k) Selection for Award.**

(1) When a proposal is not selected for award, the proposer will be notified. NASA will explain generally why the proposal was not selected. Proposers desiring additional information may contact the selecting official who will arrange a debriefing.

(2) When a proposal is selected for award, negotiation and award will be handled by the procurement office in the funding installation. The proposal is used as the basis for negotiation. The contracting officer may request certain business data and may forward a model award instrument and other information pertinent to negotiation.

**(l) Additional Guidelines Applicable to U.S. Proposals Including Foreign Participation.**

(1) Proposals from U.S. entities that include foreign participation must be endorsed by the respective government agency or funding/sponsoring institution in the country from which the foreign entity is proposing. Such endorsement should indicate that the proposal merits careful consideration by NASA, and if the proposal is selected, sufficient funds will be made available to undertake the activity as proposed.

(2) Should a U.S. proposal with foreign participation be selected, NASA's Office of External Relations will arrange with the foreign sponsor for the proposed participation on a no-exchange-of-funds basis, in which NASA and the foreign sponsor will each bear the cost of discharging their respective responsibilities.

(3) Depending on the nature and extent of the proposed cooperation, these arrangements may entail:

- (i) An exchange of letters between NASA and the foreign sponsor; or
- (ii) A formal Agency-to-Agency Memorandum of Understanding (MOU).

**(m) Export Control Guidelines Applicable to U.S. Proposals Including Foreign Participation.**

Proposals including foreign participation must include a section discussing compliance with U.S. export laws and regulations, e.g., 22 CFR Parts 120-130 and 15 CFR Parts 730-774, as applicable to the circumstances surrounding the particular foreign participation. The discussion must describe in detail the proposed foreign participation and is to include, but not be limited to, whether or not the foreign participation may require the prospective proposer to obtain the prior approval of the Department of State or the Department of Commerce via a technical assistance agreement or an export license, or whether a license exemption/exception may apply. If prior approvals via licenses are necessary, discuss whether the license has been applied for or if not, the projected timing of the application and any implications for the schedule. Information regarding U.S. export regulations is available at <http://www.pmdtc.org> and <http://www.bxa.doc.gov>. Proposers are advised that under U.S. law and regulations, spacecraft and their specifically designed, modified, or configured systems, components, and parts are generally considered "Defense Articles" on the United States Munitions List and subject to the provisions of the International Traffic in Arms Regulations (ITAR), 22 CFR Parts 120-130.

**(n) Cancellation of NRA.** NASA reserves the right to make no awards under this NRA and to cancel this NRA. NASA assumes no liability for canceling the NRA or for anyone's failure to receive actual notice of cancellation.

**(End of provision)**

**Appendix B  
Proposal Cover Sheet**

**NASA Research Announcement 2001-OES-04**

Proposal No. \_\_\_\_\_ (Leave Blank for NASA Use)

Title: \_\_\_\_\_

Principal Investigator: \_\_\_\_\_ Signature: \_\_\_\_\_

Department: \_\_\_\_\_

Institution: \_\_\_\_\_

Street/PO Box: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Country: \_\_\_\_\_ Congressional District: \_\_\_\_\_  
(used for database sorting purposes only)

E-mail: \_\_\_\_\_

Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_

**Budget:**

1st Year: \_\_\_\_\_ 2nd Year: \_\_\_\_\_ 3rd Year: \_\_\_\_\_ Total: \_\_\_\_\_

Certification of Compliance with Applicable Executive Orders and U.S. Code

By submitting the proposal identified in this *Cover Sheet/Proposal Summary* in response to this Research Announcement, the Authorizing Official of the proposing institution (or the individual proposer if there is no proposing institution) as identified below:

- certifies that the statements made in this proposal are true and complete to the best of his/her knowledge;
- agrees to accept the obligations to comply with NASA award terms and conditions if an award is made as a result of this proposal; and
- confirms compliance with all provisions, rules, and stipulations set forth in the two Certifications contained in this NRA [namely, (i) *Assurance of Compliance with the NASA Regulations Pursuant to Nondiscrimination in Federally Assisted Programs*, and (ii) *Certifications, Disclosures, And Assurances Regarding Lobbying and Debarment & Suspension*].

Willful provision of false information in this proposal and/or its supporting documents, or in reports required under an ensuing award, is a criminal offense (U.S. Code, Title 18, Section 1001).

Title of Authorizing Institutional Official: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name of Proposing Institution: \_\_\_\_\_

Telephone: \_\_\_\_\_ E-mail: \_\_\_\_\_ Facsimile: \_\_\_\_\_

## **Assurance of Compliance with the NASA Regulations Pursuant to Nondiscrimination in Federally Assisted Programs**

The (*Institution, corporation, firm, or other organization on whose behalf this assurance is signed, hereinafter called "Applicant "*) hereby agrees that it will comply with Title VI of the Civil Rights Act of 1964 (P.L. 88-352), Title IX of the Education Amendments of 1972 (20 U.S.C. 1680 et seq.), Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), and the Age Discrimination Act of 1975 (42 U.S.C. 16101 et seq.), and all requirements imposed by or pursuant to the Regulation of the National Aeronautics and Space Administration (14 CFR Part 1250) (hereinafter called "NASA") issued pursuant to these laws, to the end that in accordance with these laws and regulations, no person in the United States shall, on the basis of race, color, national origin, sex, handicapped condition, or age be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity for which the Applicant receives federal financial assistance from NASA; and hereby give assurance that it will immediately take any measure necessary to effectuate this agreement.

If any real property or structure thereon is provided or improved with the aid of federal financial assistance extended to the Applicant by NASA, this assurance shall obligate the Applicant, or in the case of any transfer of such property, any transferee, for the period during which the real property or structure is used for a purpose for which the federal financial assistance is extended or for another purpose involving the provision of similar services or benefits. If any personal property is so provided, this assurance shall obligate the Applicant for the period during which it retains ownership or possession of the property. In all other cases, this assurance shall obligate the Applicant for the period during which the federal financial assistance is extended to it by NASA.

This assurance is given in consideration of and for the purpose of obtaining any and all federal grants, loans, contracts, property, discounts, or other federal financial assistance extended after the date hereof to the Applicant by NASA, including installment payments after such date on account of applications for federal financial assistance which were approved before such date. The Applicant recognizes and agrees that such federal financial assistance will be extended in reliance on the representations and agreements made in this assurance, and that the United States shall have the right to seek judicial enforcement of this assurance. This assurance is binding on the Applicant, its successors, transferees, and assignees, and the person or persons whose signatures appear on the Proposal Cover Sheet above are authorized to sign on behalf of the Applicant.

## **CERTIFICATIONS, DISCLOSURES, AND ASSURANCES REGARDING LOBBYING AND DEBARMENT & SUSPENSION**

### **1. LOBBYING**

As required by Section 1352, Title 31 of the U.S. Code, and implemented at 14 CFR Part 1271, as defined at 14 CFR Subparts 1271.110 and 1260.117, with each submission that initiates agency consideration of such applicant for award of a Federal contract, grant, or cooperative agreement exceeding \$ 100,000, the applicant must **certify** that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit a Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

### **2. GOVERNMENTWIDE DEBARMENT AND SUSPENSION**

As required by Executive Order 12549, and implemented at 14 CFR 1260.510, for prospective participants in primary covered transactions, as defined at 14 CFR Subparts 1265.510 and 1260.117—

(1) The prospective primary participant **certifies** to the best of its knowledge and belief, that it and its principals:

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded by any Federal department or agency;

(b) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(c) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and

(d) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

(2) Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

## Appendix C

### Required Proposal Cover Pages

Two proposal cover pages are required as part of the proposal. The first is a **hard copy** (see Appendix B) which must be signed by the Principal Investigator and an official by title of the investigator's organization who is authorized to commit the organization. This authorizing signature also certifies that the proposing institution has read and is in compliance with the required certifications printed in full, therefore, these certifications do not need to be submitted separately. This page will not be counted against the page limit of the proposal.

The second proposal cover page must be submitted **electronically** to the SYS-EYFUS Web site located at <http://proposals.hq.nasa.gov/>. If the proposer has obtained a User ID and a password in the process of submitting a proposal for a previous research opportunity announcement, the same user UserID and password can be used to complete the electronic proposal cover page in response to this research opportunity announcement. Be sure to click on "Edit Personal Information" if any of your correspondence information in the SYS-EYFUS is not current.

If you do not have a SYS-EYFUS UserID or password, you may obtain one electronically by going to <http://proposals.hq.nasa.gov> and performing the following steps:

1. Click the hyperlink for **new user** which will take you to the Personal Information Search Page.
2. Enter your first and last name. SYS-EYFUS will **search** for your record information in the SYS-EYFUS database.
3. Confirm your personal information by **choosing** the record displayed.
4. Select **continue**, and a User ID and password will be e-mailed to you.

Once you receive your User ID and Password, **login** to the SYS-EYFUS Web site and follow the instructions for **New Proposal Cover Page**.

Proposers without access to the Web or who experience difficulty in using this site may contact the Help Desk at [proposals@hq.nasa.gov](mailto:proposals@hq.nasa.gov) (or call 202.479.9376) for assistance. After you have submitted your notice of intent or proposal cover page electronically, if you are unsure if it has been successfully submitted, do not re-submit. Please call the Help Desk. They will be able to promptly tell you if your submission has been received. Please note that submission of the electronic cover page does **not** satisfy the deadline for proposal submission.

## Appendix D

### Examples, Preparation Guidelines, and Evaluation Criteria for the Education Plan

The educational goal of the Earth Science Enterprise is to stimulate public interest in and understanding of Earth system science and encourage young scholars to consider careers in science and technology. The Earth Science Enterprise (ESE) Education Program comprises three components:

- Informal Education – Increase public awareness and understanding of how the Earth functions as a system and NASA's role in enabling development of that knowledge.
- Formal Education – Enable the use of Earth science information and results in teaching and learning at all levels of education.
- Professional Development – Build capacity for productive use of Earth science results, technology, and information in resolving everyday practical problems.

The ESE Education Program has its focus on building the learning continuum from broad-based awareness to enhanced understanding and knowledge that leads to the conscious usage of that knowledge in everyday activities. The educational activities supported by the Enterprise shall:

- Utilize external partnerships that bring together key expertise and capabilities
- Focus on the interests and needs of the targeted audiences
- Focus on scientific/applications, technological or educational themes related to the research objective(s)
- Build in an evaluation - front-end, formative, and summative - plan with outcome measures to ensure greatest impact
- Articulate a deployment strategy that is either national in scope or can be scaled to national level at little to no additional NASA investment
- Promote the participation of the under-served and underrepresented segments of the population as represented by demographic, social-cultural, and economic variables, and mental and physical abilities
- Leverage and network existing educational activities for economy of cost and increased impact

For informal education, learning venues capable of large impact are encouraged; examples include media programming (radio, television, film, video), print (newspapers, magazines, books), on-line learning providers, museums, science & technology centers, zoos, aquarium, parks with interpretive staff, community or civic groups, etc. Particular emphasis is placed on engaging new audiences, providing programming support, building synergy between formal and informal educational activities, as well as professional enhancement of informal learning providers and the development of effective science/applications and technology spokespersons among the scientists and engineers engaged with the Enterprise.

For formal education, the proposed activities can be in any of the program categories described in the NASA Implementation Plan for Education (<http://education.nasa.gov/implan/exec.html>). The ESE places particular emphasis on Teacher/Faculty (K-16) Preparation and Enhancement, Curriculum Support and Dissemination, Educational Technology, Support for Underrepresented Groups, and for Systemic Improvement. The content should be in the context of Earth System Science at appropriate educational levels, be clearly linked to national science and technology education standards (including teacher certification) and related standards in geography, environmental sciences, etc., as well as State and local standards, as appropriate. Student mentoring

and advising may be proposed, but they should be beyond the normal duties that the proposer has with the submitting institution

If the proposed Research Plan has a significant component addressing applied use of the scientific or technological aspects of the research results and information, the Education Plan may include professional development activities that provide training and support to the targeted users in developing practical tools for solving real world problems. The proposed activities may include technical assistance/services and/or development of ancillary products such as training materials that utilize remote sensing, standards and procedures accompanying the fusion of remote sensing into operational use, dissemination, and systemic improvement of professional networks.

Elements for a good Education Plan include:

1. Rationale - Define the educational need the plan will meet. Identify the ESE science, applications, technology, or educational thematic element(s) being addressed. What are the interesting science questions that lie behind the project? Why are they interesting? What can be said about the connection of this work to societal needs?
2. Goals - Define the project goals and objectives. What are three to five basic "take-home messages"? What are the anticipated impact and outcomes? How do they contribute to the educational goal and objectives of the Enterprise described above? How will successful activities be sustained beyond the project duration and an on-going NASA investment?
3. Audience - Clearly define the target audience. Do primary and secondary audiences exist? What is known about the audience's learning or operating levels and styles? What does the audience know about the topic? What misconceptions might they have about the topic that might influence the learning or communication outcomes? Estimate the size of the target audience.
4. Activity - Thoroughly describe the proposed project. Describe how the project will be accomplished and the goals achieved. Include a timeline of the developmental period.
5. Dissemination - Describe how the activity or project will be broadly disseminated. Dissemination involves the marketing or announcing the activity, as well as developing the mechanisms to ensure that the intended audience will use the activity.
6. Evaluation - Describe how the project will be evaluated. Formative: What procedures will be used during the developmental phase of the project to assure a good product when it is completed? Who will do this work? Summative: How will it be determined that the educational goals have been achieved? Describe the means by which the impact of the project on the target audience will be examined? Who will do the evaluation?
7. Management - Provide staffing details for all elements of the education plan, if additional personnel is needed in the development and production of the activity.
8. Budget - Provide appropriate details on cost. What potential support from non-NASA sources exists? If so, what might these be and to what extent?

The general concept of evaluation factors described in Appendix A are applicable here to the evaluation of the Education Plan; the principle elements are the proposal's relevance to NASA's objectives, its intrinsic merit, and its cost:

- Evaluation of the Education Plan's relevance to NASA's objectives includes consideration of:
  - the potential contribution of the effort to the *NASA Educational Excellence* (<http://education.nasa.gov/>)

- the degree to which the effort contributes to the Earth Science Enterprise 10 year educational goals (see page 26 of Earth Science Enterprise Strategic Plan, <http://www.earth.nasa.gov/visions/stratplan/index.html>)
- Evaluation of intrinsic merit includes consideration of the following factors listed in order of decreasing importance:
  - Overall educational or technical merit of the Education Plan and/or particularly effective or innovative methods, approaches, concepts, or advanced technologies demonstrated by the proposal
    - merit of the identified educational need
    - quality of project design; evidence of a genuine, good idea and thoroughness in implementation
    - robustness of the evaluation plan
    - alignment with national agenda in science, mathematics, engineering, technology and geography education
    - engagement of underrepresented groups in science and technology
    - scalability, sustainability beyond NASA investment, partnerships, and "multiplier" effect
    - when appropriate, synergy among formal, informal, and professional educational activities
  - Offeror's capabilities, related experience, facilities, techniques, or unique combinations of these which are integral factors for achieving the proposed objectives
  - The qualifications, capabilities, and experience of the proposed educational personnel critical in achieving the proposed objectives
  - Overall standing among similar proposals and/or evaluation against the state-of-the-art or acknowledged "best practices"
- Evaluation of cost of the proposed effort shall include consideration of the realism and reasonableness of the proposed cost and the comparison in relation to impact.

**APPENDIX E**

**BUDGET SUMMARY**

For period from \_\_\_\_\_ to \_\_\_\_\_

- Provide a complete Budget Summary for year one and separate estimated for each subsequent year.
- Enter the proposed estimated costs in Column A (Columns B & C for NASA use only).
- Provide as attachments detailed computations of all estimates in each cost category with narratives as required to fully explain each proposed cost. See *Instructions For Budget Summary* on following page for details.

	<b>A</b>	<b><u>NASA USE ONLY</u></b>	
		<b>B</b>	<b>C</b>
1. <u>Direct Labor</u> (salaries, wages, and fringe benefits)	_____	_____	_____
2. <u>Other Direct Costs:</u>			
a. Subcontracts	_____	_____	_____
b. Consultants	_____	_____	_____
c. Equipment	_____	_____	_____
d. Supplies	_____	_____	_____
e. Travel	_____	_____	_____
f. Other	_____	_____	_____
3. <u>Indirect Costs*</u>	_____	_____	_____
4. <u>Other Applicable Costs</u>	_____	_____	_____
5. <u>SUBTOTAL--Estimated Costs</u>	_____	_____	_____
6. <u>Less Proposed Cost Sharing</u> (if any)	_____	_____	_____
7. <u>Carryover Funds</u> (if any)			
a. Anticipated amount : _____			
b. Amount used to reduce budget	_____	_____	_____
8. <u>Total Estimated Costs</u>	_____	_____	XXXXXXXX
9. APPROVED BUDGET	XXXXXXX	XXXXXXXX	_____

**\*Facilities and Administrative Costs.**

## INSTRUCTIONS FOR BUDGET SUMMARY

1. Direct Labor (salaries, wages, and fringe benefits): Attachments should list the number and titles of personnel, amounts of time to be devoted to the grant, and rates of pay.
2. Other Direct Costs:
  - a. Subcontracts: Attachments should describe the work to be subcontracted, estimated amount, recipient (if known), and the reason for subcontracting.
  - b. Consultants: Identify consultants to be used, why they are necessary, the time they will spend on the project, and rates of pay (not to exceed the equivalent of the daily rate for Level IV of the Executive Schedule, exclusive of expenses and indirect costs).
  - c. Equipment: List separately. Explain the need for items costing more than \$5,000. Describe basis for estimated cost. General purpose equipment is not allowable as a direct cost unless specifically approved by the NASA Grant Officer. Any equipment purchase requested to be made as a direct charge under this award must include the equipment description, how it will be used in the conduct of the basic research proposed and why it cannot be purchased with indirect funds.
  - d. Supplies: Provide general categories of needed supplies, the method of acquisition, and the estimated cost.
  - e. Travel: Describe the purpose of the proposed travel in relation to the grant and provide the basis of estimate, including information on destination and number of travelers where known.
  - f. Other: Enter the total of direct costs not covered by 2a through 2e. Attach an itemized list explaining the need for each item and the basis for the estimate.
3. Indirect Costs\*: Identify F&A cost rate(s) and base(s) as approved by the cognizant Federal agency, including the effective period of the rate. Provide the name, address, and telephone number of the Federal agency official having cognizance. If unapproved rates are used, explain why, and include the computational basis for the indirect expense pool and corresponding allocation base for each rate.
4. Other Applicable Costs: Enter total explaining the need for each item.
5. Subtotal-Estimated Costs: Enter the sum of items 1 through 4.
6. Less Proposed Cost Sharing (if any): Enter any amount proposed. If cost sharing is based on specific cost items, identify each item and amount in an attachment.
7. Carryover Funds (if any): Enter the dollar amount of any funds expected to be available for carryover from the prior budget period Identify how the funds will be used if they are not used to reduce the budget. NASA officials will decide whether to use all or part of the anticipated carryover to reduce the budget (not applicable to 2nd-year and subsequent-year budgets submitted for award of a multiple year award).
8. Total Estimated Costs: Enter the total after subtracting items 6 and 7b from item 5.

\* Facilities and Administrative (F&A) Costs