

A.28 RAPID RESPONSE AND NOVEL RESEARCH IN EARTH SCIENCE

NOTICE: Before any is begun on a proposal to this program, potential proposers should read the first section entitled Important Caveat to Potential Proposers.

1. Important Caveat to Potential Proposers

Before any effort is expended in preparing a proposal, potential proposers should:

- Read this solicitation in its entirety. It has a number of specific requirements. Failure to meet them will result in a proposal being returned without review.
- Understand that NASA reserves the right to return or decline proposals to this solicitation based on internal review with limited feedback to the proposers.
- The Earth Science Division (ESD) has not reserved any funds dedicated to this solicitation, but anticipates that its individual programs will consider support of a very small number of meritorious proposals each year.
- Prior to proposal submission, contact the most relevant NASA program officer (<http://science.nasa.gov/researchers/sara/program-officers-list/#earth>) and the current Rapid Response and Novel Research in Earth Science (RRNES) program officer (listed below). Proposers that forego this step run an increased risk of having their proposals declined or returned without review.
- Proposals should normally be for support of one year or less, under the assumption that further work will be proposed to another program.
- This solicitation is not intended to support mitigation of active disasters or immediate hazards. Contact the Disasters Program Manager in NASA's Applied Sciences Division and/or the other most relevant NASA program manager directly to discuss expedited options (<http://science.nasa.gov/researchers/sara/program-officers-list/#earth>).
- While the ESD does its best to review proposals quickly, because of the funding nature of this solicitation sometimes a response may take longer than anticipated.
- Note that support for "limited duration opportunity for an unanticipated research collaboration," which had been included in earlier versions of the RRNES solicitation, has been eliminated. Proposers interested in support for such activities should contact their NASA program manager directly to see if support can be arranged by another method.

2. Introduction

In order to address its strategic goals and objectives (see Section I of the *ROSES Summary of Solicitation*), the ESD of the Science Mission Directorate (SMD) acknowledges that there are important and highly relevant research topics and opportunities that cannot be anticipated in the annual ROSES solicitation. In particular, it is usually not possible to solicit the following two types of activities:

- Immediate research activity to take advantage of a target of opportunity due to an unforeseen event in the Earth system,
- Exceptionally novel and innovative ideas to advance Earth remote sensing that do not fit within ESD's current slate of solicitations and/or programs.

ESD has not reserved any funds dedicated to this solicitation, but anticipates that its individual programs will consider support of a very small number of meritorious proposals each year.

3. Scope of Program

This program element solicits proposals that advance the goals and objectives of NASA's Earth Science Division by conducting unique research to investigate 1) unforeseen or unpredictable Earth system events and opportunities that require a rapid response, and 2) novel ideas of potential high merit and relevance for ESD science to advance Earth remote sensing that have not otherwise been solicited by NASA in the past three years.

3.1 Rapid Response to Earth System Events

This subelement is focused on research proposals having great urgency for action involving quick-response research on natural or anthropogenic extreme events and/or similar unanticipated or unpredictable events that fall outside the norm. Examples are major fires, volcanic eruptions, 100-year floods, episodes of severe and large-scale environmental pollution, harmful algal blooms, coral bleaching events, and other unexpected large-scale events causing rapid environmental change.

The research activities proposed must require rapid, near-term data acquisition, field work, and/or other such research activities. Given the significance of these events, rapid sharing of data and results are expected. Proposers are strongly encouraged to contact the NASA program officer(s) whose expertise best matches the proposal topic before submitting a proposal, in order to determine whether the proposed work is appropriate for this ROSES program element and if funding is likely to be available for a meritorious proposal.

The proposal must include clear statements as to 1) why the proposed research is of an urgent nature, 2) why the proposed research is of high significance and likely to have a long-lasting impact, 3) why this ROSES program element is the only feasible mechanism to request NASA support for the proposed work, and 4) a detailed plan on data dissemination and sharing.

Please note that this element is not intended to support mitigation of active disasters or immediate hazards. Please contact the Disasters Program Manager in NASA's Applied Sciences Division and or the other most relevant NASA program manager directly to discuss expedited options (<http://science.nasa.gov/researchers/sara/program-officers-list/#earth>).

3.2 Novel Ideas in Earth Remote Sensing

This subelement is intended to provide an open, systematic, competitive process for NASA's ESD to consider proposals for exceptionally novel scientific research that includes remote sensing of the Earth which cannot be considered relevant to any other NASA solicitation. ESD recognizes that such proposals offer the possibility for major scientific breakthroughs and new approaches to remote sensing and knowledge of the Earth system. ESD offers this subelement as a mechanism for researchers to develop

their ideas and justify near-term investment through an important new capability or scientific application that will advance ESD goals and objectives.

Proposals must focus on topics that offer fundamental scientific research to advance Earth remote sensing, including new ways of interpreting remote sensing data or improving knowledge of the Earth system and its processes. Proposals may include calibration and validation work, as appropriate.

Proposals that focus on instrument or technology development, data and information systems research, or educational activities are strongly discouraged.

If the topic is relevant to any other ESD ROSES program element(s), it should not be submitted here, but should be submitted to the relevant element. In addition, in order for a proposal to be considered responsive as novel Earth science, the topic and approach must not have been solicited or have been considered responsive under any NASA solicitations during the past three years (this includes ROSES, NASA Announcements of Opportunity, etc.). Any proposal that contains research that in the view of cognizant NASA managers violates one or both of these requirements will be considered as nonresponsive and declined without further review.

NASA anticipates that only a very small number of proposals will meet these criteria each year and that selection and funding of such proposals will be a rare, but a strategically important occurrence.

4. Relevance to SMD's Goals and Objectives

Proposals submitted in response to this solicitation must demonstrate the relevance of the proposed activity to ESD by showing how the Scientific/Technical area(s) to be covered will advance not only high-level ESD goals and objectives, but also specific (existing or anticipated) outcomes identified in ROSES program elements, ESD roadmaps, other ESD program documents, the *NASA Science Plan*, findings in decadal surveys, or the reports of NASA advisory bodies or groups relevant to NASA. Proposers must explicitly state from what source (e.g., ROSES program element, roadmap, or decadal survey) the claim of relevance derives. Proposers are referred to A.1 the *Earth Science Overview* in this solicitation for a description of the scope of NASA Earth Science activities and the research programs areas and topics of interest. To be relevant under this program element, proposals must take into consideration ESD's defined scope and its focus on the use of airborne and/or space-based measurements to provide information about the Earth system.

5. Programmatic Information and Additional Requirements

5.1 Proposal Structure, Content, and Budget Requests

Prior to any submission, proposers are encouraged in the strongest possible terms to contact the ESD program managers (<http://science.nasa.gov/researchers/sara/program-officers-list/#earth>) whose expertise are most germane to the proposal topic to determine the appropriateness of the work for consideration under this program element. This may include consideration of whether funding is potentially available.

5.1.1 Proposals for Rapid Response to Earth System Events

The Technical Plan for proposals submitted for rapid response is limited to a maximum of five pages and must include clear statements as to why the proposed research is of an urgent nature and why this solicitation is the only feasible mechanism to request NASA support for the proposed work, as well as the other requirements listed in the text of the subelement. The bulk of the Technical Plan should be devoted to describing the core scientific objectives and anticipated scientific return, the research work to be done, and the timetable for rapid actions. If NASA facilities will be required to conduct the research (e.g., NASA aircraft or airborne sensors), proposers should contact the relevant facility managers to develop feasibility and cost estimates in parallel with the preparation of their proposal. Feasibility and cost estimates should be submitted as part of the budget justification.

Questions regarding the NASA flight request system or processes should be addressed to Marilyn Vasques, Flight Request Manager (Marilyn.Vasques@nasa.gov or 650-604-6120).

To ensure timely processing of the submitted proposal, "Rapid Response" must be selected as the Primary Investigation Type on the proposal cover sheet. On the cover sheet, the relevant program manager/program under which the proposal should be considered should also be indicated.

NASA will initially conduct an internal review of each proposal that may result in a decision, and there may be limited feedback to the proposer. Some proposals may be declined simply for lack of available funding. However, proposals may also be subject to external peer review at the discretion of NASA. The larger the requested funding, the more comprehensive (e.g., the use of external mail review) the review is likely to be.

Budget requests should be commensurate with the nature of the rapid response work to be conducted and, if no other research projects are being leveraged, include sufficient funding for processing of the data and its public distribution, as well as minimal data analysis to achieve the core, near-term objectives of the rapid response. Full exploitation of a successfully acquired data set can be included in future competitive ROSES disciplinary program elements and should not be requested here.

Proposals should normally be for support of one year or less, under the assumption that further work will be proposed to one of the ongoing research programs or one of the other periodic ROSES elements (e.g., competed mission science teams, Interdisciplinary Science, etc.). Up to three years of funding may be requested, but proposals requesting more than one year of funding must provide specific and compelling justifications as to why the core, rapid response science objectives require a longer duration for completion.

5.1.2 Proposals for Novel Ideas in Earth Remote Sensing

The Technical Plan for Novel Ideas in Earth Remote Sensing proposals is limited to a maximum of 15 pages and must include clear statements as to why the proposed scientific research is novel and not responsive to any other NASA solicitations released in the past three years. The technical plan should emphasize the initial research activities needed to explore the feasibility of the new idea, prove the concept, and/or

provide a first demonstration of the potential utility and benefits to NASA Earth science, as well as the other requirements listed in the text of the subelement. Potential proposers are encouraged to pay close attention to the types of research that are discouraged for this area as noted in Section 3.2 ("instrument or technology development, data and information systems research, or educational activities").

It is anticipated that most such studies will be conducted in one year at modest cost (e.g., ~\$75-\$150K), and that continued funding would be sought from proposals submitted to open research programs or periodic ROSES elements (e.g., competed mission science teams, Interdisciplinary Science, etc.). However, up to three years may be requested, but the proposal must fully justify the need for that length of time. In addition, all proposals must describe plans for the publication/documentation/dissemination of their results at the earliest possible date.

NASA will initially conduct an internal review of each proposal that may result in a decision, and there may be limited feedback to the proposer. Some proposals may be declined simply for lack of available funding. In some cases, NASA will, at its discretion, conduct a full peer-review of the proposal, most likely involving individual evaluations submitted through NSPIRES. However, if sufficient proposals are received, NASA reserves the right to convene a peer review panel. NASA's standard evaluation criteria will be used in reviewing these proposals. The uniqueness of the research proposed and the degree of innovation will be weighed heavily under the intrinsic merit criterion, as well as under relevance.

5.2 Availability of Funding

No specific budget is identified for this program element; selected proposals will be funded by the ESD program managers in the disciplines most closely related to or benefitting from the proposed work. The number of proposals selected will be dependent on the availability of funds, as well as the number and quality of proposals submitted.

Potential proposers should contact both the NASA Point of Contact for this solicitation and the ESD Program Officers in the disciplines and programs most germane to the proposed investigations to discuss the proposed work and the availability of funds. Contact information for SMD Program Officers is available at <http://science.nasa.gov/researchers/sara/program-officers-list/#earth> or in the Summary Information table at the end of a ROSES program element description.

5.3. Award Instruments

Awards selected under this solicitation will only be supported as a grant, a cooperative agreement, an interagency agreement, or internal funding to a NASA Center. Contracts will not be used for these awards.

6. Summary of Key Information

Expected annual program budget for new awards	No specific budget is identified; selected proposals will be funded by the relevant program(s).
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Number of new awards pending adequate proposals of merit	The number of proposals selected will be dependent on the availability of funds from the relevant program(s), as well as the number and quality of proposals submitted.
Maximum duration of awards	3 years (but see Sections 5.1.1 and 5.1.2)
Due date for Notice of Intent to propose (NOI)	No Notices of Intent are requested for this program element.
Due date for proposals	Proposals may be submitted at any time until 11:59 PM (Eastern time) on March 29, 2021.
Planning date for start of investigation	No sooner than 1 ½ months after proposal receipt for Rapid Response, and 6 months after proposal receipt for Novel Earth Science.
Page limit for the central Science/Technical/Management section of proposal	5 pp for Rapid Response and 15 pp for Novel Earth Science; see also Table 1 of ROSES <i>Summary of Solicitation</i> and the Guidebook for Proposers .
Relevance	See Section 4. Proposals that are relevant to this program are, by definition, relevant to NASA.
General information and overview of this solicitation	See the <i>ROSES Summary of Solicitation</i> .
General requirements for content of proposals	See Section 3 of the NASA Guidebook for Proposers and Section IV and Table 1 of the <i>ROSES Summary of Solicitation</i> .
Detailed instructions for the submission of proposals	See https://nspires.nasaprs.com/tutorials/ Sections 3.22-4.4 of the NASA Guidebook for Proposers and Section IV(b) of the <i>ROSES Summary of Solicitation</i> .
Submission medium	Electronic proposal submission is required; no hard copy is required or permitted.
Web site for submission of proposal via NSPIRES	http://nspires.nasaprs.com/ (help desk available at nspires-help@nasaprs.com or (202) 479-9376)
Web site for submission of proposal via Grants.gov	http://grants.gov (help desk available at support@grants.gov or (800) 518-4726)
Funding opportunity number for downloading an application package from Grants.gov	NNH20ZDA001N-RRNES
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