

## B.10 HELIOPHYSICS U.S. PARTICIPATING INVESTIGATOR

**NOTICE: Amended on August 9, 2016. This amendment delays the Step-1 proposal due date for B.10 Heliophysics U.S. Participating Investigator from August 16, 2016, to August 19, 2016 to coincide with the corresponding SALMON-2 due date and give time for Step-1 proposal preparation after the [preproposal conference](#) on August 15, 2016. The Step-2 proposals due date remains unchanged, at October 14, 2016.**

**Amended on July 13, 2016. This amendment presents a new program element in ROSES-2016: B.10 Heliophysics U.S. Participating Investigator (H-USPI) Program, released in conjunction with the SALMON-2 AO PEA Q: Heliophysics Explorer Mission of Opportunity. Step-1 proposals are due by August 19, 2016, and Step-2 proposals are due October 14, 2016.**

### 1. Scope of Program

#### 1.1 Introduction

This ROSES program element for Heliophysics Explorer U.S. Participating Investigator (H-USPI) is released in conjunction with the Second Stand Alone Mission of Opportunity Notice (SALMON-2) Announcement of Opportunity (AO) Program Element Appendix (PEA) Q: Heliophysics Explorer Mission of Opportunity. The purpose is to solicit potential Heliophysics Explorer Mission of Opportunity (MO) investigations in which investigators participate as a Co-Investigator (Co-I) for an instrument, experiment, or technology demonstration that is being built and flown by a sponsor agency other than NASA.

Proposals submitted in response to this program element must comply with the requirements in this ROSES-2016 NASA Research Announcement (NRA) and in this Heliophysics Explorer USPI program element. Proposals submitted in response to this solicitation are not required to comply with the requirements in the SALMON-2 AO.

Proposals submitted in response to the SALMON-2 AO PEA Q solicitation will be reviewed at the same time as proposals submitted in response to this ROSES program element for Heliophysics Explorer U.S. Participating Investigators.

A single selection meeting will select proposals, and all Explorer selections will be funded from the same Explorer future mission budget; there is no separate budget for Explorer USPIs.

These studies are carried out in support of NASA's Heliophysics strategic objective "to understand the Sun and its interactions with Earth and the solar system, including space weather." from the *Science Mission Directorate Science Plan for 2014* (<http://nasascience.nasa.gov/about-us/science-strategy>). The recommended priorities of the Heliophysics community are also discussed in the National Research Council Decadal Strategy for Solar and Space Physics report, *Solar and Space Physics: A Science for a Technological Society* ([http://www.nap.edu/catalog.php?record\\_id=13060](http://www.nap.edu/catalog.php?record_id=13060)).

## 1.2 Science and Program Objectives

NASA solicits proposals for Explorer USPI investigations that address any heliophysics objective as outlined in Section 1.1 of this program element. Investigations that address NASA goals in other areas, such as Earth science, planetary science, or astrophysics, are not solicited in this program element.

## 2. Relevance Criteria

A proposed investigation as a U.S. Participating Investigator on a non-NASA space mission may be as a Co-I for an instrument, experiment, or technology demonstration that is being built and flown by a sponsor agency other than NASA. The Co-I role can include, but is not limited to, instrument design, modeling and simulation of the instrument's operation and measurement performance, calibration of the instrument, scientific analysis and/or research of the data returned, and/or development of innovative data analysis techniques. A U.S. Participating Investigator may also serve as a member of a non-NASA space mission science or engineering team and participate in science team activities, such as mission planning, mission operations, data processing, data analysis, and data archiving. Regardless of the nature of the U.S. Participating Investigator role, an investigation proposed under this category must be for a science or technology investigation and must include some meaningful data analysis component, archiving of the complete data set, and the publication of science results in the peer reviewed literature. All aspects of the investigation through publication must be within the proposed cost.

Investigations requiring the provision of flight hardware are not solicited through this USPI solicitation. Investigations requiring the provision of flight hardware may be proposed as a Partner Mission of Opportunity (PMO) proposal through the Heliophysics Explorer Mission of Opportunity described in Program Element Appendix Q of the SALMON-2 AO.

A proposed investigation as a USPI on a non-NASA mission or instrument may take any form that clearly and demonstrably enhances the scientific output of the mission, benefits the U.S. scientific community, and enables the U.S. heliophysics science community access to a highly valued scientific data set.

The proposed investigations can vary in duration, to include just the prime science mission phase or to begin at the post-confirmation development phase (e.g., for calibration analysis) through the prime mission operational phase, depending on the science requirements of the investigation. All investigations shall include adequate time for data analysis and archiving following the conclusion of the prime mission phase.

This program element solicits new investigations only. Proposals whose intent or purpose is to extend or directly supplement existing investigations already funded for approved space flight missions or other NASA-supported research programs are not appropriate for this program element. Investigators who are members of the science teams of ongoing missions and who propose to use data from those missions must clearly demonstrate that the proposed research is distinct from their existing efforts.

### 3. Submission and Evaluation Process

#### 3.1 General Considerations

Each Principal Investigator (PI) is allowed to submit one and only one proposal to this solicitation. In that proposal, the Principal Investigator must invest a substantial portion of his/her time, of order 10-20%, to the investigation. Co-Investigators must each have a specific and defined task in the project, and the task must be essential to completion of the project. Use of collaborators is discouraged. Proposals may be declared noncompliant based on either the Step-1 or Step-2 proposal if they are outside the scope of the USPI program (3.2 below) or if they fail to meet submission guidelines specified below (3.2, 3.3, and 3.4).

#### 3.2 Step-1 Proposals

To streamline the proposal process (submission, evaluation, and administration), this program uses a two-step proposal submission process (see the overall description of a two-step process in the *Summary of Solicitation Section IV. (b) vii*).

A Step-1 proposal is required and must be submitted electronically by the Step-1 due date (see below and Tables 2 and 3 in the *ROSES Summary of Solicitation*). The Step-1 proposal must be submitted by the organization Authorized Organizational Representative (AOR). No budget or other elements are required. Only proposers who submit a Step-1 proposal are eligible to submit a full proposal. Full (Step-2) proposals must contain the same scientific goals proposed in the Step-1 proposal. The Step-1 proposal title, Principal Investigator, and all co-investigators, collaborators, and consultants cannot be adjusted between in the Step-1 and Step-2 proposals. The expected format and compliance evaluation criteria are described below. Submission of the Step-1 proposal does not obligate the offerors to submit a Step-2 (full) proposal later.

##### *3.2.1 Step-1 Proposal Format*

Proposers should refer to the "Instructions for Submitting a Step-1 Proposal" under "Other Documents" on the NSPIRES page for this program. The Step-1 proposal is restricted to the 4000 character Proposal Summary text box on the NSPIRES web interface cover pages.

The Step-1 proposals must include the following:

- The science goals and objectives to be addressed by the proposal;
- The relevance of the problem to one or more of the four Decadal Survey goals.
- A brief statement of the methodology to be used, including what data, models, and analysis will be used for completing the investigation;

The NSPIRES system for proposal submission requires that Step-1 proposals include a summary (i.e., abstract) describing the proposed work as outlined above. The proposal summary is entered directly into a text field in NSPIRES. No PDF attachment is required or permitted for Step-1 proposal submission. All information will be entered within the 4000 character Proposal

Summary text box on the NSPIRES web interface cover pages. Proposers will be notified by E-mail when they are able to submit their Step-2 proposals. Step-1 proposals may be declared noncompliant if they fail to meet submission guidelines specified in Sections 3.2 and 3.3 or if they are outside the scope of the H-USPI program, as discussed in Section 1. PIs of noncompliant proposals will not be eligible to submit the associated Step-2 proposal and will receive a letter to this effect.

### *3.2.2 Step-1 Evaluation Criteria*

Step-1 proposals may be declared noncompliant if they are outside the scope of the H-USPI program as described in Section 1. PIs of noncompliant proposals will not be eligible to submit the associated Step-2 proposal and will receive a letter to this effect.

### *3.2.3 Request for reviewer names*

Proposers are strongly encouraged to provide names and contact information of up to five experts qualified to review their proposal. These experts must not be from the institutions of the PI or Co-Is or stand to benefit financially from the selection (or otherwise) of the proposal. This information can be supplied through NSPIRES Program Specific Data Questions when submitting a Step-1 proposal.

## 3.3 Step-2 Proposals

A Step-2 (full) proposal must be submitted electronically by the Step-2 due date (see below and Tables 2 and 3 in the *ROSES Summary of Solicitation*). The Step-2 proposal must be submitted via NSPIRES by the organization Authorized Organizational Representative (AOR). A budget and other specified information is required. The Step-2 proposal title, Principal Investigator, and all Co-Investigators, collaborators, and consultants must be the same as those in the Step-1 proposal. Step-2 proposals must contain the same scientific goals proposed in the Step-1 proposal.

Proposers must have submitted a Step-1 proposal to be eligible to submit a Step-2 proposal. Proposers that have received a noncompliant letter are not eligible to submit a Step-2 proposal.

Proposers are expected to provide mail-in reviews for one to three proposals in this competition. Much of the science expertise lies in the PI/Co-I community because, increasingly, nearly the entire Heliophysics community proposes. In order to maintain a high caliber review process, it is important to get the additional mail-in reviews to cover all proposals fairly.

### *3.3.1 Step-2 Proposal Format*

The process for preparation and submission of the Step-2 (full) proposals is the same as that for any other ROSES proposal. Guidelines for content and formatting Step-2 full proposals are specified in the NASA Guidebook for Proposers and the ROSES Summary of Solicitation.

Proposals are restricted to fifteen (15) pages for the Scientific/Technical/Management section

and must include the following sections with the preferred order:

- The science objectives and perceived impact of the proposed work to the state of knowledge in the field; references to existing work in the field should be limited to that which is needed to justify the value of the science proposed;
- The data and methodology to be employed in conducting the proposed research; the proposal must demonstrate (1) that the data is appropriate to address the science objectives and (2) that the methodology is both appropriate and feasible to make substantial progress on the science objectives;
- The relevance of the proposed work to science goals listed in Section 1.1 must be demonstrated;
- A general plan of work, the management structure for the proposal personnel, and a description of the expected contribution to the proposed effort by the PI and each person as identified in the proposal, whether or not they derive support from the proposed budget. Postdoctorals and students do not need to be named.

### 3.3.2 Step-2 Evaluation Criteria

Step-2 proposals that are not compliant with format requirements may be rejected without review. See Section IV (b) ii of the *ROSES Summary of Solicitation* and the *NASA Guidebook for Proposers* for details. Proposals that have changed the scientific scope from that of their Step-1 proposal may be declared noncompliant.

Compliant proposals will be evaluated according to the criteria specified in Section C.2 of the *NASA Guidebook for Proposers*. These criteria are intrinsic scientific and technical merit, relevance to NASA's objectives, and cost realism/reasonableness.

The evaluation of scientific and technical merit will include the following:

- Compelling nature and scientific priority of the proposed investigation's science goals and objectives, including the importance of the problem within the broad field of Heliophysics; the unique value of the investigation to make scientific progress in the context of current understanding in the field, and the importance of carrying out the investigation now.
- Appropriateness and feasibility of the methodology, including the appropriateness of the selected data, models, and analysis for completing the investigation and the feasibility of the methodology for ensuring scientific success.

Based on these two factors, the evaluation will consider the overall potential science impact and probable success of the investigation.

Relevance to and priority within the H-USPI program will be assessed based on criteria discussed in Section 1. Each proposal must demonstrate that the investigation is relevant and of high priority. As requested in the *Guidebook for Proposers*, cost realism/reasonableness will be evaluated based on the amount of work to be accomplished versus the amount of time proposed

### 3.4 Technical Requirements and Constraints

In addition to the requirements given in *ROSES*, all proposed investigations must also

demonstrate: (1) their formal relationship with the sponsoring agency’s mission (e.g., selected participant, invited participant, or proposed participant); (2) the status of the mission within the sponsoring agency (i.e., Preliminary Study (Pre-Phase A); Concept Study and Technology Development (Phase A); Preliminary Design and Technology Completion (Phase B); Final Design and Fabrication (Phase C); System Assembly, Integration and Test, and Launch (Phase D); Operations and Sustainment (Phase E)), including the level of commitment that the sponsoring agency has made to complete development; (3) a description of the type and the characteristics of the data from this investigation, as well as any ancillary science data, that will be archived as part of this investigation, and a description of the arrangements and resources included in the proposal to ensure the timely delivery of the necessary data in the required format; and (4) a detailed explanation of how the heliophysics science community benefits from this participation.

4. Available Funds

For individual investigators, the cost for selected proposals is expected to be on the order of \$125K per selected investigation per year through the prime science mission phase, plus one year for additional data analysis and archiving for the baseline scientific investigation. For a team of investigators, the cost is expected to be on the order of \$125K per investigator per year, up to a maximum combined team total of on the order of \$500K per year, through the prime science mission phase, plus one year for additional data analysis and archiving.

Proposals must include archiving data such as raw data, reduced data (Level 2), instrument calibration data, observation geometry ancillary data, and derived products at an appropriate data archive.

NASA reserves the right to make no selection if there are no proposals of appropriate merit.

5. Maximum Duration of Awards

Proposals should be for the entire duration of the proposed investigation. This may be no more than through the prime science mission, plus one year for additional data archiving for the baseline scientific investigation. The budget justification in the body of the proposal should cover this entire period. Note that proposers can only enter the first five years of budget into the cover page of the NSPIRES web interface, but this is simply an artifact of the NSPIRES system.

6. Award Management

Awards will likely be executed directly from NASA Headquarters, although NASA reserves the right to implement them through a NASA Center in order to facilitate coordination with related flight projects that the Center may be carrying out.

7. Summary of Key Information

Expected program budget for first year of new awards	See Section 4
Number of new awards pending adequate proposals of merit	Up to two awards

Maximum duration of awards	Through the end of the Prime Mission plus one year for data analysis and archiving, see Section 5.
Due date for Step-1 Proposal	See Tables 2 and 3 in the <i>ROSES Summary of Solicitation</i> .
Due date for Step-2 (full) proposals	See Tables 2 and 3 in the <i>ROSES Summary of Solicitation</i> .
Planning date for start of investigation	6 months after proposal due date.
Page limit for the central Science-Technical-Management section of proposal	15 pp. see also Chapter 2 of the <i>NASA Guidebook for Proposers</i>
Relevance	See Section 2. Relevance Criteria. This program is relevant to the Heliophysics questions and goals in the NASA Science Plan. 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> .
Detailed instructions for the preparation and submission of proposals	See the <i>NASA Guidebook for Proposers</i> at <a href="http://www.hq.nasa.gov/office/procurement/nraguidebook/">http://www.hq.nasa.gov/office/procurement/nraguidebook/</a> .
Submission medium	Electronic proposal submission is required; no hard copy is required or permitted. See also Section IV of the <i>ROSES Summary of Solicitation</i> and Chapter 3 of the <i>NASA Guidebook for Proposers</i> .
Web site for submission of Step-1 and Step-2 proposal via NSPIRES	<a href="http://nspires.nasaprs.com/">http://nspires.nasaprs.com/</a> (help desk available at <a href="mailto:nspires-help@nasaprs.com">nspires-help@nasaprs.com</a> or (202) 479-9376)
Web site for submission of Step 1 and Step-2 proposal via Grants.gov	<a href="http://grants.gov">http://grants.gov</a> (help desk available at <a href="mailto:support@grants.gov">support@grants.gov</a> or (800) 518-4726)
Funding opportunity number for downloading an application package from Grants.gov	NNH16ZDA001N-HUSPI
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