2016 Heliophysics Small Explorer (SMEX) and Mission of Opportunity (MO) Pre-Proposal Conference

Conference Goals

Willis Jenkins
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NASA Headquarters
August 15, 2016

Conference Goals

The Heliophysics Explorers Program has released <u>three</u> solicitations for new science investigations:

- **2016 Small Explorer (SMEX) Announcement of Opportunity** (2016 SMEX AO) – NNH16ZDA005O
- **2016 Mission of Opportunity** Program Element Appendix for the Second Stand Alone Missions of Opportunity Notice (2016 MO SALMON-2 PEA-Q) – NNH12ZDA006O-HPEXMO.
- **2016 Heliophysics Explorer U.S. Participating Investigators** Program Element for the Research Opportunities in Space and Earth Sciences (ROSES) 2016 NRA (2016 HEX USPI) - NNH16ZDA001N-HUSPI

Conference Goals

Goals today are to:

- Provide an overview of the
  - 2016 SMEX AO
  - 2016 MO SALMON-2 PEA-Q
  - 2016 HUSPI ROSES-2016

- Provide an overview of the evaluation, categorization, and selection process for the SMEX and MO

- Address questions

Conference Goals

Agenda

9:00	Welcome and Introductions	Jeffrey Newmark, NASA HQ
9:15	Conference Goals and Overview of the Solicitations	Willis Jenkins, NASA HQ
10:00	Overview of the Evaluation, Categorization, Selection Process	Dan Moses, NASA HQ
10:20	Science Evaluation	Dan Moses, NASA HQ
10:35	Break	
10:50	Technical, Management, and Cost Evaluation	Chauncey Wu, NASA LaRC
11:20	Explorer Program Overview	Greg Frazier, NASA GSFC
11:40	Launch Services	Alicia Mendoza-Hill, NASA KSC
12:20	Lunch	
1:20	Mission Operations and Communications Services	Gary Morse, NASA HQ
1:40	International Cooperation at NASA	Matthew Koeppe, NASA HQ
2:00	Export Control Compliance	Ken Hodgdon, NASA HQ
2:20	International Space Station Capabilities and Payload Accommodations	Kenol Jules, NASA JSC
2:40	Scientific Balloon Investigations	Debora Fairbrother, NASA Wallops
3:00	CubeSat Investigations	David Pierce, NASA HQ
3:30	Roses 2016 H-USPI Presentation	Dan Moses, NASA HQ
3:45	Questions & Answers	All
4:00	Wrapup	All

Questions

- Answers to questions received prior to the Workshop are included in presentations and/or being addressed on the Q&A web site.
- Questions submitted today will be addressed as time permits and as appropriate answers can be generated.
- Please submit your questions in writing so that we may best understand your intent.
- WebEx users, please submit questions via the WebEx chat lines.
- Questions may also be sent to Dan Moses at:

  dan.moses@nasa.gov
- Questions may be submitted until 14 days before the proposal due date. Questions and answers will be posted at the Heliophysics Explorers Acquisition site: **http://explorers.larc.nasa.gov/HPSMEX/**

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Overview of the Solicitations

Willis Jenkins
Heliophysics Explorers Program Executive
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August 15, 2016

Solicitations Overview

Outline

- Overview of the three solicitations
  - 2016 SMEX AO
  - 2016 MO SALMON-2 PEA-Q
  - 2016 HUSPI ROSES-2016

Important Note: These solicitations incorporate a large number of changes relative to the drafts and previous Explorer solicitations, including both policy changes and changes to proposal submission requirements. All proposers must read the solicitations carefully, and all proposals must comply with the requirements, constraints, and guidelines contained within.

Solicitations Overview

The Heliophysics Explorers Program has released 3 solicitations:

•**2016 Small Explorer Announcement of Opportunity** (2016 SMEX AO) – NNH16ZDA005O

for the purpose of soliciting proposals for investigations to be implemented through the Explorer Program. All investigations proposed in response to this solicitation must support the goals and objectives of the Explorer Program, must be implemented by Principal Investigator (PI) led investigation teams, and must be implemented through the provision of **complete spaceflight missions**.

Solicitations Overview

The Heliophysics Explorers Program has released 3 solicitations:

•**2016 Mission of Opportunity** Program Element Appendix for NASA's Second Stand Alone Missions of Opportunity Notice (2016 MO SALMON-2 PEA Q) – NNH12ZDA006O-HPEXMO

for the purpose of soliciting proposals for **Mission of Opportunity (MO) science investigations**. All investigations proposed in response to this solicitation must support the goals and objectives of the Explorer Program, must be implemented by Principal Investigator (PI) led investigation teams, and must be implemented through the provision of space investigations

Solicitations Overview

The Heliophysics Explorers Program has released 3 solicitations:

•**2016 US Participating Investigations** Program Element Appendix for NASA's Second Stand Alone Missions of Opportunity Notice (2016 MO SALMON-2 PEA Q) – NNH12ZDA006O-HPEXMO

for the purpose of soliciting proposals for **Mission of Opportunity (MO) science investigations**. All investigations proposed in response to this solicitation must support the goals and objectives of the Explorer Program, must be implemented by Principal Investigator (PI) led investigation teams, and must be implemented through the provision of space investigations

Proposal Opportunity Period and Schedule

Notice of Intent to Propose	August 19, 2016
Proposal Submission Deadline 11:59 pm EST	October 14, 2016
Letters of Commitment due (w/ proposal)	October 14, 2016
Deadline for Receipt of Proposal on CD-ROM at 5:00 p.m. EST	October 18, 2016
Step 1 Selections announced (target)	Spring 2017
Initiate Phase A Concept Studies (target)	Spring 2017
Phase A Concept Study Reports due (target)	Spring 2018
Down-selection of Investigation(s) for flight (target)	Fall 2018
Launch Readiness Date for proposed mission	NLT August, 2022
Commitment Need Date for a Partner MO	March 2020
Launch Readiness Date for Small Complete Missions	NLT August, 2022

2016 SMEX AO is based on the SMD Standard AO template.

- **Requirements** are identified, numbered, and specific.
  - There are 97 requirements in the 2016 SMEX AO main body
  - When Sections do not levy requirements they do not have numbered requirements.
- **Evaluation Factors** are identified, numbered, and specific.
  - 4 for Science Merit
  - 6 for Scientific Implementation Merit and Feasibility
  - 5 for Technical, Management, and Cost (TMC) Feasibility
- Appendix B has numbered **requirements on Proposal Preparation**
  - There are 65 specific requirements for the format and content of Step 1 proposals [more together as some Appendix B requirements have more than one part]

SMEX AO Highlights

- The PI-Managed Mission Cost cap for a Small Explorer (SMEX) mission is $165M in Fiscal Year (FY) 2017 dollars, including the cost of access to space, but not including any contributions.
- NASA-provided launch services may be proposed at a charge of $50M in FY 2017 dollars against the PI-Managed Mission Cost.
- Alternative access to space, which must be arranged by the proposer and funded within the PI-Managed Mission Cost, may also be proposed. A charge to the PI cost cap of $2.0 million will be levied for the expected NASA launch vehicle monitoring functions and advisory services.
- Investigations to be flown aboard the International Space Station (ISS) may be proposed. NASA will provide accommodations on the ISS, as well as transportation to the ISS, at a charge of $50 million in FY 2017 dollars against the PI-Managed Mission Cost.

SMEX AO Highlights

- Any selected mission is intended to launch no later than August of calendar year 2022.
- Proposers selected through this AO will be awarded a contract to conduct a Phase A concept study with a duration of ~ 11 months. The cost of the Phase A concept study is capped at $1.25M FY 2017 dollars.

SMEX AO Highlights

Requirement 1: Proposals submitted in response to this solicitation shall be submitted electronically no later than the Electronic Proposal Submittal Deadline.

Requirement 2: In addition to electronic submission, CD-ROMs containing the proposal and relevant files described in Section 6.2.3 must be submitted. Proposals on CD-ROMs submitted in response to this solicitation shall be delivered no later than the Deadline for Receipt of Proposal on CD-ROMs and shall be delivered to the address for submittal of proposals given in Section 6.2.3.

The address for delivery of CD-ROMs (Requirement 96):

NASA Research and Education Support Services (NRESS)
Suite 500
2345 Crystal Drive
Arlington, VA 22202

Telephone for commercial delivery: 202-479-9030

NASA will notify proposers that their proposals have been received.

Requirement 4: Proposals shall describe a science investigation with goals and objectives that address the program science objectives described in Section 2.

MO SALMON-2 PEA-Q Highlights

- *SALMON-2* is a five-year omnibus AO that incorporates PEAs for general MO proposal opportunities, as well as focused proposal opportunities for specific flight opportunities. The AO allows U.S. and non-U.S.-led mission opportunities.
- Each PEA is a separate and independent solicitation, has its own solicitation number in NSPIRES, its own proposal due date, and its own funding available for selected investigations.
- NNH12ZDA006O Program Element Appendix Q is the HPEX2016 MO SALMON-2 PEA. Investigations are funded from the Heliophysics Explorers Future Missions budget line.

MO SALMON-2 PEA-Q Highlights

Two Mission of Opportunity types may be proposed in response to this HPEX2016 MO SALMON-2 PEA

- **Partner Missions of Opportunity (PMOs)**
- **Small Complete Missions (SCM)** including:
  - Investigations on the International Space Station
  - Suborbital-class missions (investigations requiring flight on high altitude scientific balloon platforms, on suborbital Reusable Launch Vehicles [sRLVs], or using CubeSats)
  - Investigations launched as secondary or hosted payloads

Cost and Schedule Constraints

- $55M cap in Fiscal Year 2017 dollars
- $35M cap in Fiscal Year 2017 dollars for suborbital-class missions
- Access to space provided by NASA for ISS investigations and suborbital-class SCM.
- Phase A Studies, ~11 mo. duration, capped at $400K FY 2017 dollars
- For PMOs, PI must provide evidence of sponsoring organization funding primary host mission and that the NASA commitment for U.S. participation is required by the sponsoring organization prior to March 2020. The launch date itself for a PMO is not constrained.
- For SCM, launch date is NLT August 2022.

MO SALMON-2 PEA-Q Highlights

- For proposed secondary or co-manifested missions, or for missions proposed as hosted payloads, the PI assumes all risk for any delays in the implementation of the parent mission.
    - PI shall propose appropriate reserves for such schedule contingencies.
    - Proposal shall include 9 months funded schedule reserve for this risk.

MO SALMON-2 PEA-Q Highlights

- PMOs may be proposed for participation in nonstrategic NASA missions, other than Explorer.
- Such a PMO proposal must satisfy the following requirements: (i) The PI of the host mission provides a Letter of Commitment endorsing the partnership and (ii) the feasibility assessment of the host mission, i.e., the TMC evaluation in Step 1 and Step 2, includes the accommodations for the PMO instrument .

MO SALMON-2 PEA-Q Highlights

In addition to the requirements given in the SALMON-2 AO, all proposed PMO investigations must also demonstrate:

(1)their formal relationship with the sponsoring agency's host mission (e.g., already selected contribution, invited contribution, or proposed contribution); and

(2)the status of the host mission within the sponsoring agency (i.e., Pre-Phase A, Phase A, or Phase B), including the level of commitment that the sponsoring agency has made to complete the mission.

MO SALMON-2 PEA-Q Highlights

In addition to requirements given in SALMON-2, all PMO requiring flight on the ISS must also provide a Letter of ISS Technical Interface and Resource Accommodation Feasibility Assessment from the NASA Space Station Research Integration Office.

(1)a preliminary assessment of the feasibility of proposed provisions for access to and accommodation on the ISS

(2)identification of known technical interface challenges and/ or conditional provisions for access or accommodation, and

(3)a description of the level of technical interchange and negotiation required to mature the host mission's provisions for access and accommodation.

MO SALMON-2 PEA-Q Highlights

In addition to requirements given in SALMON-2, all proposed SCM, with the exception of investigations requiring flight on the ISS or suborbital-class missions, must also provide a Letter of Commitment from the program or agency providing access to space.

(1) a detailed description of the proposed provisions for access to space, and

(2) the status of those proposed flight provisions within the sponsoring program or agency (i.e., conditional, confirmed, conceptual, etc.) including the level of commitment that the sponsoring program/agency has made to support that flight opportunity.

MO SALMON-2 PEA-Q Highlights

In addition to requirements given in SALMON-2, all SCM investigations requiring flight on the ISS must also provide a Letter of Feasibility from the Space Station Payload Office:

(1) a conceptual description of the feasibility for proposed provisions for access and accommodation,

(2) identification of known challenges and/or conditional provisions for access or accommodation, and

(3) a description of the level of technical interchange and negotiation required to mature the proposed provisions for access and accommodation.

MO SALMON-2 PEA-Q Highlights

- The SALMON-2 AO provides that a proposal may be selected for development without first completing a Phase A concept study. The proposal must make the case that it is not only necessary, but that it is also technically feasible.
- The proposer must recognize that NASA would only make such a decision if the proposal was especially compelling.
- Recall, for this AO, KDP-A is the selection of a Step-1 proposal for a Phase A concept study, KDP-B is the downselection of a mission to enter Phase B following evaluation of Concept Study Reports.

Science Enhancement Options

- Activities such as extended missions, guest investigator programs, general observer programs, participating scientist programs, interdisciplinary scientist programs, and/or archival data analysis programs, where appropriate, have the potential to broaden the scientific impact of investigations. Such optional activities may be proposed as Science Enhancement Options (SEOs).
- Costs for proposed SEO activities must be defined, but will not count against the PI-Managed Mission Cost cap. Funding for SEO activities prior to Phase E should be minimized.
- As these proposed activities are optional and are not included within the cost capped baseline investigation, the science enabled by SEO activities is not considered as part of the scientific merit of the proposed investigation.
- See SALMON-2 section 5.2.5, Requirements 19-21.

Student Collaboration

- Proposals may define a Student Collaboration (SC) that is a separate part of the proposed investigation.
- The SC could be in the form of an instrument development, an investigation of scientific questions, analysis and display of data, development of supporting hardware or software, or other aspects of the investigation.
- Student Collaboration proposals, if any, will be evaluated only for the impact they have on science implementation feasibility to the extent that they are not separable; student collaboration proposals will not be penalized in Step 1 for any inherent higher cost, schedule, or technical risk, as long as the student collaboration is shown to be clearly separable from the implementation of the Baseline Science Mission.
- The intrinsic merit of student collaborations will not be evaluated at this time.
- See SALMON-2 section 5.7.2, Requirements 71-72

Education and Public Outreach

- This PEA does not require an Education and Public Outreach program; therefore Requirements 69 and 70 of the SALMON-2 AO do not apply to this PEA.
- However, NASA may impose E/PO requirements during, or subsequent to, the Phase A concept study phase.

Additional Elements for 2016 SMEX AO and Salmon-2 PEA-Q investigations

•In addition to the mission selections, NASA has set aside funding sufficient to select one Category III proposals for technology development.

Category III. Scientifically or technically sound investigations which require further development. Category III investigations may be funded for development and may be reconsidered at a later time for the same or other opportunities