Heliophysics Solar Terrestrial Probes Mission of Opportunity Phase A Concept Study Kickoff Meeting Overview

Welcome and Congratulations!

Dan Moses

September 5, 2019

Missions Selected for Phase A Study Science

- **17-HPSMO18-1-0023, "SIHLA: Spatial/Spectral Imaging Of Heliospheric Lyman Alpha", Dr. Larry Paxton (PI), Johns Hopkins Univ./Applied Physics Laboratory -** The Spatial/Spectral Imaging of Heliospheric Lyman Alpha (SIHLA) is a mission that would orbit the Earth-Sun L1 point, taking advantage of a mature, existing far-ultraviolet (FUV) scanning imaging spectrograph (SIS) with the addition of a Hydrogen Absorption Cell (HAC) to map the Heliospheric Lyman-alpha line-shape and intensity over the entire sky from the edge of the heliosphere to the inner solar system. SIHLA would provide new observational capability to address a range of compelling science topics within several rapidly-evolving research fields. The technical evaluation of the proposal found low technical and cost risk with multiple major strengths and no major weaknesses. SIHLA is recommended for selection because of the reasons leading to it's categorization.

- **17-HPSMO18-1-0020, "The Global Lyman-alpha Imagers of the Dynamic Exosphere (GLIDE) Mission", Dr. Lara Waldrop (PI), Univ. Illinois, Champaign-Urbana** – The scientifically compelling GLIDE mission would study the global dynamics of Earth's exosphere, expected to be governed by several competing physical processes. The proposed mission would fill in a measurement gap since only a handful of Hydrogen Lyman-alpha images of the geocorona have been made from outside the exosphere. The high cadence, global, synoptic, and exosphere-dedicated strategy ensures that an exploitable dataset is acquired over the lifetime of the mission. GLIDE has no low TRL systems or subsystems and the probability of technical success is high. The compelling science that GLIDE would provide, coupled with a proposed instrument that has significant heritage and low risk with no major technical weaknesses, make this proposal rated as Category I. GLIDE is recommended for selection because of the reasons leading to it's categorization

Missions Selected for Phase A Study
Tech Demo

- **17-HPTDMO18-1-0001, Science-Enabling Technologies for Heliophysics (SETH) mission, Dr. Antti Pulkkinen (PI), NASA Goddard Space Flight Center** – The SETH proposal is selected because it will demonstrate two critical enabling technologies for Heliophysics. The first is a small satellite optical communications demonstration, with 10 Mbps data rates from 0.1 AU from the Earth. NASA has invested in optical communications technology, and if successful, this will be the first demonstration of this technology from deep space small satellites. This technology is also highly desired by other divisions within the Science Mission Directorate. The second technology is a solar Energetic Neutral Atom (ENA) detector with capability to observe solar eruptions and corresponding X-rays, ENA and energetic charged particles.

- **17-HPTDMO18-1-0004, Solar Cruiser, Dr. Les Johnson (PI), NASA Marshall Space Flight Center** – The Solar Cruiser proposal is selected because it will demonstrate and mature a large solar sail with a solar coronographic imaging technology, to enable Heliophysics strategic needs for new observational capabilities away from the Sun-Earth line, and at high solar inclinations. Such observations present opportunities for addressing outstanding science questions of Heliophysics, for improving space weather monitoring and prediction, and for revealing new discoveries about the Sun and the solar system.

Logistics

2018 Heliophysics STP MO Kickoff, Sept 5, 2019

GSFC, Building 36--Various Locations:

Session	Room	
		Dial in #: 1-844-467-6272; Passcode: 452468#
		Webex: Meeting #: 903 691 915
Plenary:	**C211**	Password: 2STPMoO#
Debriefs:	**C211**	Dial in to be provided at the start of the meeting
Awards:	**N207**	Dial in to be provided at the start of the meeting
Lunch:	**C211**	

Start	End	Duration	Comment				
8:45 AM	9:05 AM	0:20	Plenary	Introduction - Dan Moses			
9:05 AM	9:30 AM	0:25	"	Evaluation Process -Roshanak Hakimzadeh			
9:30 AM	9:55 AM	0:25	"	TMC Requirements - Andrea Overman-Salas and James Florance			
9:55 AM	10:05 AM	0:10	"	STP Program Office - Mike Delmont			
10:05 AM	10:15 AM	0:10	"	Safety & Mission Assurance - Bob Calvo			
10:15 AM	10:20 AM	0:05	"	International Relations - OIIR			
10:20 AM	10:25 AM	0:05	"	Export Control - OIIR			
10:25 AM	10:40 AM	0:15	"	IMAP ESPA Accommodation - Alan Zide and Ally Mendoza			
10:40 AM	10:55 AM	0:15	"	Break			
				Univ. Ill Waldrop	**NASA MSFC** Johnson	**APL/JHU** Paxton	**NASA GSFC** Pulkkinen
10:55 AM	12:25 PM	1:30	Individual		Award		Debrief
12:25 PM	1:10 PM	0:45	"	Lunch			
1:10 PM	2:40 PM	1:30	"	Award	Debrief		
2:40 PM	4:10 PM	1:30	"	Debrief		Award	
4:10 PM	5:40 PM	1:30	"			Debrief	Award
				Award - Contract Information			
				Debrief - Evaluation and Selection Process, Findings			

Phase A Overview

- Missions of Opportunity (MO) selected teams will conduct 9-month Phase A Concept Studies, funded up to $400k
- Concept Study Reports (CSRs) will be due June 5, 2020
- At the end of Concept Studies, NASA will conduct detailed reviews to evaluate the implementation details of the investigations, including any modifications of the scientific objectives, and the implementation including all technical and management factors.
- The CSR plus any modifications from the Site Visit and associated responses will form the Step-2 proposal in the down-selection competition.
- Nominally, the CSR will be evaluated only for Criteria B and Criteria C
  - The initial Criteria A (Intrinsic Merit) evaluation will be retained for the down-select competition
  - Note: In this step Criteria B includes factor B-7: Likelihood of Scientific Success
    - This is a revisit of Factor A-3, in light of the Phase A study
    - If a Proposal received a Major Weakness finding in Criteria A, it is essential to address this in the CSR and the Factor B-7 will specifically evaluate this
  - If the Lead Program Scientist determines the CSR contains significant change of the Science Basis for the investigation (Intrinsic Merit) in comparison to the Step-1 proposal, an evaluation of the Criteria A will be conducted on the CSR

HSMO vs TDMO Missions

- Both are conducted as mission elements of the Solar Terrestrial Program (STP)
- Both utilize the same launch opportunity: STP IMAP ESPA
- Both Phase A Concept Study Reports will be evaluated under the same Concept Study Guidelines and Criteria document.
- Due to the differences in the intrinsic nature of the usual SMD Science Missions and the new Technology Demonstration Missions, the two will be evaluated by separate Science and TMC teams.
- At down select, it is anticipated that one mission of each type will be selected for implementation.
- **However**, NASA explicitly reserves the option to select more than one of one type of mission and/or none of the other type of mission – depending upon the outcome of the CSR evaluations

Management and Constraints

- Phase A Study deliverables:
  - **Concept Study Report** providing sufficient implementation detail and planning to allow NASA to judge probability of mission success
  - **Complete cost or pricing data** for Phase B shall be included with the CSR for each organization. A separate, 4-month bridge phase option shall be part of the Phase B cost or pricing data.
- Phase A activity includes:
  - **Site Visit** with 1 day summary presentation of investigation with responses to evaluation team Significant Weaknesses, Questions, and/or Requests for Information.
  - **Post-Site Visit request** responses.

Management and Constraints

- Each mission's Concept Study Report must conclude with a ***commitment*** by the PI for the cost, schedule, and scientific performance of the investigation.
- NASA cannot guarantee that the proposed funding ***profile*** can be accommodated within the STP Program's budget.
  - The funding profile for the selected mission will be negotiated during Phase B.
- During the Bridge Phase, NASA and the continued project will negotiate and sign a contract modification necessary for the remaining portion of Phase B.
- Deliverables for Phase B will be negotiated during the Bridge Phase, on the basis of information provided in the Concept Study Report.

Procurement

- The CSR plus any modifications from the Site Visit and associated responses will form the Step-2 proposal in the down-selection competition.
- CSR (Proposals) must be for complete mission cycle (Phase A-Phase F).
- Solicit science proposals with sufficient implementation information to evaluate risk, expected total cost to NASA, and commitment to other programmatic goals.
- Each Phase A contract will contain a priced option for Phase B along with a Bridge Phase, to be exercised upon investigation(s) down-selected to proceed into Phase B.
  - The Bridge Phase option will allow work to be continued uninterrupted under the contract after a Step-2 down selection decision is made.

Schedule

- The 9-month Phase A clock starts today with the kickoff.
- Concept Study Reports (CSRs) will be due on June 5, 2020.
- Anticipate site visits in August-September 2019

- For Tech Demo MO
  - Roshanak Hakimzadeh (Dan Moses backup) will be the overall chair of the evaluation team
  - Andrea Salas (SOMA) will lead the TMC evaluations & coordinate site visits.

- For HPSMO
  - Dan Moses will be the overall chair of the evaluation team.
  - James Florance and Carlos Liceaga (SOMA) will lead the TMC evaluations & coordinate site visits.

Competition Conditions

- "Blackout" after the Kickoff Meeting. Communications between Study Teams and the various NASA program offices will be focused to ensure fairness
  - Communications after this meeting will be controlled.
  - Technical and expert advice should be obtained directly from identified Points of Contact (POC's)
    - See CSR Guidance and Criteria document
  - All programmatic questions, including questions of policy, questions of interpretation, and questions of clarification, should come to NASA HQ addressed to Dan Moses or Roshanak Hakimzadeh
- Generic versions of questions and answers will be posted as "Questions and Answers" available from the SOMA Acquisition websites.

Concept Study Guidelines

- Draft Guidelines And Criteria For The Phase A Concept Study may be found at either SOMA Acquisition Website:
  - 2018 Heliophysics Science MO Program Library or
  - https://soma.larc.nasa.gov/2018HelioMO/pdf_files/CSR%20Guidelines_PEAsL+M.Final-Sept2019.pdf

    or
  - 2018 Technology Demonstration Mission of Opportunity Program Library
  - https://soma.larc.nasa.gov/STP/tdmo/pdf_files/CSR%20Guidelines_PEAsL+M.Final-Sept2019.pdf

  - These Draft Guidelines are based on the “Standard CSR Guidelines,” so changes for the final version are expected to be minimal

QUESTIONS?