

**Community Announcement NNH22ZDA007L:
2022 Heliophysics Small Explorer (SMEX) and Heliophysics Explorers Program
(HEP) Mission of Opportunity (MO) Announcements of Opportunity:
Planning Information**

NASA's Science Mission Directorate (SMD) intends to release a draft Announcement of Opportunity (AO) for 2022 Heliophysics Small Explorer (SMEX) missions in March 2022 and a final AO in June 2022. In conjunction with the 2022 SMEX AO release, a separate Heliophysics Explorers Program (HEP) Mission of Opportunity (MO) science investigations AO via a Program Element Appendix (PEA) to the Third Stand Alone Mission of Opportunity Notice (SALMON-3) is planned. The Heliophysics Explorers Program conducts Principal Investigator (PI)-led space science investigations in SMD's Heliophysics programs under a not-to-exceed cost cap.

SMD estimates that no more than three 2022 Heliophysics SMEX investigations will be selected for 9-month, \$2.0M (Fiscal Year 2022) Phase A concept studies. At the conclusion of these concept studies, it is anticipated that at least one SMEX investigation will be down-selected to continue into Phase B and subsequent mission phases. The SMEX AO PI Managed Mission Cost (PIMMC) Cap for Phase A-F of investigations will be \$150M (Fiscal Year 2022), excluding standard launch services. The cost of any mission specific and special launch services is the responsibility of the PI and must be included within the PIMMC Cap. A 25% minimum unencumbered cost reserve on Phases A-D will be required within the AO Cost. Lower-cost investigations and cost-efficient operations are encouraged. When available, the draft and final AO text will be posted on the NASA Solicitation and Proposal Integrated Review and Evaluation System (NSPIRES): <https://nspires.nasaprs.com/external/>.

The separate HEP Mission of Opportunity (MO) science investigations PEA to SALMON-3 may solicit Small Complete Mission (SCM) MOs, including investigations requiring flight on the International Space Station (ISS). It is anticipated that no more than four 2022 HEP MO investigations will be selected for 6-month, \$500K Phase A concept studies through this PEA Solicitation. Small Complete Mission MOs are solicited in two separately evaluated groups defined by different Phase A-F PIMMC Caps. Standard-class MOs will be defined by a PEA PIMMC that is expected to be no greater than \$70M in FY 2022 dollars. SmallSat-class MOs will be defined by a PEA PIMMC that is expected to be no greater than \$35M in FY 2022 dollars. A 25% minimum unencumbered cost reserve on Phases A-D will be required within the PIMMC for both classes.

With specific exceptions described below, the cost of launch services must be included within the MO PIMMC. At the conclusion of these concept studies, it is planned that at least one 2022 HEP MO investigation will be down-selected to continue into Phase B and subsequent mission phases. Additional MO investigations may be down-selected depending upon the quality of the concept studies and the budget available at that time. The distribution between the two classes of MOs for either Phase A study selections or down-selection is neither pre-determined nor guaranteed.

The SMEX mission launch services can be NASA-provided or PI-provided. As all payloads solicited under the 2022 Heliophysics SMEX are Class D, the NASA-provided access to space will be either through the Launch Services Program (LSP) Venture-Class Acquisition of Dedicated and Rideshare (VADR) Launch Services, through Rideshare on NASA Primary launches, or International Space Station (ISS) attached payload launches. Launch vehicle standard services will be provided as Government Furnished Equipment (GFE), and the cost will not be included in the PIMMC cap. If the PI provides the launch service, then SMD will increase the AO cost cap up to \$12M (Fiscal Year 2022) covering the actual launch cost.

For HEP 2022 Missions of Opportunity, both PI-provided and NASA-provided access to space are permitted. With the exception of ISS missions and contributed launches, the cost of MO mission access to space must be included within the PEA PIMMC. NASA provided access to space for ISS MO investigations is outside the PEA cost cap. The cost of any mission specific and special launch services is the responsibility of the PI and must be included within the PIMMC Cap.

The HEP 2022 Mission of Opportunity PEA-defined rideshare access to space may occur as a Rideshare on NASA Primary launches or through VADR on an Evolved Expendable Launch Vehicle Secondary Payload Adapter (ESPA) or ESPA Grande dependent on the opportunity. For Standard-class MOs, the PEA cost cap will be adjusted downwards by \$4.2M for each port required on an ESPA and by \$6.5M for each port on an ESPA Grande. For Standard-class MOs using NASA-provided access to space with standard launch services as a VADR Primary Payload with capability to lift ~150kg to low earth orbit (LEO), the PEA cost cap will be adjusted downwards by the VADR launch service value not to exceed \$12M.

For SmallSat-class MOs, rideshare access via VADR to LEO or Geostationary Transfer Orbit on an ESPA or ESPA Grande is provided by NASA outside the PEA cost cap. For SmallSat-class MOs, PEA-provided access to the International Space Station (ISS) is provided by NASA outside the PEA cost cap. For SmallSat-class MOs using PI-provided access to space, the PEA cost cap may be adjusted upwards by \$4.2M.

MO PIMCC and Access to Space	SmallSat MO	Standard MO
PEA cost cap (FY 2022 dollars)	\$35M	\$70M
Adjustment to Cost Cap for PI provided access to space	+\$4.2M	\$0
Adjustment for PEA-provided rideshare	\$0	-\$4.2M/ESPA port -\$6.5M/ESPA Grande port
Adjustment for PEA-provided Venture Class Launch Vehicle	N/A	Value NTE -\$12M
PEA-provided access to the International Space Station (ISS)	\$0	\$0

Heliophysics Explorers Program investigations must be compliant with NASA Policy Directive 1001.0C entitled “*NASA Governance and Strategic Management Handbook*”

and address NASA’s heliophysics science objectives as described in the 2020 NASA Science Mission Directorate strategy document; “*Science 2020-2024: A Vision for Scientific Excellence.*”

Inclusion is a NASA core value found in NPD 1001.C. SMD is committed to a culture of inclusion, diversity, equity, and accessibility (IDEA) where all employees feel welcome, valued, respected, and engaged. NASA expects that its IDEA philosophy will be reflected in the composition of all Announcement of Opportunity (AO) proposal teams. SMD also expects that all AO mission projects will clearly define the principles by which team members can operate in an inclusive and equitable environment. SMD also expects diverse and inclusive scientific, engineering, and technology communities in peer review panels (science, engineering, and technology), science definition teams, and mission and instrument teams.

NASA values the use of innovative, new technologies and encourages the demonstration of them in mission-relevant environments. SMEX investigations may therefore propose PI-Team-Developed Enabling and Enhancing Technology Demonstration Opportunities (TDOs) to demonstrate new capabilities. PI-Team-Developed Enhancing TDOs, like Science Enhancement Opportunities (SEOs), are funded outside of the AO Cost Cap and may possibly not be selected even if the parent mission is selected for flight.

NASA endeavors to provide NASA-developed technologies for NASA-Developed Enabling TDOs on science missions. The specific technologies to be offered for 2022 Heliophysics SMEX have yet to be determined. More information about NASA-developed technologies will be announced at a future date.

Foreign contributions to science instruments may not exceed approximately one-third of the science payload. Proposals shall include a discussion of the scale of any internationally-contributed instruments, how the proposed contribution is consistent with NASA’s policy that the contribution does not exceed approximately one-third of the science payload, and how the programmatic risks associated with the contribution will be handled.

The time frame for the solicitation is intended to be:

Release of draft AO and PEA	March 2022
Release of final AO and PEA	June 2022
Pre-proposal conference.....	~3 weeks after final AOs release
Notice of Intent	60 days after AOs release
Proposals due	90 days after AOs release
Step 1 Selection announced	2 nd Quarter CY2023 (target)
SMEX Down-selection	3 rd Quarter CY2024 (target)
MO Down-selection.....	2 nd Quarter CY2024 (target)
SMEX launch readiness date	NLT 3 rd Quarter CY 2028
MO launch readiness date	NLT 1 st Quarter CY 2028

The 2022 Heliophysics SMEX AO will be based on the Standard PI-led Mission AO Template available at http://soma.larc.nasa.gov/standardao/sao_templates.html. Proposers should read the final AO carefully when it is released.

NASA has not approved the issuance of the HPD's 2022 SMEX AO or SALMON-3 PEA and this community announcement does not obligate NASA to issue the announcements and solicit proposals. Any costs incurred by prospective investigators in preparing submissions in response to this announcement are incurred completely at the submitter's own risk.

Further information will be posted, as it becomes available, on the Science Office for Mission Assessments (SOMA) of the NASA Langley Research Center (LaRC) in the 2022 Heliophysics SMEX Acquisition websites at <https://explorers.larc.nasa.gov/HPSMEX22/SMEX/index.html> and <https://explorers.larc.nasa.gov/HPSMEX22/MO/index.html>.

Questions may be addressed via email only to Dr. Dan Moses, Heliophysics Explorers Program Lead Scientist, Science Mission Directorate, NASA, Washington, DC 20546; Email: dan.moses@nasa.gov. Emails will be acknowledged, and responses to inquiries will be posted at the Questions and Answers (Q&A) location on the Explorer Program Acquisition website. Anonymity of persons or institutions submitting questions will be preserved.