Heliophysics Explorers Program (HEP)
2019 Medium-Class Explorer (MIDEX)
Announcement of Opportunity (AO)
Pre-Proposal Conference

The Heliophysics Explorers Program Overview

July 23, 2019

Willis Jenkins
Heliophysics Explorers Senior Program Executive
NASA Heliophysics Division, Science Mission Directorate (SMD)

Explorers Program

- The Explorers Program is the oldest program at NASA. Established in 1958, with its first launch, Explorer I on January 31, placing the United States in the space race after the launch of Sputnik. There are over 100 mission flown.
- The Explorers program is the only program at NASA for which the scientist have received Nobel Prizes.
- The Explorers Program conducts Principal Investigator (PI)-led space science investigations in Science Mission Directorate's Heliophysics and Astrophysics Divisions.
- Explorer investigations are intended to obtain an understanding of the Sun and its effects on Earth and the Solar System and/or to discover the origin, structure, evolution, and destiny of the Universe and search for Earth-like planets.

Explorers Program

The mission of the Explorers Program includes:

- Conduct world-class scientific investigations of modest programmatic scope.
- Provide continuing flight opportunities.
- Utilize innovative, streamlined, and efficient management approaches; contain costs and improve performance; enhance public awareness of space science; incorporate educational and public outreach activities as integral parts of space science investigations.

The current program is made up of Small Explorers (SMEX), Medium-class Explorers (MIDEX) and Missions of Opportunity (MO)

Explorers Program

- Explorer Program is managed by NASA Goddard Space Flight Center.
- The Announcement of Opportunity (AO), evaluation, and selection process is supported by the Science Office for Mission Assessments (SOMA) at NASA LaRC.

Explorers History

The SMEX program was started in 1988 as an opportunity to train young engineers at GSFC. The spacecraft bus, system engineering, and integration and test were provided by GSFC. The principal investigator bid the science and instruments that were fairly well developed (Typically having evolved through the sounding rocket or balloon program). By 1997, the full responsibility of the SMEX missions was given to the PI through the highly competitive process that exists today.

SMEXs and MIDEXs are:

- Highly competitive
- PI led programs at universities and industries
- Frequent announcements of opportunities (SMEX or MIDEX alternate calls approximately every 3 years)
- Appropriate oversight by NASA (SMEXs and MIDEXs still in operation)
- Superior science/low cost mission

Explorers History

- An Announcement of Opportunity (AO) for the first Medium-class Explorer (MIDEX) missions was issued in March, 1995.
- This AO included, for the first time in the Explorer program, several features that were intended to facilitate the preparation and review of flight investigation proposals: two-step procurement process, an option for a Principal Investigator (PI)-mode, and strict adherence to cost caps.
- In addition, the AO addressed new programmatic initiatives for technology, education and outreach, and small and disadvantaged businesses.

"NASA's Explorer program is an example of mission lines that are vital to realizing the Enterprise's science objectives. Explorer offers frequent opportunities to carry out small- and medium-sized missions (SMEX and MIDEX) that can be developed and launched in a short (approximately four-year) time frame. These focused missions can address science of great importance to several of the Themes and respond quickly to new scientific and technical developments. The Mission of Opportunity option enables valuable collaborations with other agencies, both national and international. Explorer Missions and Missions of Opportunity are selected for science value through competitive peer review.

Each Explorer solicitation elicits more high-quality experiments than can be implemented. Peer review, the ability to implement new, creative ideas, and quick reaction to recent discoveries are essential elements of the high science value of the Explorer program."

The 2003 Space Science Enterprise Strategy

Announcement of Opportunity

- The PI-Managed Mission Cost is expected to be no greater than $250M in Fiscal Year (FY) 2019 dollars, not including the cost of the LV or any contributions
- Standard launch services on an LV will be provided for MIDEX missions at no charge against the mission cost cap
- Only the launch services described in the HEP 2019 MIDEX Program Library's launch services document will be provided.
- There is no Mission of Opportunity (MO) for FY 2019, this MO was released in 2018.

Heliophysics Explorers AO Process

2019 MIDEX investigations will be evaluated and selected through a two-step competitive process.

- Step 1 is the solicitation, submission, evaluation, and selection of proposals prepared in response to this AO.
- As the outcome of Step 1, NASA intends to fund approximately two or three Step-1 MIDEX proposals to proceed to an 9-month Phase A concept study and submit Concept Study Reports to NASA.
- Step 2 is the preparation, submission, evaluation, and continuation decision (down selection) of the Concept Study Reports.
- As the outcome of Step 2, NASA intends to down-select one MIDEX investigation to proceed into Phase B and subsequent mission phases.

Questions?

All further questions pertaining to the MIDEX AO MUST be addressed to:

Dr. Daniel Moses
Heliophysics Explorers Lead Program Scientist
Science Mission Directorate
NASA Headquarters
Washington, DC 20546
dan.moses@nasa.gov
(subject line to read "2019 Heliophysics MIDEX")
202.358.0558