



NASA LEARN Forum: NASA Mission Opportunities

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National Aeronautics and Space Administration Small Satellite Learning from Experience, Achievements and Resolution Navigation Forum





Outline



- NASA Science Mission Directorate (SMD)
 - Heliophysics Science (HPD)
 - Astrophysics Science (APD)
 - Earth Science (ESD)
 - Planetary Science (PSD)
- NASA Space Technology Mission Directorate (STMD)

Disclaimer: The list of opportunities is not comprehensive, and programs may have been offered in the past with no clear future solicitation

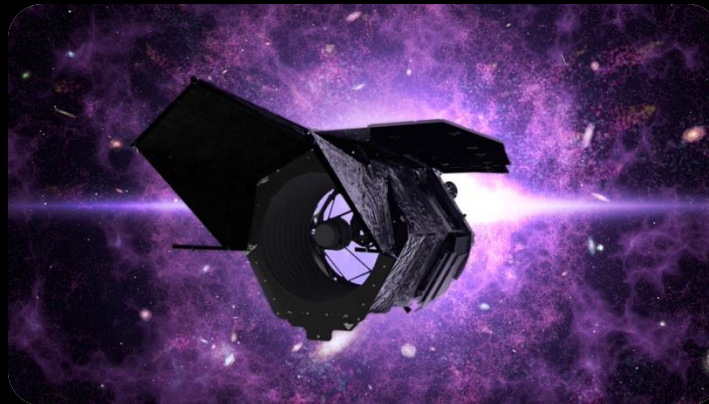


SMD: NASA Research Opportunities in Space and Earth Science (ROSES)



SMD's omnibus solicitation with over 100 opportunities/program elements. The opportunities are mostly for federal assistance awards (e.g., grants) and each have their own topics, due dates and other requirements.

- Open to organizations of every type unless otherwise restricted by a particular program element
- Released Annually on Feb14
- Awards up to \$10M+, over 1-5+ years (depends on program element)
- Topics include Astrophysics, Planetary Science, Heliophysics, Earth Science and Biophysics



Heliophysics Flight Opportunities for Research and Technology (H-FORT)

- Development of technologies that will enable investigation of heliophysics science questions
- TRL 1 – 9 (suggest 3+), up to \$10M up to 5 years
- Released annually, 1-2 awarded missions per year.
- The 2024 solicitation recently closed (9/20/2024)
- 29 missions awarded and 18 launched since 2013



CIRBE



- Small Explorers (SMEX) is intended to be the lowest cost missions of the Explorers Program
- Spacecrafts are, on average, 200 to 300 kg in mass
- Access to space utilizes the small expendable launch vehicles
- Two step Process
 - Step 1: Selection of ~3 investigations for a concept study
 - Step 2: Concept study reports are evaluated and up to one investigation will continue into Phase B
- Cost capped at around \$150M excluding NASA-provided launch services
- Last announcement was 2022



PUNCH



TRACERS

Astrophysics Research and Analysis (APRA)

- Technology development or science research relating to Astrophysics
- TRL 1 – 9, up to \$10M up to 5 years
- Rolling solicitation, 1 mission award per year
- Currently OPEN
- 9 missions awarded and 3 launched since 2015



BurstCube



HaloSat



Astrophysics Pioneers

- Intended for compelling astrophysics science at a lower cost using smaller hardware than missions in the Explorers Program
- TRL 6 by PDR, up to \$20M (excluding launch costs) for up to 5 years
- 6 missions awarded and currently under development since 2019
- Currently OPEN until 3/13/2025



Pandora



StarBurst



SMD: APD Astrophysics SMEX



- Two step Process
 - Step 1: Selection of two or three investigations for a concept study with a duration of 9 months and \$3.0M/each
 - Step 2: Concept study reports are evaluated and up to one investigation will continue into Phase B
- AO participation will be open to all categories of U.S. organizations non-U.S. organizations with some restrictions
- The Principal Investigator-Managed Mission Cost (PIMMC) for Phases A-F of investigations will be capped at \$170M
 - Excluding NASA-provided launch services
 - Lower-cost investigations and cost-efficient operations are encouraged
- Release of draft AO intended by December 2024 with release of final AO by March 2025



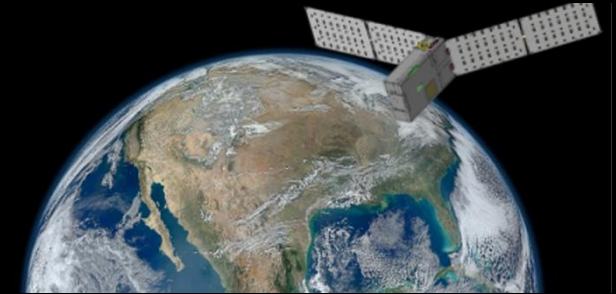
COSI

SMD: ESD Earth Venture (EVI, EVM)

- SMD Earth Science Division's Earth Venture is a Program element within the Earth System Science Pathfinder Program
- Consists of a series of new science-driven, low-cost missions
- Frequent openly-competed solicitations for innovative research and application missions that might address any area of Earth science



EVI: PoISIR



EVI: PREFIRE



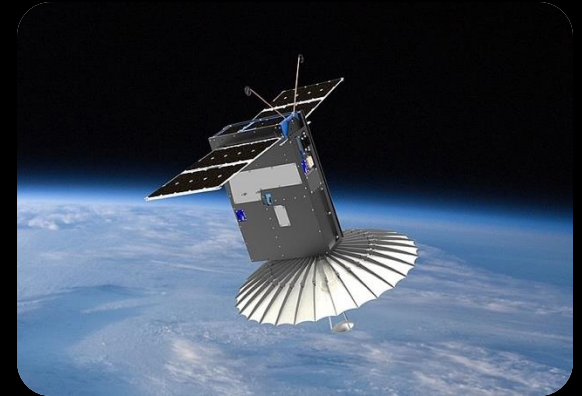
EVM: CYGNSS

SMD: ROSES ESD InVEST

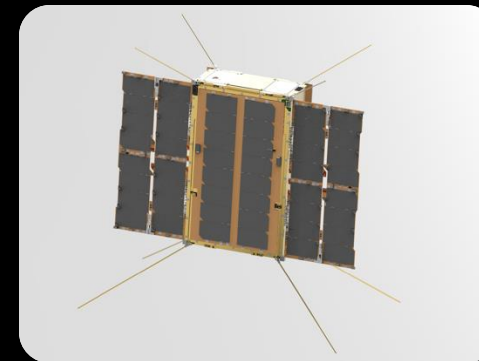
- In-Space Validation of Earth Science Technologies (InVEST)
- Validates new technologies, measurement concepts and techniques
- Objective: to test viability of these concepts in the space environment, especially those attributes that cannot be fully tested on the ground or in airborne systems, to reduce the risk to future Earth science missions
- Funding for Hosted Payloads and CubeSats



CubeRRT



RainCube



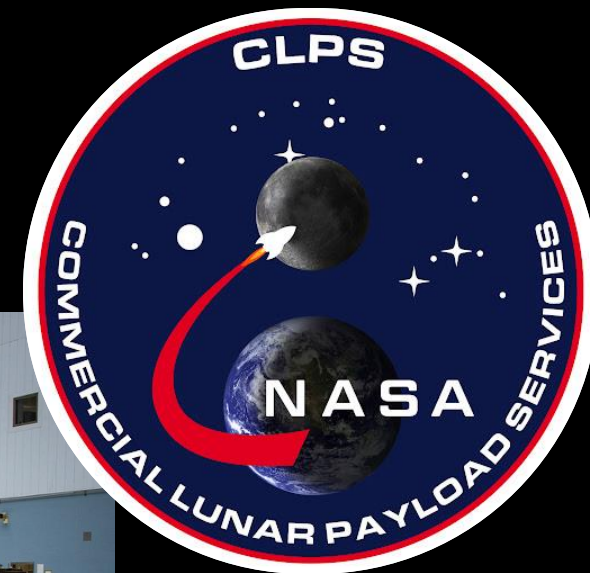
SNOOPI

Payloads and Research Investigations on the Surface of the Moon (PRISM)

- Science-driven suite of instruments and supporting technology demonstration payloads
- Payloads to be delivered to the lunar surface on a Commercial Lunar Payload Services (CLPS) lander



Models of the first three commercial landers selected for the program: Peregrine (Astrobotic Technology), Nova-C (Intuitive Machines), and Z-01 (OrbitBeyond)

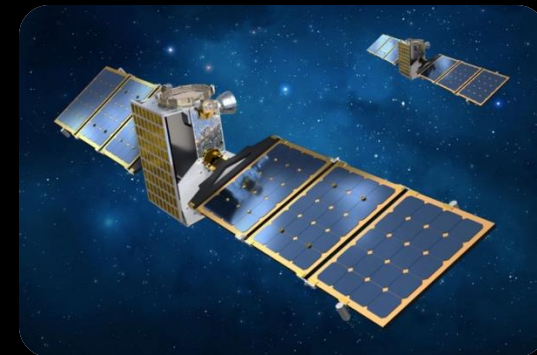


Stand Alone Missions of Opportunity Notice (SALMON) Small, Innovative Missions for Planetary Exploration (SIMPLEX)

- Formulation and development of science investigations that require a spaceflight mission using small spacecraft
- Responsive to the goals of the Planetary Science Division
- May target any body in the Solar System except for the Earth and Sun



EscaPADE



Janus



Lunar Trailblazer



STMD: NASA TechFlights



Advance technologies that align with U.S. space exploration priorities and support the expanding space economy through development and test of space technologies that address agency and mission goals in relevant environments

- Open to U.S.-based researchers from industry, academia, and private research institutes
- Payloads must be TRL4+
- Typically, 7-10 suborbital awards and 1-2 orbital awards, annually
- Selected projects receive awards of up to \$1M
- Funding covers:
 - Purchase of flight tests on commercial suborbital vehicles or orbital platforms hosting payloads
 - Design, development, and preparation of technology payloads for flight
 - Travel, educational opportunities, and other indirect cost
- **Website:** www.nasa.gov/stmd-flight-opportunities/access-flight-tests/nasa-techflights-solicitation-information





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