NASA-PEA-PROVIDED ACCESS TO SPACE--CUBESATS

SALMON-3 2018 HELIO SCIENCE MO
PRE-PROPOSAL CONFERENCE
AUGUST 24, 2018

Anne E Sweet
NASA HQ, Launch Services Office
CubeSat Launch Initiative
CSLI and Launch Services Program Relationships (NASA/HEOMD/KSC)

- NASA HQ
  - Bridenstine
  - SPACE TECHNOLOGY
    - Reuter (Acting)
  - SCIENCE
    - Zurbuchen
  - HUMAN EXPLORATION
    - GERSTENMAIER
  - DIRECTOR, LAUNCH SERVICES OFFICE
    - NORMAN
  - SPACECRAFT PROGRAMS AND PROJECTS AT NASA CENTERS
  - LAUNCH SERVICES PROGRAM
    - MITSKEVICH
  - ISS CRS
  - Commercial Crew
  - KENNEDY SPACE CENTER
    - CABANA
    - ENGINEERING
    - SAFETY & MISSION ASSURANCE
    - INDEPENDENT TECHNICAL AUTHORITIES
    - PROCUREMENT
    - RESOURCES
    - INFRASTRUCTURE
    - IT
    - LEGAL ETC.
  - Interfaces to other NASA Centers
    - SSC PROPULSION SUPPORT
    - MSFC, GRC TECHNICAL SUPPORT
  - Support Contractor Interface
    - ELVIS (AI Solutions) SUPPORT CONTRACTOR
CubeSat Options available for 2018 Helio Science MO

- Proposals in the form of CubeSats are allowed under the 2018 Helio Science MO up to 12U, including CubeSat constellations up to a total of 24U equivalent

- Access to Space varies in cost (or “Reduction of PEA Cost Cap”)
  - No cost for ≤12U to ISS
  - No cost ≤3U to other LEO
  - 6U to other LEO is $450K
  - 12U to other LEO is $1.95M
  - CubeSat constellation up to 24U is ≤$3.75M
  - All quotes already factor in SMD and CSLI contributions

- The form factor for 6U is either 1x2x3 or 1x1x6 (ISS only)

- The form factor for a 12U is either 2x2x3 or 1x2x6 (ISS only)

- Alternate (PI-provided) access to space is allowed; PI covers all costs
Options available for this AO (cont’d)

<table>
<thead>
<tr>
<th>CubeSats</th>
<th>Reduction of PEA Cost Cap</th>
<th>Volume (Interface)</th>
<th>Payload Max Launch Mass</th>
<th>Orbits</th>
<th>Availability of Opportunities (U/M/L)</th>
<th>Launch Vehicles</th>
<th>LV Risk</th>
<th>Comments</th>
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</thead>
<tbody>
<tr>
<td>1U</td>
<td>no charge</td>
<td>10 x 10 x 11.35 cm</td>
<td>*1.33 kg</td>
<td>High</td>
<td>ISS (Dragon/Cygnus)</td>
<td>G</td>
<td></td>
<td>all LVs and accommodations are operational</td>
</tr>
<tr>
<td>3U</td>
<td>no charge</td>
<td>12 x 12 x 36 cm</td>
<td>*4 kg</td>
<td>Medium</td>
<td>Atlas V / Falcon 9</td>
<td>G</td>
<td></td>
<td>LV is LSP Certified; accommodations are operational</td>
</tr>
<tr>
<td>6U</td>
<td>no charge to ISS orbit</td>
<td>12 x 24 x 36 cm</td>
<td>*12 kg</td>
<td>Medium</td>
<td>Medium</td>
<td>Y</td>
<td></td>
<td>No LSP certification; accommodation not operational</td>
</tr>
<tr>
<td>12U</td>
<td>no charge to ISS orbit</td>
<td>23 x 24 x 36 cm</td>
<td>*24 kg</td>
<td>Medium</td>
<td>Medium</td>
<td>Y</td>
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<tr>
<td>SmallSat or CubeSat Constellations (up to a total of 24U)</td>
<td>SurfBoard</td>
<td>*Your 3U dispensers/bearad **two 6U dispensers/bearad **two surf boards-launch</td>
<td>~30 kg/board</td>
<td>multiple</td>
<td>Low</td>
<td>Falcon 9</td>
<td>G</td>
<td>LV is LSP Certified; 1st flight of accommodation is pending</td>
</tr>
<tr>
<td></td>
<td>At Bulkhead Carrier</td>
<td>$3.15M</td>
<td>80 kg</td>
<td>multiple</td>
<td>Medium</td>
<td>Atlas V</td>
<td>G</td>
<td>LV is LSP Certified; accommodation is operational</td>
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<tr>
<td></td>
<td>C-Adapter Platform</td>
<td>**23 x 31 x 33 cm smallsat</td>
<td>45 kg</td>
<td>multiple</td>
<td>Low</td>
<td>Atlas V / Delta/V</td>
<td>G</td>
<td>LV is LSP Certified; accommodation is not operational</td>
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** see provider websites for updated interface details

ESPA Class Secondaries on lMAP mission

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*** see NASA’s Mission Specific Evolved Expendable Launch Vehicle Secondary Payload Adapter (ESPA) System Interface Specifications (SIS) for Heliophysics Missions of Opportunity in the Program Library.

Primaries

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LV Point of Contact: Garrett Skrobot at 321-867-5365 or garrett.skrobot@nasa.gov
Summary

• It is the Launch Service Program’s goal to ensure the highest practicable probability of mission success while managing the launch service technical capabilities, budget and schedule.

• Questions on CubeSat access to space must be officially submitted to:

  Anne Sweet  
  NASA Headquarters  
  Launch Services Office  
  Phone: 202-358-3784  
  Email: anne.sweet-1@nasa.gov

NASA Launch Services is ready to respond to your mission specific questions