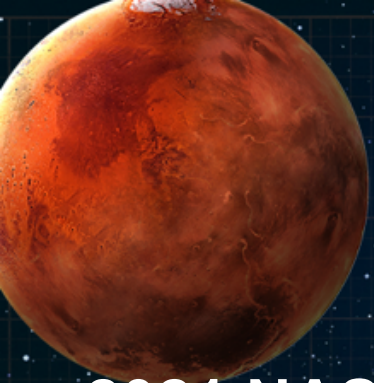




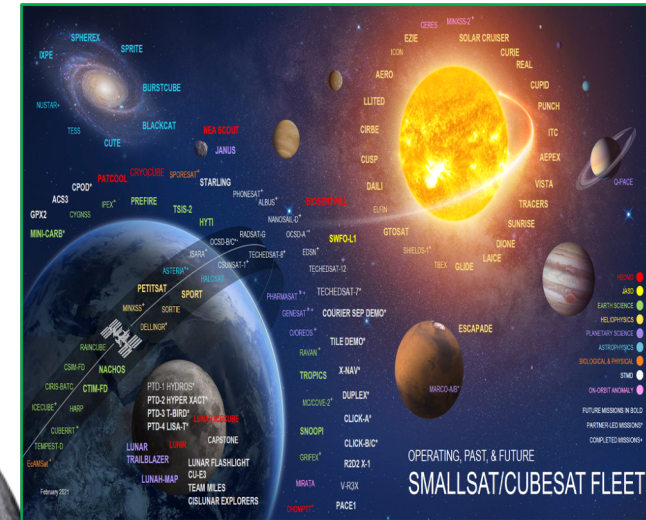
2021 NASA Small Spacecraft Virtual Forum : Opening Session

March 25th 2021

Joseph Casas (Joe)

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256-961-3029 office
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National Aeronautics and
Space Administration

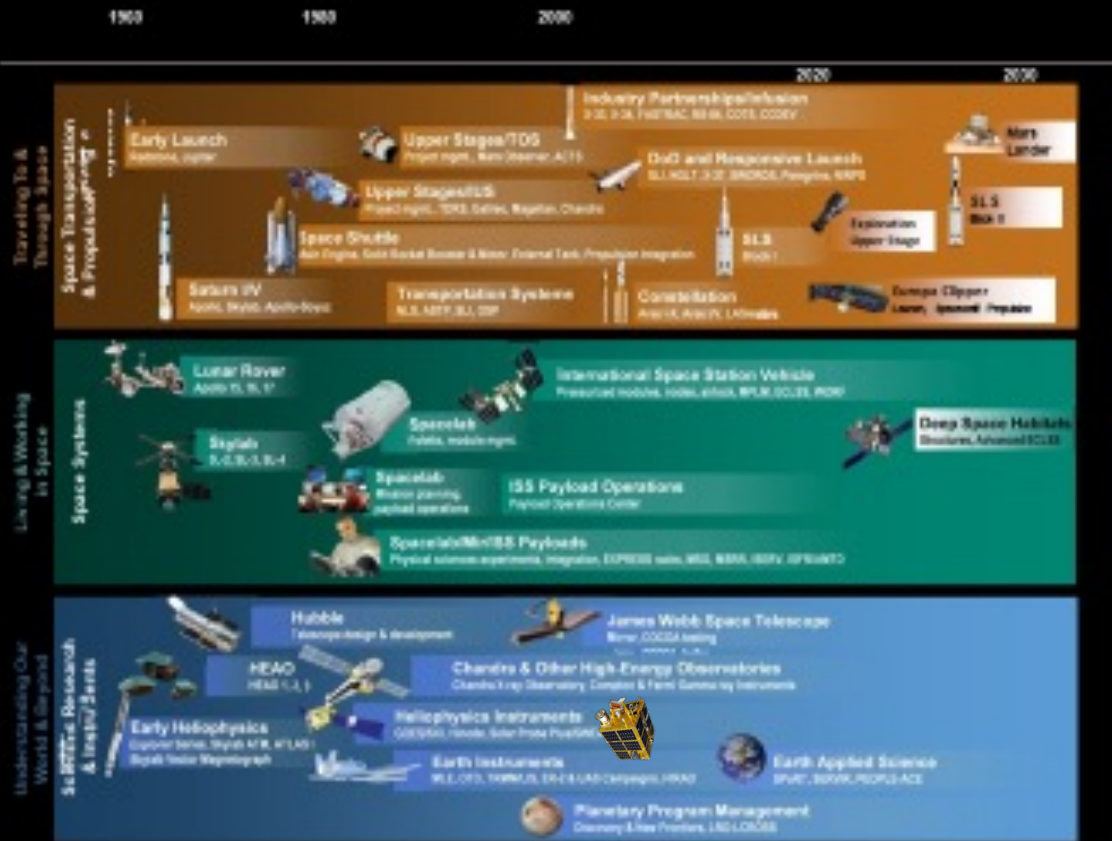


small spacecraft missions



MARSHALL
SPACE FLIGHT CENTER

MSFC PAST, PRESENT and FUTURE



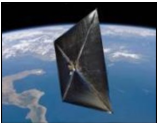
Shaping the Marshall of Tomorrow



- 2020 Management Emphasis**
1. Deliver on the Mission
 2. Ensure a Vibrant Workforce
 3. Build Agile Partnerships
 4. Risk Leadership
 5. Leading Change



FASTSAT 2010 : First Government Designed, Developed and Flown ESPA Class Spacecraft



On Orbit insertion NanoSail-D

MSFC :Long Successful Legacy in Space Transportation & Propulsion, Space Systems and Scientific Research & Instruments

Areas of Focus for the Center : MSFC Small Spacecraft Mission Capabilities Integration(SSMC)

Communities of Interest for Small Spacecraft Mission Capabilities Integration: Adopt small spacecraft as part of a balanced program of discovery, incorporating new technology & processes, mission formulation, and launch capabilities to enable unique and timely science, exploration and technologies

**Advanced
Manufacturing &
Materials:
Additive**



**Advanced
System
Engineering,
Testing &
Mission
Assurance**



**Transportation for Unique
Missions: SLS
Accommodations for
Cubesat**



**Unique Mission
Accommodations:
Propulsive ESPA**



**Propulsion: Green &
Hybrid**



**Science, Technology
& Exploration
Payloads :
Instruments,
technologies,
systems and
missions**

MSFC, Agency, Industry, OGAs and Academic partners addressing next generation opportunities for enhancement of our people and community skills, capabilities, innovation challenges and the development of leadership and management capabilities

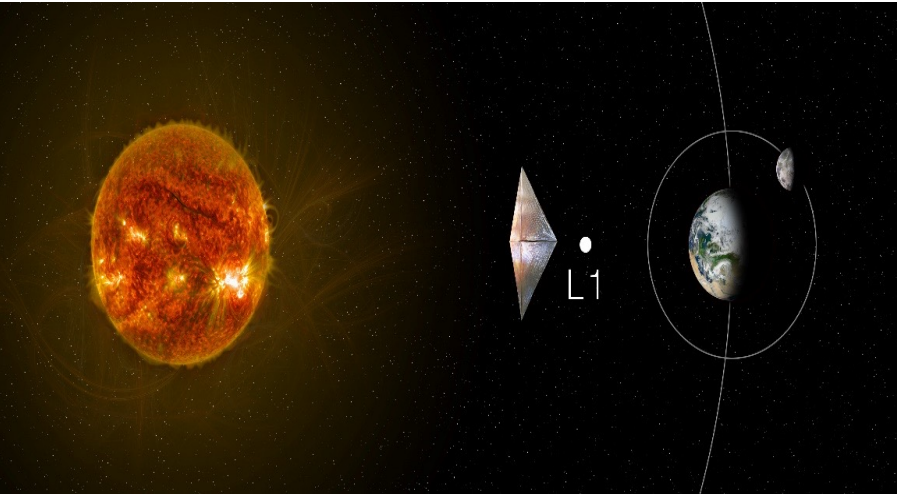


**Space Operations and Control :
Diversity of Investigators, complexity
of human and non-human rated space
experiments/ instruments/ facilities,
Lunar surface systems and spacecraft**



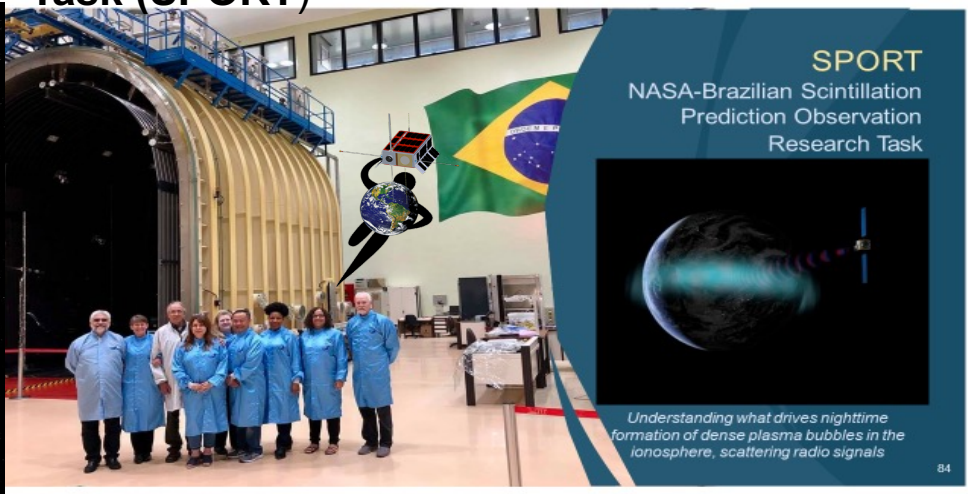
**MSFC historical
capabilities and
experience**

Solar Cruiser



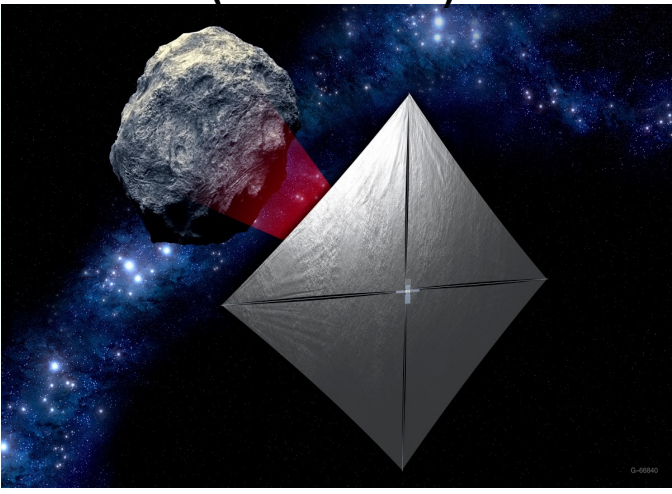
Demonstrate solar sail propulsion to enable near-term missions addressing high-priority science questions defined in the Solar and Space Physics Decadal Survey:

Scintillation Prediction Observation Research Task (SPORT)



Understanding what drives nighttime formation of dense plasma bubbles in the ionosphere, scattering radio signals:

Near-Earth Asteroid Scout (NEA Scout)



Demonstrate the capability of an extremely small spacecraft, propelled by a solar sail, to perform reconnaissance of an asteroid at low cost.

Lunar Flashlight



Low-cost secondary payload concept will map the lunar south pole for volatiles and demonstrate several technological firsts, including being the first CubeSat to reach the Moon, the first planetary CubeSat mission to use green propulsion, and the first mission to use lasers to look for water ice:

Lightweight Integrated Solar Array and anTenna (LISA-T)



PTD Mission Objective: Demonstrate the deployment, operation, and environmental survivability of the LISA-T power generation and communication array :