



The HERMES Payload for Gateway: Heliophysics Enabled by Lunar Exploration

W.R. Paterson + HERMES Science Team



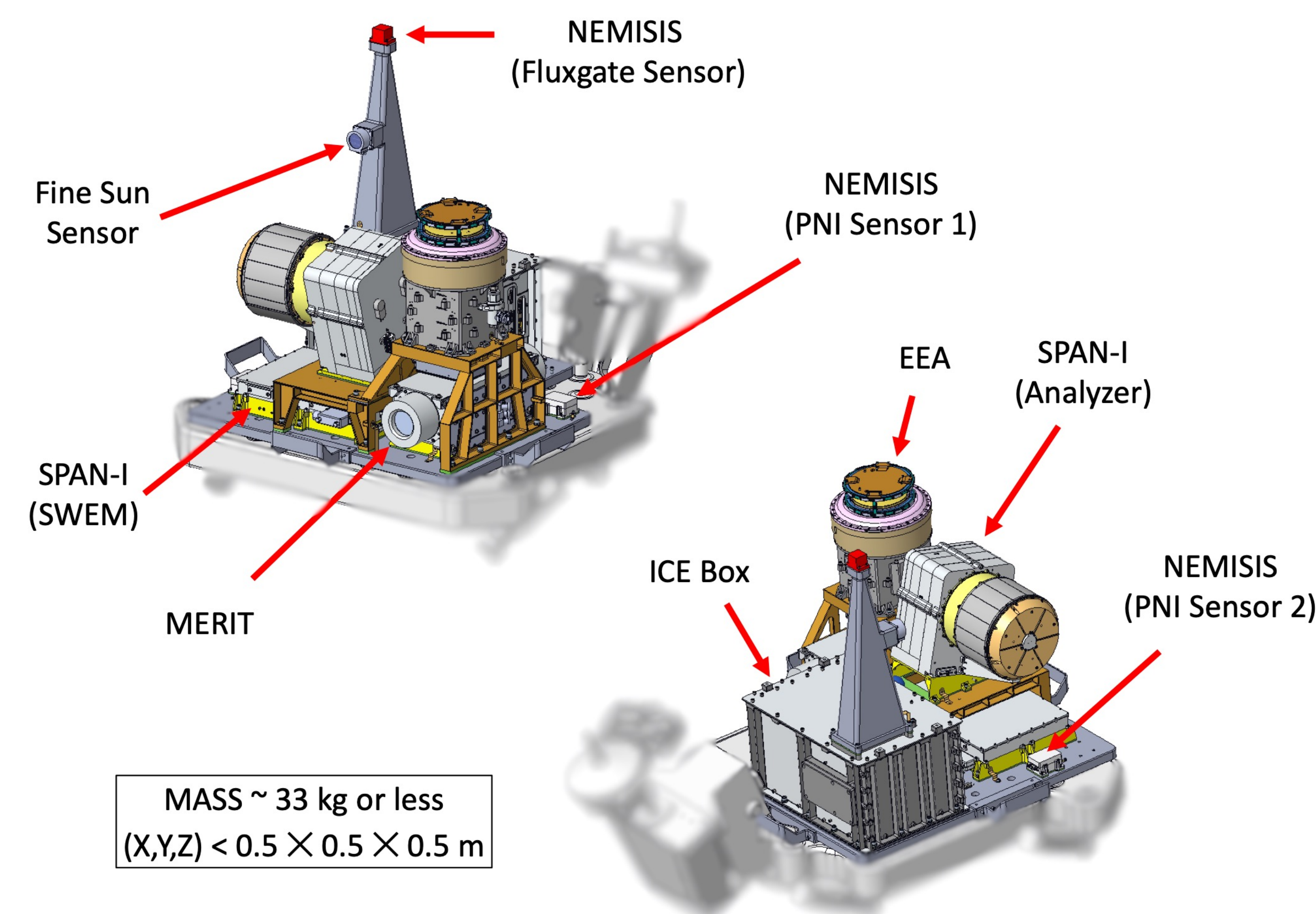
Science Description

Heliophysics Environmental and Radiation Measurement Experiment Suite (HERMES)

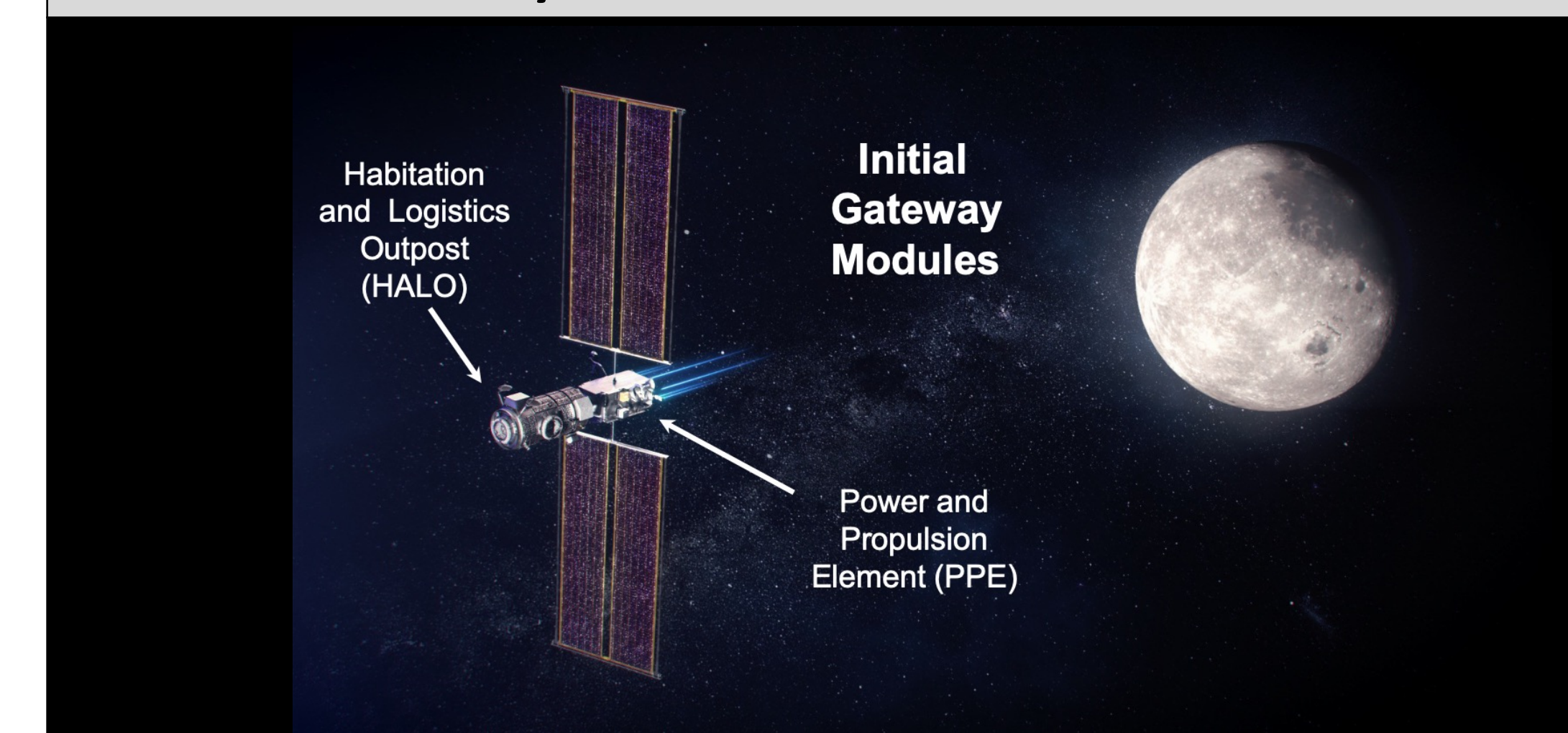
HERMES is a space weather instrument suite that will attach to the exterior of the Gateway Habitation And Logistics Outpost (HALO). It will study the solar wind and the tail region of Earth's magnetosphere from the unique vantage point of Gateway's polar lunar orbit to provide better understanding of mass and energy transport, topology, and variability within these regions.

Additionally, HERMES will establish capabilities of an on-board space-weather payload to support deep-space and long-term human exploration.

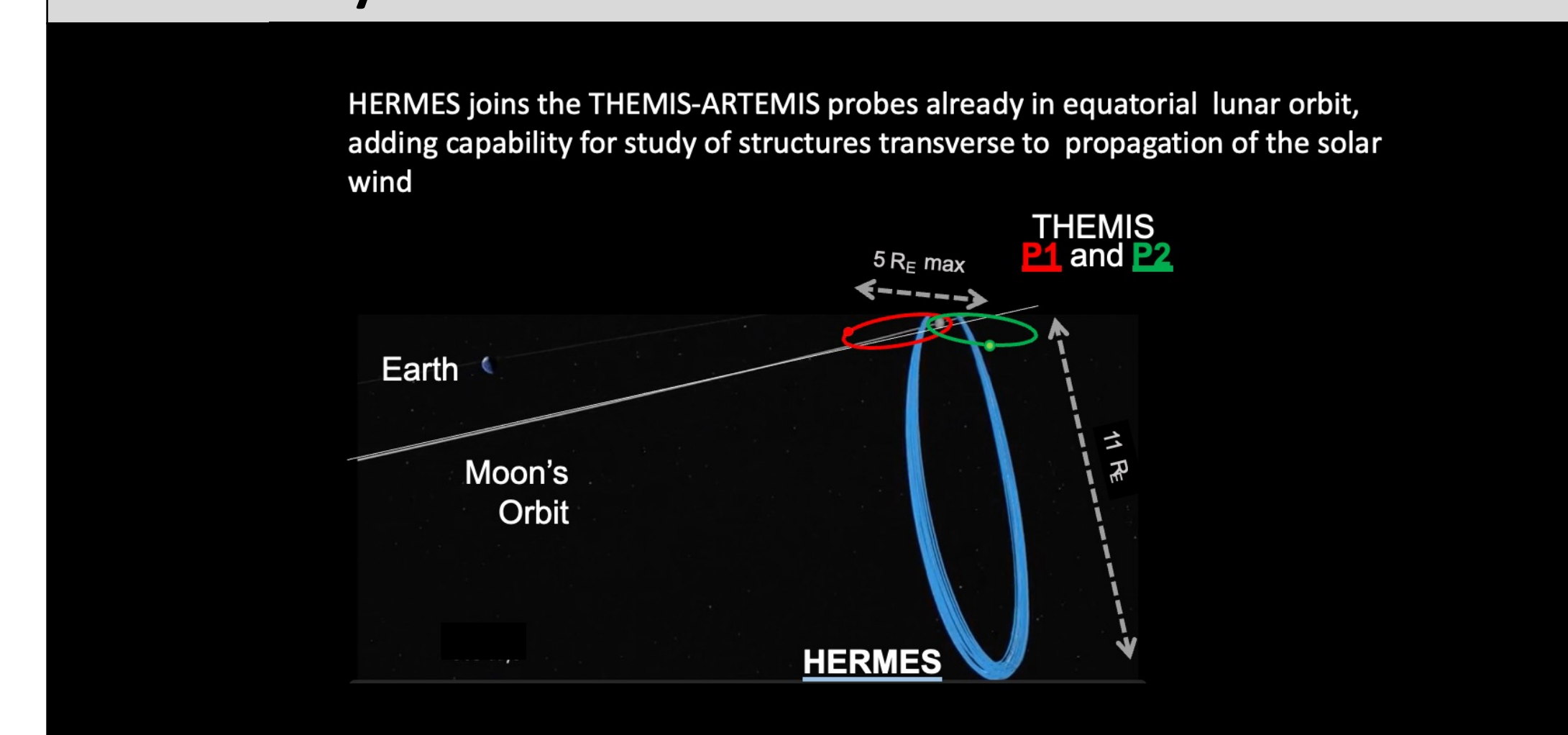
HERMES Payload



First Gateway Modules



Gateway Lunar orbit

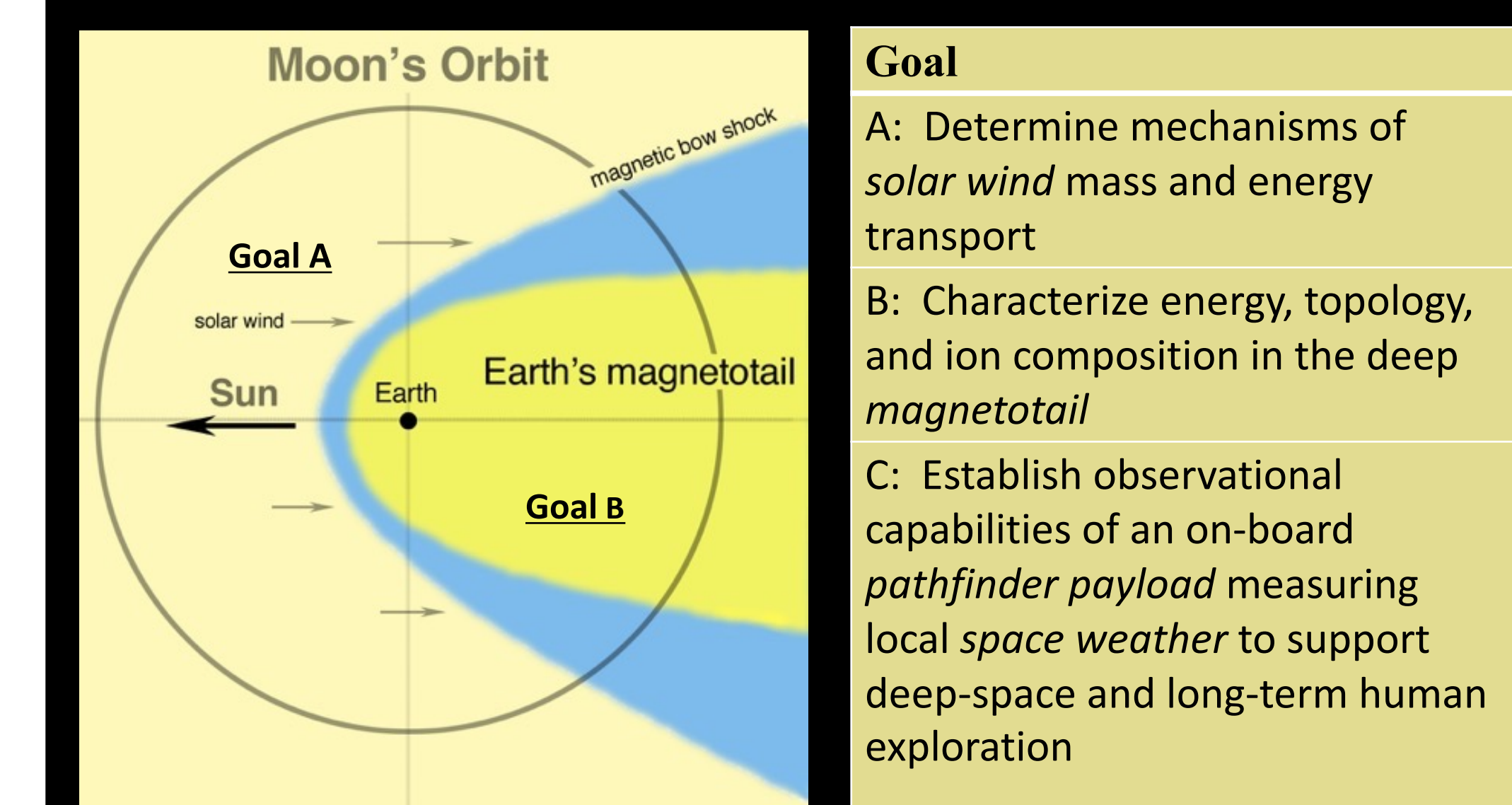


Key Information

- October 2025 or later Launch on Falcon 9 Heavy with Gateway's HALO and PPE
- Approximately 1 year transit to lunar orbit
- 2-year nominal science mission from lunar orbit
- Leverages observations from other NASA Heliophysics Missions
 - THEMIS-ARTEMIS in equatorial lunar orbit
 - Solar Wind monitors at L1
 - Magnetospheric Multiscale
- Leverages Gateway's unique polar lunar orbit
- Science addressed by Instrument Teams in collaboration with HERMES Interdisciplinary Science Teams + ESA and JAXA Gateway partners
- Companion Payload to European Radiation Sensor Array (ERSA) and Internal Dosimeter Array (IDA)

Instrument	Measurement	Range	Provider/PI
MERIT: Miniaturized Electron pRoton Telescope	Electron and Proton Telescope	Protons: 1 - 190 MeV, Electrons: 0.3 - 9 MeV	NASA GSFC/ Shrikanth Kanekal
SPAN-I: Solar Probe Analyzer - Ions	Ion Mass Spectrometer	2 eV – 40 keV	U.C. Berkeley/ Roberto Livi
EEA: Electron Electrostatic Analyzer	Electron Spectrometer	5 eV – 10 keV	NASA GSFC/ Daniel Gershman
NEMISIS: Noise Eliminating Magnetometer In a Small Integrated System	Magnetometers - One fluxgate sensor - Two inductive sensors	+/-65,000 nT	NASA GSFC/ Eftyhia Zesta U.Michigan/ Mark Moldwin

Science Regions



Key Project Personnel

Project Scientist: Bill Paterson
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Project Manager: Carolyn Mariano

Deputy Project Manager: Kristen Brown

Financial Manager: Joan Rodriguez-Rivera

Ground System Manager: Bob Kozon

Mission Systems Engineer: Joe Cerullo

Safety & Mission Assurance Officer: Linda Glusing