National Aeronautics and Space Administration

NASA Space Weather Status

ISWI Steering Committee

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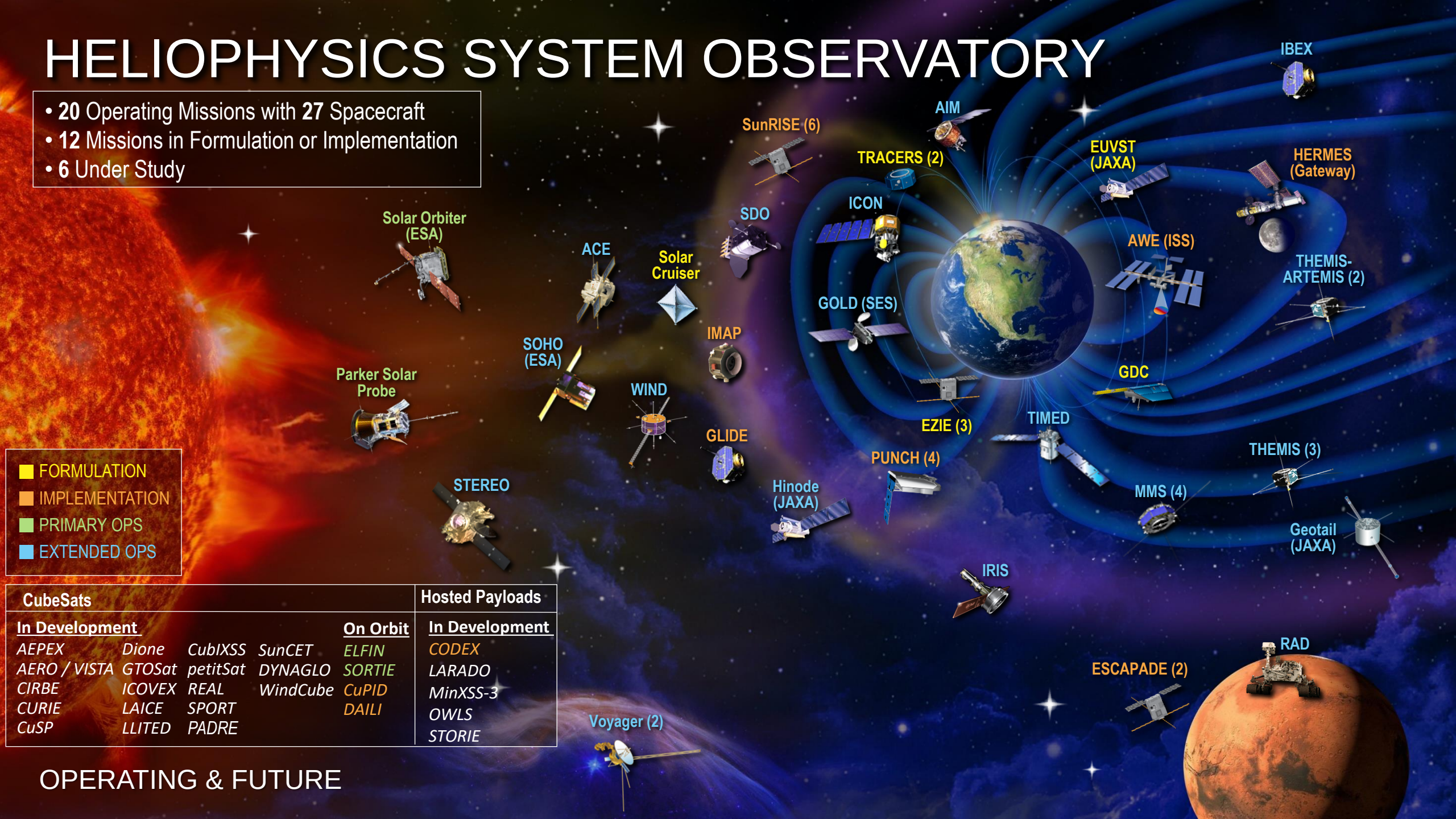
Feb 11, 2022

HELIOPHYSICS SYSTEM OBSERVATORY

- **20** Operating Missions with **27** Spacecraft
- **12** Missions in Formulation or Implementation
- **6** Under Study



- FORMULATION
- IMPLEMENTATION
- PRIMARY OPS
- EXTENDED OPS

CubeSats					Hosted Payloads
In Development				**On Orbit**	**In Development**
AEPEX	*Dione*	*CubIXSS*	*SunCET*	*ELFIN*	*CODEX*
AERO / VISTA	*GTOSat*	*petitSat*	*DYNAGLO*	*SORTIE*	*LARADO*
CIRBE	*ICOVEX*	*REAL*	*WindCube*	*CuPID*	*MinXSS-3*
CURIE	*LAICE*	*SPORT*		*DAILI*	*OWLS*
CuSP	*LLITED*	*PADRE*			*STORIE*

OPERATING & FUTURE

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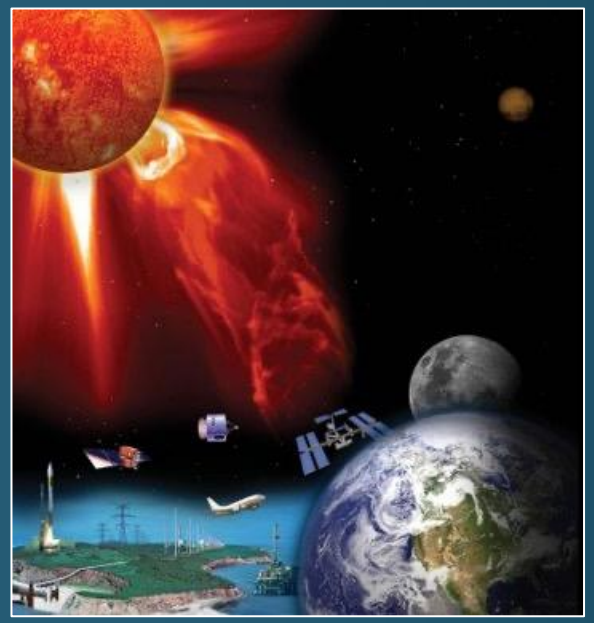

Recent Accomplishments

- NASA space weather strategy and implementation plan
- NOAA and DoD Framework to transition NASA research, techniques and technology relevant to space weather operations
- NSF-NASA Space Weather Quantification of Uncertainty grant solicitation
- Research to Operations to Research (R2O2R) grant solicitation: Additional Transition Step for efforts that show promise to use in an operational space weather environment at NOAA or DoD
- HERMES instrument package in support of Gateway and Artemis and space weather confirmed for flight – 1/27/2022
- In Nov. 2021, HPD announced the selection of eight Cubesats within the HFORT 2019/HFORT 2020 ROSES elements:
  - **CubIXSS: The CubeSat Imaging X-ray Solar Spectrometer**
  - Sun Coronal Ejection Tracker (SunCET)
  - DYNamics Atmosphere GLObal-Connection (DYNAGLO)
  - WindCube
- Completed Space Weather Science Gap Analysis, managed by APL. The report can be viewed here.

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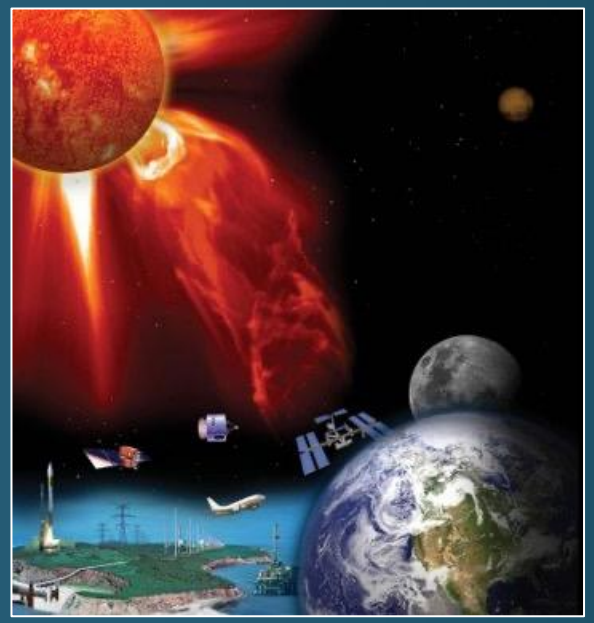

Looking Ahead

- Develop space weather instrument pipeline for future opportunities
- Engage international partners on future collaborations (ESA Lagrange, CSA AOM, ESA Daedalus, KASI SNIPE, ISRO Aditya, others?)
- Continue transitioning Radiation Assessment Detector (RAD) instrument on Curiosity rover on Mars from Planetary Science Division to the Heliophysics Division
- Continued funding R2O2R grants and SWx SBIR efforts - >70 funded efforts with multiagency input (DoD/NOAA/NSF/NASA)
- Preparing solicitation for Space Weather Centers of Excellence
  - Draft solicitation will be available for comment prior to formal announcement with ROSES-22.
- Developing the ARC program to support early-stage/foundational research to enable downstream results in space weather.
- Actions in response to 2020 PROSWIFT Act are underway

Gateway: HERMES

- The NASA space weather instrument suite, led by HPD, will observe solar particles and the solar wind. The second scientific investigation is a radiation instrument package, built by the European Space Agency.
  - NASA Suite: **HERMES** (Heliophysics Environmental and Radiation Measurement Experiment Suite)
  - ESA Suite: **ERSA** (ESA Radiation Sensors Array)
- **Program Office:** Living With a Start (LWS) Program, Explorers and Heliophysics Projects Division (EHPD), Goddard Space Flight Center (GSFC)
- This payload will enable meaningful science, support Artemis, and be forward looking to crewed missions to Mars.
- HERMES was successfully confirmed in Jan. 2022