Heliophysics Advisory Council
February 2024

Joseph Westlake
Director, Heliophysics Division
NASA Headquarters

Peg Luce
Deputy Director, Heliophysics Division
NASA Headquarters

Nicole Rayl
Associate Director for Flight, Heliophysics Division
NASA Headquarters

NASA HELIOPHYSICS DIVISION LEADERSHIP

Joseph Westlake
Division Director

Peg Luce
Deputy Division Director

Nicole (Nicki) Rayl
Associate Director for Flight

NASA HELIOPHYSICS OBJECTIVES

- Solve the **fundamental physics** mysteries of heliophysics: Explore and examine the physical processes in the space environment from the Sun to the Earth and throughout the solar system including the interface with the interstellar medium.
- Build the **knowledge to forecast space weather** throughout the heliosphere: Develop the knowledge and capability to detect and predict extreme conditions in space to protect life and society and to safeguard human and robotic explorers beyond Earth.
- Understand the **nature of our home in space**: Advance our understanding of the connections that link the sun, the Earth, planetary space environments, and the outer reaches of our solar system.

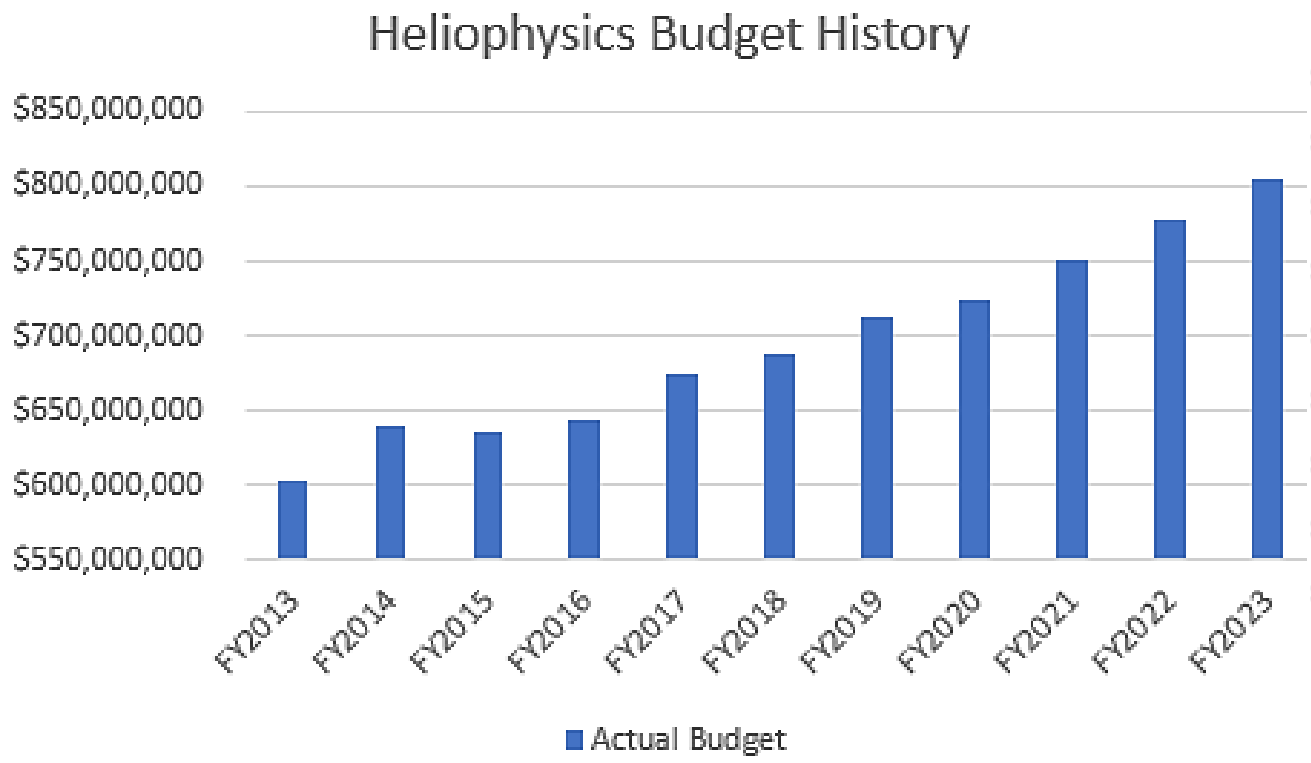
The NASA HQ Heliophysics Division

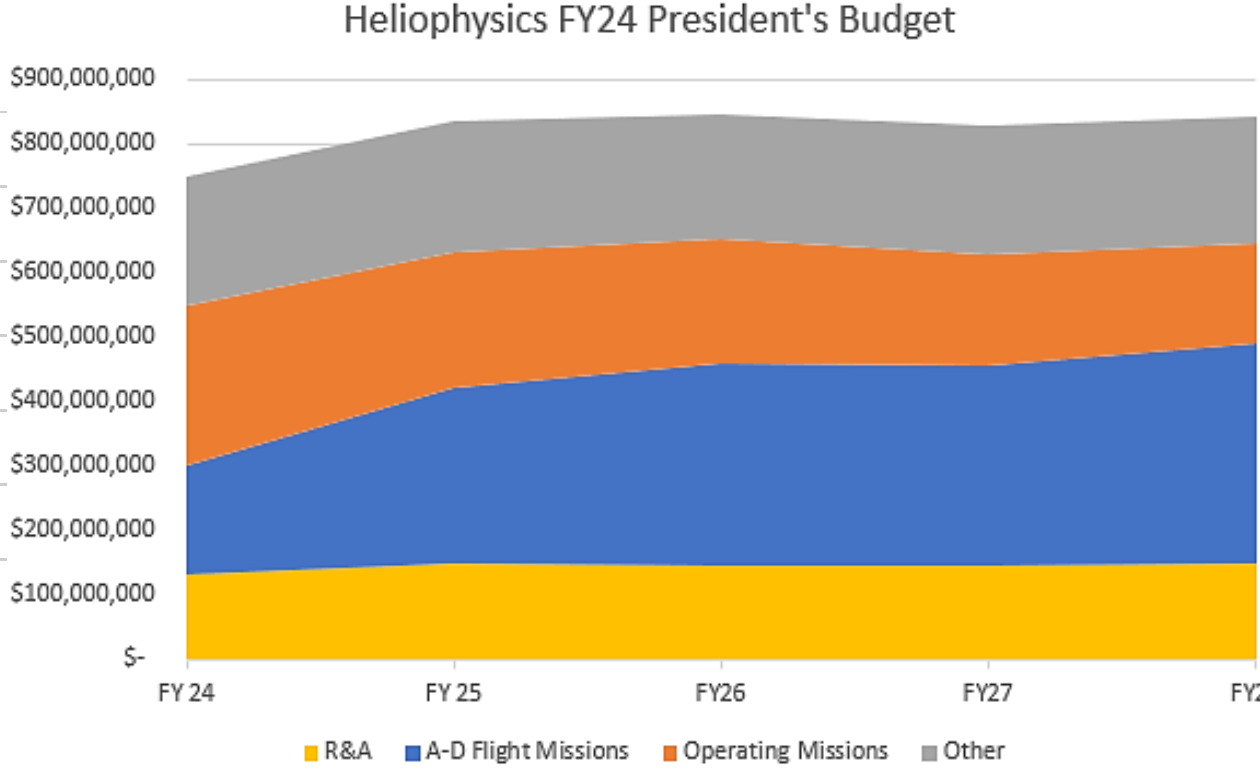
HPAC FINDINGS AND RECOMMENDATIONS

HPAC Topic	Findings from Nov 2023	Recommendations from Nov 2023	HPD POC(s)
HSO Infrastructure Missions	In the last Senior Review, NASA transitioned six Heliophysics missions to Heliophysics System Observatory Infrastructure. HPAC recognizes that this is a reasonable way to allow missions to keep operating and produce data useful to the community within a limited budget.	"In the Heliophysics Senior Review Call for proposals it is stated that "HSO Infrastructure Mission continues operations as an extended mission and does not receive funding to execute a scientific research plan. It only receives funding necessary to continue operations and associated activities. We recommend that HPD communicates better to the community the implications of a mission's transition to HSO infrastructure. For example: Are HSO infrastructure mission teams allowed to re-organize their limited budget for science to be produced (e.g., science publications) even if they are not explicitly required to do so? Can a mission move from the infrastructure category to the Science Investigation category if new data acquisition can lead to specific proposals of new scientific tasks? We recommend HPD to track any correlation between the transition of certain missions to HSO infrastructure and the number of proposals submitted to R&A programs using data from those missions.	Joe Westlake , Peg Luce, Nicole Rayl, Elizabeth Esther
R&A Funding Level	HPD is addressing budget realities and providing good rationale for preserving the R&A budget in order to optimize science return and the health of the community.	We recommend sharing this and other decision-making rules, guidelines and rationale used to determine priorities within the HPD budget more broadly with the community.	"Joe Westlake Nicki Rayl Patrick Koehn Peg Luce"

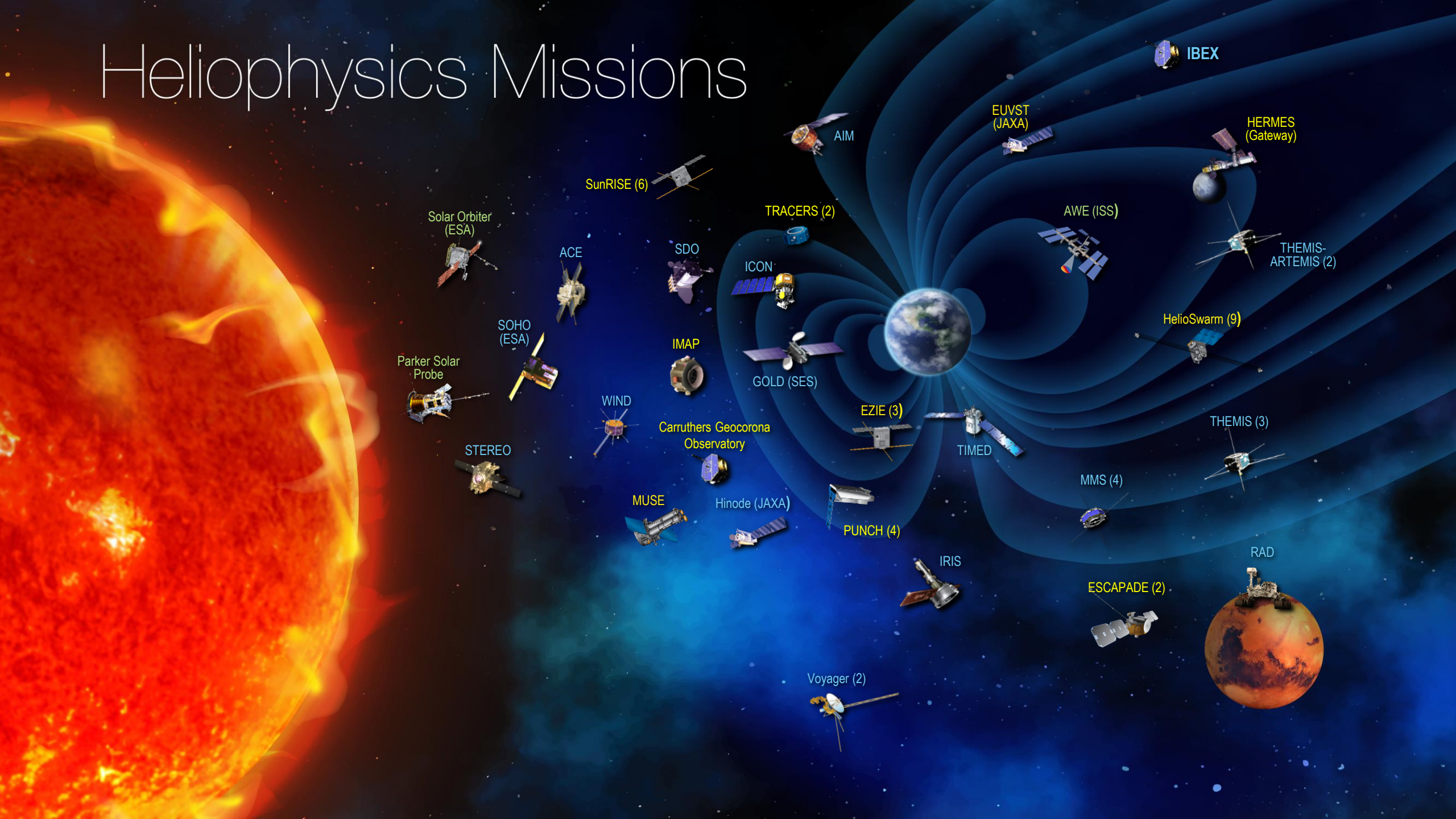
- Division POCs have been assigned to November 2023 HPAC recommendations
- Updates to be provided at next HPAC meeting
- A few responses to mention:
  - HSO Infrastructure: Division strategy being revamped
  - R&A: Budget for R&A remains steady

BUDGET UPDATE



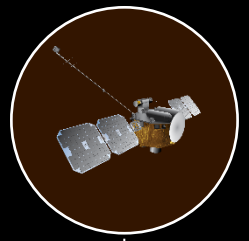


Heliophysics Missions



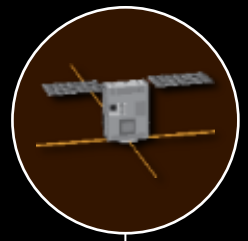
HELIO MISSION LAUNCH TIMELINE

ESCAPADE



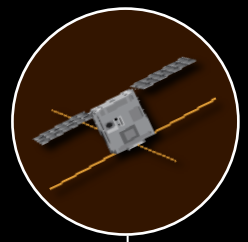
~August **2024**

EZIE



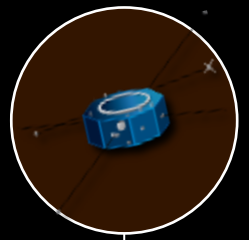
~October **2024**

SunRISE



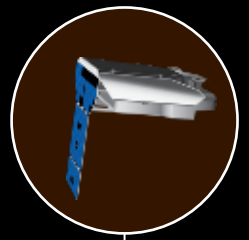
~March **2025**

TRACERS



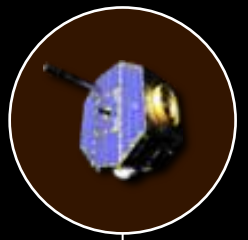
~April **2025**

PUNCH



~April **2025**

Carruthers Geocorona Observatory

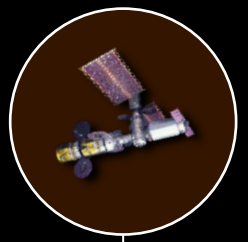


~May **2025**

IMAP

~May **2025**

HERMES



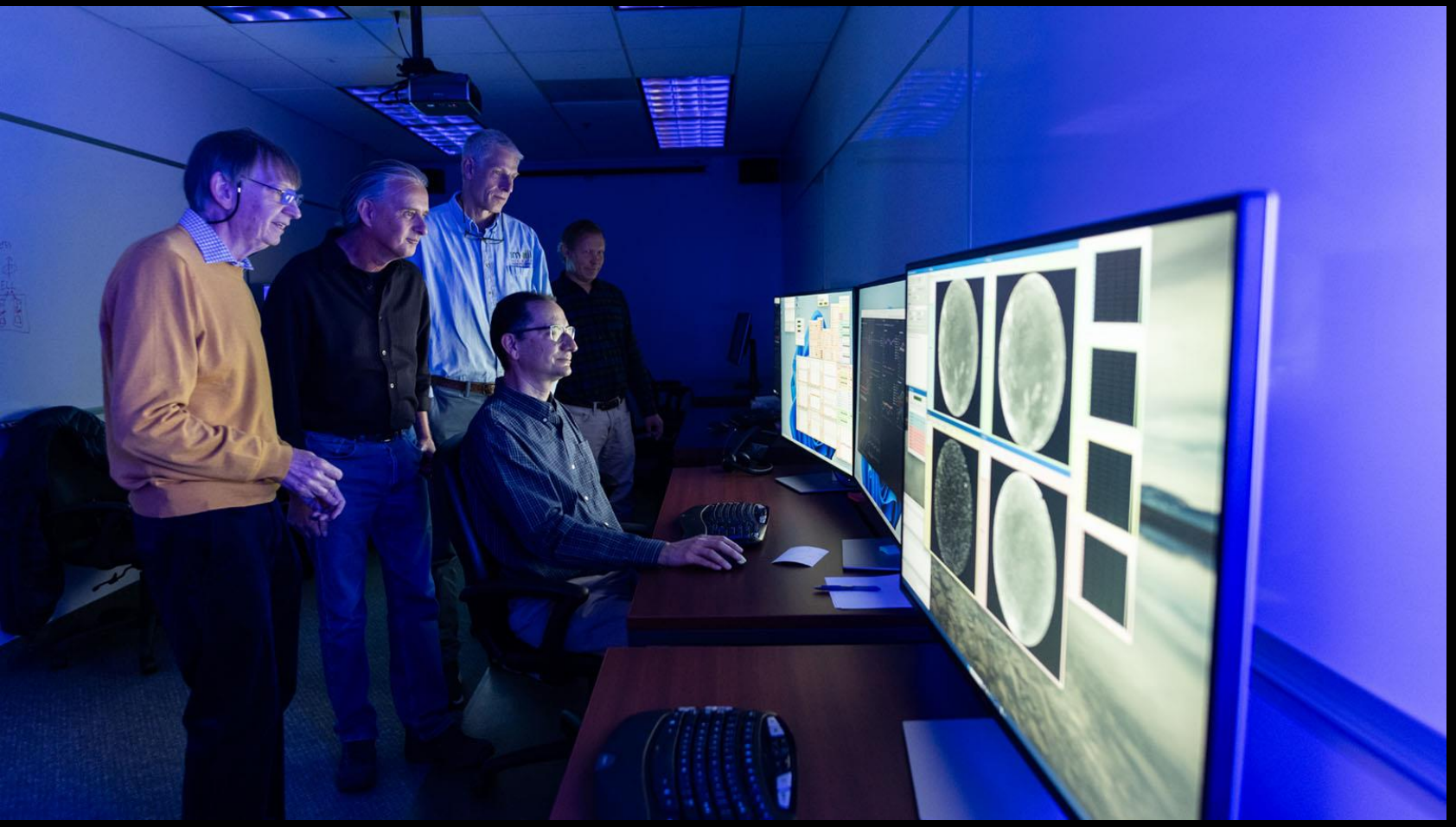
~October **2025**

HELIOPHYSICS MISSION HIGHLIGHTS

CARRUTHERS GEOCORONA OBSERVATORY & EZIE

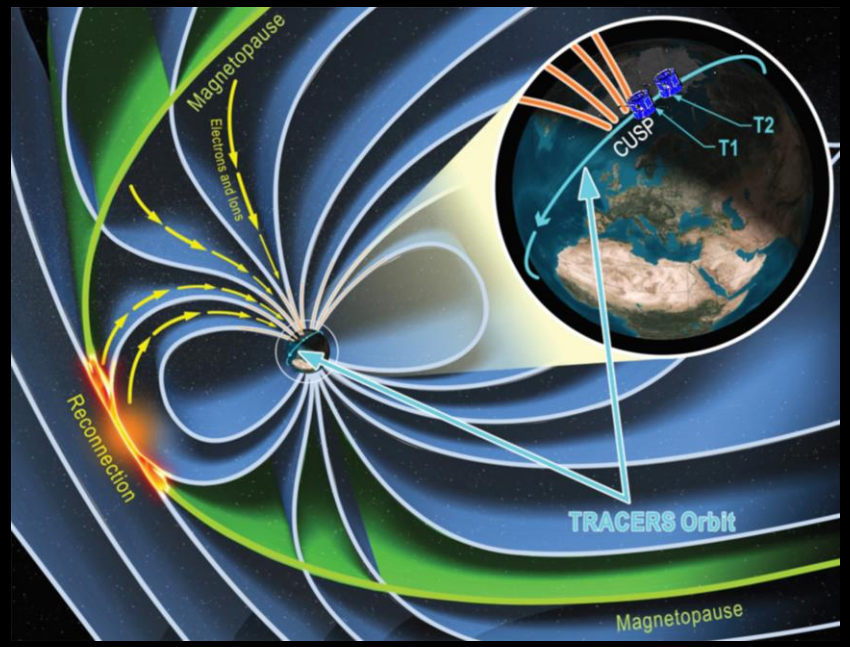
AWE FIRST LIGHT

Atmospheric Waves Experiment

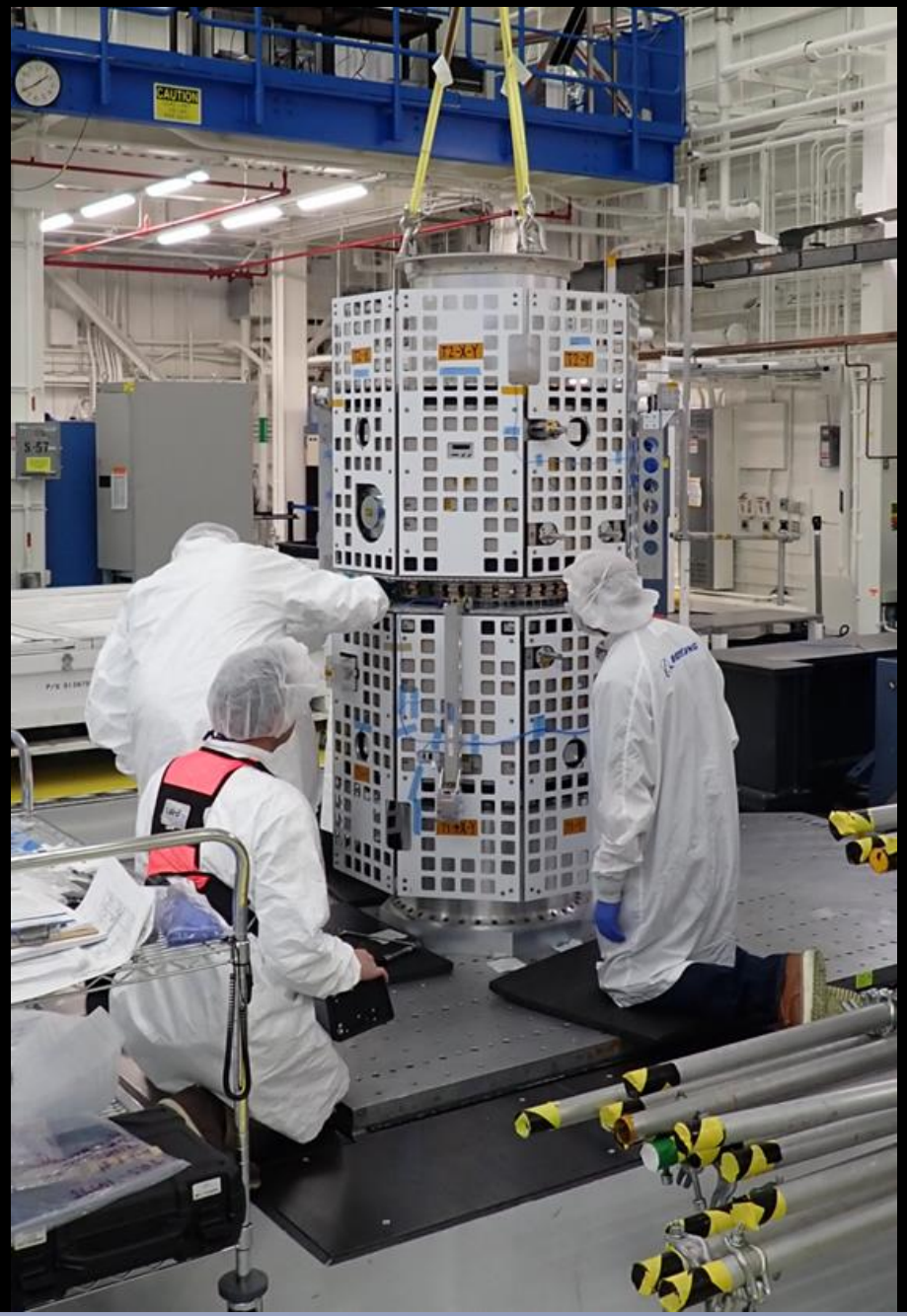


https://blogs.nasa.gov/awe/

TRACERS


Magnetopause
Electrons and Ions
CUSP
T2
T1
Reconnection
TRACERS Orbit
Magnetopause

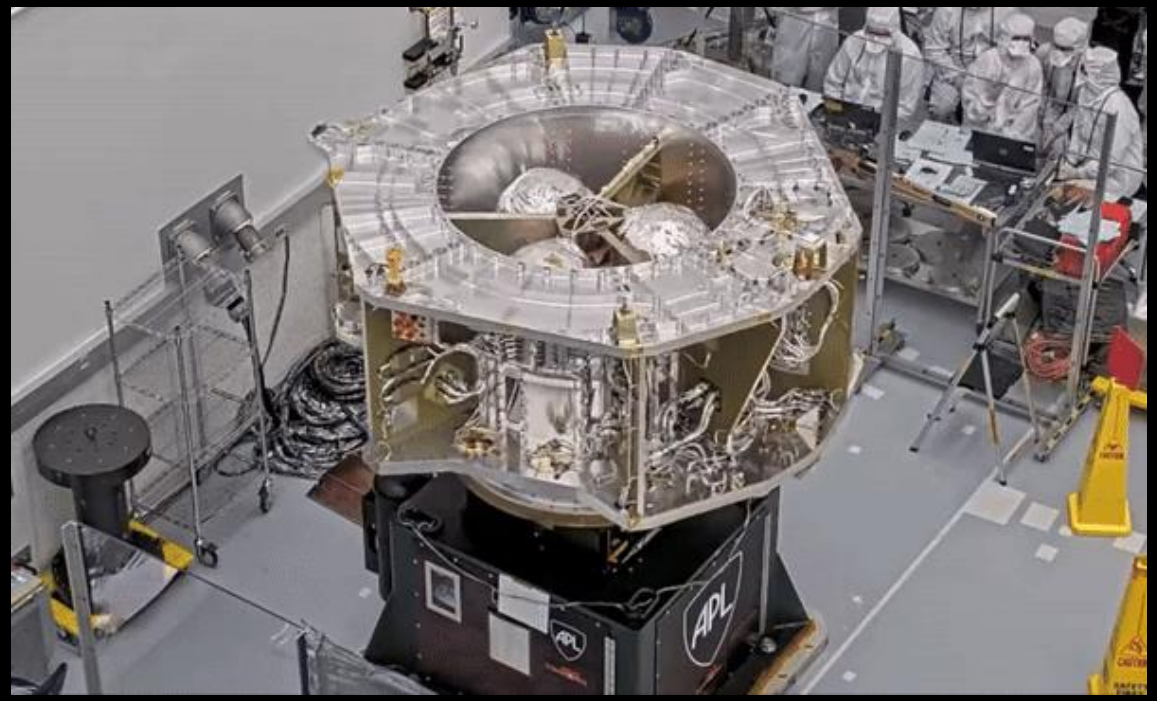

FARO


CAUTION

INTERSTELLAR MAPPING AND ACCELERATION PROBE (IMAP)

Mission Updates

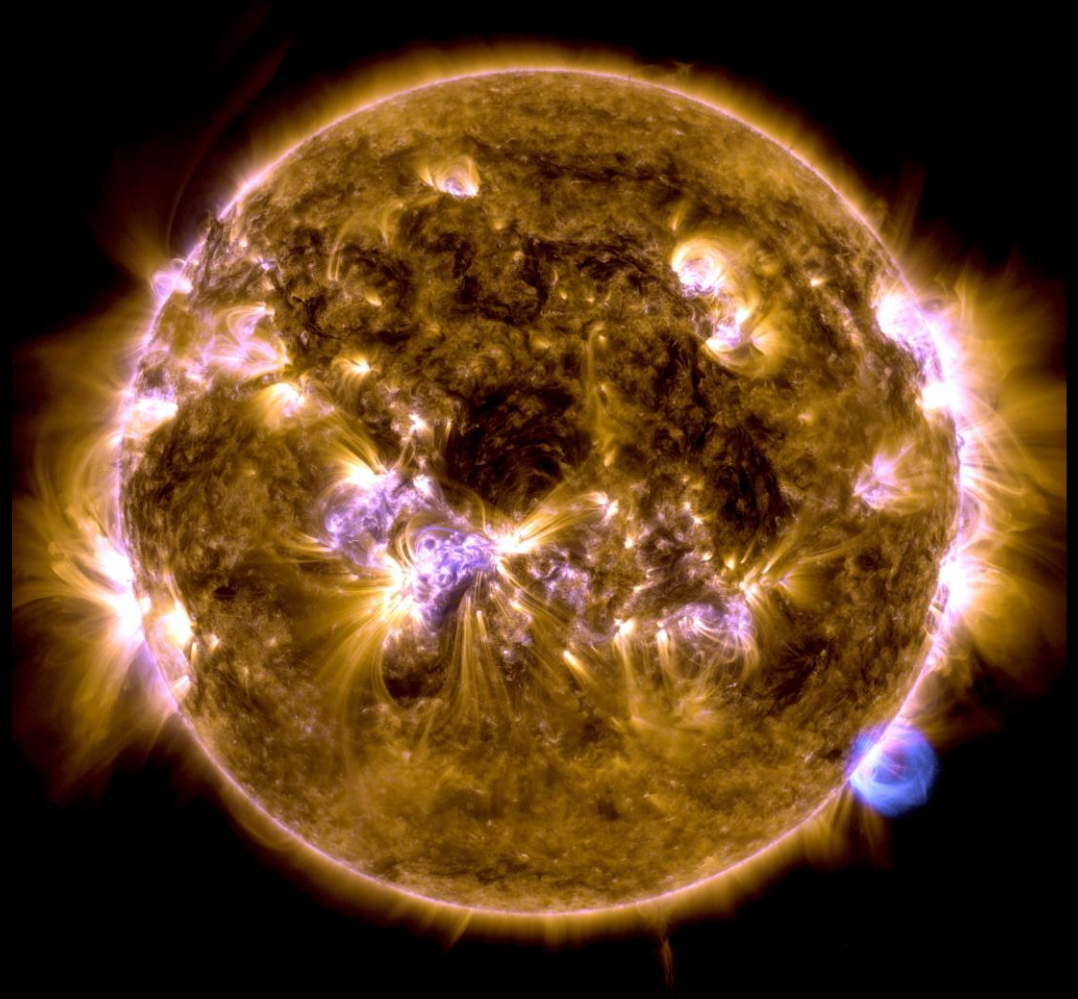
- Launching in 2025
- MAG and IDEX delivered



Learn more: https://www.nasa.gov/missions/imap

Watch the live spacecraft integration here.

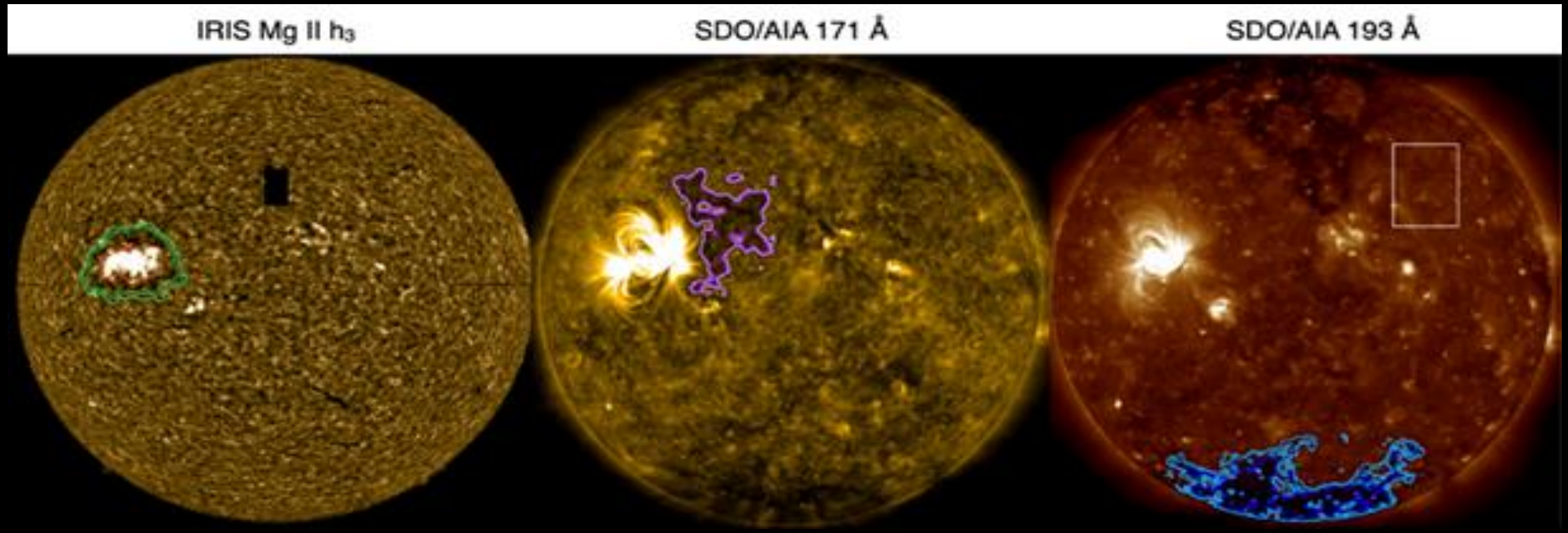
SCIENCE STORYTELLING



- Share your science!
- We want to advocate for compelling “science nuggets” from the Heliophysics community
- Pull science results and captivating images from reports that can be easily shared

SCIENCE NUGGET

Dark Halos around active regions in the solar atmosphere



Authors of a recent paper characterize the emission properties of a dark halo by combining chromospheric, and coronal observations to provide observational constraints. By investigating the different properties of dark halos and coronal holes, they can create a quick method to distinguish them.

The Paper can be found here.

Heliophysics System Observatory?

HSO SENIOR REVIEW FEEDBACK

- Triennial Senior Review is used to evaluate all missions in extended operations
  - 2023 Senior Review was recently completed
  - All operating missions are continuing with only minor adjustments to budgets

- Senior Review Recommendations
  - Develop opportunities for HSO science working groups
  - Expand HSO Guest Investigator funding opportunities
  - Expand HSO community frameworks to share and leverage development of code, team science efforts, and coordination with HDRL

HELIOPHYSICS PROGRAMMATIC UPDATES

RESEARCH & ANALYSIS UPDATE

- ROSES-2023 solicitation provides the greatest scope ever offered for NASA Heliophysics
  - New Technology Program and Space Weather Program
  - Growing number of Cross-Divisional programs

<u>Recent ROSES-23 Selections</u>

- HSR 2023 (notified 10/20/2023)
  - 161 proposals received
  - 24 selected
  - 14% selection rate
  - HGIO 2023 (notified 1/08/2024)
  - 82 proposals received
  - 19 selected
  - 23% selection rate

- HFOS (Notified 1/25/24)
  - 6 proposals received
  - 1 proposal selected
  - 17% selection rate

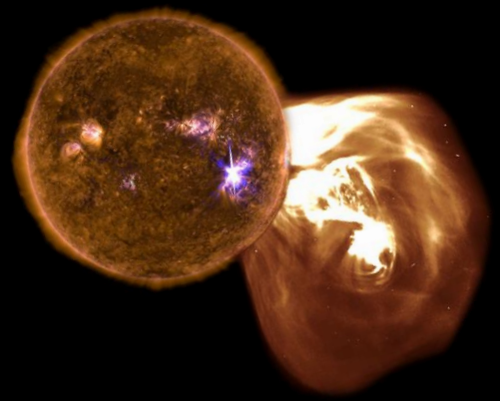
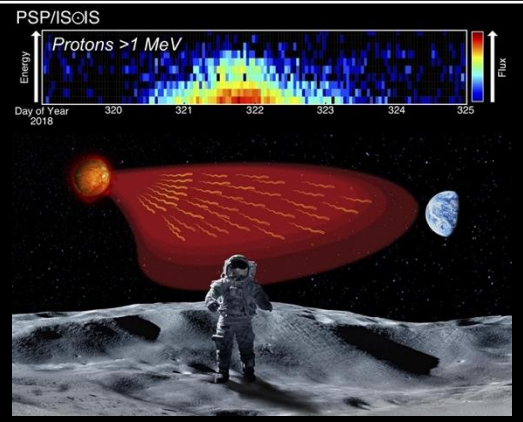
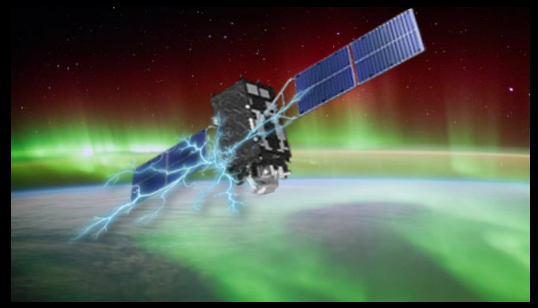
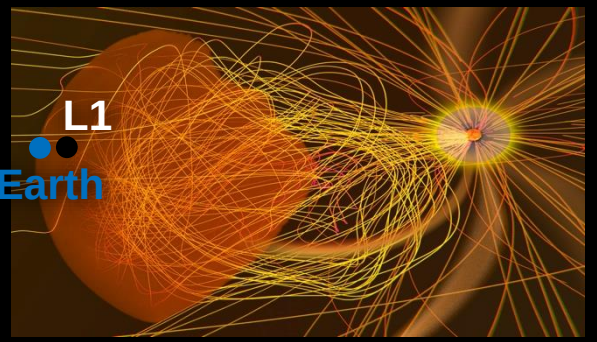
- HTIDES (notified 1/25/24)
  - 26 proposals received
  - 6 selected
  - 23% selection rate

SPACE WEATHER ACTIVITIES

The signing of the Quad Agency Memorandum of Agreement for Space Weather Research-To-Operations-To-Research Collaboration took place on December 7, 2023 at the White House. (pictured, above)

FIRST END-TO-END SPACE WEATHER TABLETOP EXERCISE (TTX)

- New national Space Weather strategy released in Dec 2023
- Section 3.5 calls for exercises to gauge national preparedness & identify gaps
- NASA, NOAA, and NSF sponsoring Space Weather TTX
- Managed, designed, and conducted at APL on May 8th and 9th, 2024
- Multiple federal, state, and local agencies involved

	Module 1	Module 2	Module 3	Modules 4 and 5
Scenario				
	Solar Drivers	Solar radiation storm	CME impact	Geomagnetic storms and aftermath

HELIOPHYSICS STRATEGIC TECHNOLOGY OFFICE (HESTO)

- The Heliophysics Division created HESTO to help manage the Heliophysics technology program, which works closely with the Sounding Rocket Program and Balloon program.

Accomplishments to date:

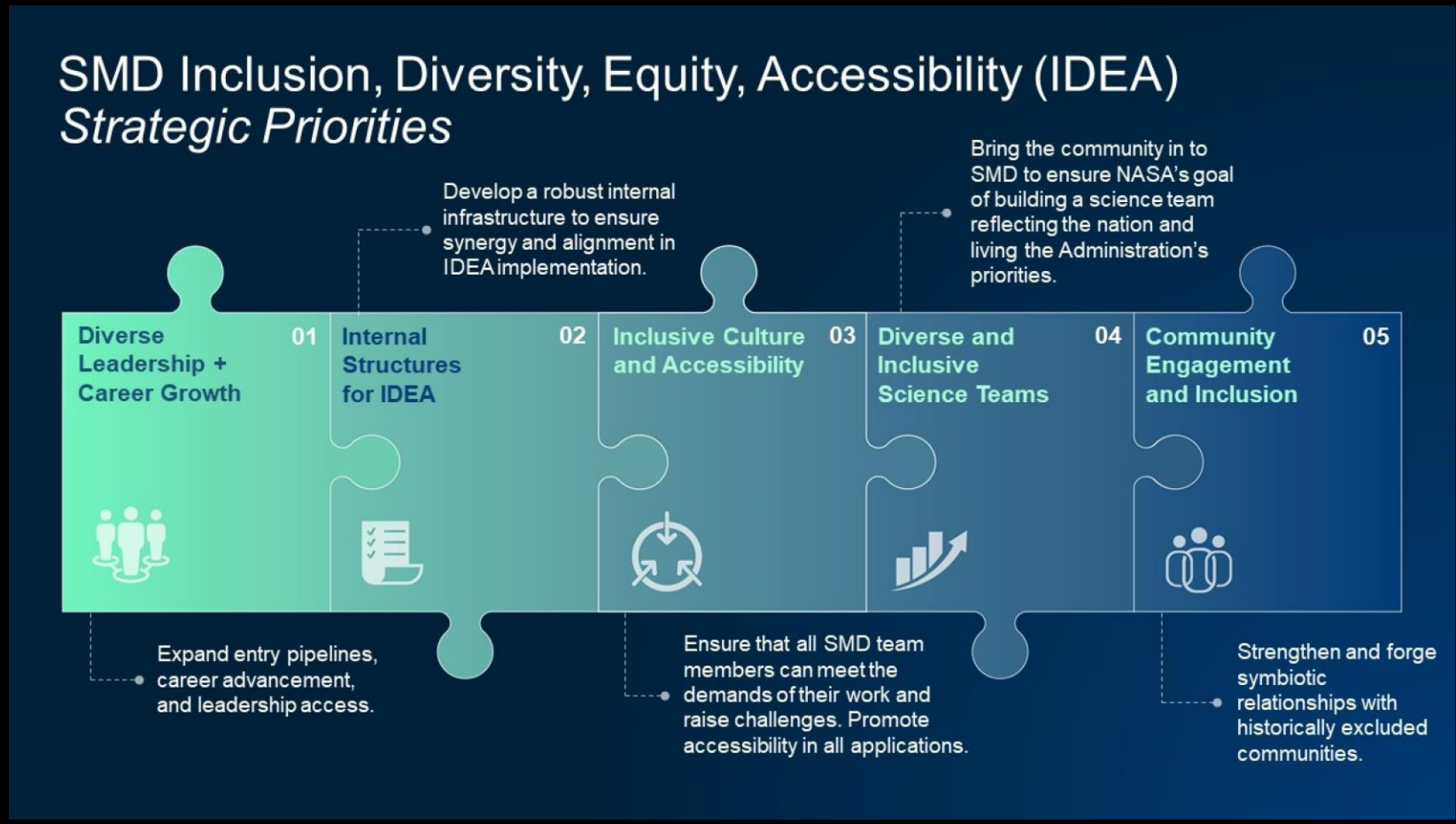
- The inaugural annual Heliophysics Technology Symposium was held on October 18-19, 2023
- The Heliophysics Technology Gap & Trend Analysis was released
- The Heliophysics Technology website was launched (www.hesto.smce.nasa.gov)
- The first annual Heliophysics Technology report was released
- 2023 HTIDeS and HFOS selections were made. Six HTIDeS and one HFOS proposals were selected.

IDEA: INCLUSION, DIVERSITY, EQUITY, & ACCESSIBILITY

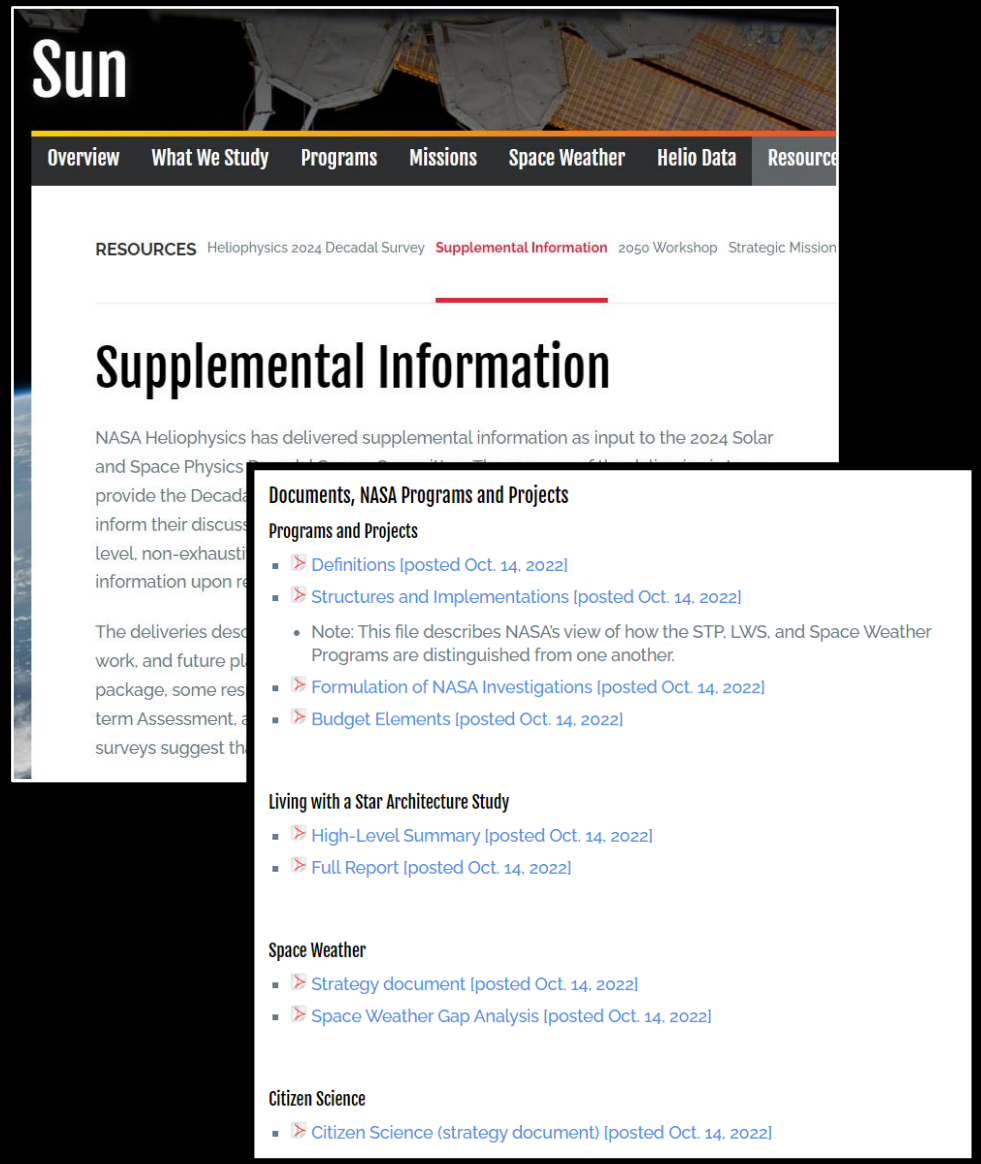
SMD aims to create an environment where each team member is valued for their diversity of thought, unique background and whole selves.

Activity Highlights to Date:

- Launch of SMD Bridge Program to develop sustainable partnerships among institutions historically under-resourced
- PI Launchpad to support first-time proposers, the annual PI Launchpad workshop provides resources and insight into the proposal process.
- Adoption of dual-anonymous peer review for ROSES proposals to ensure that the review of proposals is performed in an equitable and fair manner.



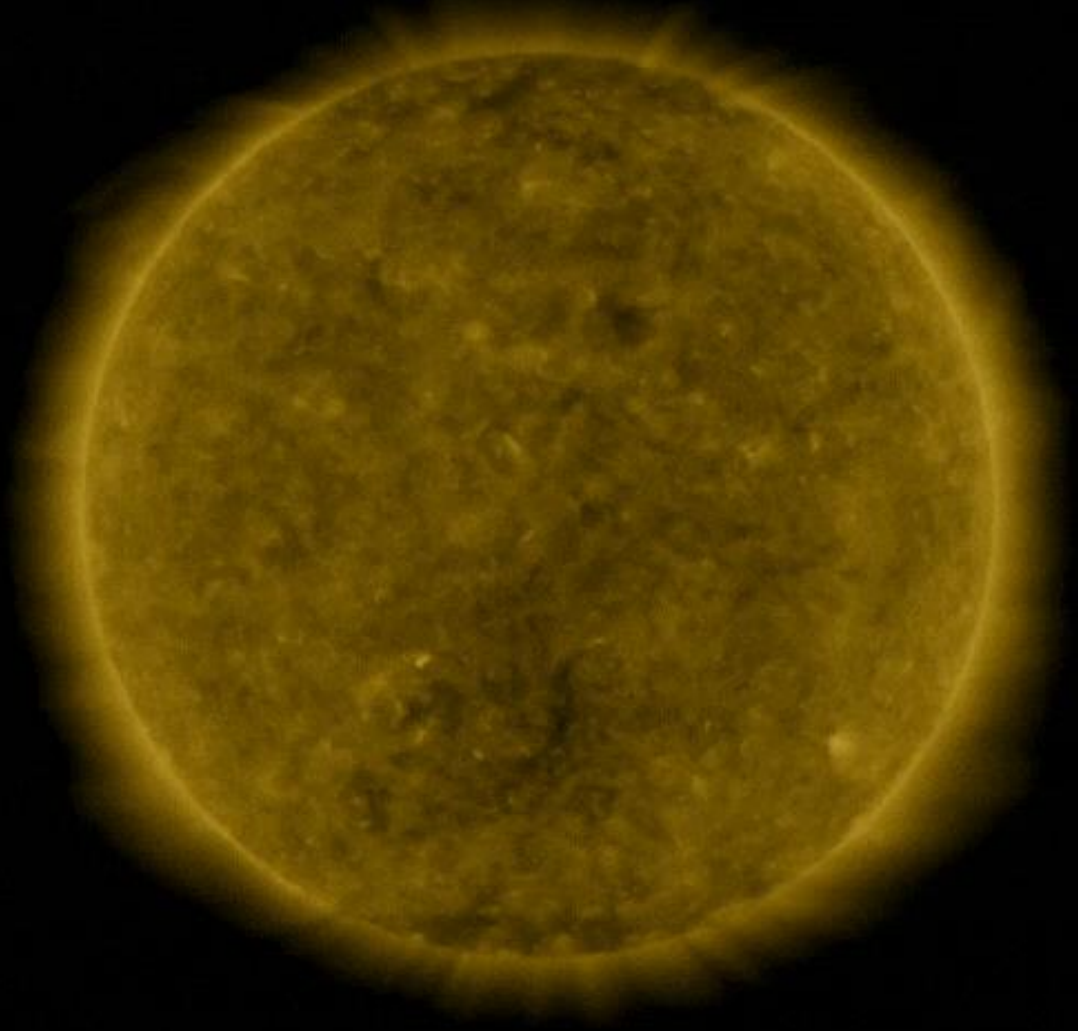
DECADAL SURVEY



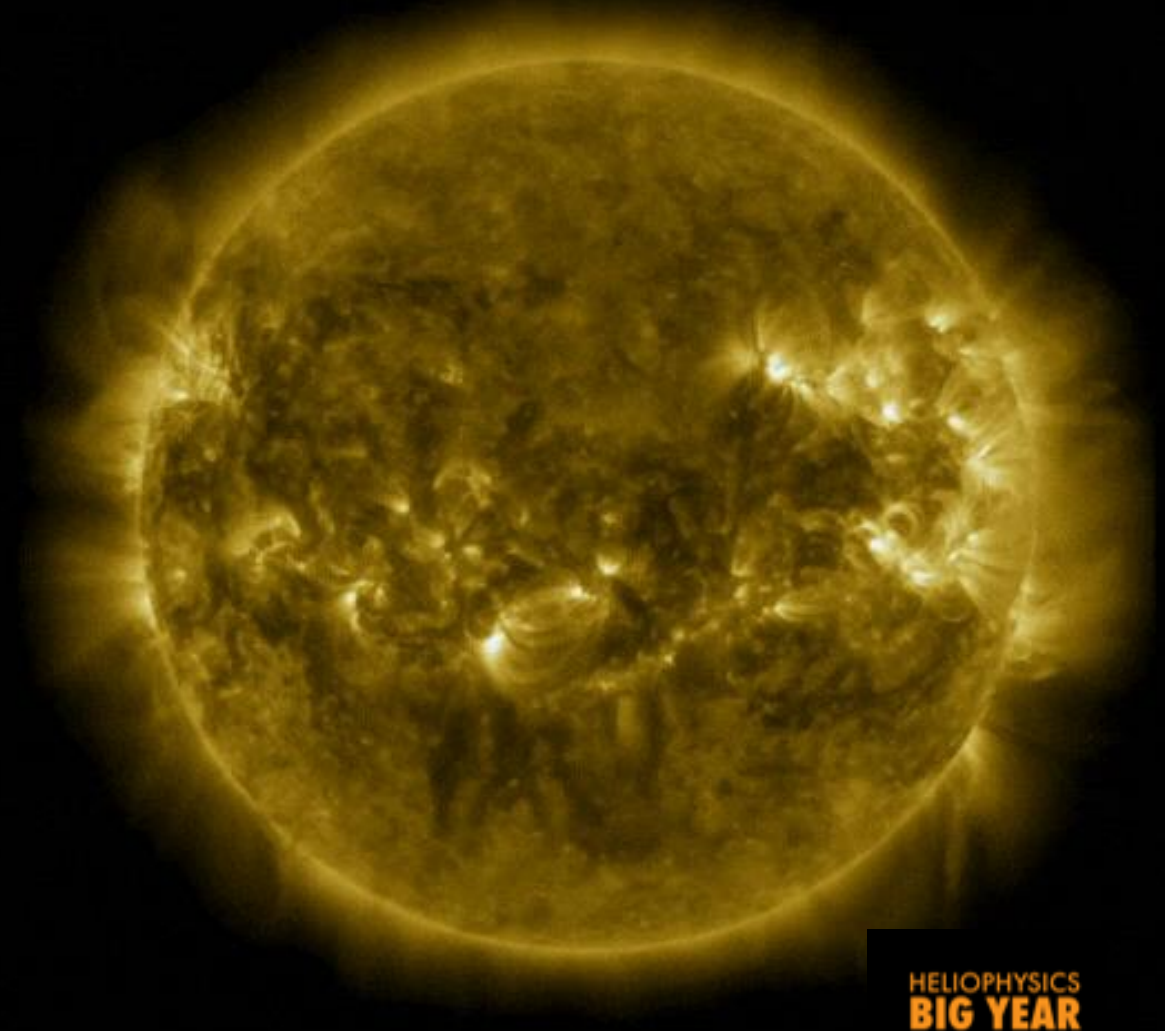
- The Decadal Survey process is well underway, with completion expected in Fall 2024
- Visit the National Academy of Sciences' Decadal Survey website for the latest up-to-date information!
  - Panel teleconferences ongoing
  - NASEM website lists the latest announcements and upcoming events
  - NASEM is the authoritative resource for the latest on the Decadal
- https://www.nationalacademies.org/our-work/decadal-survey-for-solar-and-space-physics-heliophysics-2024-2033

- **NASA Heliophysics Decadal Survey Website**
- Provides informational materials provided to NASEM
- https://go.nasa.gov/HelioDecadal

SOLAR **MINIMUM**



SOLAR **MAXIMUM**



HELIOPHYSICS
BIG YEAR

BACKUP

23 January 2024

Heliophysics Division (HPD)

NASA Science Mission Directorate (SMD)

Division Director
Joe Westlake

Deputy Division Director
Peg Luce

Transition Advisor
Therese Moretto Jorgensen

Associate Director Flight
Nicki Rayl

Communications & Outreach

Communications
Denise Hill[1] - Lead
Sarah Frazier - Comms Manager (GSFC)

Outreach
Denise Hill[1] - Lead
Leslie Garrison[1] - Coordination Lead

Executive Assistants

Amy Marshall[1]
Jess Calles (Flight)[1]
Wynette Hoskins (Research)[1]

Division Operations

Mission Services Integration
Johnny Grady[1]

Executive Officer
Britney Smith[1]

Operations Support
Kate Petersen[1]
Walter Twetten[1]
Carolina Ravinskas[1]

Knowledge Management

Task Monitor
Maria Busuioceanu

Knowledge Management
Tara Roberts[1] - Lead
Julia Kaner[1]
Kennedy Novak[1]
Roger Sanchez[1]

IT/Heliophysics Advanced Library (HAL)
Aadel Ragaban[1] - Lead
James Bruniany[1]
Mazin Rasmi[1]
Vyjayanthi Sunkara[1]

Program Executives

Maria Busuioceanu
David Cheney
Elizabeth Esther
Jamie Favors
Heather Futrell
Skyler Kleinschmidt[2]
Aly Mendoza-Hill
Asal Naseri
Ursula Rick[2]
Ezinne Uzo-Okoro[4]
Brad Williams
Alan Zide

Program Scientists

Susanna Finn[3]
Genene Fisher
Galen Fowler
Reiner Friedel
Lika Guhathakurta
Roshanak Hakimzadeh
Jeff Hayes[4]
Patrick Koehn
Kelly Korreck
Janet Kozyra
Jared Leisner
Elizabeth MacDonald[2]
Matt McClure
John McCormack
Dan Moses
Simon Plunkett
Arik Posner
Esayas Shume[3]
Katya Verner[1]
Amy Winebarger[2]

Programs & Technology

Research & Analysis
Patrick Koehn – Lead
Darcia Brown

Space Weather
Jamie Favors - Director
Genene Fisher - Prog Scientist
Walter Twetten[1]

Technology
Dan Moses - Chief Technologist
Roshanak Hakimzadeh – Deputy

Domain Leads
Susanna Finn - Outer Heliosphere
Reiner Friedel - Magnetosphere
Lika Guhathakurta - Inner Heliosphere
John McCormack - Ionosphere, Thermosphere, Magnetosphere

Presidential Innovation Fellow
Ha-Hoa Hamano

Cross-Cutting

Archives
Matt McClure
Alan Zide
Alvin Robles[1]

Resource Management Division (RMD)
David Darbouze
Carol Peterson
Dan Walsh

Rideshare Office
Aly Mendoza-Hill
David Cheney
Alan Zide
Katie Nelson[1]

Sounding Rockets & Range
Jamie Favors
Dan Moses

SMD Interfaces

International & Interagency Interface
Gib Kirkham - SMD Lead
Betsy Goldemen - HPD Lead

Office of Legislative & Intergovernmental Affairs Interface
Andy Rowe - HPD Lead

Policy
Nathan Boll[2]
Kayla Rillo

Key
1: Contractor
2: Detailee
3: IPA
4: Detailed Out

New/Incoming
Outgoing