



National Aeronautics and
Space Administration

2026 NASA SCIENCE

NASA Heliophysics Community Meeting

NASA Heliophysics Division Leadership

Joe Westlake, Director, Heliophysics Division

Nicki Rayl, Deputy Director, Heliophysics Division

Asal Naseri, Associate Director for Flight, Heliophysics Division

Therese Jorgensen, Director, Heliophysics Research Program

Jamie Favors, Director, Space Weather Program

May 20, 2026



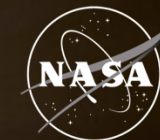
Agenda

- 01 HELIOPHYSICS UPDATES**
2025 Recap & 2026 Updates
- 02 HELIOPHYSICS DIVISION VISION**
- 03 THE SHIFT**
- 04 SPACE WEATHER**
Vision, Goals & Strategy
- 05 RESEARCH**
Science Goals & Strategy
- 06 FLIGHT**
Program Strategy
- 07 CONCLUSION**



SCIENCE MISSION DIRECTORATE
HELIOPHYSICS DIVISION LEADERSHIP

National Aeronautics and
Space Administration



DR. JOSEPH (JOE) WESTLAKE
Division Director



NICOLE (NICKI) RAYL
Deputy Division Director



DR. ASAL NASERI
Associate Flight Director (Acting)



DR. THERESE MORETTO JORGENSEN
Research Program Director



JAMIE FAVORS
Space Weather Program Director

NASA Heliophysics Community
Meeting Materials
Meeting Recording & Presentation slides



HPD 2025 RECAP

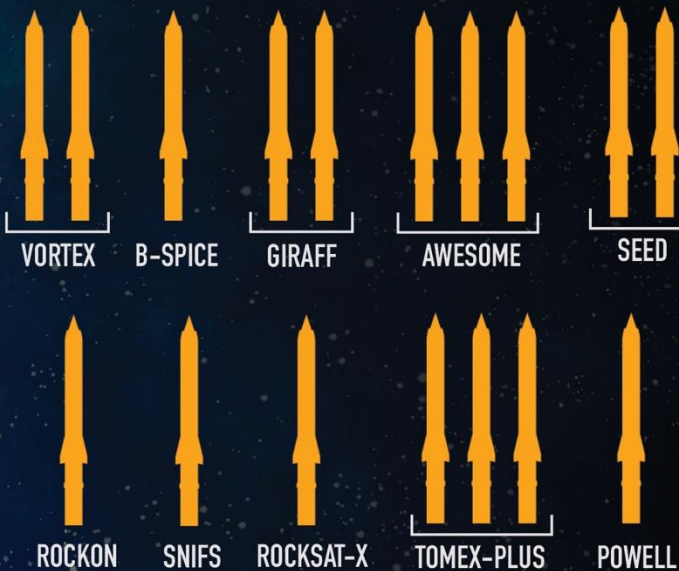


HELIOPHYSICS 2025

7 MISSIONS LAUNCHED
13 SPACECRAFT + 1 INSTRUMENT

| | | | | |
|--------------------------------|---|---|---|------------|
| JANUARY LEXI |  |  |  | INSTRUMENT |
| MARCH PUNCH |  |  |  | |
| MARCH EZIE |  |  |  | |
| JULY TRACERS |  |  |  | |
| SEPTEMBER IMAP |  |  |  | |
| SEPTEMBER CARRUTHERS |  |  |  | |
| NOVEMBER ESCAPADE |  |  |  | |

10 SOUNDING ROCKET CAMPAIGNS WITH 17 ROCKETS

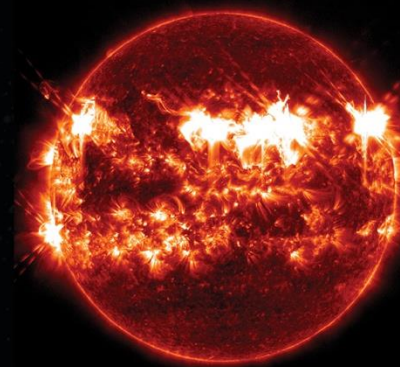


3 CUBESATS DEPLOYED

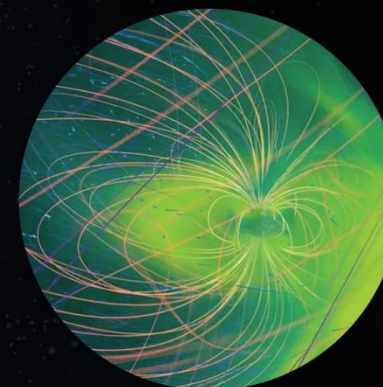


415 SOLAR FLARES
INCLUDING **17 X-CLASS**
FLARES AS OF DEC 8

A blended composite image of all six X-class flares from November 2025

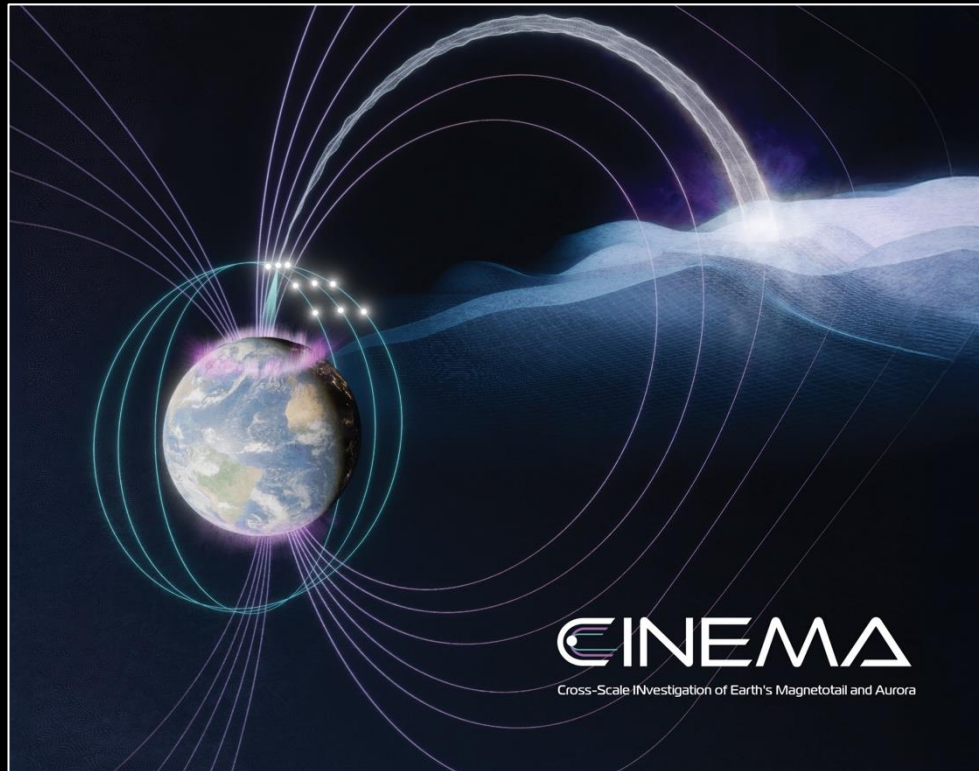


22 GEOMAGNETIC STORMS



The most powerful geomagnetic storm of the year was a G4 recorded on November 12

Small Explorer (SMEX) Selections



Advanced to Phase B
Flight Design and Mission Operations



Extended Phase A Study
Mission Design Refinement

Heliophysics Is a Word

Dictionary

Definition

Word History

Entries Near

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heliophysics

noun, plural in form but singular or plural in construction

he·lio·phys·ics (hē-lē-ə-ˈfi-ziks)

: a branch of [astrophysics](#) that deals primarily with the behavior of the sun and its effects on other celestial bodies in the solar system

... in *heliophysics*, ongoing and future studies are exploring the floods of charged particles emanating from the Sun.

– Alexandra Witze

Despite plenty of advances in *heliophysics* and atmospheric science, much about the northern lights remains a mystery.

– Daisy Dobrijevic and Stephanie Waldek

Using a free app ... citizen scientists can help advance *heliophysics* research by capturing as many images of the Sun as possible just before and after the solar eclipse.

– Sharmila Kuthunur

Merriam-Webster®

HPD 2026 UPDATES

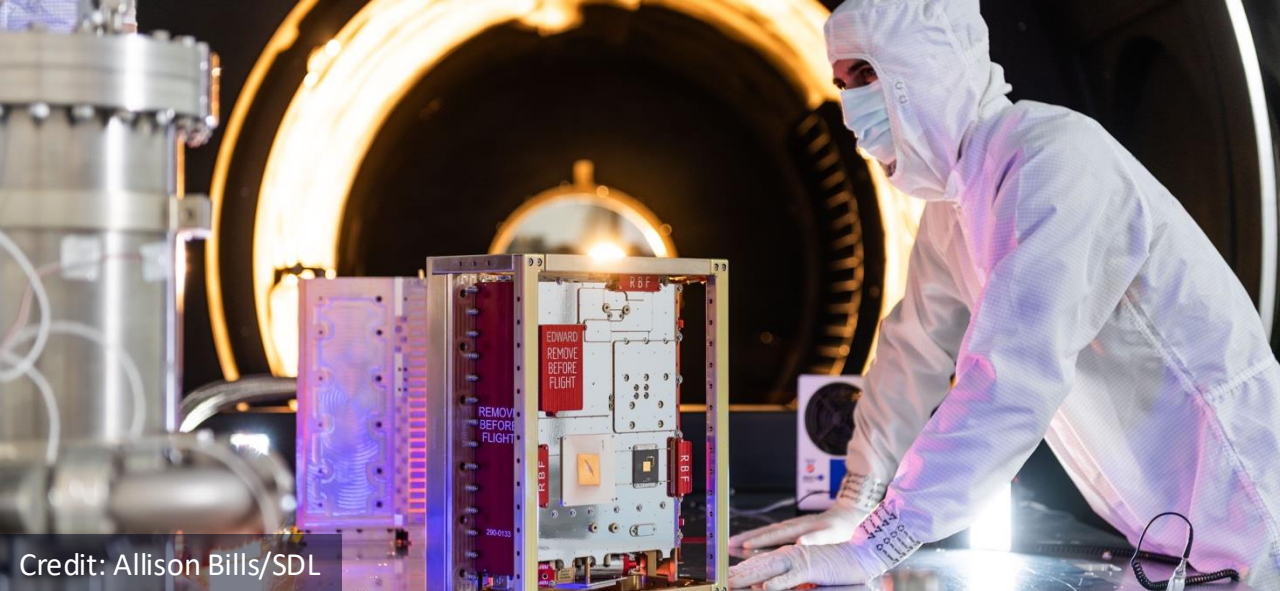




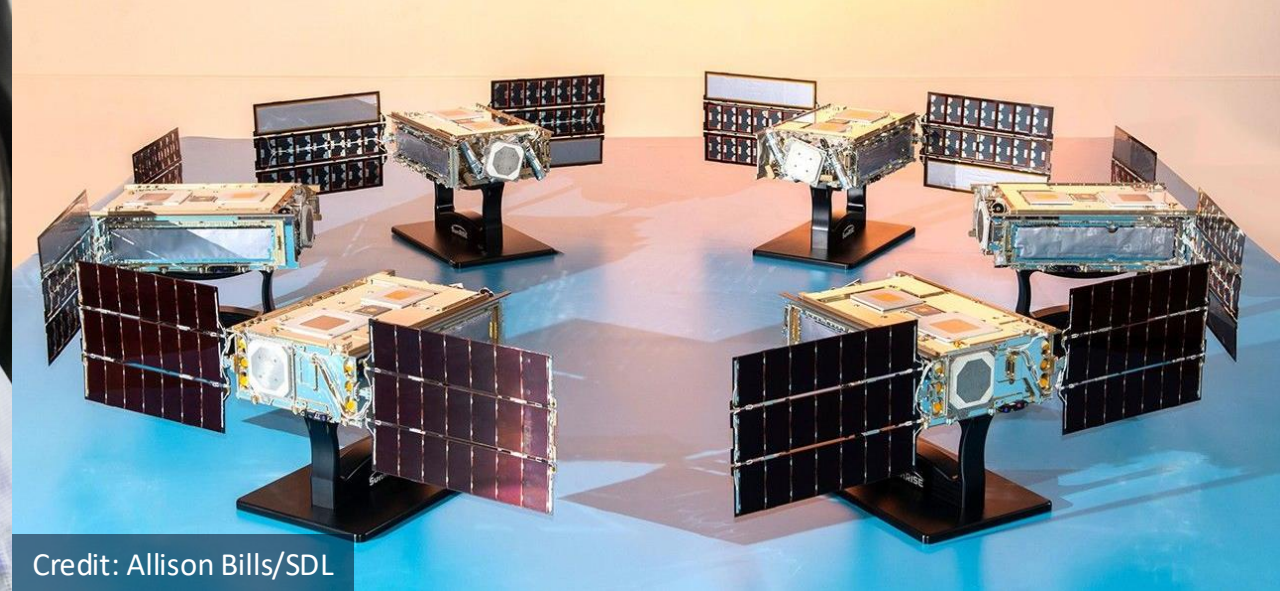
Launching Dreams

UP NEXT





Credit: Allison Bills/SDL



Credit: Allison Bills/SDL

Mission Description

- Six toaster-sized CubeSats will observe solar radio wavelengths invisible from Earth.
- The spacecraft will orbit within 6 miles of each other above Earth's atmosphere and will function as a single-aperture radio telescope.



SUNRISE

SUN RADIO INTERFEROMETER SPACE EXPERIMENT

Mission Highlights

- SunRISE will provide insight into how space weather and geomagnetic storms are generated.
- The mission will help improve future forecasting capabilities and help protect astronauts and space assets.

HELIOPHYSICS VISION





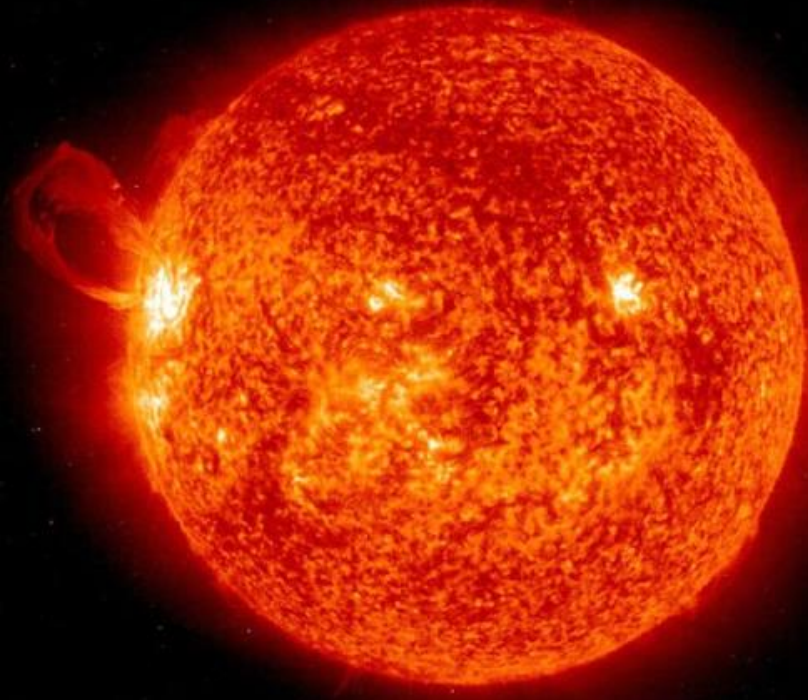
WE OWN THE FRONTIER

Science is our Foundation. Society is our Customer.





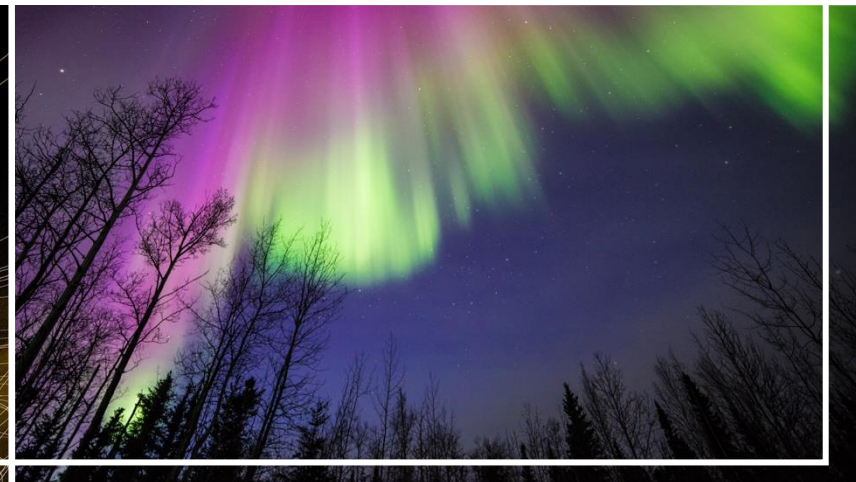
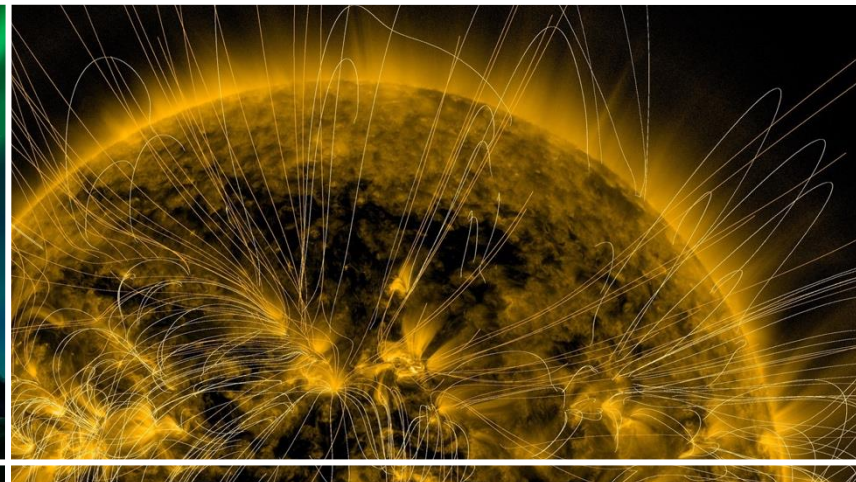
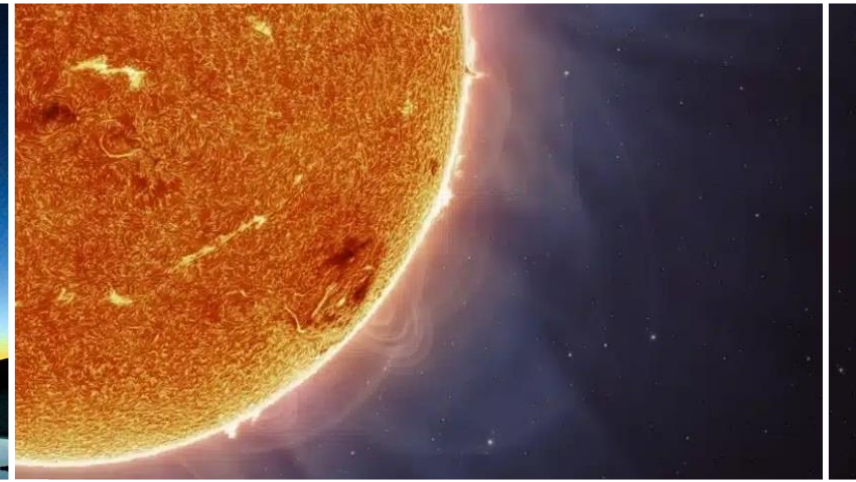
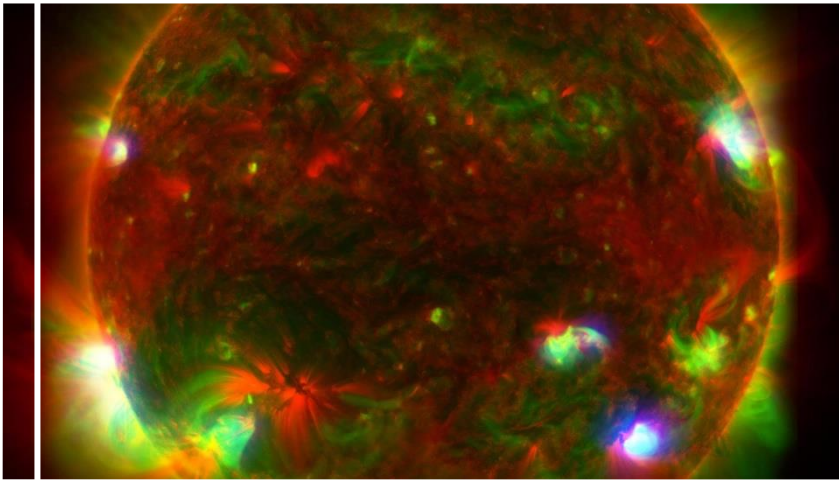
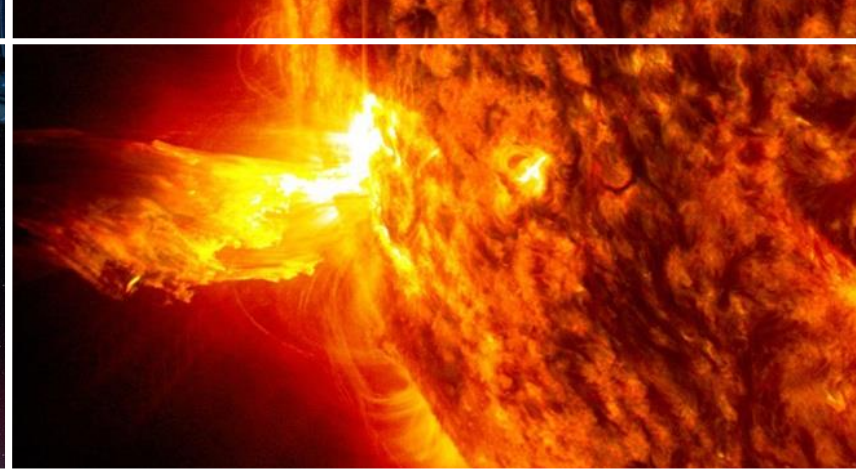
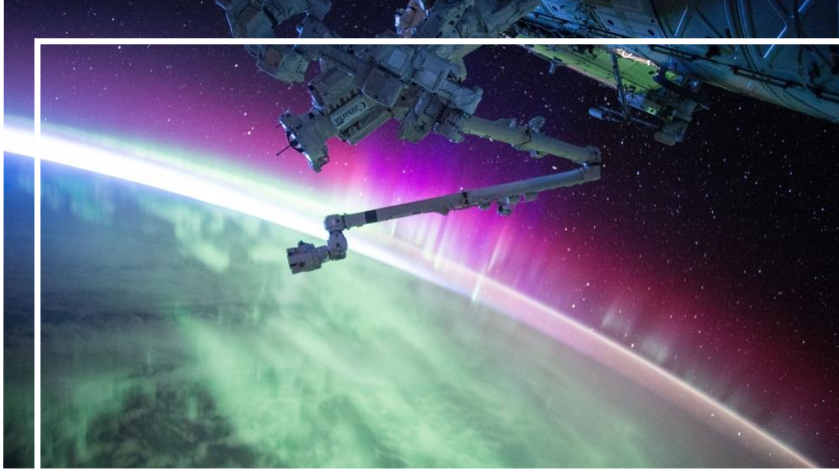
The NASA Artemis II crew had a very eventful April 6. After breaking Apollo 13's record for the farthest distance humans have ever been from Earth, the crew captured this beautiful eclipse photo.



The Shift

From vision to implementation

| Traditional Focus | 2026 Strategic Focus | Benefit |
|---|-----------------------------------|---|
| Disciplinary & Mission Silos | Strategic Purpose Themes | Alignment with NASA and National Priorities |
| Curiosity-Driven Investigations | Outcome-Driven Research | Actionable "Environmental Intelligence" |
| Fragmented Theory, Knowledge Building, Operations | Integrated Knowledge Chain | Faster Transition to Application |

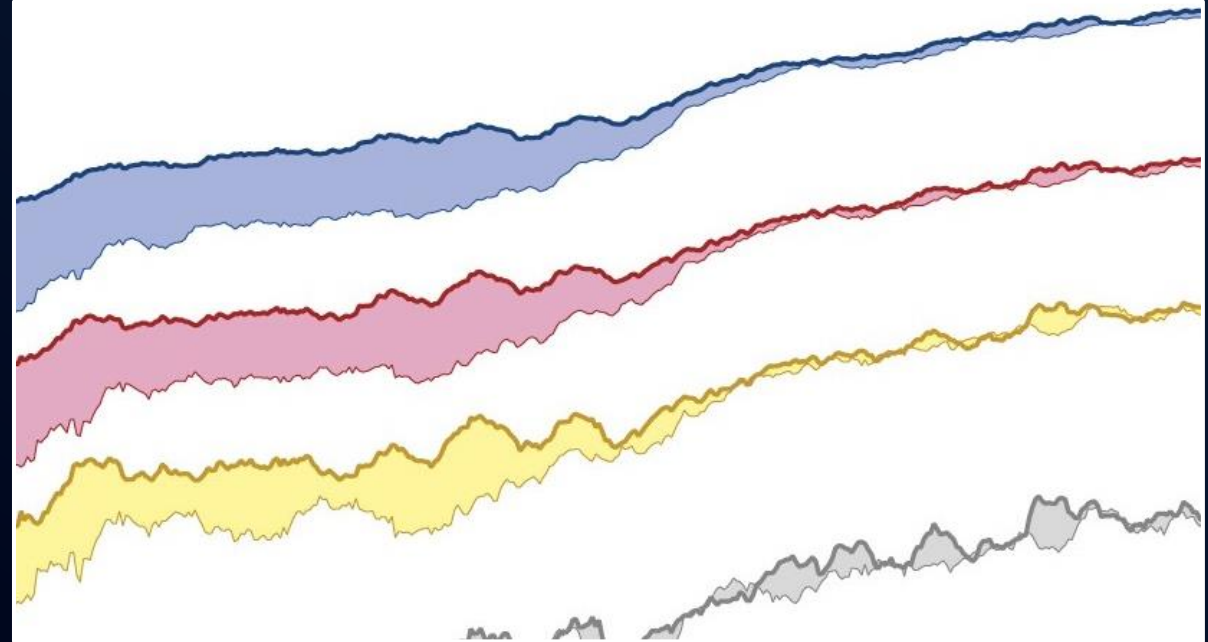




Space Weather Philosophy



User-Driven, User-Engaged



Managed by Metrics

An Updated Space Weather Research-to-Operations-to-Research (R2O2R)

The updated Space Weather Program R2O2R solicitation language released in ROSES-25 is based on adopting lessons from other successful programs to address the challenges identified by the interagency and science community.

This is fundamentally built upon two key principles to ensure more successful project outcomes for the Nation.



Inaugural Space Weather Prediction Testbed Exercise



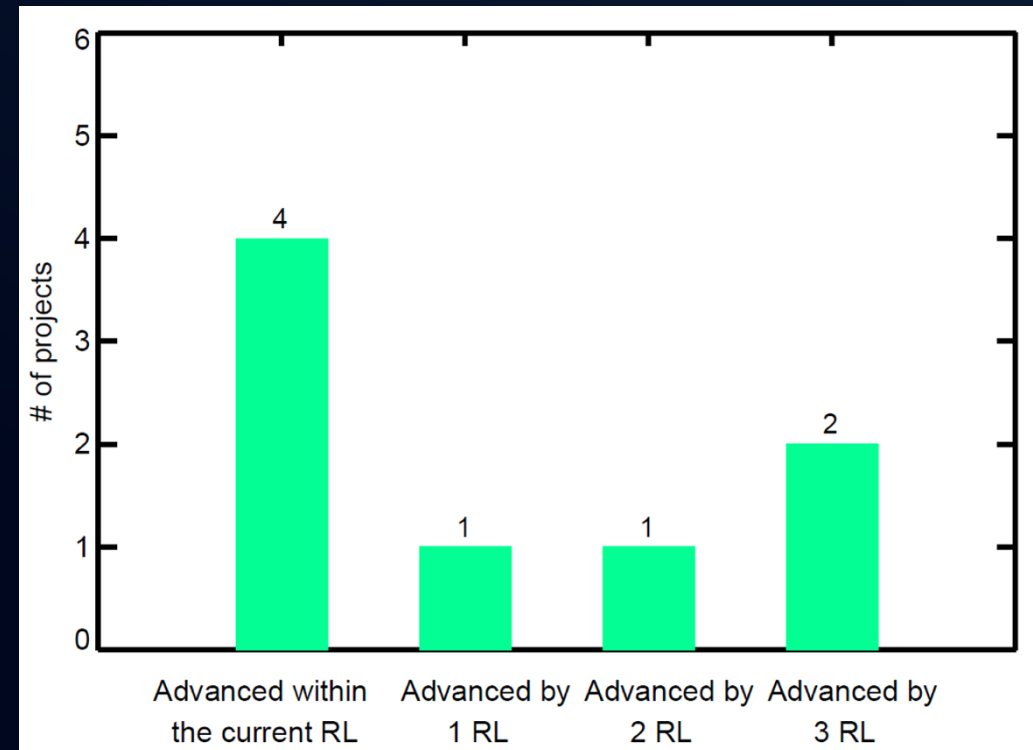
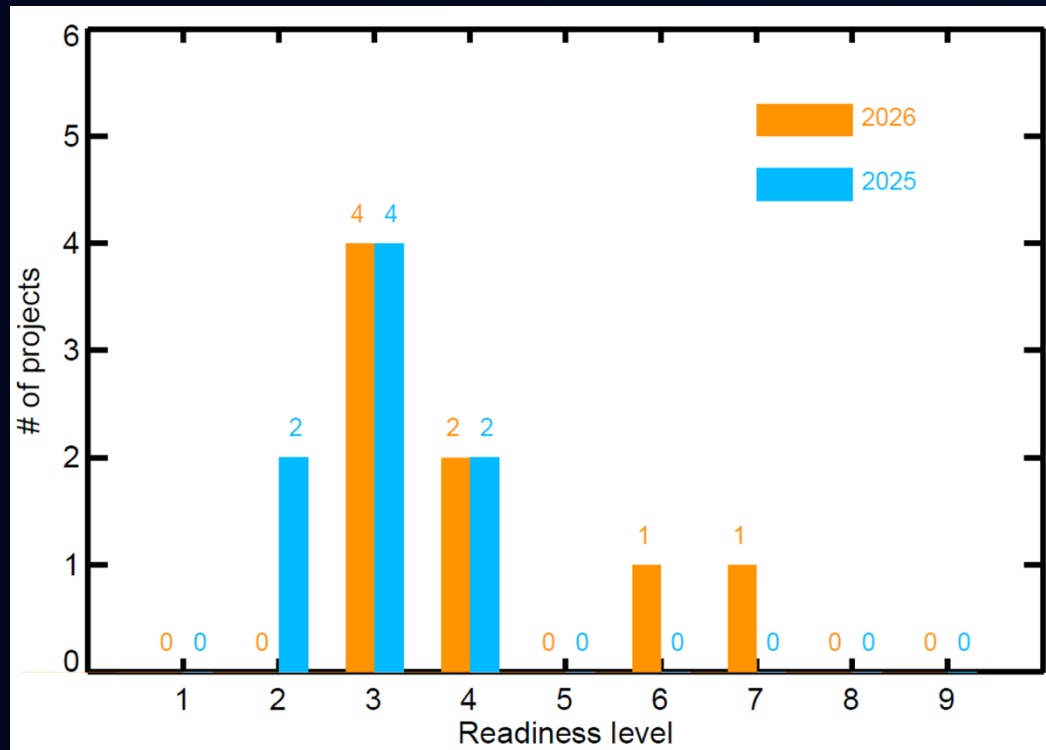
Stronger relationships with users throughout the entire project process

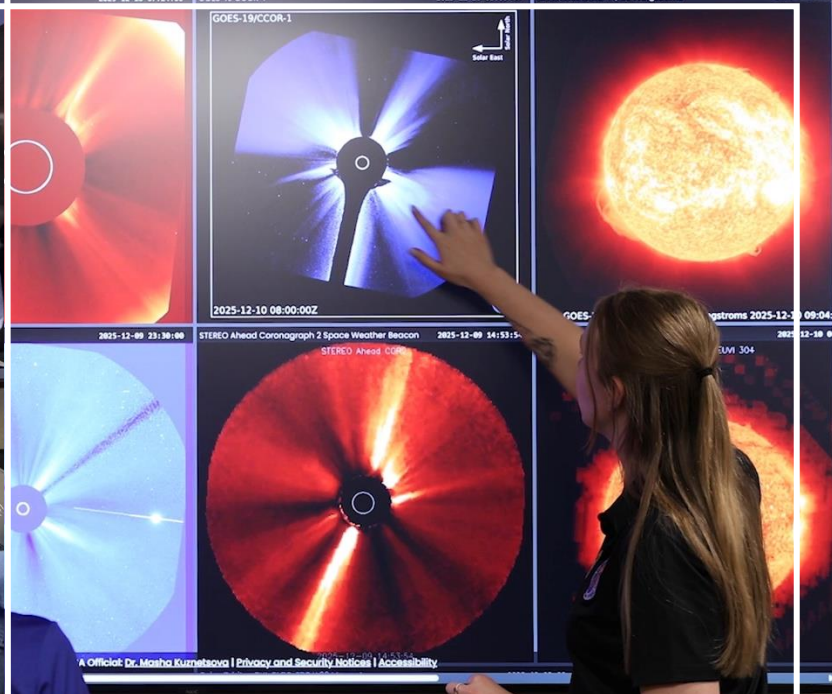
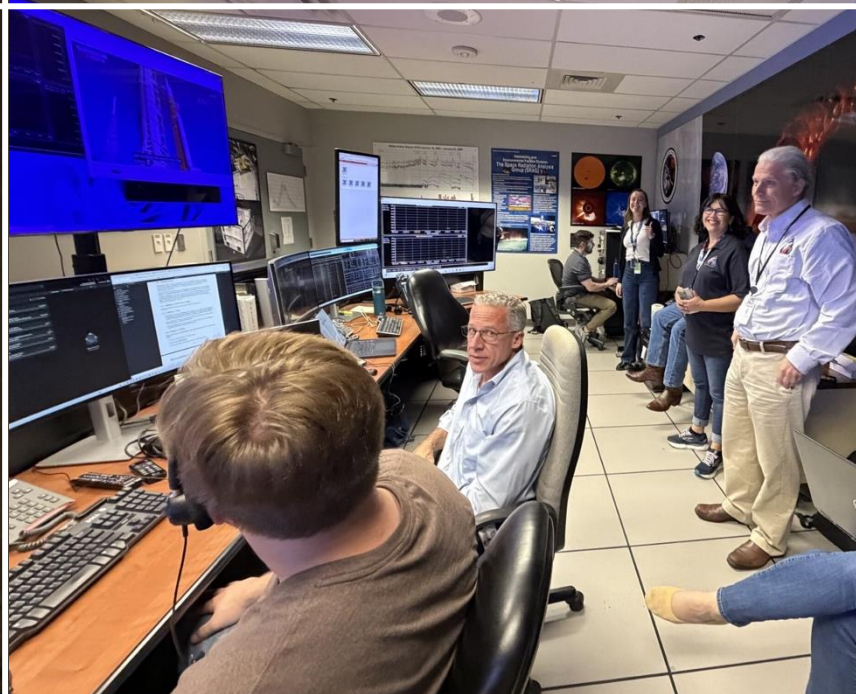
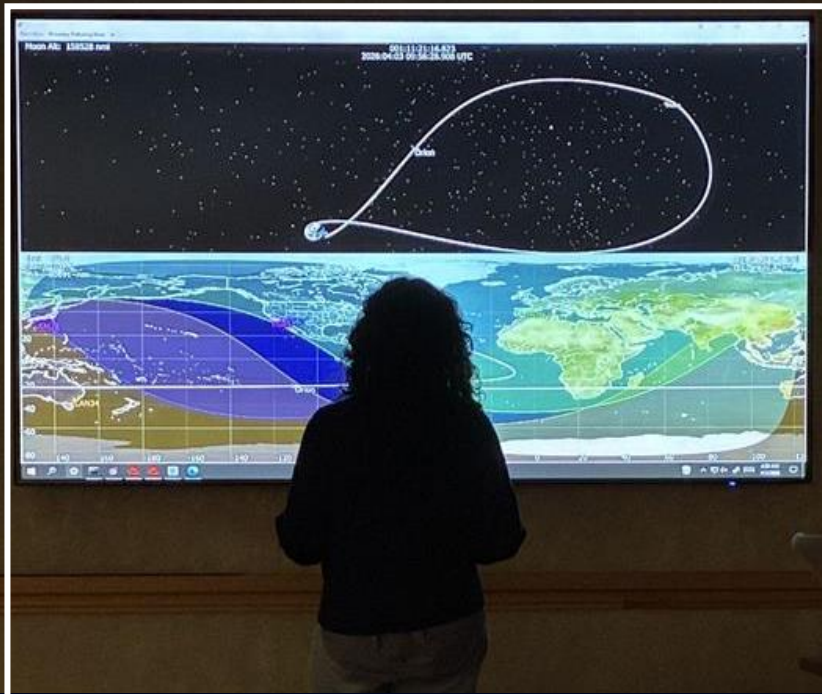


Improved project management support and use of metrics (i.e., space weather Readiness Levels)

An Updated Space Weather Research-to-Operations-to-Research (R2O2R)

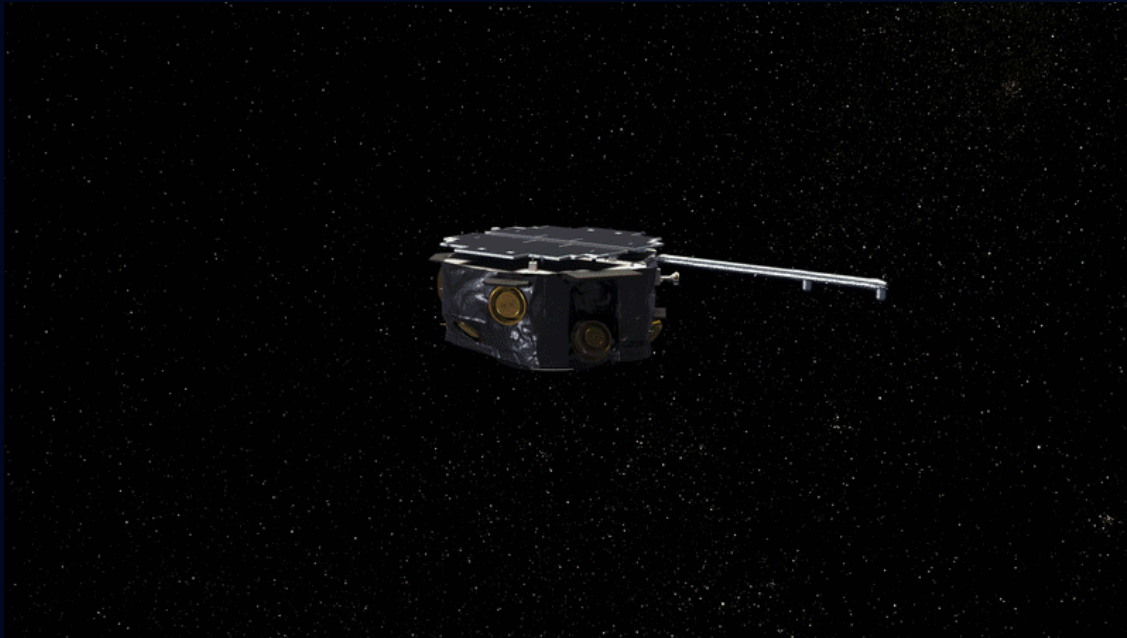
Space Weather R2O2R Readiness Level Advancements:
May 2025 to May 2026



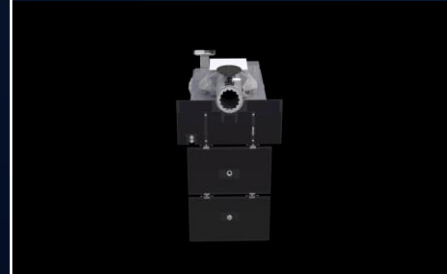


Science Missions & User Benefit

What would it look like for any Heliophysics Division science mission to provide substantive benefit to space weather users?



IMAP



PUNCH



October 20-22, 2026

NASA Ames Research Center

NASA Space Weather Program is hosting...

Mars L1 Workshop

User Needs, Existing Capabilities, & Science Opportunities
Driving a **Space Weather Mission** to the Red Planet

Bold Science in Action

Overarching strategic goals

1

Master the Heliosphere

Solve the fundamental mysteries of our Sun and its domain.

2

Shield the Homefront

Build the predictive foundation for Earth's space weather resilience.

3

Secure the Journey

Safeguard human exploration from the Moon to Mars and beyond.

4

Fuel the Space Economy

Power a sustainable, secure, and data-driven orbital future.

Bold Science in Action

Critical Path Science Objectives

1

Physical Drivers of Thermosphere Variability

To secure the Orbital Economy

2

Cross-Scale Energy Transfer & Geospace Response

To Fortify Infrastructure

3

Solar Eruption Mechanics & Particle Acceleration

To Protect the Artemis Generation

4

Plasma Interactions in Planetary Environments

To Enable Exploration

Bold Science in Action

Additional Frontier Objectives

1

The Solar Dynamo

- Characterize the long-term drivers of the solar cycle.
- Characterizing the solar cycle's influence on the long-term dynamics of the Sun-Earth system is vital for multi-decadal planning.

2

The Interstellar Boundary

- Resolve the fundamental physics of the heliosheath to understand how our solar system interacts with the local galactic environment.
- This is a fundamental mystery that defines the boundaries of our home in the galaxy.

3

Cross-Disciplinary Discovery

Advance interdisciplinary and system-level studies, such as the impact of solar variability on planetary atmospheres.

A Targeted & Purposeful Research Engine

1 Bigger Science
Prioritizing larger teams and broad collaboration to tackle Decadal-scale challenges.

2 Purposeful Science
Aligning investments to results rather than disciplinary boundaries.

3 Integrated Knowledge Chain
Everything from fundamental theory to final application is linked through common program goals.

4 Faster Science
Accelerating the transition from theory to application to meet the urgency of the space economy.

5 Stability
Providing longer, more stable awards to allow researchers to spend more time on discovery and less on proposal writing and reviewing.

Heliophysics R&A Themes

1 **Preparation for Spaceflight**
Develop the scientific foundation for future spaceflight activities and explore future scientific directions.

2 **Focused Science Objectives & Foundational Research**
Achieve priority science with existing data and capabilities.

3 **Strategic Capabilities**
Advance capabilities needed for priority heliophysics science.

4 **Rapid Access to Space**
Advance capabilities needed for priority heliophysics science.

5 **Space Weather Applications**
Apply heliophysics science to improve space weather forecasting and decision-making capabilities.

6 **Workforce Development**
Foster and support a healthy pipeline of heliophysics scientists and future leaders.

FLIGHT



Heliophysics Flight Portfolio

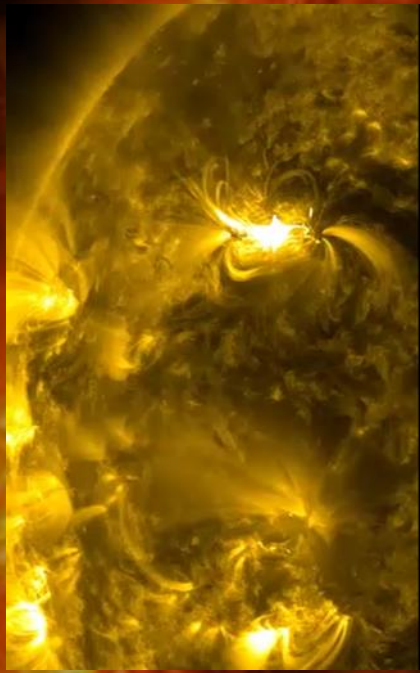
Updates



A Strategic Flight Portfolio

Space Weather

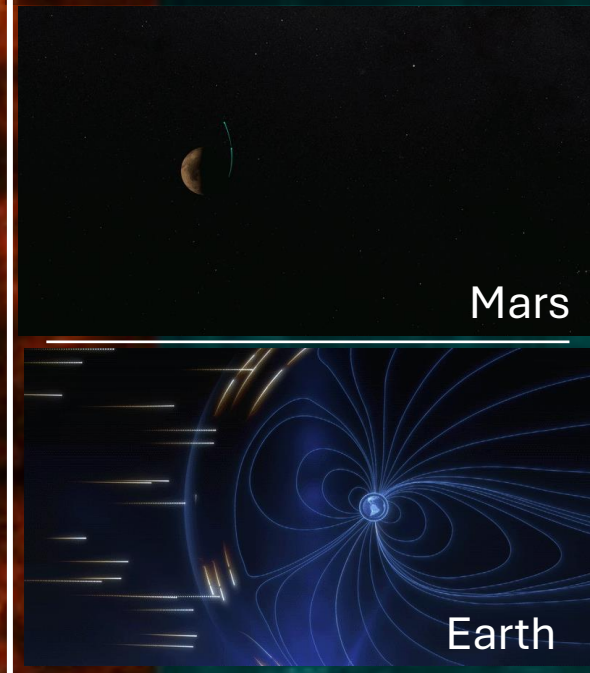
Solar Activity



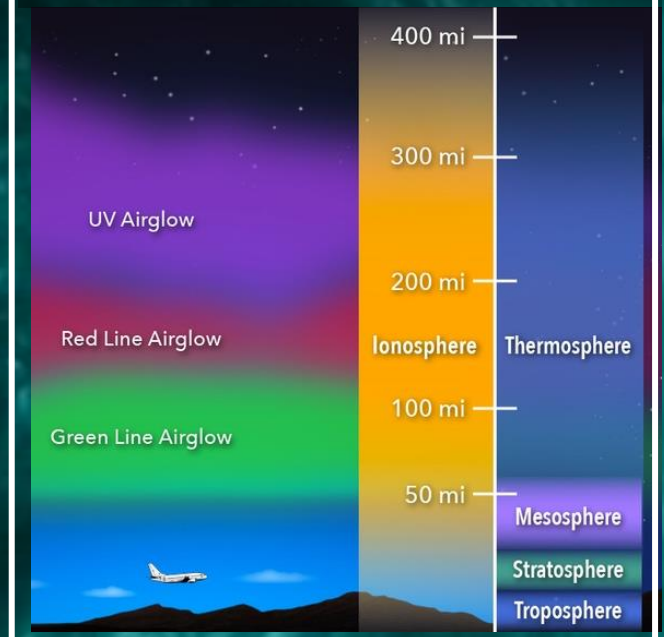
Heliosphere



Magnetospheres



Ionosphere, Thermosphere, Mesosphere (ITM)



Operating Missions



SPEED

0

KM/H

ALTITUDE

0.1

KM

STAGE 1 TELEMETRY

LIFTOFF

STARTUP

MAX-Q

MECO

FAIRING

BOOSTBACK

T - 00:00:03

SPHEREX / PUNCH

Revamped Senior Review Process



BENEFITS

Promote open participation in HSO mission science by the whole Heliophysics community, with a deliberate focus on innovation and cross-disciplinary research to ensure that the best science and most valuable data are funded.

Minimize the administrative burden on mission teams & reviewers.

Maximize the scientific return from Heliophysics Systems Observatory (HSO) missions in extended operations.

Time-lapse video of IMAP
instrument integration

Missions In Development



The Year of Launches

Lessons Learned



CONCLUSION





Seeking NASA Heliophysics Program Scientists



POSITION DETAILS:

Grade and Series: GS-301-14-15

Application Period: 05/29/2026 to 06/02/2026

POSITION DESCRIPTION:

The Heliophysics Division leads the study of the Sun's impact on the space environment at Earth and across the solar system, including space weather to safeguard infrastructure and enable exploration. NASA is developing cutting edge capability to predict risks from solar radiation and geomagnetic storms.

We are seeking a Space Weather Program Scientist and an AI/Data Program Scientist to lead research and missions characterizing hazards in space and securing our future among the stars.

Visit USAJobs for the full listing.

WE ARE HIRING!

NASA Heliophysics Community Meeting Materials

Meeting Recording & Presentation slides

