

National Aeronautics and
Space Administration



EXPLORE SCIENCE

Dr. Thomas H. Zurbuchen

Associate Administrator

NASA Science Mission Directorate

 @Dr_ThomasZ

February 8, 2022



NEWS &
UPDATES



PROGRAMS &
RESEARCH



DIVISION
HIGHLIGHTS

Dr. Katherine Calvin
NASA Chief Scientist,
Senior Climate Advisor



Current and Upcoming Job Announcements

Astrophysics Division director

Paul Hertz will be stepping down this year after more than 10 years. The search for the Director of Astrophysics successor has already begun.

- For the job announcement, see <https://www.usajobs.gov/job/628265700> or search announcement number **HQ-22-ES-11334214** on <https://www.usajobs.gov>
- The application period closes on March 21, 2022

SMD-Wide Program Executives

SMD will be seeking highly experienced engineers to fill multiple Program Executive positions across the directorate's divisions and/or program offices.

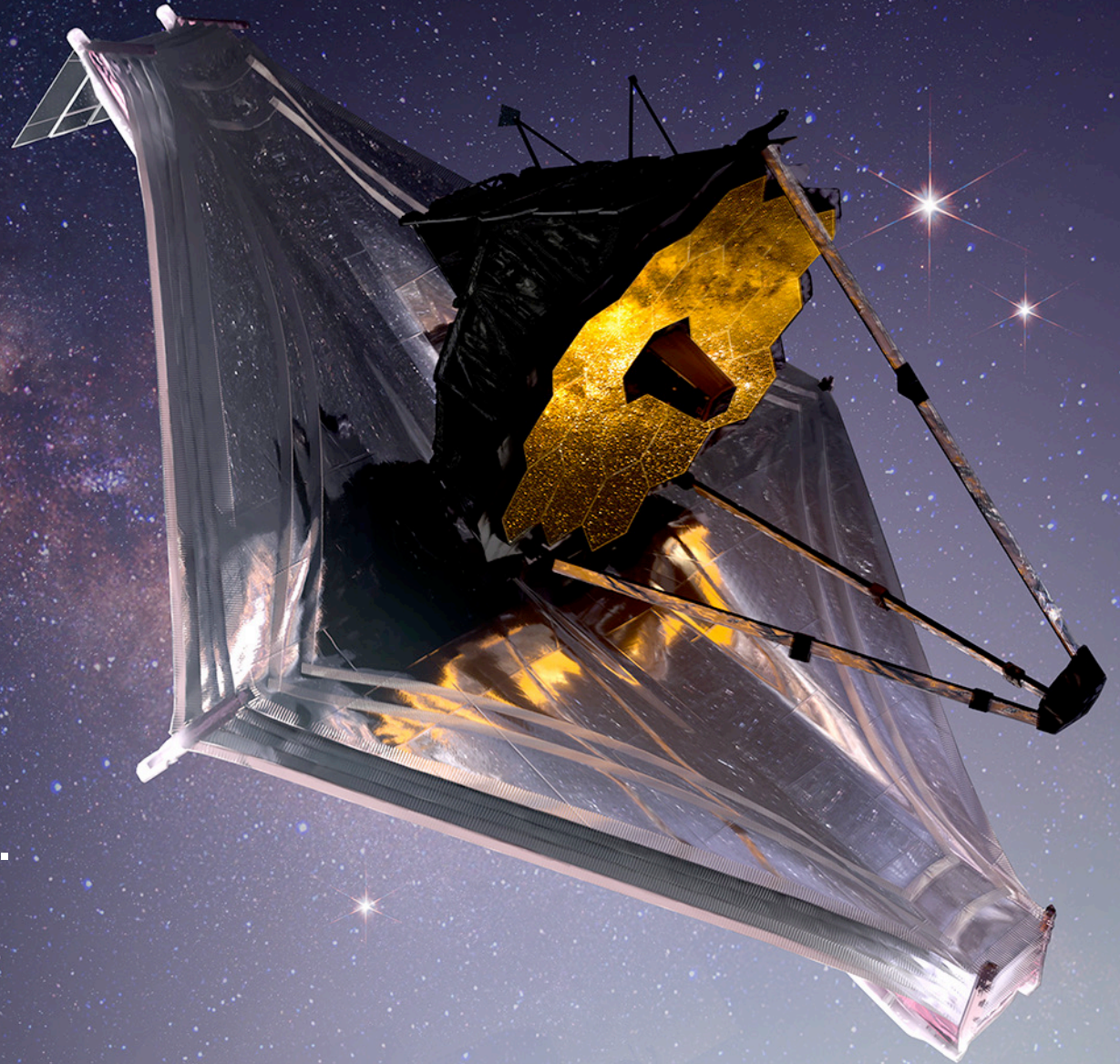
- The USAJOBS announcement will open February 17 on <https://www.usajobs.gov> and can be found by searching announcement number **HQ-22-DE-11374045-JK**
- The application period closes on February 22, 2022



WEBB

SPACE TELESCOPE

Successfully arrived at
Lagrange Point 2 and
turned on all its instruments.

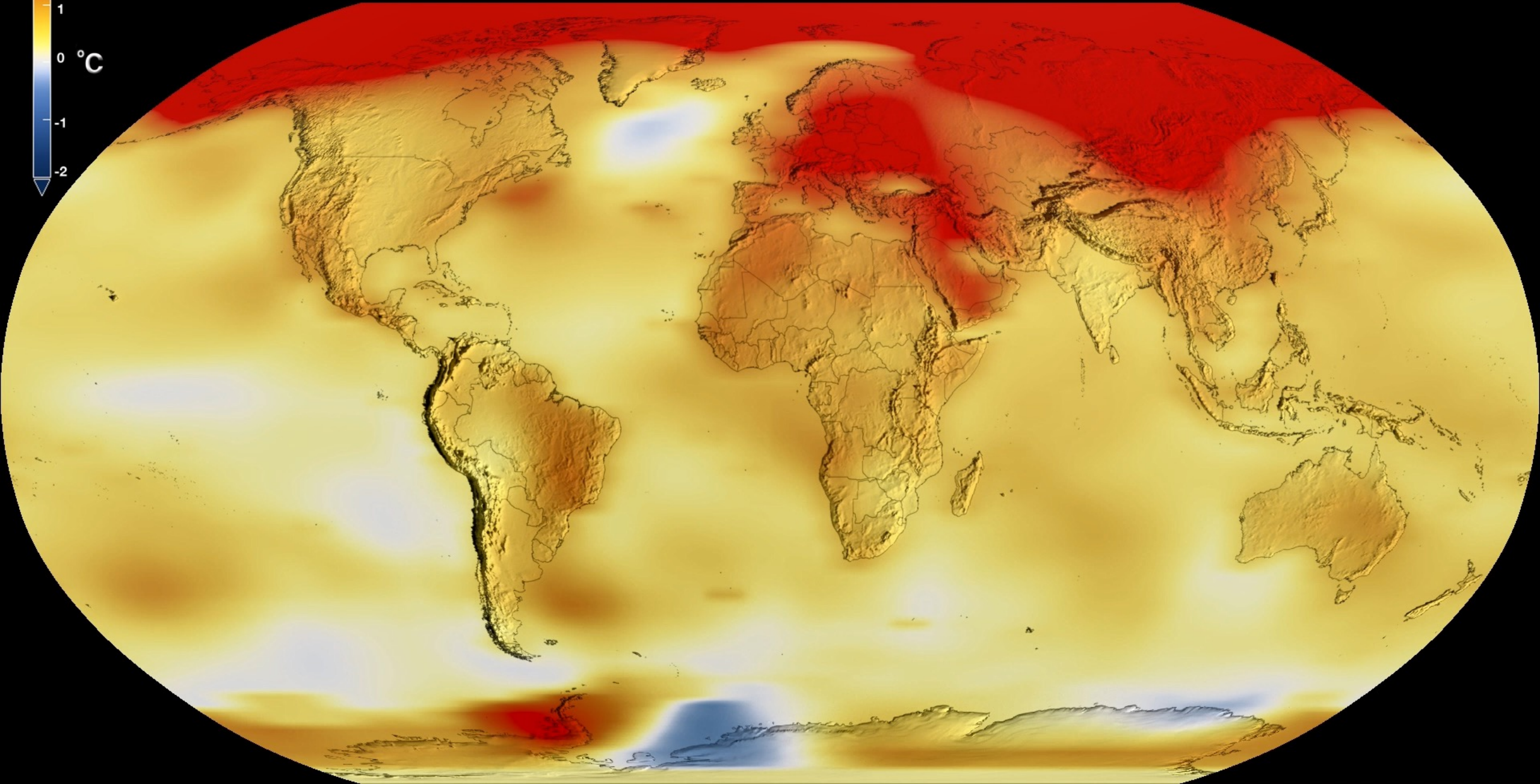


Imaging X-ray Polarimetry Explorer (IXPE)

On Jan. 11, IXPE began observing its first official scientific target – Cassiopeia A, or Cas A – the remains of a massive star that blew itself apart in a supernova around 350 years ago in our own Milky Way galaxy. The image to right is Cas A as seen by Chandra X-Ray Observatory.



2017 - 2021



Double Asteroid Redirect Test (DART)

After launching atop a SpaceX Falcon 9 rocket on Nov. 24 EST, NASA's DART spacecraft is on track to impact Dimorphos, the moonlet of asteroid Didymos, on Sept. 26.





NEWS &
UPDATES



PROGRAMS &
RESEARCH



DIVISION
HIGHLIGHTS

Why Web Modernization

1. **Facts matter.** We need accurate, scientifically-vetted content now, more than ever
2. **Reach audiences where they are.** Our goal is to improve the user experience with accessible, searchable, mobile-friendly information
3. **Enhanced creativity in storytelling.** We will engage and hold audiences with immersive experiences, experiential tools, and data interactives. Our users are more than casual observers—they are our citizen scientists and ambassadors
4. **Improved search.** When people search with science questions, NASA science should be the #1 search result. Yet users are often sent to space.com, Nat Geo, and others. By reducing duplication of subdomains with SMD content, our ranking will vastly improve
5. **We're stronger together.** Our strategy builds on the successful social media account consolidation. Example: NASA Kepler social pages transitioned from mission-specific to the thematic NASA Exoplanets accounts, with a 336% increase in Facebook followers and 724% jump in Twitter followers
6. **Streamlined workflow.** With a uniform editorial process, we will remove roadblocks in the review process, facilitate collaboration, and ensure consistency of look and style

SMD Web Modernization for Public-facing Sites

NASA SMD web modernization responds to a Congressional* mandate to enhance the government's digital footprint while reducing duplication. This effort presents an opportunity to grow audiences, as we create the world's most audacious website for science.

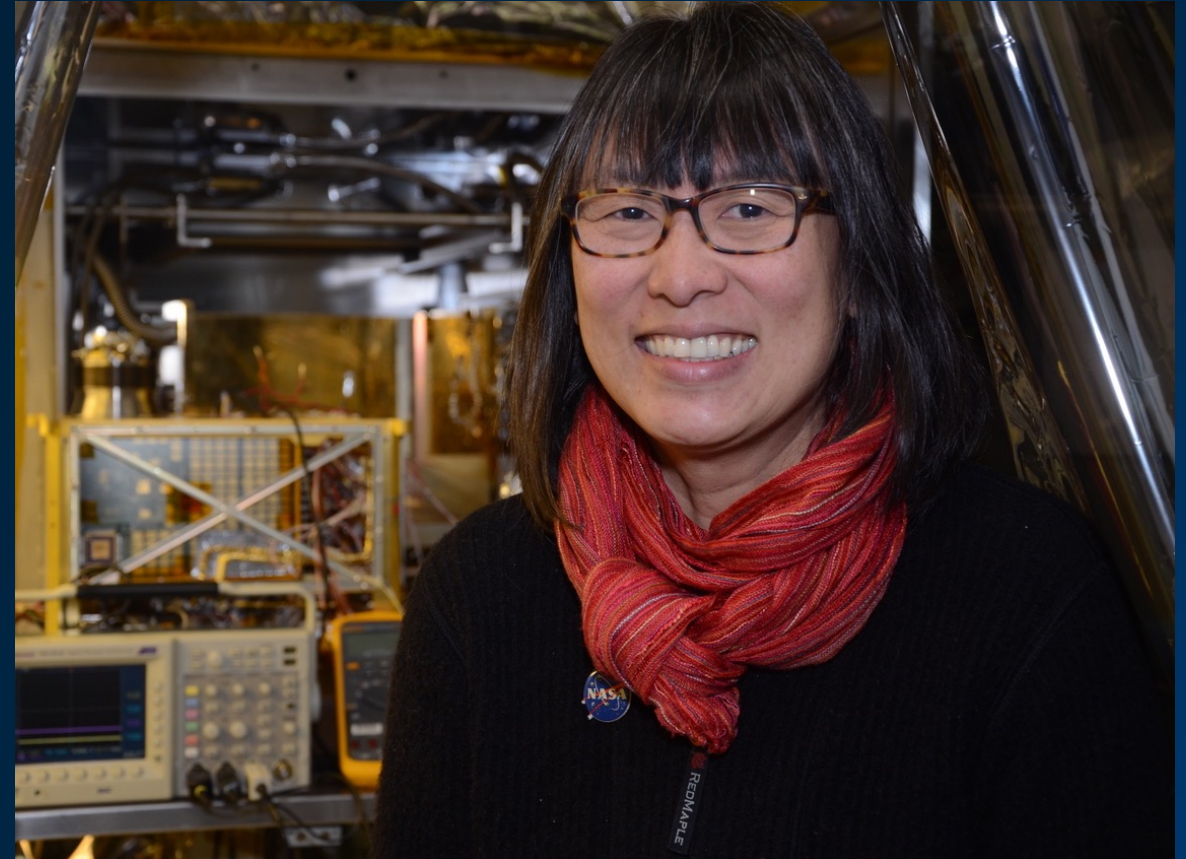
- A redesigned science.nasa.gov will centralize content from SMD's top public-facing websites into an engaging, interconnected, and accessible platform
- The new site will be a showcase for cutting-edge science data visualizations and accurate deep dive content from across NASA's science themes
- SMD will use the WordPress Content Management System to build the site
- Our portfolio of 1,900 websites has already been reduced by 24% through decommissioning and archiving of outdated/dormant sites

* [21st Century Integrated Digital Experience Act \(IDEA\)](#)

Enabling Science Through Technology



Dr. Carolyn Mercer
SMD Chief Technologist



Florence Tan
SMD Deputy Chief Technologist

Status of SMD Programs

- The state and health of the SMD Flight Portfolio is **Good**
- SMD successfully launched 5 missions over the last 6 months (Go SCIENCE!):
 - Landsat-9, Lucy, DART, IXPE, and JWST
- Several launches are planned for 2022, including the upcoming launch of GOES-T on March 1, 2022
- Several missions have successfully completed Key Decision Point (KDP) milestones:
 - Six missions were approved for launch; five missions established agency baseline commitments for their budget and launch date; and four missions had their budget and/or schedule adjusted to address technical and/or COVID impacts
- Technology and SmallSat/CubeSat efforts are advancing and enabling science
- Portfolio Management:
 - Rolled out the Large Missions Implementation Plan, incorporating recommendations from the Large Mission Study
 - Released the SMD Class D MAR; SMD Class D Implementation Guide and the Class D Compliance Matrix coming soon
- Ongoing COVID impacts:
 - SMD missions continue to be impacted by COVID; and supply chain issues are ongoing
 - SMD COVID assumptions are being re-evaluated, targeting release of updated guidance in March 2022
 - Hybrid meetings (e.g., combination of in-person and virtual participation) are being held on a limited basis, enabling more interaction with our Centers, project teams, partners, and vendors

Academic Award and Stipend Updates



Graduate Students: FINESST

- This year the FINESST award is up to \$50K/year for three years, an increase of \$5K in award value
- The FINESST call for graduate student research is out at: <https://go.nasa.gov/FINESST21>
- Proposals are due February 11, 2022

Post Doctorate: NPP

- The NASA postdoctoral fellowship base stipend will increase from \$60K to \$70K starting sometime early in 2022

Supporting Innovation and Inclusion in ROSES-2022

DAPR EXPANSION

VIRTUAL REVIEWS

BRIDGE PROGRAM

I-CORPS

CONTINUING NoDD /
HPD QUARTERLY EVALS

ACCELERATE HR/HI
SUPPORT

EXPANSION OF
INCLUSION PLANS

COMMERCIAL
SUBORBITAL

EXPAND SUPPORT FOR
MSIs/PUIs

NEW TOPS +
AI/ML PROGRAMS





NEWS &
UPDATES



PROGRAMS &
RESEARCH



DIVISION
HIGHLIGHTS

Division Highlights

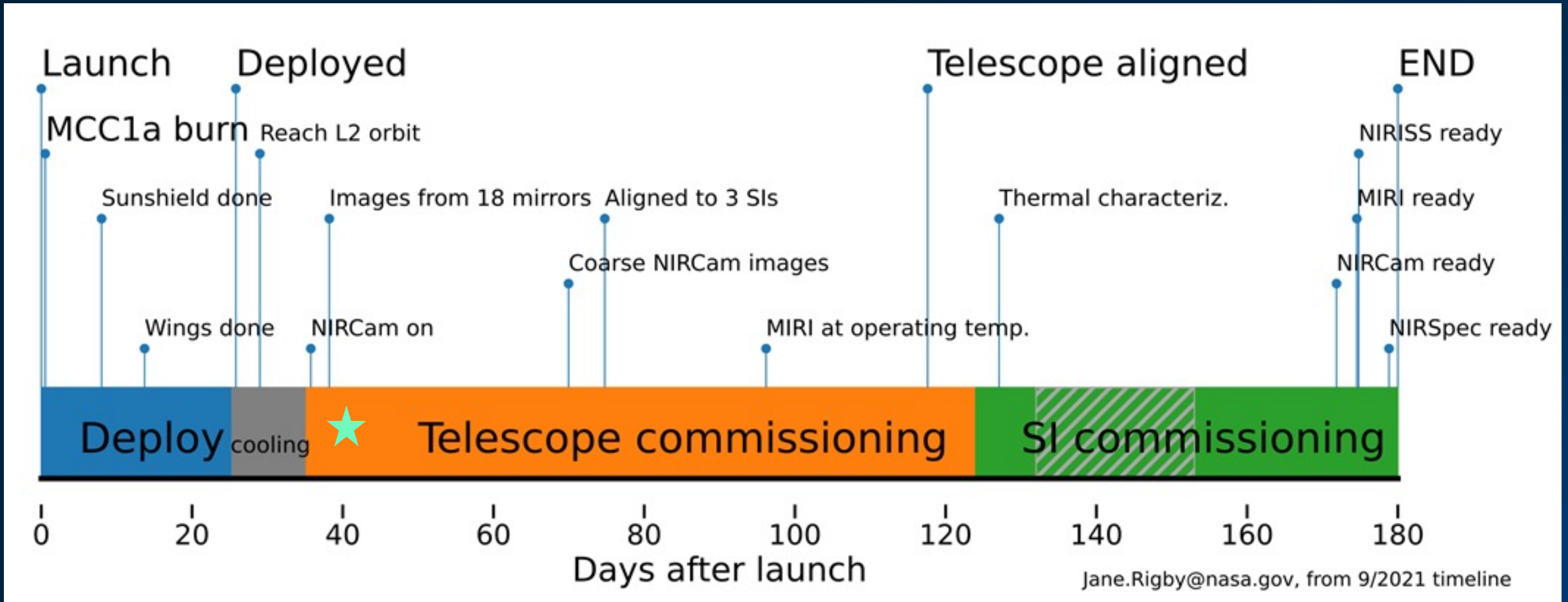
- James Webb Program Office (Webb) – Greg Robinson
- Exploration Science Strategy and Integration Office (ESSIO) – Joel Kearns
- Astrophysics – Paul Hertz
- Biological and Physical Sciences (BPS) – Craig Kundrot
- Heliophysics – Peg Luce
- Planetary Science – Lori Glaze
- Mars Sample Return Program Office – Joe Gasbarre
- Earth Science Division – Karen St. Germain





Commissioning

Commissioning begins at launch and is ~ 180 days* long marked by the following key events:

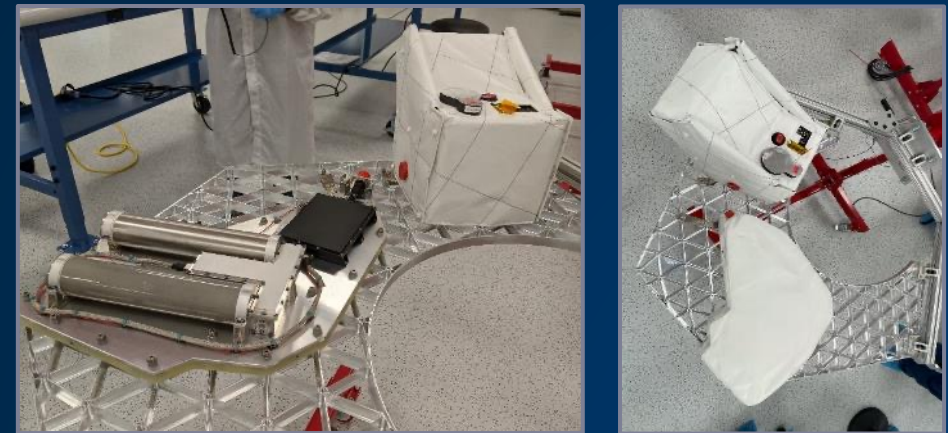
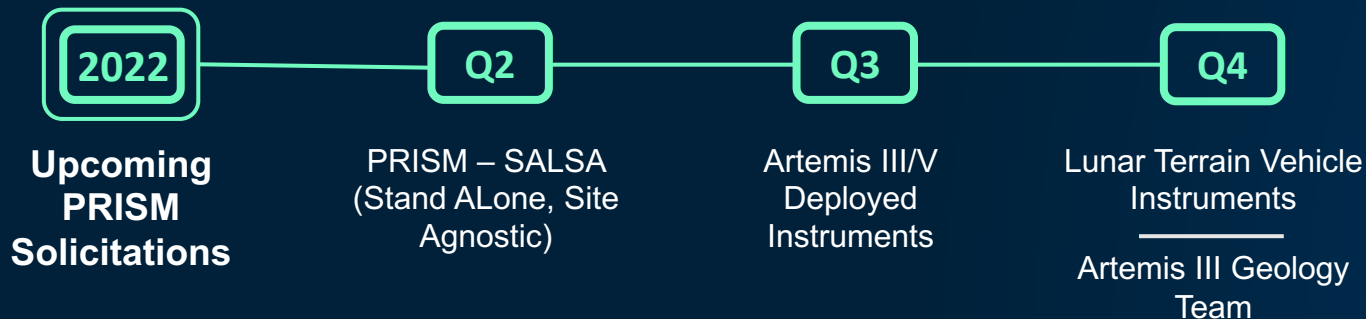
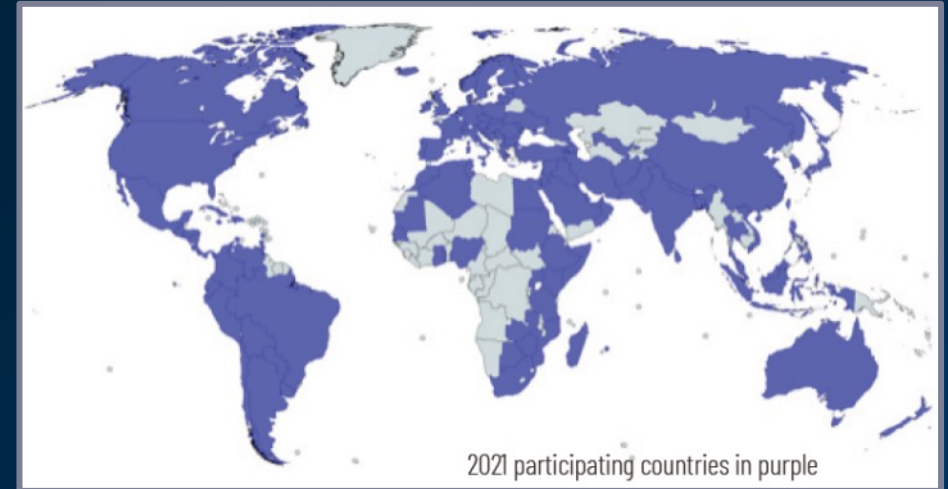


★ We are here

ESSIO Highlights

- NASA's 2021 *International Observe the Moon Night* events hosted 500k worldwide; Moon enthusiasts from all 7 continents participated in the celebration of learning and cultural connections
- Payloads and Research Investigations on the Surface of the Moon (PRISM) 1:
 - **Task order CP-11 awarded to Intuitive Machines in Nov 2021!** Delivering Lunar Vertex and STMD's CADRE to lunar swirl Reiner Gamma in 2024 on IM's NOVA-C lander
 - CP-11 International payloads: ESA's MoonLIGHT Pointing Actuator (MPAc) and KASI's Lunar Space Environment Monitor (LUSEM)
- PRISM 2 - Step 2 proposals received Dec 20, 2021; selections will be made in May 2022 for flights to the Moon starting late 2025

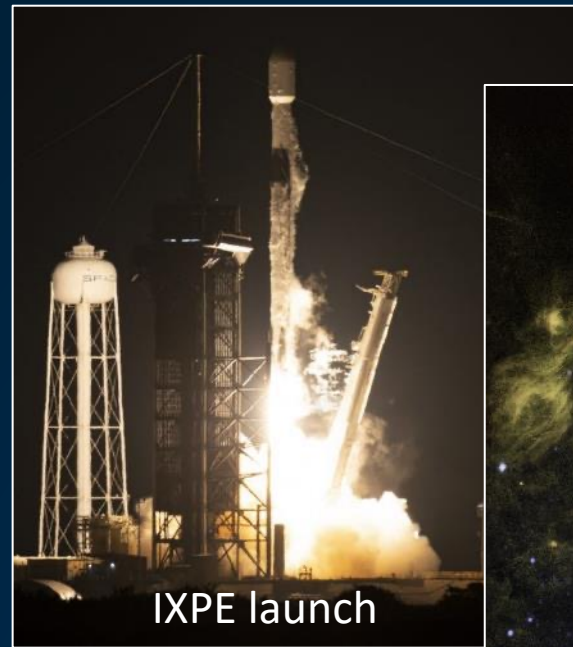
Observe the Moon Night - 122 participating countries



NASA payloads NIRVSS and NSS integrated onto Astrobotics' Peregrine Mission-1 lander

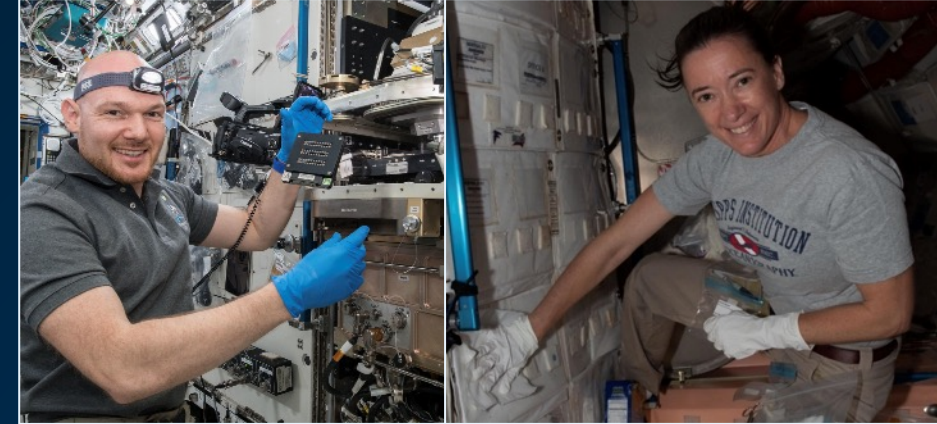
Astrophysics Division Highlights

- The 2020 Decadal Survey in Astronomy and Astrophysics was released in November
- The Imaging X-ray Polarimetry Explorer (IXPE), NASA's newest Astrophysics SMEX, launched on December 9, has successfully completed in orbit checkout, and has begun science operations
- NASA selected the Compton Spectrometer and Imager (COSI) (PI: J. Tomsick, UC Berkeley) as the next Astrophysics SMEX
- NASA completed its first ever review of the Hubble Fellowship Program. The report contains 32 recommendations to improve the success of the program and to improve the diversity, equity, and inclusion of the program; there will be a community webinar in February
- The Hubble Space Telescope passed the one billion second mark on January 1. Hubble recently found evidence that the supermassive black hole at the center of the Milky Way has been active in the past several thousand years



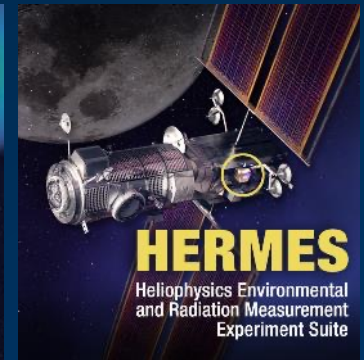
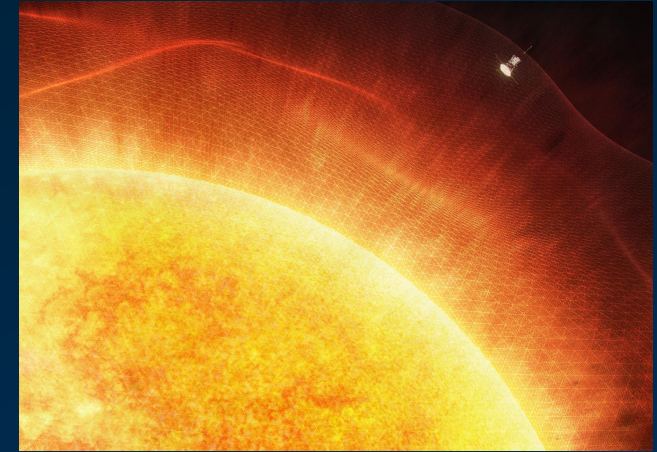
BPS Division Highlights

- The Light Microscopy Module (LMM) completed 12 years of service on the ISS in support of research ranging from plant biology to Soft Matter research. Studies included the control of colloidal systems contributing to three patents for Proctor and Gamble
- Five Space Biology experiments launched on SpaceX-24 to support Thriving in Deep Space including rodents (visual function), plants (gene regulation), and environmental microbes (human health and environmental control)
- Decadal Survey (expected summer 2023)
 - Whitepapers received
 - Biological Sciences and Physical Sciences panels held two public meetings
- FY 2022 Budget Request Update
 - \$109M FY22 in President's Budget Request focused on enabling transformative science
 - \$90M FY22 in the House appropriations bill; \$109M in Senate bill; await reconciliation
- Mary Walsh joins BPSD as Space Biology Program Manager
- Hans Hansen joins BPSD as Physical Sciences Deputy Program Manager



Heliophysics Division Highlights

- Parker Solar Probe enters the Solar Atmosphere for the first time, bringing new discoveries
 - Three years after launch, Parker has now flown within the Sun's inner corona, sampling particles and fields still bound to the Sun's atmosphere
- Daily Atmospheric Ionospheric Limb Imager (DAILI) CubeSat successfully launched Dec. 21 on SpaceX CRS-24 from KSC. Deployed from the ISS on Jan. 27
- Community announcement for the 2022 Small Explorer (SMEX) and Heliophysics Explorers (HEP) Programs was released on Dec. 22
- **Congratulations!**
 - **GLIDE** confirmed for flight (KDP C) Jan. 13
 - **HERMES** confirmed for flight (KDP C) Jan. 27
- NASA Space Weather Council established
- Heliophysics Data Environment RFI deadline extended to Feb. 28
- **Staffing:** Welcome to Bradley Williams (Program Executive) and Matthew McClure (Program Scientist)!



Brad Williams



Matt McClure

Planetary Science Division Highlights

- NASA allocation of Hayabusa-2 samples (10% / 0.5 g) received at JSC in December 2021
 - Proposals to study JAXA-catalogued samples can be submitted to LARS from February 13, 2022
 - Catalog of U.S. sample share will be posted by late spring and then opened to loan requests
- Upcoming meetings:
 - Planetary Science Advisory Committee (PAC): February 15
 - Lunar and Planetary Science Conference (LPSC): March 7 to 11
- Planetary Science and Astrobiology Decadal Survey:
 - NASEM is on track to deliver report to NASA and NSF by end of March/early April
 - Public release will be mid-April
 - Timeline for a response will be set by SMD and PSD:
 - Initial PSD public response will be within 90 days
 - Full written response will be provided later

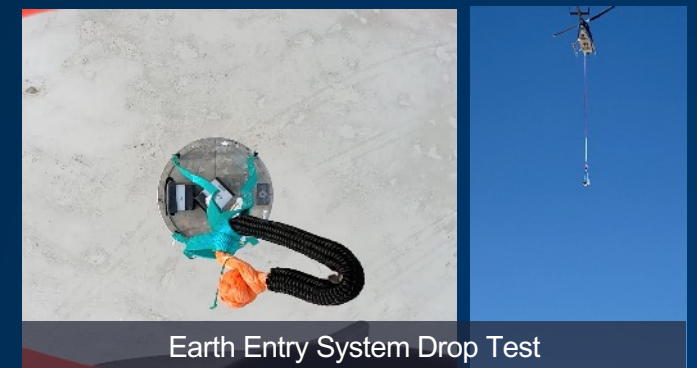
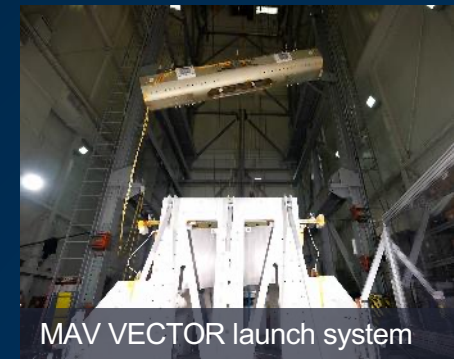


Hayabusa-2 samples received at JSC



Mars Sample Return Highlights

- Perseverance continues to successfully collect scientifically selected samples for return- 8 samples (including 1 Atmospheric Sample and 1 witness tube)
 - Recent science publications confirm and enhance the high scientific potential of the samples collected from Jezero Crater by Perseverance
- MSR is working to complete Phase A activities, including technical and programmatic trades recommended by the Independent Review Board prior to Phase A
- Multiple long-lead procurements have been awarded
 - Yesterday, February 7, Lockheed Martin Space was selected to build the Mars Ascent Vehicle Integrated System (MAVIS)
- Technology and engineering developments continue with progress on several prototypes (see images at right)
- The Program System Requirements Review is scheduled for April 2022 with KDP-B following in early Summer 2022



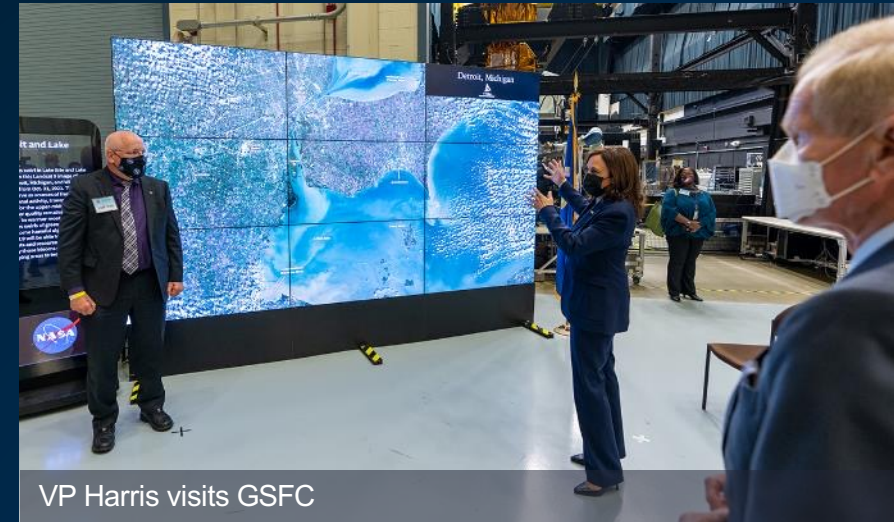
Earth Science Division Highlights

Climate Science:

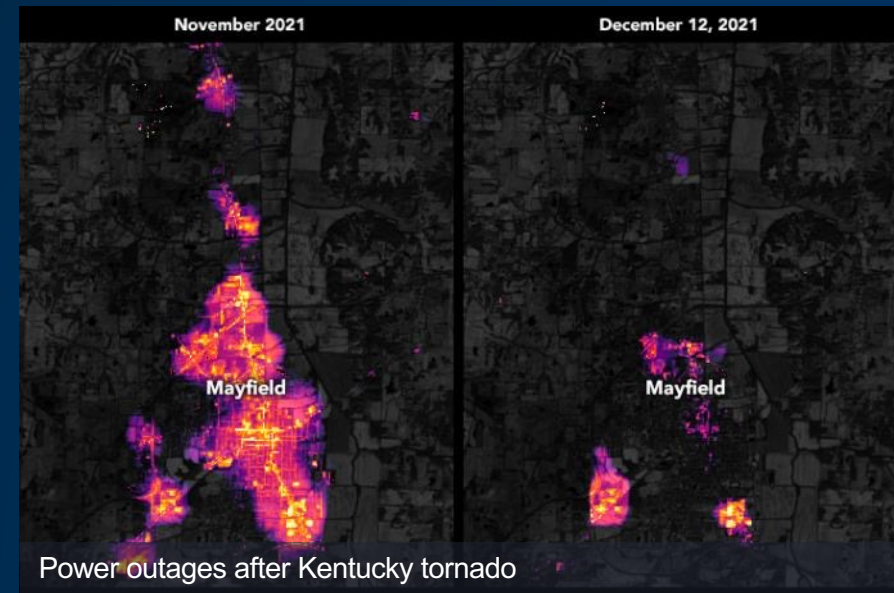
- Vice President Harris, NASA leadership discuss climate science at NASA center visits
- ESD supports U.S. Delegation in COP26 climate conference activities
- NASA-FEMA host online Alliance for Climate Action series
- NASA study shows climate change impacts crop yields as early as 2030 (corn down, wheat up)
- NASA-NOAA reports on 2021 ozone hole (13th largest), global temperature (6th warmest)

Of Note:

- Suomi-NPP (with NOAA) marks 10 years in space; CYGNSS tracks cyclones for 5 years
- ESTO awards \$50 million over 3 years to 17 proposals in the Instrument Incubator Program
- Space Apps Challenge announces winners from among more than 4,500 teams
- GLOBE Program wins AGU Excellence in Earth and Space Science Education Award



VP Harris visits GSFC

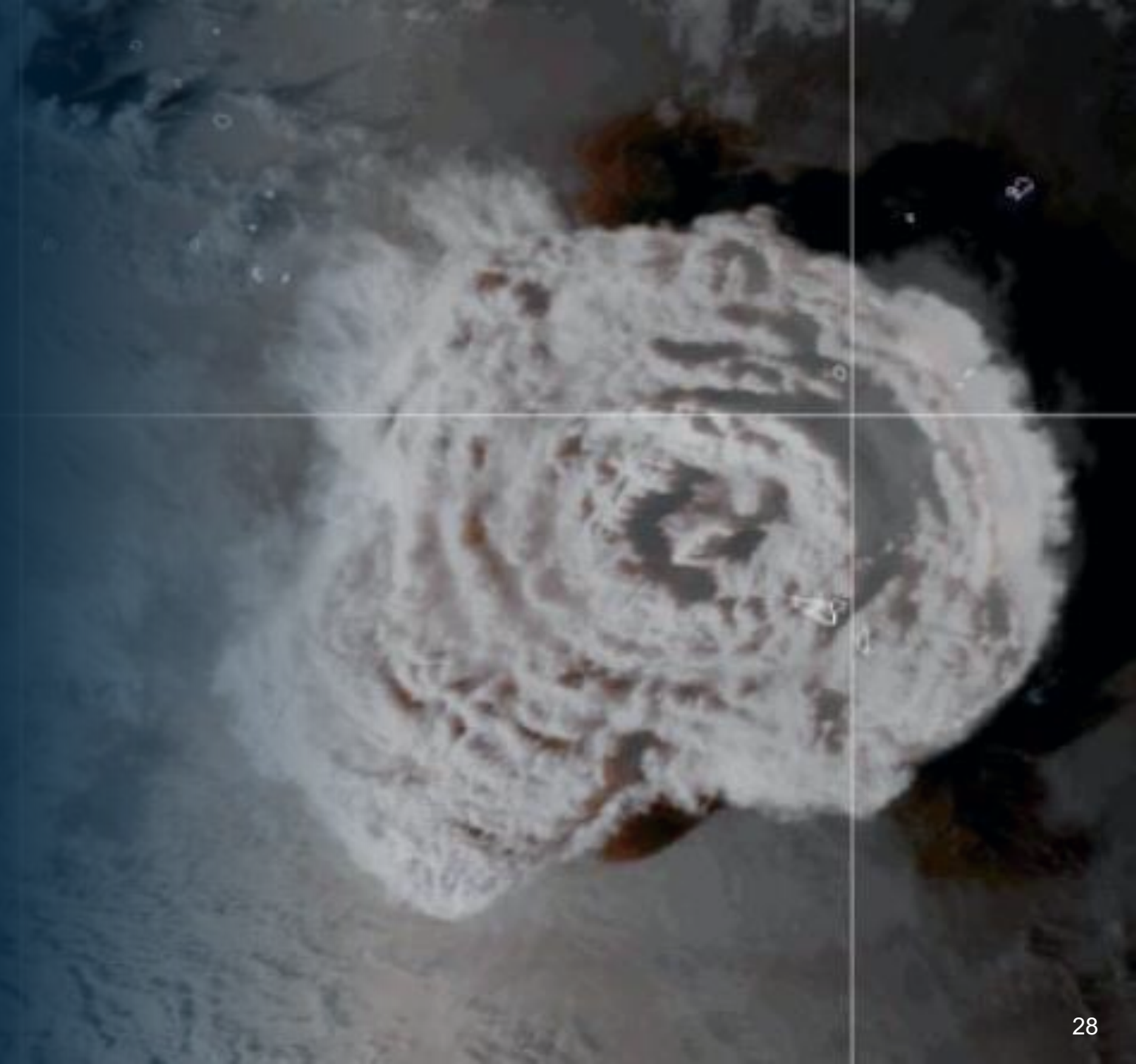


Power outages after Kentucky tornado

Earth Science Division Highlights

Earth Observations:

- In the news: Satellites observe impacts of Kentucky tornadoes, Tonga volcano
- NASA releases Landsat 9 first light images (with USGS); mission on track for operational status
- S-MODE campaign deploys off California to study ocean whirlpools, eddies, and currents
- New NASA-ESA Open-Source Science tool analyzes Earth science data in the cloud
- ESD selects new Venture-class INCUS mission to study storms and their impact on climate models
- OpenET launches, uses Landsat data to help manage water resources in the Western U.S.



A surreal landscape featuring a glowing, ethereal river that flows through a valley. The sky is a deep, dark blue, filled with stars and a large, pale moon in the upper left. A vibrant aurora borealis in shades of green and blue dances across the upper right portion of the sky. In the background, majestic mountains are silhouetted against a soft, golden light that suggests a sunrise or sunset. The foreground shows a grassy field with a rustic wooden fence and some purple flowers. The overall atmosphere is dreamlike and otherworldly.

EXPLORE

With Us