



National Aeronautics and
Space Administration

Committee on Astronomy and Astrophysics NASA APD Update

Dr. Shawn Domagal-Goldman

Director, Astrophysics Division

NASA Science Mission Directorate





Science Mission Directorate
ASTROPHYSICS
 Organizational Chart

DIVISION MANAGEMENT



Shawn Domagal-Goldman
Director



Peg Luce
Deputy Director

ADMINISTRATIVE SUPPORT
 Balam "Orby" Yaxkin, James Jackson, Kimberly Durschlag

DIVISION LIAISONS

<p>Resource Management Elijah Owuor (Lead) Jennifer Holt Danielle Gervalis</p> <p>Communications Alise Fisher</p>	<p>Science Management Operations Elaine Denning</p> <p>OIIR Peyton Blackstock</p> <p>Mission Services Integrator Lina Carrington</p>
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CROSS CUTTING

Executive Officer
 Rhiannon Roberts

Technologist
 Dominic Benford (Deputy)

Science Activation Lead
 Hashima Hasan

Senior Research Scientist
 Daria Pidhorodetska

FLIGHT PROGRAMS

Acting Associate Director
 Tahani Amer

PROGRAM EXECUTIVES

Rosa Avalos-Warren
 Rachele Cocks
 Lucien Cox
 Julie Crooke
 Lucas Paganini
 Miles Skow
 Mark Sistilli
 Breann Sitarski

RESEARCH & ANALYSIS

Associate Director
 Stefan Immler

**Associate Director for Concept and
 Technology Development**
 Jessica Gaskin

R&A Lead
 Roopesh Ojha

PROGRAM SCIENTISTS

Alessandra Aloisi Megan Ansdell Dominic Benford Mia Bovill Antonino Cucchiara Doris Daou Thomas Hams Hashima Hasan Hannah Jang-Condell	David Morris Roopesh Ojha Joshua Pepper Pablo Saz Parkinson Sanaz Vahidinia John Wisniewski Amber Young Dan Moses
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RESEARCH PROGRAM SPECIALIST
 Ingrid Farrell

**ASTROPHYSICS
 STRATEGIC MISSIONS**

Acting Program Director
 Peg Luce

PROGRAM EXECUTIVES

Lucas Paganini
 Miles Skow

PROGRAM SUPPORT
 Tony Comberiate, Andre Davis



Peg Luce
Deputy Director



Jessica Gaskin
Associate Director for Concept
and Technology Development



Tahani Amer
Acting Associate Director
Flight Programs



Breann Sitarski
Program Executive



Daria Pidhorodetska
Senior Research Scientist



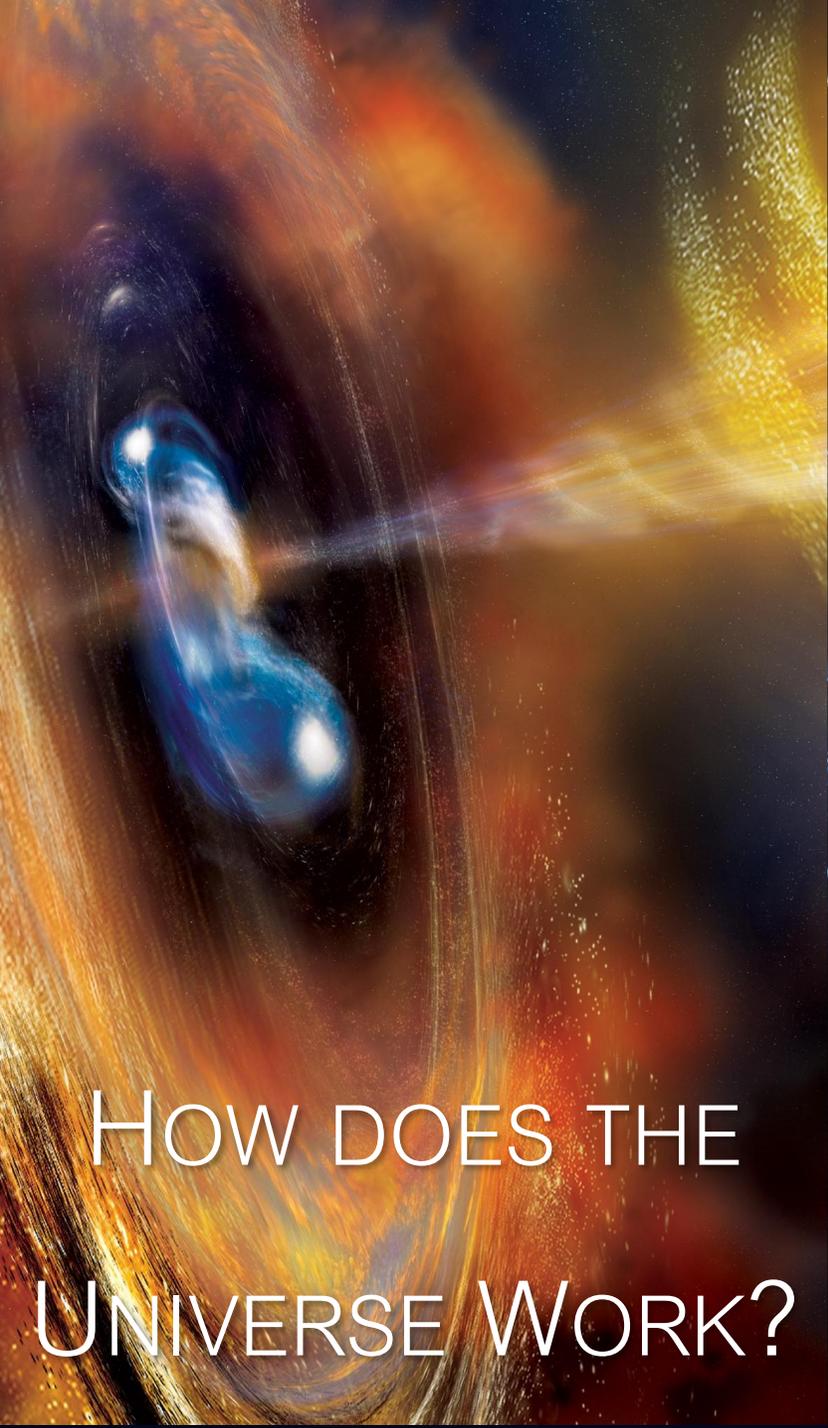
Amber Young
Program Scientist



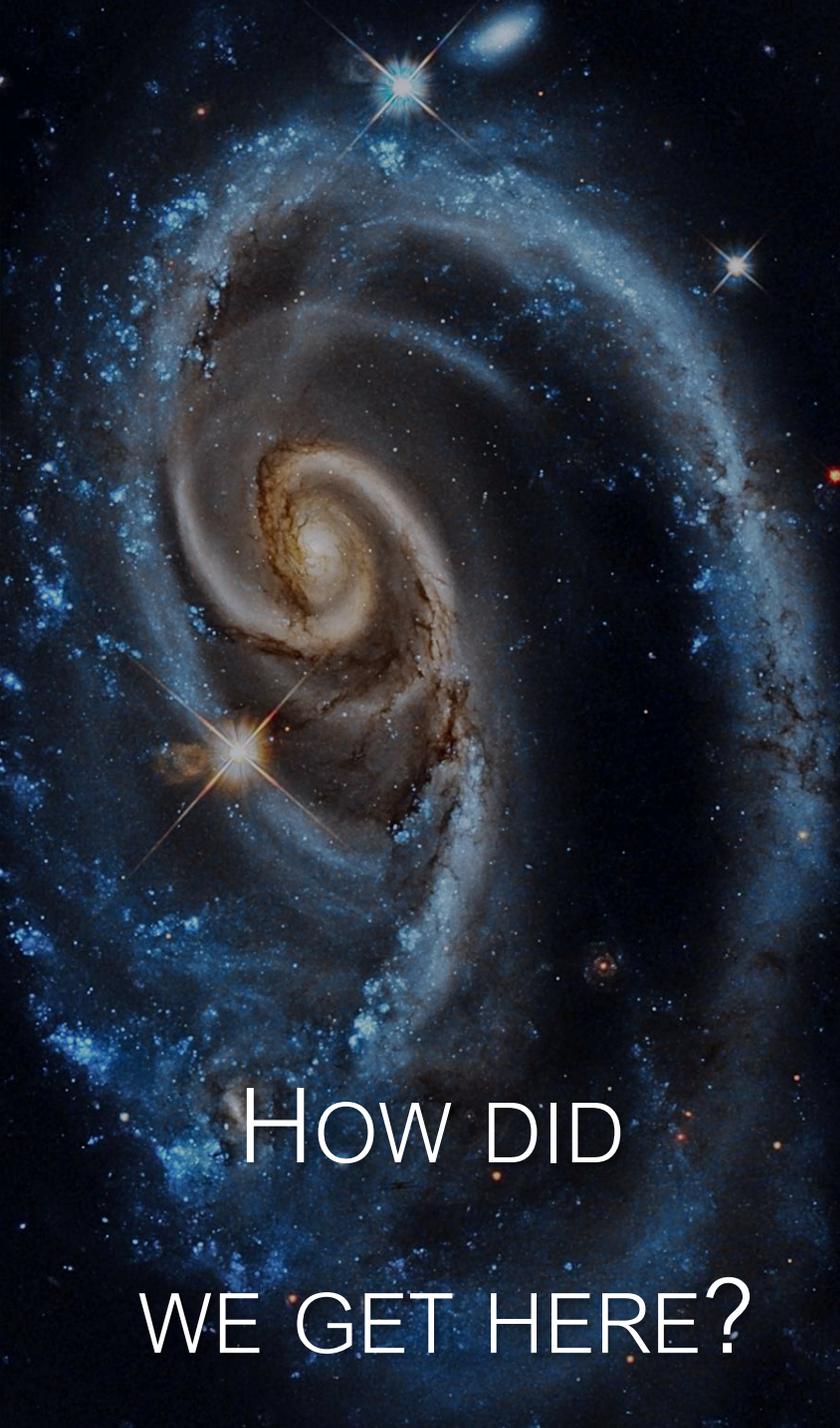
Dan Moses
Program Scientist



Peter Sooy
Engagement Officer



HOW DOES THE
UNIVERSE WORK?

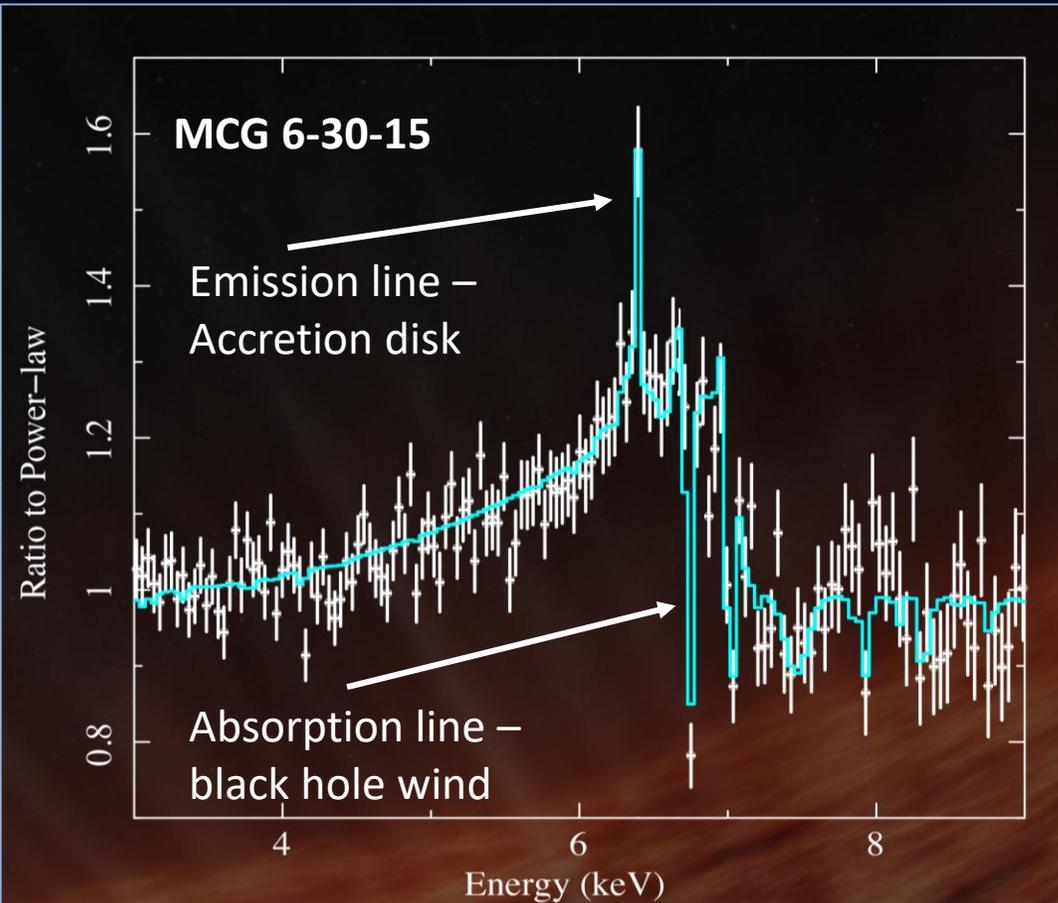


HOW DID
WE GET HERE?



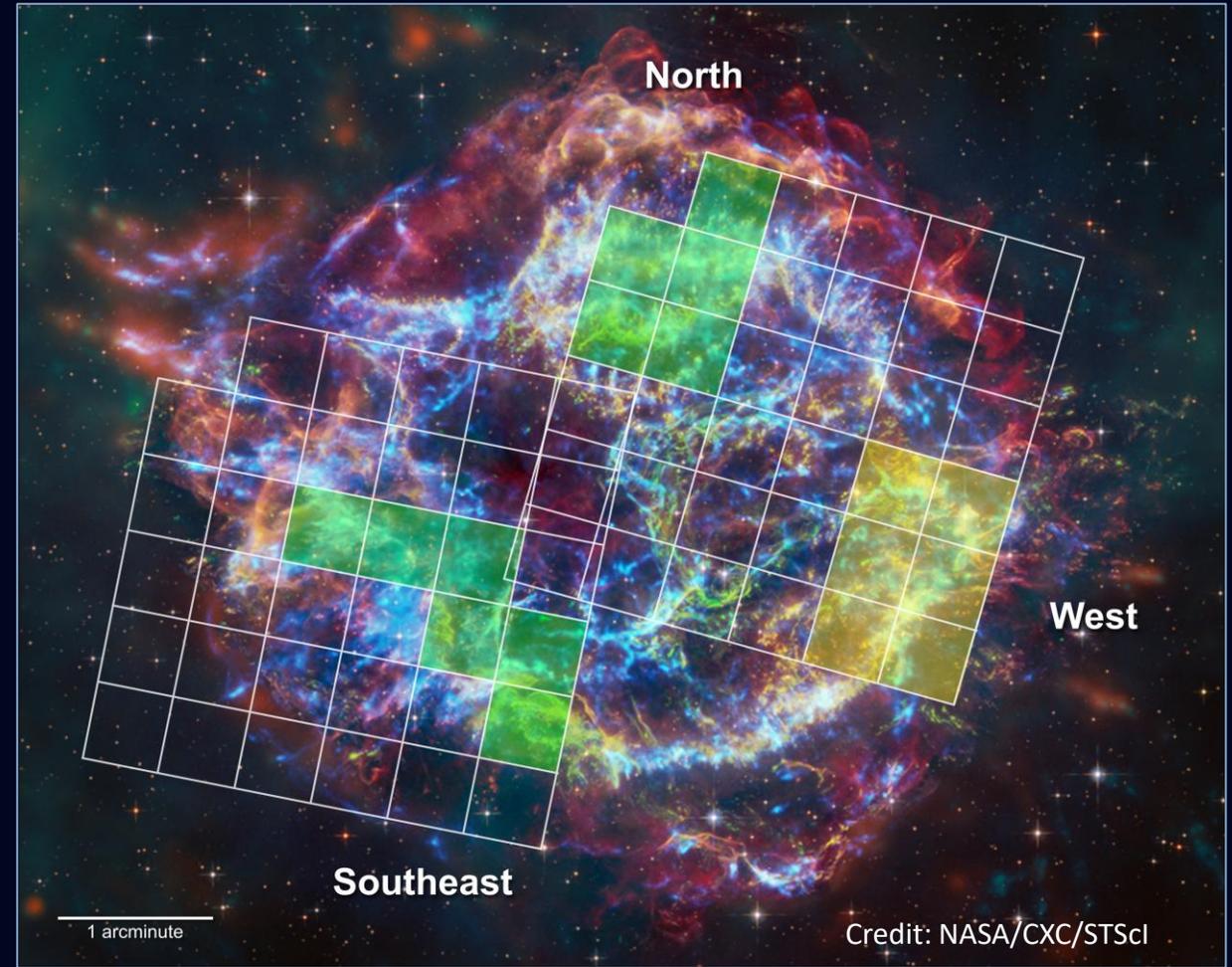
ARE WE ALONE?

Sharpest Ever Glimpse at Growth of a Rapidly-Spinning Black Hole

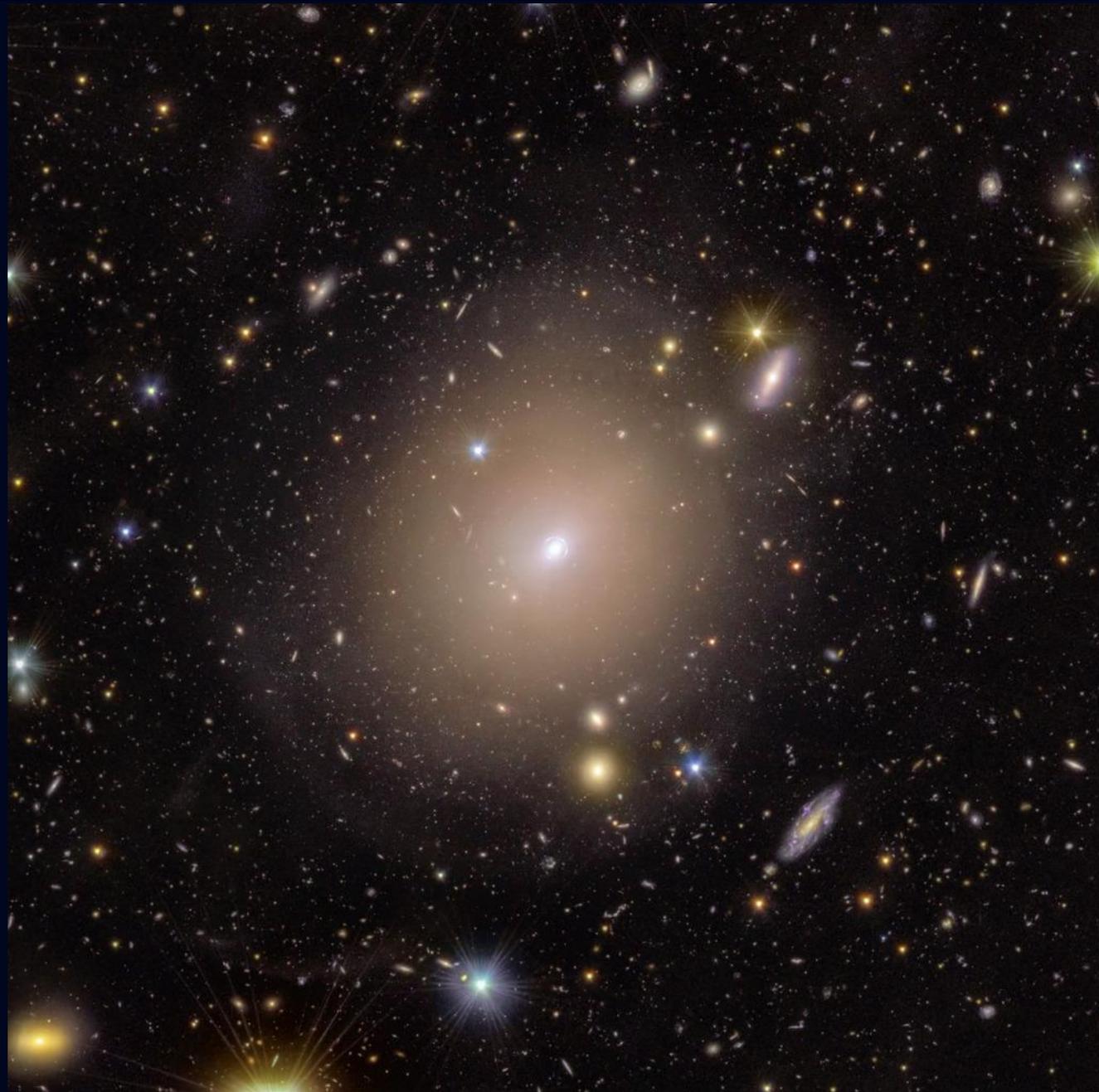


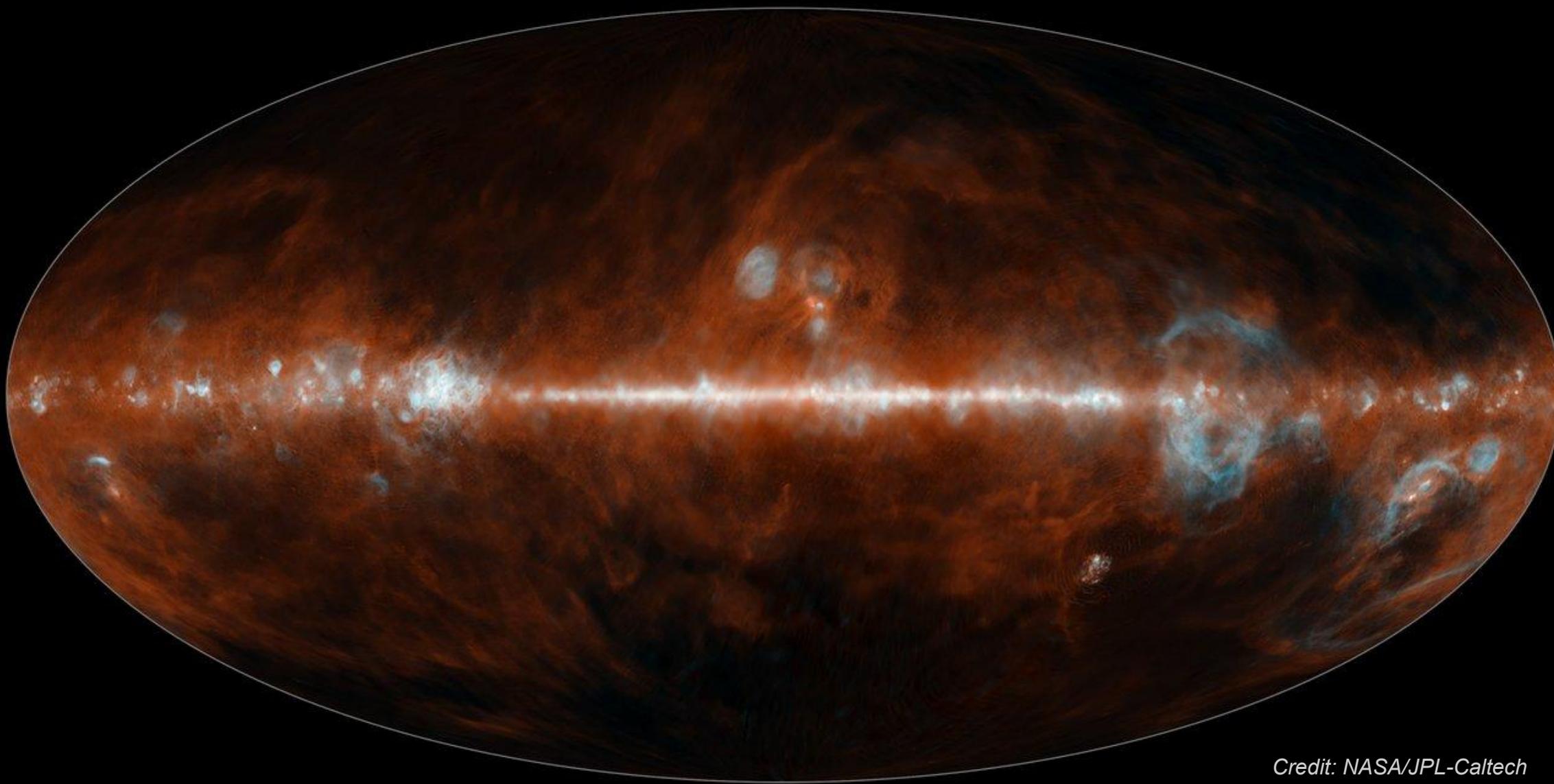
Credit: Center for Astrophysics | Harvard & Smithsonian

XRISM finds macro-mineral elements (K & Cl) of life in Cas A supernova remnant



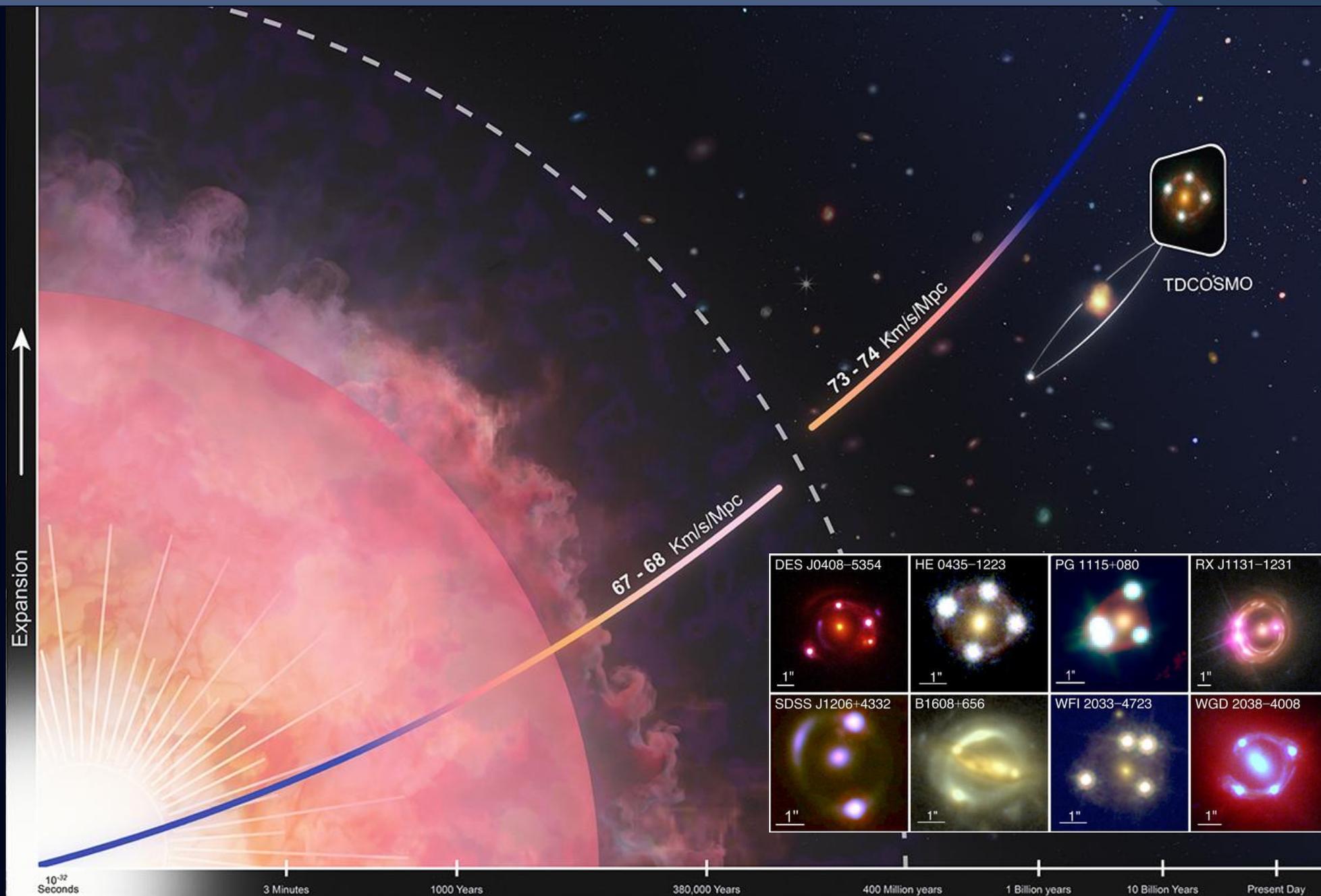
- Euclid continues with its prime operating phase to map approximately 1/3 of the sky over the course of 6 years of observations. July 1, 2025 marked two years from the Euclid launch.
- Euclid Quick Release 1 (Q1) data are available at the primary archive at ESAC, as well as via the U.S. archives at IRSA.



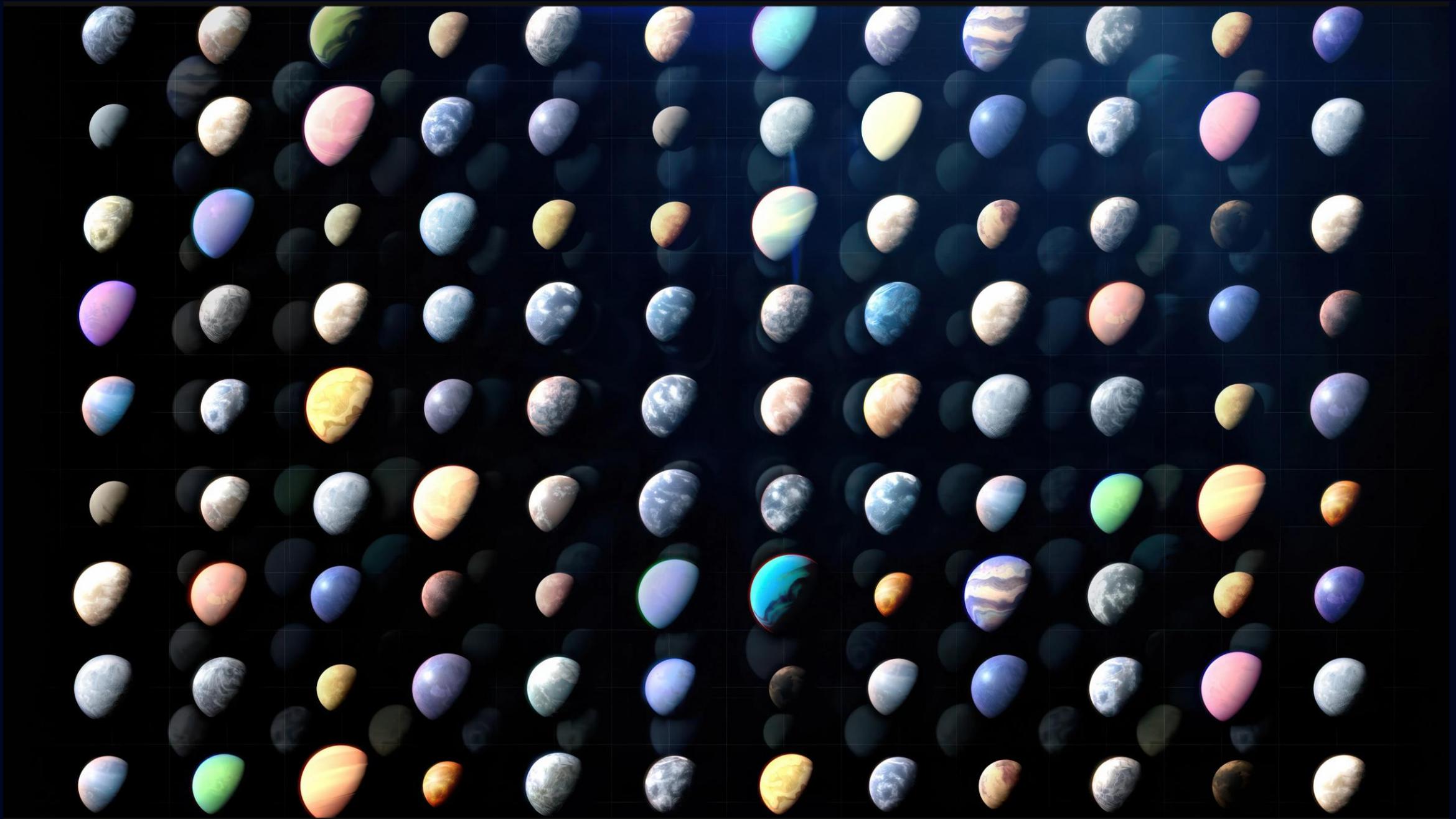


Credit: NASA/JPL-Caltech

"Hubble Tension"



NASA's Tally of Planets Outside Our Solar System Reaches 6,000



Research Opportunities in Space and Earth Science (ROSES):

- For Astrophysics Division ROSES-24/25 solicitations, no peer reviews have been postponed, selections are being formulated, and funding is being released to PIs
- A release of ROSES-26 is anticipated. Please check the ROSES-26 blog for decision announcements including timing: <https://science.nasa.gov/researchers/solicitations/roses-2026/>
- We do not expect to release an ADAP solicitation in ROSES-26, but a data analysis opportunity will be included in ROSES-27 with a proposal due date in mid-2027, returning to the prior schedule of ADAP.
- Most program elements in ROSES-26 will be open to proposals that advance opportunities aligned with NASA's Artemis/Moon/Mars exploration program.
- NASA is updating the language used in its post-review notifications in compliance with recent Executive Orders. These changes do not reflect a significant change in the underlying process by which NASA handles proposals after peer review.

NASA DATA ANALYSIS IN THE CLOUD

The Astrophysics Division sees a common need for:

Multi-archive analyses on large data sets (“Big Data”)

Complex analyses that require a lot of compute (“Big Compute”)

Collaboration tools and tutorials for non-experts (“Big Community”)

Fornax offers:

FREE ACCESS TO CLOUD COMPUTING

next to the NASA Astrophysics archival data through a JupyterLab interface.

COMMON DATA ANALYSIS SOFTWARE

already installed and ready to go, and space to build your own software.

SPACE TO IMPORT

external datasets for co-analysis with NASA data.

SUPPORT SERVICES

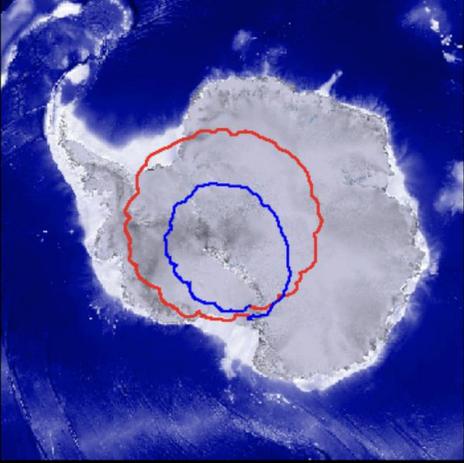
such as a helpdesk, an open community forum, tutorials, etc.



For questions about a Fornax account, reach out to fornax-helpdesk@lists.nasa.gov

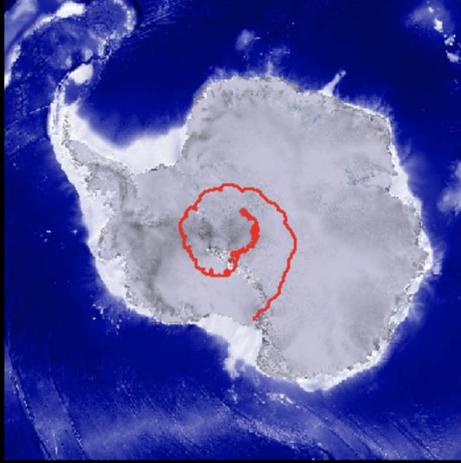
BALLOON TRACKING Current Revolution in Red

GAPS



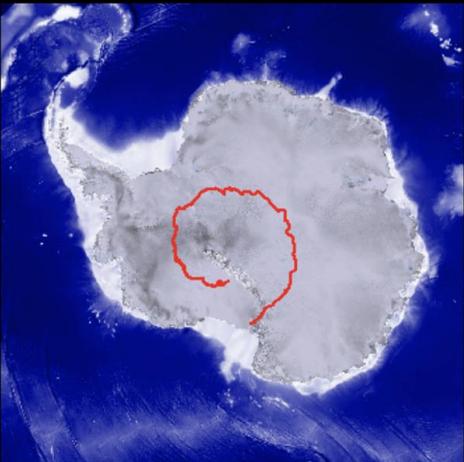
Total Flight Time
25 days 2 Hours 53 Minutes

PUEO



Total Flight Time
23 Days 9 Hours 52 Minutes

HICAL A



Total Flight Time
12 Days 12 Minutes

HICAL B



Total Flight Time
5 Days 2 Hours 6 Minutes

The main science payloads completed successful science flights (GAPS, 25 days; PUEO, 23 days) with payload recovery currently underway.

The two PUEO calibration sondes HiCal A and HiCal B completed their mission and have been terminated for ease of recovery near ground traverse lines.

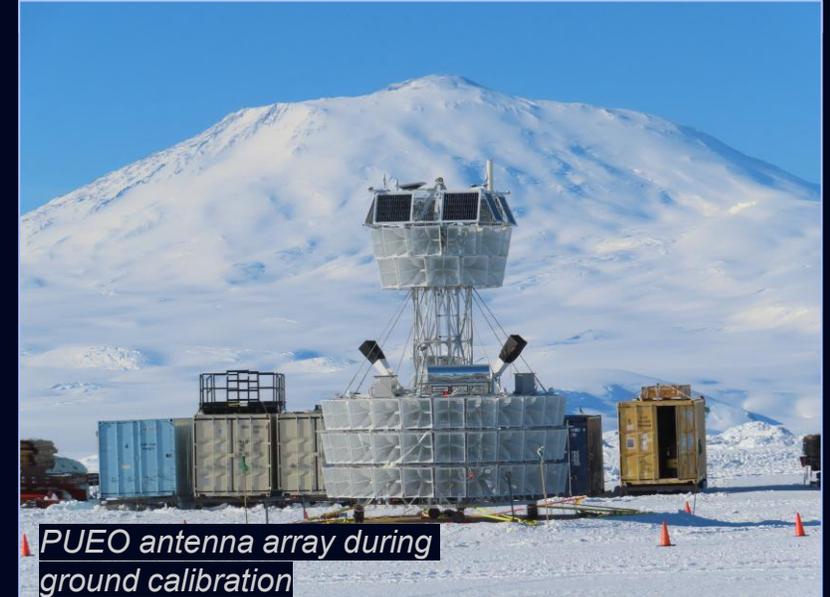
Status of the balloons is available at:
<https://www.csbf.nasa.gov/>

- PUEO is a balloon-borne Pioneers mission, led by Abigail Viereggs from the University of Chicago. PUEO was launched from McMurdo Station, Antarctica and collected data for 23 days aloft.
- **Science Driver:** What is the nature and cosmic distribution of the astrophysical accelerators that produce the highest energy particles in the universe?
- **Science Objectives:**
 - O1: Characterize astrophysical source populations in the distant universe with a maximum proton acceleration energy above 10^{21} eV
 - O2: Characterize astrophysical sources that create neutrinos at energies above 10^{18} eV in flaring events that occur within a month-scale cadence with fluences at levels predicted from NS-NS mergers, high luminosity FSRQs, and short Gamma Ray Bursts

PUEO launched December 20, 2025 for multi-circumnavigation of the Antarctic continent, using the deep Antarctic ice as part of the detector and measuring the distinct impulsive interaction radio signatures with the balloon payload.



*Fully Deployed
PUEO payload*



*PUEO antenna array during
ground calibration*

GAPS, led by PI Charles Hailey from Columbia University, is funded through the Astrophysics Research and Analysis Program (APRA) call in ROSES. **GAPS launched in December 2025 and collected data for 25 days.**

GAPS Science Objectives:

Antideuteron sensitivity 2 orders of magnitude below the current best limits:

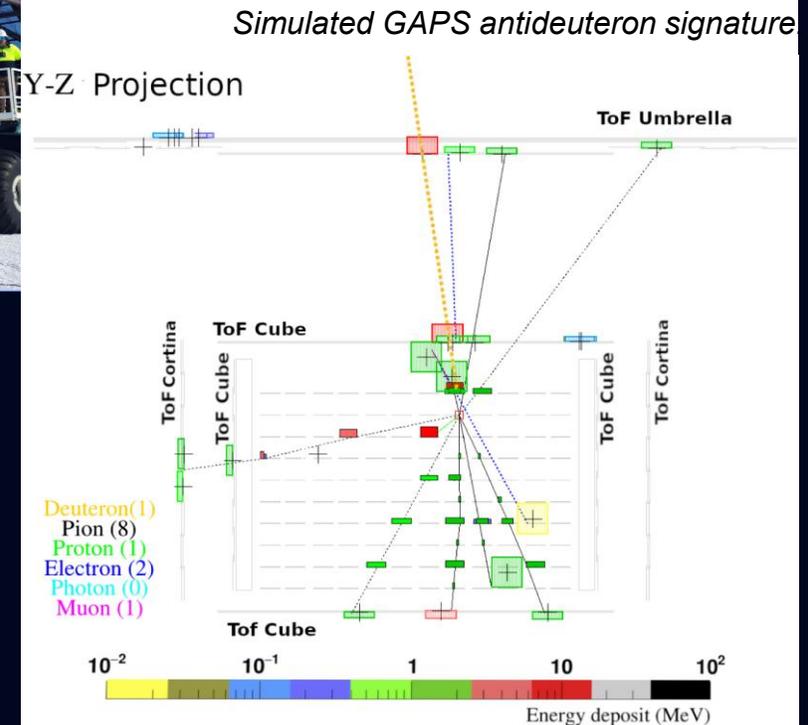
- Real potential for a major discovery
- Probe a wide variety of dark matter models across a wide mass range with very low astrophysical background

A precision antiproton measurements in an unexplored energy range <0.25 GeV/n:

- Search for primordial black hole evaporation
- Constrain DM models
- Learn about cosmic-ray propagation, solar effects, atmospheric interactions

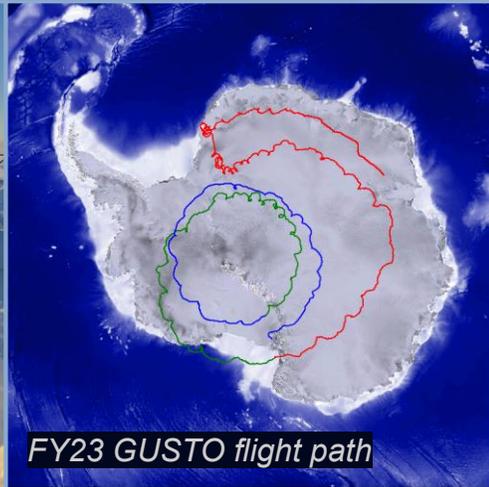
A complimentary probe for AMS-02 antinucleus measurements

- Confirm or refute (astonishing) AMS-02 claim to have detected antihelium nuclei → would profoundly shake our understanding of cosmic-ray physics





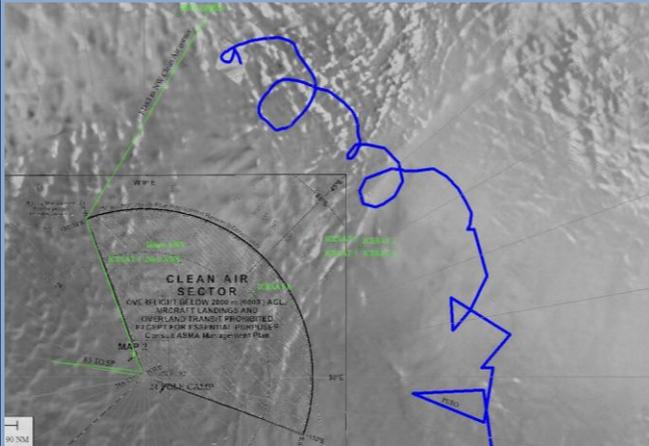
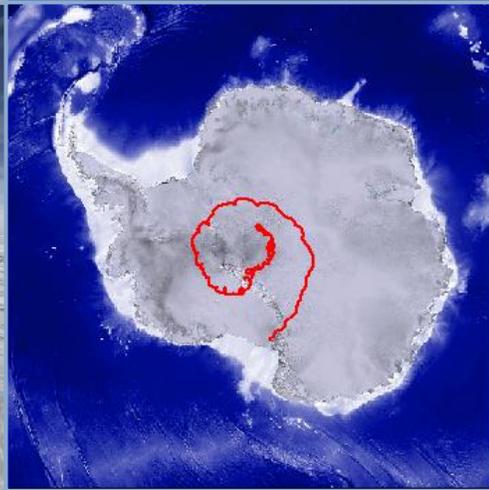
GUSTO recovery 2 years post flight



FY23 GUSTO flight path



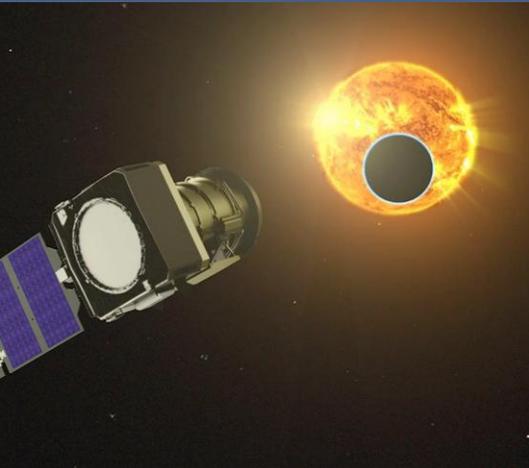
Arctic Trucks arriving at PUEO



PUEO FY26 flight path and land site relative to South Pole Station.

- BPO contracted Arctic Trucks to provide additional recovery capabilities
 - Enabling access to ground traverse routes that are inaccessible to fixed wing aircraft
 - Providing longer flight durations and full payload recovery in season, including data vaults.

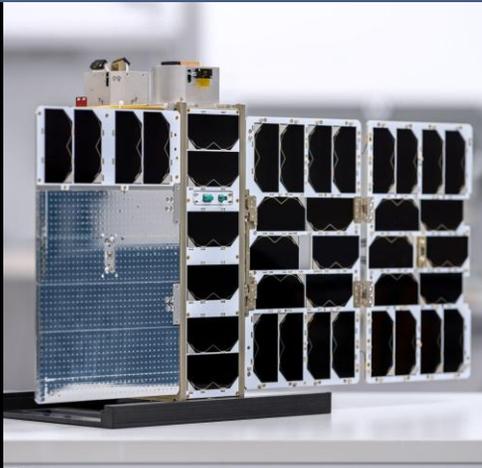




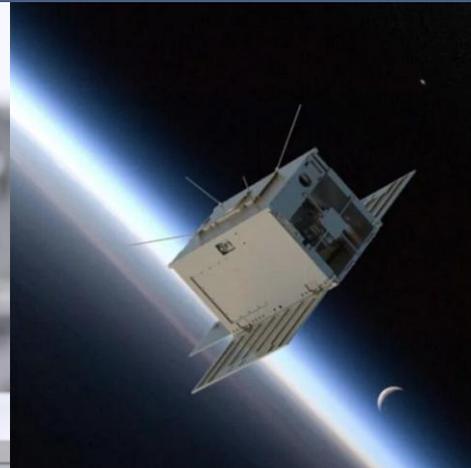
Pandora



**Star-Planet Activity
Research CubeSat
(SPARCS)**



**The BlackCAT
CubeSat Wide-Field
X-Ray Transient
Monitor**



SPRITE



Aspera

<p>Launched Jan. 11, 2026</p>	<p>Launched Jan. 11, 2026</p>	<p>Launched Jan. 11, 2026</p>	<p>NET Mid 2026</p>	<p>NET Late 2026</p>
<p>SmallSat (Pioneer): Will observe transiting exoplanets and their host stars with long time baselines and simultaneous optical photometry and infrared spectroscopy.</p>	<p>CubeSat: The first mission to provide dedicated, long duration UV observations of red dwarf stars.</p>	<p>CubeSat: Will be used to search for transient objects such as early universe stars collapsing to form black holes and will enable studies of early star formation.</p>	<p>CubeSat: Will study shock emission in nearby SNRs and will measure the escape fraction of H-ionizing radiation from low-Z star-forming galaxies.</p>	<p>SmallSat (Pioneer): Designed to study the gas flows into and out of galaxies, making the first maps of 'missing' matter surrounding nearby galaxies.</p>

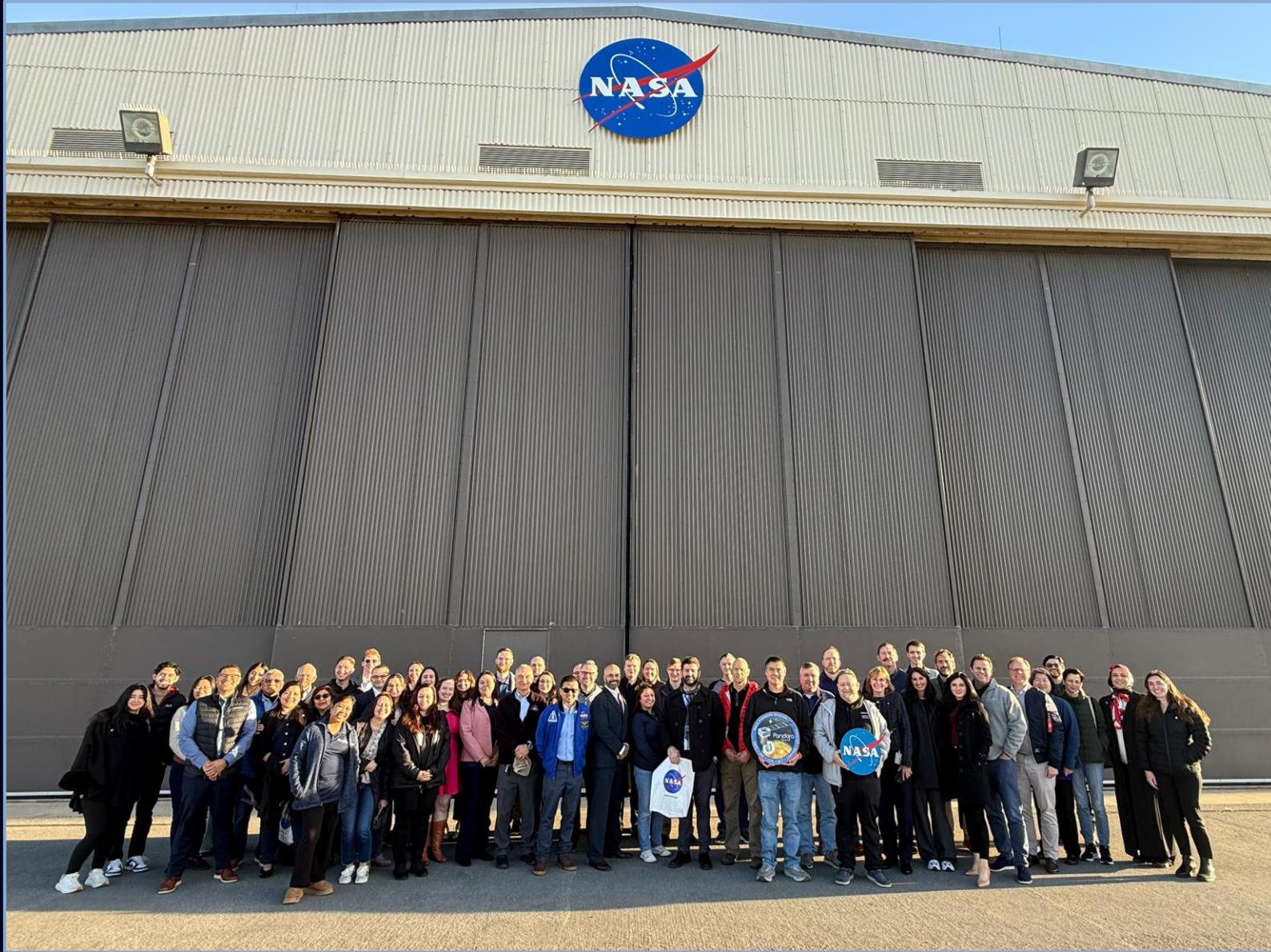
Pandora

- Pandora is a multiwavelength SmallSat mission designed to observe transiting exoplanets and their host stars with long time baselines and simultaneous optical photometry and infrared spectroscopy.
- Science Driver: Pandora will disentangle star and planet signals in transmission spectroscopy to reliably determine exoplanet atmosphere compositions.
- Pandora launched from Vandenberg Space Force Base on January 11, 2026. Mission controllers received full acquisition of signal from the Pandora spacecraft on Sunday, Jan. 11. Pandora will now begin a month of commissioning before starting science operations.

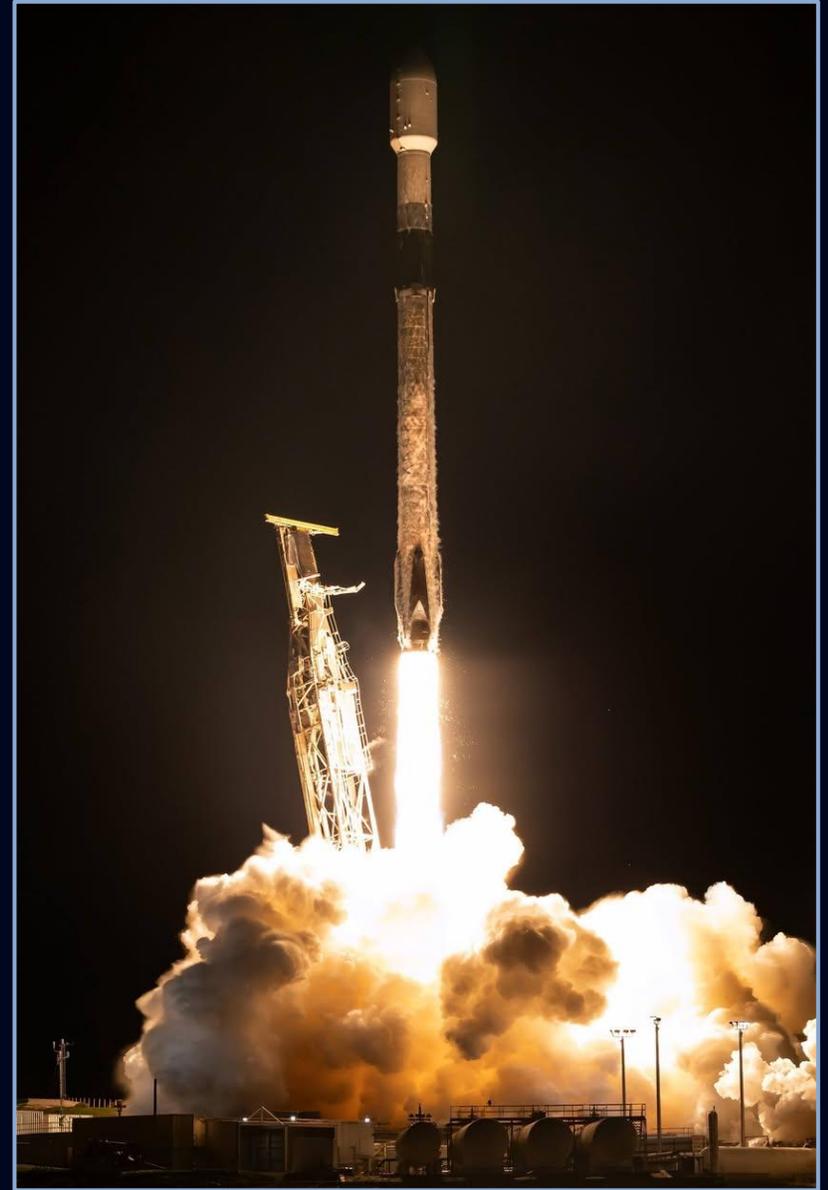
Aspera

- Aspera is a University of Arizona-led SmallSat mission designed to study the gas flows into and out of galaxies, making the first maps of 'missing' matter surrounding nearby galaxies.
- Almost 40 students have been trained on flight hardware at U. of Arizona, many going on to launch careers at Raytheon, ICEYE, Ascending Node Technologies, etc., demonstrating Aspera will deliver transformational science while building the workforce for industry.
- Scheduled to launch in late 2026





NASA Pandora, SPARCS and BlackCAT teams at Vandenberg post launch.



Credit: SpaceX; SpaceX's Falcon 9 launched the Twilight Rideshare Mission on January 11, 2026

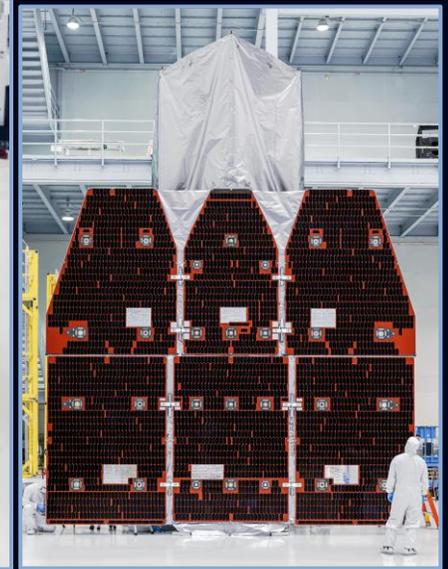
Northrop Grumman



Katalyst



- **On Track for 2026:** With the thermal vacuum campaign successfully concluded, the Roman team has completed mechanical and electrical integration of the Observatory while continuing to perform readiness tests simulating operations.
- **Robust Schedule Performance:** Despite the recent government shutdown, the project maintained critical momentum by operating as an "excepted" activity.
- **Cycle 1 General Investigator Call:** Solicitation was released last month (Dec 10, 2025) with a March 17, 2026 deadline.
- **User Prep:** STScI & IPAC are launching a webinar series to train the community on the new analysis tools and planning software.



The project remains on schedule for a Fall 2026 launch!



NASA Goddard
SPACE FLIGHT CENTER

Genie GS-1930

Genie GS-1930

SKY

Overview

- NASA plans to release the 2026 Astrophysics Small Explorer Announcement of Opportunity in 2026
- SMEX missions are PI-led, cost-capped space missions that address focused astrophysics science priorities
- The 2026 AO adopts a single-step selection process and streamlined early development to improve efficiency
- Updates reflect community feedback and lessons learned, supporting cost, schedule, and risk discipline
- SMEX supports Decadal Survey priorities by enabling timely, competed missions within the NASA Astrophysics Explorers Program

Notional Timeline

- Final AO Release: NET Spring 2026
- Mission Selection: ~Early 2027
- Launch Readiness: By ~2031



Questions: John Wisniewski, Astrophysics Small Explorers Program Lead Scientist, john.p.wisniewski@nasa.gov and E. Lucien Cox, Astrophysics Small Explorers Program Executive, elbert.l.cox@nasa.gov using subject line “APD 2026 SMEX CA”

Advanced X-ray Imaging Satellite (AXIS)

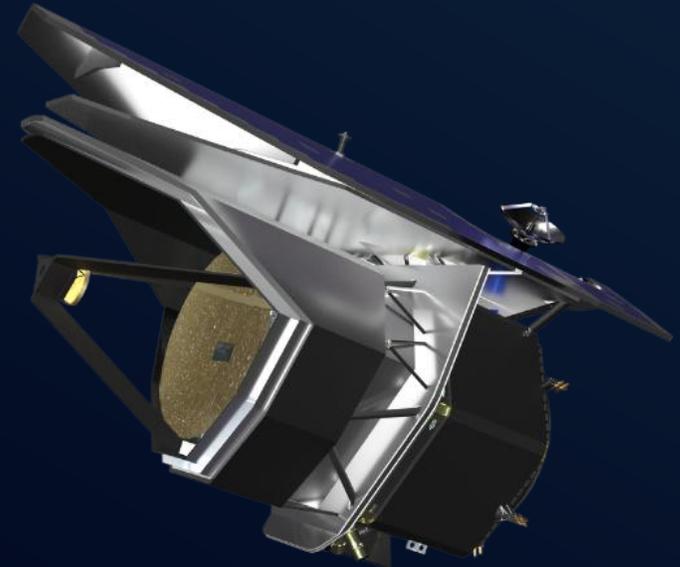


What seeds supermassive black holes and how do they grow?

How do gas, metals, and dust flow into, through and out of galaxies?

What powers the diversity of explosive phenomena?

Probe far-Infrared Mission for Astrophysics (PRIMA)

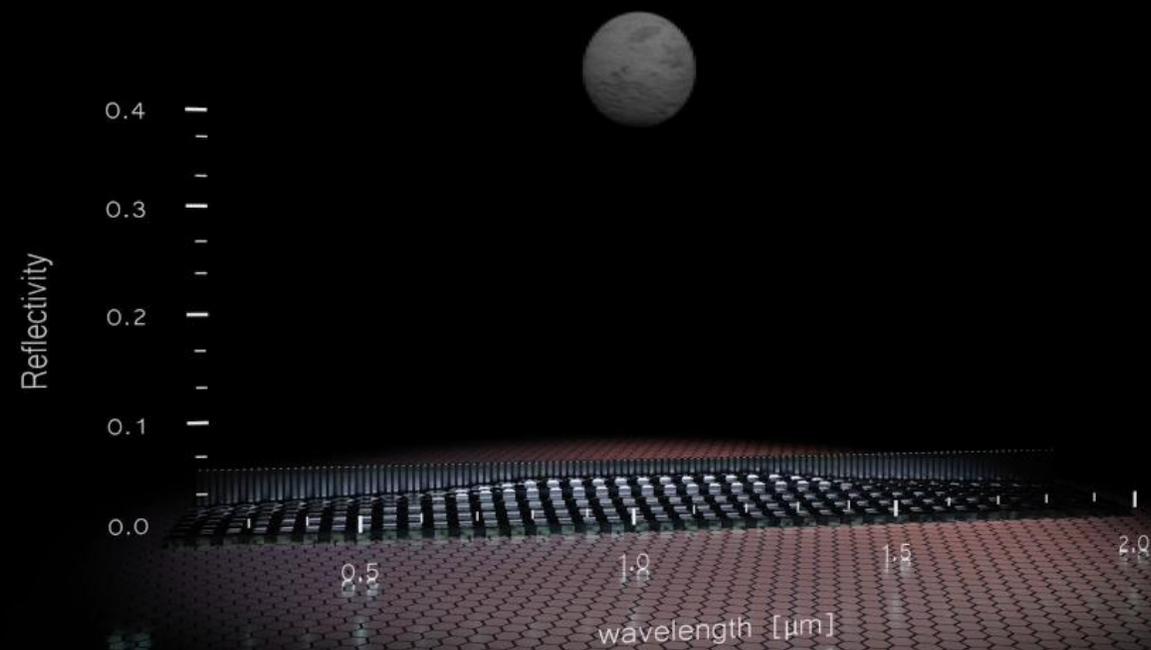


Origin of Planets and their Atmospheres

Co-Evolution of Galaxies and Supermassive Black Holes Since Cosmic Noon

Buildup of Dust and Metals

Habitable Worlds Observatory
Simulated Solar System Time-lapse
Observed from 33 light-years away
Time = 10 years, 1 second = 72 days



1. 

2. 
 

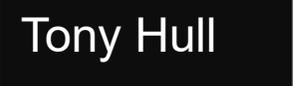
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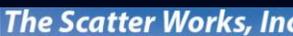
 
 
 
 
 

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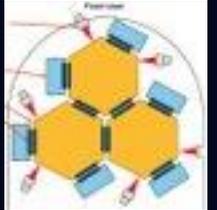
 
  




Servicing architecture studies to optimize science return and operational lifetime



Picometer-level rigid body telescope sensing and control and laser metrology to **TRL5**



Microthruster Propulsion System Module to **TRL5**



Thermal Picometer-level (pm) stable mirrors to **TRL6**



Non-contact Vibration Isolation and Precision Pointing System to **TRL5**



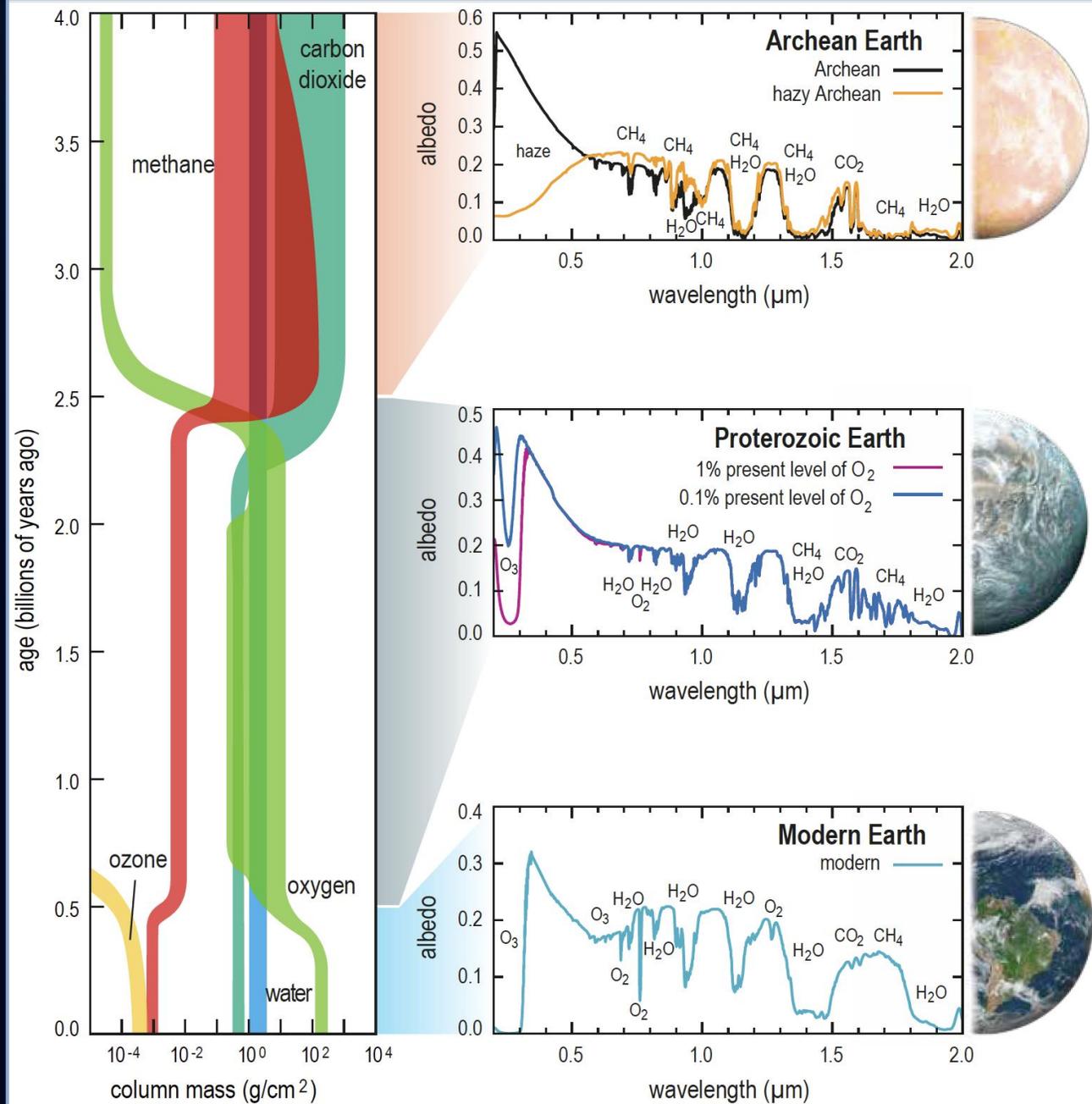
Ultrastable, Stiff Telescope Structures (**TRL5**), Latches (**TRL6**), Structural Micro-lurching and Creep (**TRL5**) and Micrometeoroid Shield Protection (**TRL4**)



Large-scale Far-Ultraviolet Broadband Mirror Coating to **TRL5**



- **International ex officio members on the HWO Community Science & Instrument Team (CSIT)**
 - CSIT international ex officio members will represent the views & interests of their respective geographical regions, and collectively begin to capture the broader global science community
 - Invited international partners are in the process of identifying their representatives (beginning with international partners who were involved in the previous HWO START community group)
- **Avenues for potential technical contributors to contact the HWO Technology Maturation Project Office (TMPO), and liaise with each other, to identify areas of interest and potential collaborations**
 - **TMPO Contact:** those interested in specific potential technical contributions should contact TMPO through the HWO Deputy Principal Architect, Breann Sitarski (breann.n.sitarski@nasa.gov)
 - **Instrument Concept Studies:** TMPO plans to release US domestic call for proposals in 2026; while proposing teams may include international participants, funding will be provided to US organizations only; call may also include proposals for funding participation of US individuals in non-US-led studies
 - **Technical Interchange Opportunities:** initial planning underway of nearer-term opportunities for potential technical contributors to liaise with each other, in a broad and open forum, to identify what areas make the most sense for them to pursue in upcoming study calls as well as identify possible collaborations.



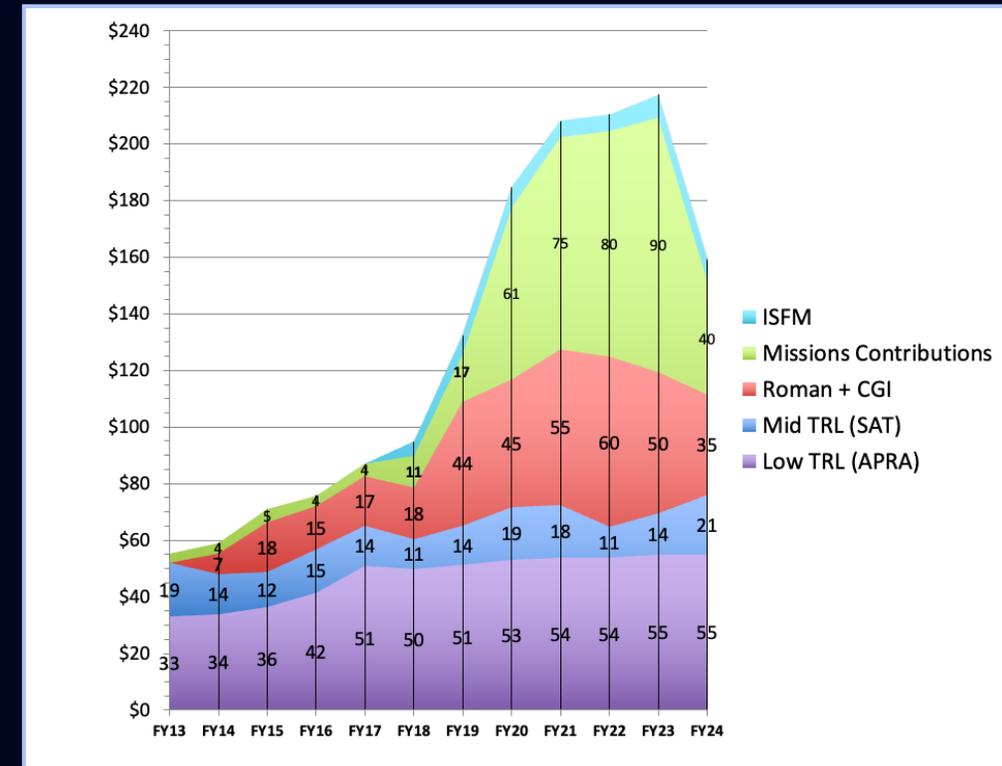
Credit: National Academies/Astro2020 decadal survey

How we invest:

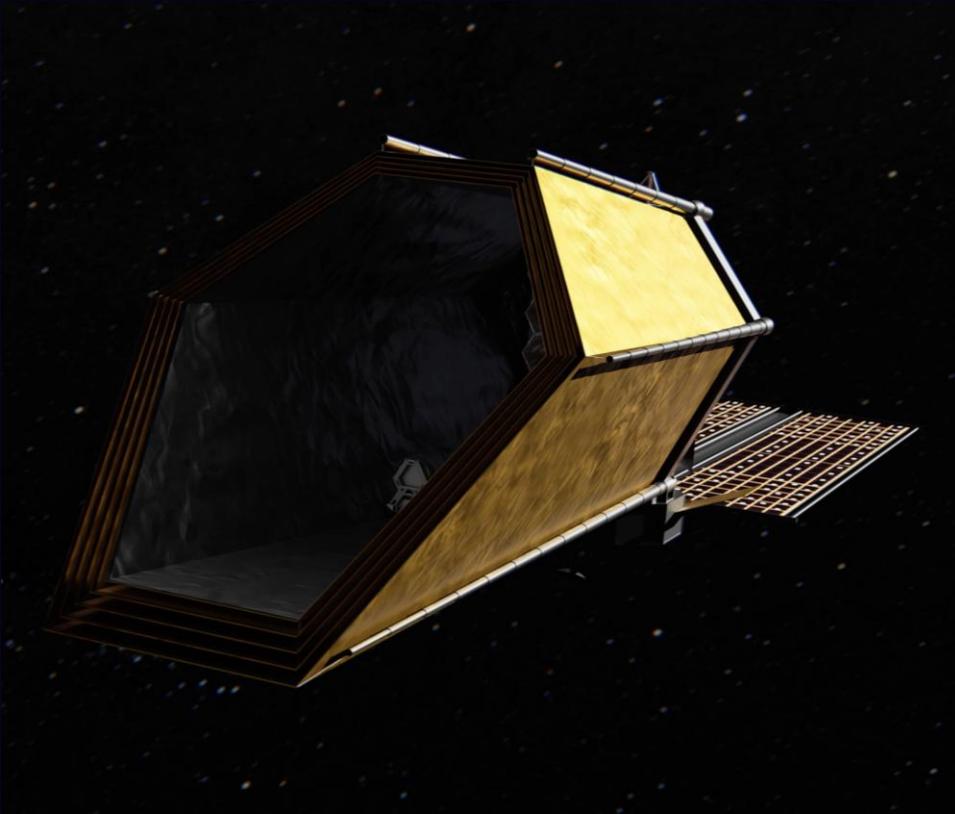
- Wide range of technologies; everything should have a home
- Mix of identified mission concepts (ex: Habitable Worlds Observatory) and future (ex: Explorers)
- Mix of mechanisms: primarily via open proposal opportunities but also via directed funding
- Mix of both low-Technology Readiness Level (TRL1-3) and maturation for space flight readiness (TRL4-6)

Where to go:

- D.3 Astrophysics Research & Analysis (APRA): expecting to solicit early 2026
- D.7 Strategic Astrophysics Technology (SAT): expecting to solicit early 2026
- D.8 Roman Technology Fellowship (RTF): expecting to solicit early 2026
- Internal Scientist Funding Model (ISFM), for NASA Centers only: majority on 3-year cycle, next in 2028

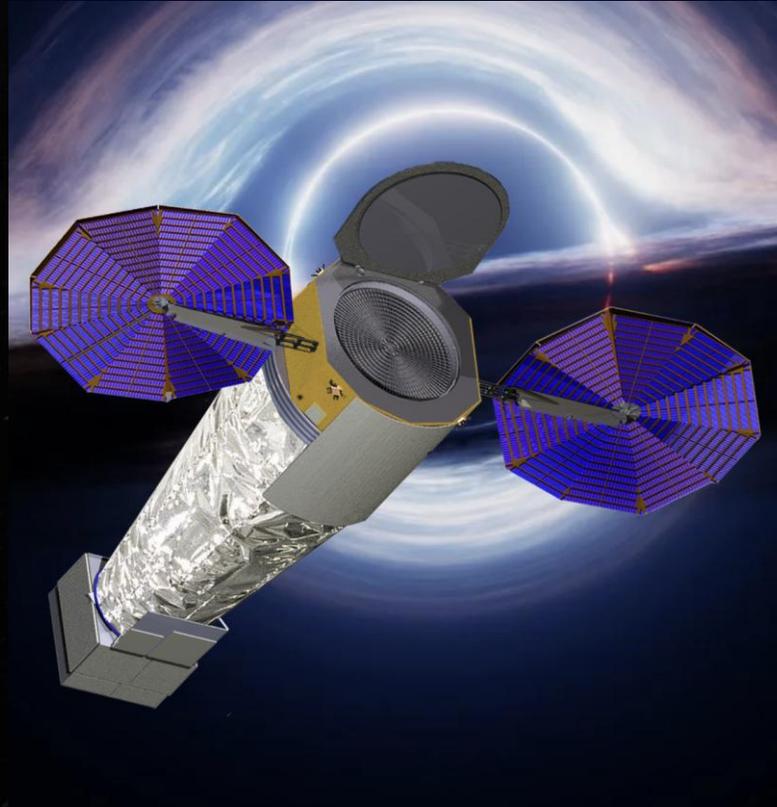


Habitable Worlds Observatory



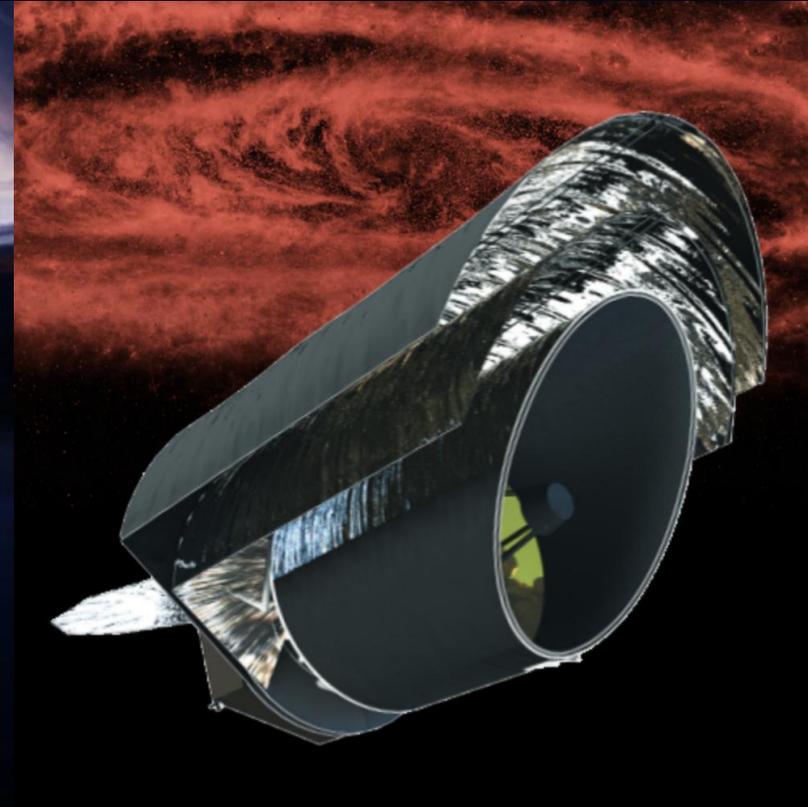
The first observatory designed to find and characterize Earth-like exoplanets.

Future X-Ray Great Observatory



A future X-ray telescope with a large field of view and greater sensitivity than current observatories, it will study high-energy events like those around black holes and supernovae.

Future Far-Infrared Observatory



A future observatory to study the infrared universe and expand our understanding of the origin of solar systems, stars, and galaxies.

- Mid-decadal Review (Astro 2020):
 - **Statement of Task (SOT):** Reviewed by NSF, NASA, DoE; returned to NASEM for implementation
 - **Purpose:** Provide independent NASEM feedback on progress toward Astro 2020 priorities
- Next Decadal survey (Astro 2030):
 - **AAS Special Sessions:** Initiating forward-looking planning on innovation and Astro 2030 science workshops
 - **Mid-Decadal Purpose:**
 - Assess progress against Astro 2020 goals
 - Identify key scientific opportunities and strategic gaps
 - Recommend next steps to achieve key future science goals

When: ~ September 2026 in Washington, D.C.

Rationale & Context

- Goal: Inform NASA of key preparations for the Astro 2030 Decadal Survey.
- What studies should NASA fund in preparation to the Astro 2030 Decadal?
- Specific Objectives:
 - Provide findings to inform NASA planning for Astro 2030
 - Assess scientific and technological progress since Astro 2020
 - Engage and prepare the community for Astro 2030

Structure

- Format: 3-Day Hybrid Workshop
- Agenda Highlights:
 - Day 1: Astro 2020 Lessons Learned, results from Innovation Workshop
 - Day 2: Discussions on potential large missions & probes.
 - Day 3: Discussions on Small Missions

Outcomes

- Report within 60 days of workshop
- Potential Findings:
 - Summary of relevant science changes since Astro 2020
 - Type and number of large mission studies to perform/update
 - Type and number of probe studies to perform/update



For more information and to sign up for our email distribution list, see [here](#)

Innovations for Astrophysics Missions Workshop

Rationale: Evolve APD mission development paradigm to leverage rising commercial capabilities and constrained budgets, while maximizing science delivery

Scope: Convene NASA, commercial entities, other agencies, and academia to address current and future capabilities offered by commercial entities and other agencies; astrophysics investigations using Artemis/Moon-to-Mars infrastructure; challenges and opportunities, internal and external to NASA, for developing Astrophysics missions at all size scales

Structure: In-person workshop over ~2 days in May 2026 in the Washington DC area, consisting of invited presentations, panel discussions, and ample time for brainstorming

Deliverable: A summary paper (due 60 days after the workshop) to serve as input for APD and the Astro 2030 Community Workshop





QUESTIONS?