STScI | SPACE TELESCOPE SCIENCE INSTITUTE

STScI Townhall - AAS 246

Neill Reid, Multi-Mission Project Scientist, STScI

June 10 2025

Budget Challenges

- The FY26 President's Budget Request includes severe cuts to NASA and NSF science across the board
- NASA community science funding is reduced severely
- STScI and STScI's missions will be impacted by those cuts
    - Hubble and Webb would operate with reduced capabilities
    - Roman is faced with major reductions in the last year before launch
    - MAST and Universe of Learning also see impacts
    - Grant funding is reduced substantially
- Most other areas with NASA Astrophysics, Planetary Science and Heliophysics are projected to see significantly higher impacts with numerous cancellations

But

- It is important to remember that the PBR is the first step in a long process

NASA science leadership remains key for America's future

STScI Townhall Agenda

Introduction — Neill Reid, STScI Multi-Mission Project Scientist

JWST Mission and Science Operations Center Update

— Stacey Bright

The Nancy Grace Roman Space Telescope: *Coming soon to an L2 near You*

— Kristen McQuinn, Roman Mission Office Head

Roman as a Community Endeavor: *Updates on Roman's Community Defined Surveys and Ways to Prepare for Launch*

— Karoline Gilbert, Roman Mission Office Project Scientist

All presentations are available to download via this QR code

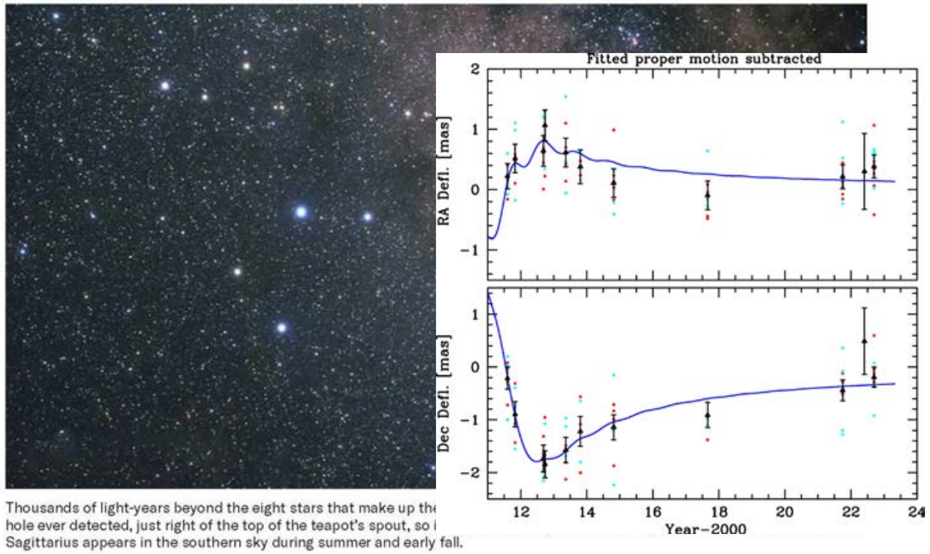
Hubble celebrates its 35th Birthday!

ScienceNews SIGN IN

NEWS ASTRONOMY

Yes, there really is a black hole on the loose in Sagittarius

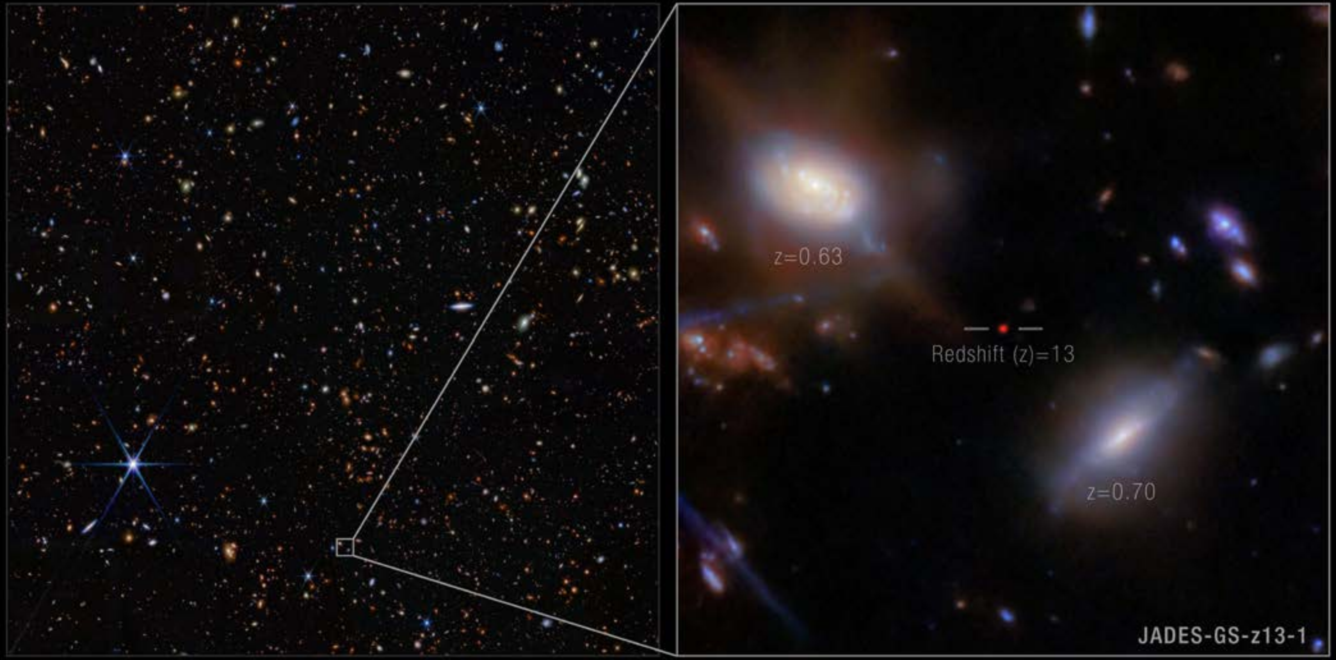
It's the first solitary black hole ever detected



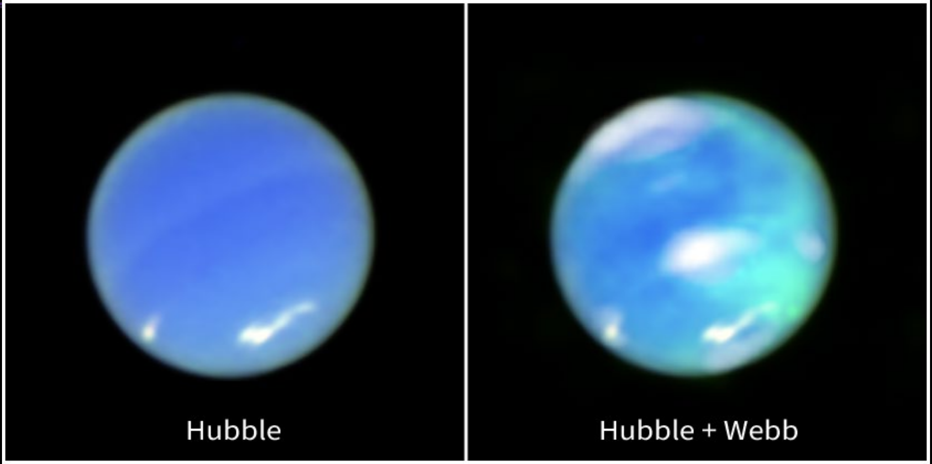
Thousands of light-years beyond the eight stars that make up the
hole ever detected, just right of the top of the teapot's spout, so i
Sagittarius appears in the southern sky during summer and early fall.

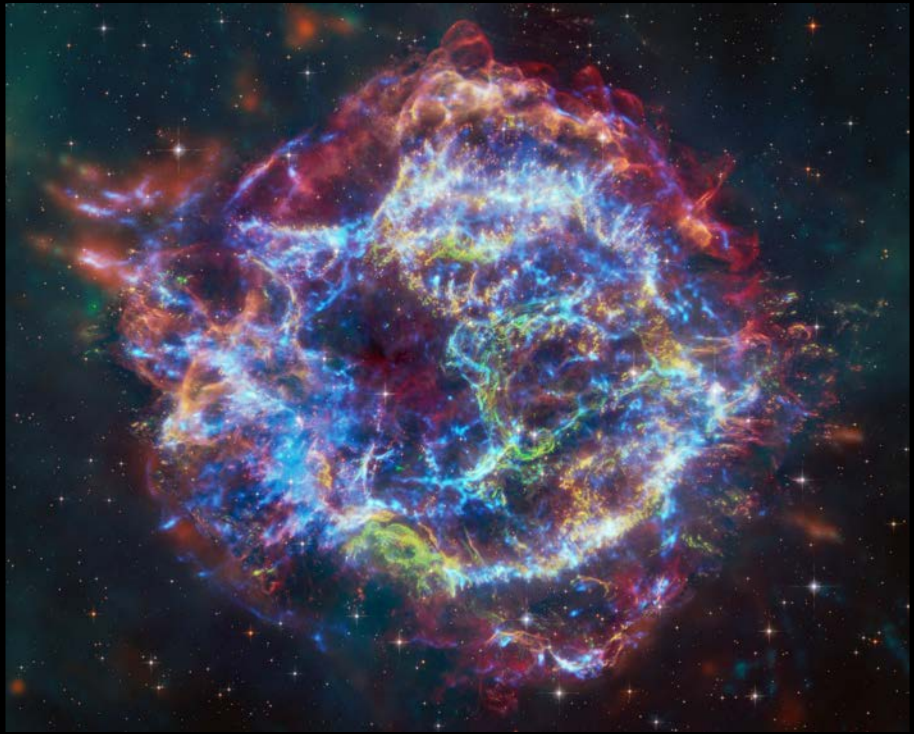
AKIRA FUJII

Webb’s grasp spans the universe

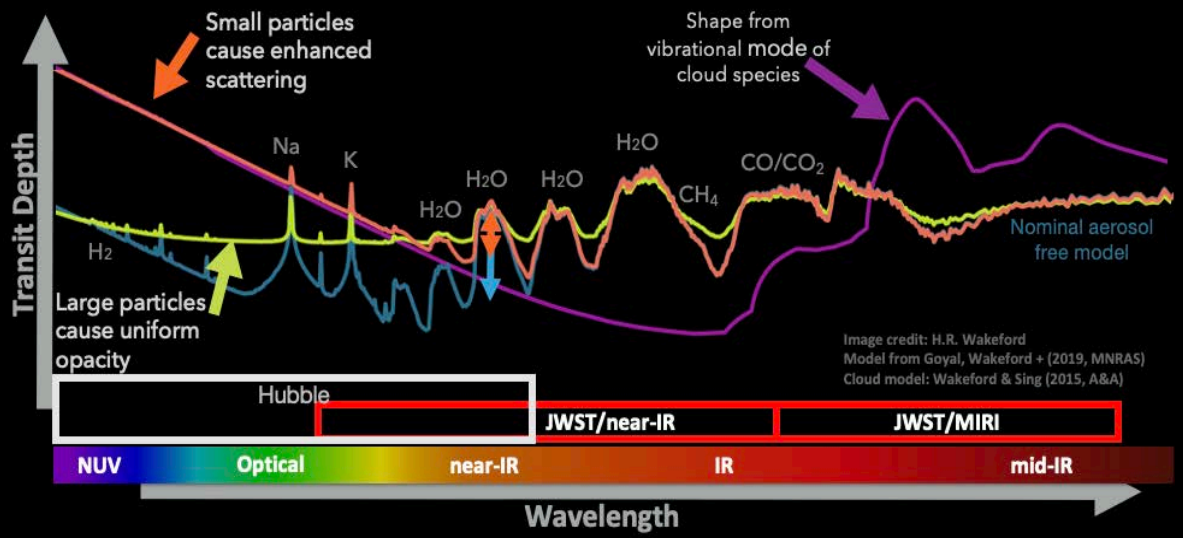


Hubble and Webb (& Chandra) offer strong scientific synergies



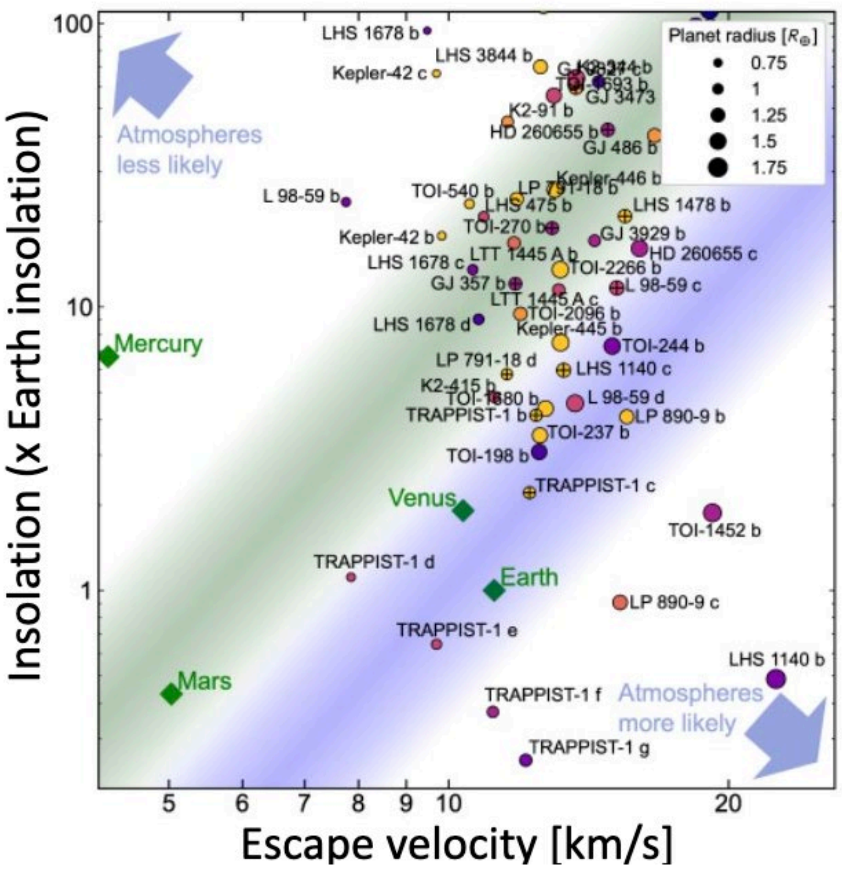


Hubble / Optical   Hubble & Webb   Webb / Infrared



Credit: Hannah Wakeford - University of Bristol

RockyWorlds JWST+HST DDT Program



STScI Core Implementation Team Leads:
Néstor Espinoza and Hannah Diamond-Lowe

- Initiated by allocating 500 JWST hours + 250 Hubble orbits to search for atmospheres of rocky planets around M-dwarfs
- Observations starting now through 2027
- Program combines two related, but disparate, science cases
    - Using 15-micron photometry of secondary eclipses to measure the thermal emission of rocky exoplanets and identify planets likely to have retained atmospheres
    - Using UV spectroscopy of host M dwarfs to characterize their level of activity and the likelihood of atmospheric retention
- **First observations of GJ 3929b scheduled for early July**
- **More extended target list identified by the Science Advisory Council will be announced soon**

Roman is Designed to Address Big Questions

On track to launch ahead of schedule in October 2026

- Dark Energy
- Expansion of the Universe
- Exoplanet Demographics

→

Roman's 3 Core Community Surveys

High Latitude Wide Area

High Latitude Time Domain

Galactic Bulge Time Domain

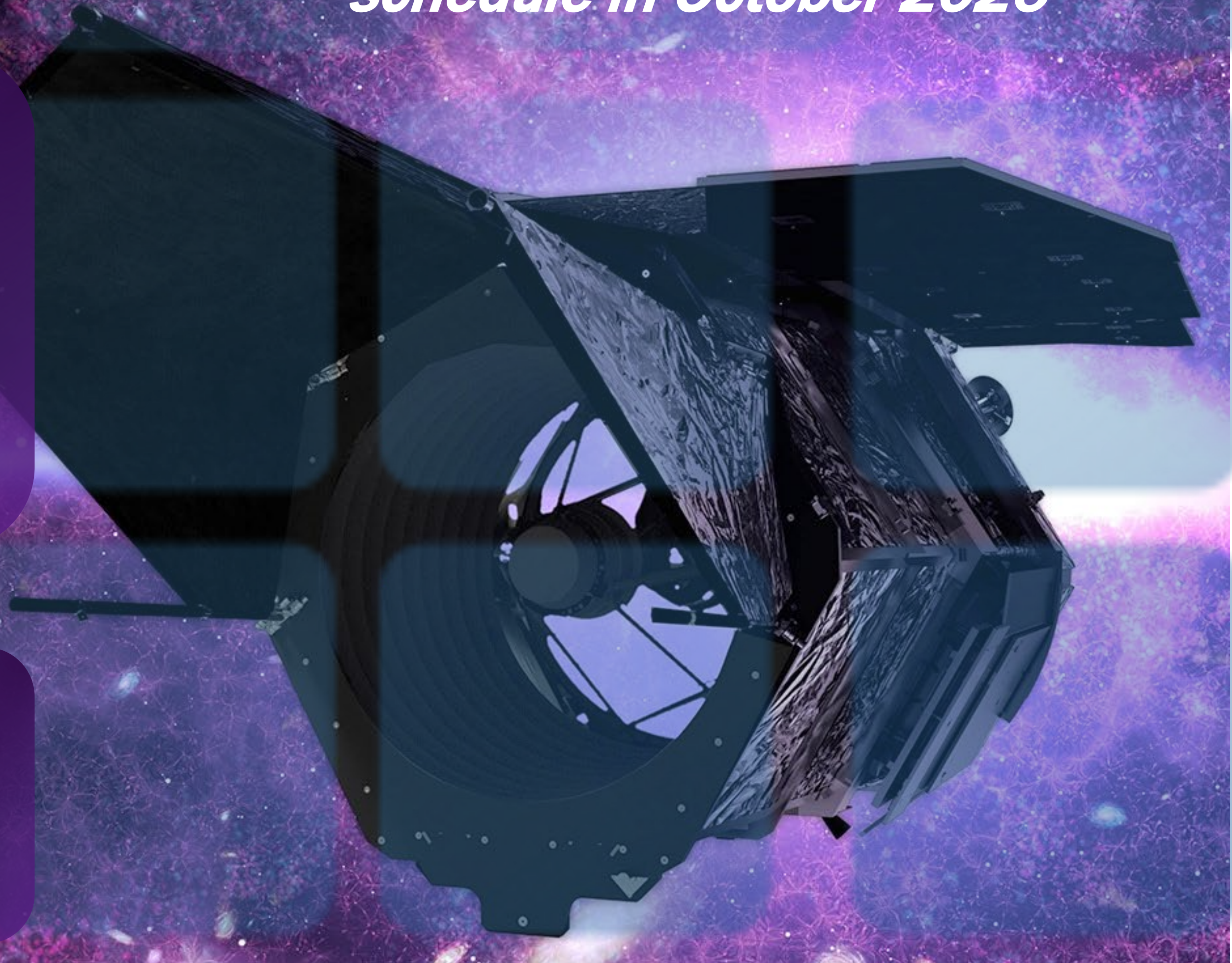
Transformational Astrophysics

→

All Roman's Surveys

Core Community Surveys

General Astrophysics Surveys



STScI is the Roman Science Operations Center, partnering with IPAC and GSFC

Hubble systems status

Hubble has a high probability of producing high impact science through the early 2030s

Re-entry predictions

Median re-entry date: September 2033

Instruments

ACS, STIS, COS, WFC3

>90% probability of being operational in **2030**

Decades of improvements in calibration and capabilities

Pointing Control System

✓ 3 FGS, 2 gyros, 4 reaction wheels currently operating

✓ >90% probability of maintaining operations through 2030

Reduced gyro mode operations since June 2024

✓ Scheduling efficiency: ~55%

✓ No impact on pointing stability and performance

✓ No safe-mode events since June 2024

Science Instrument Command & Data Handler (SI C&DH)

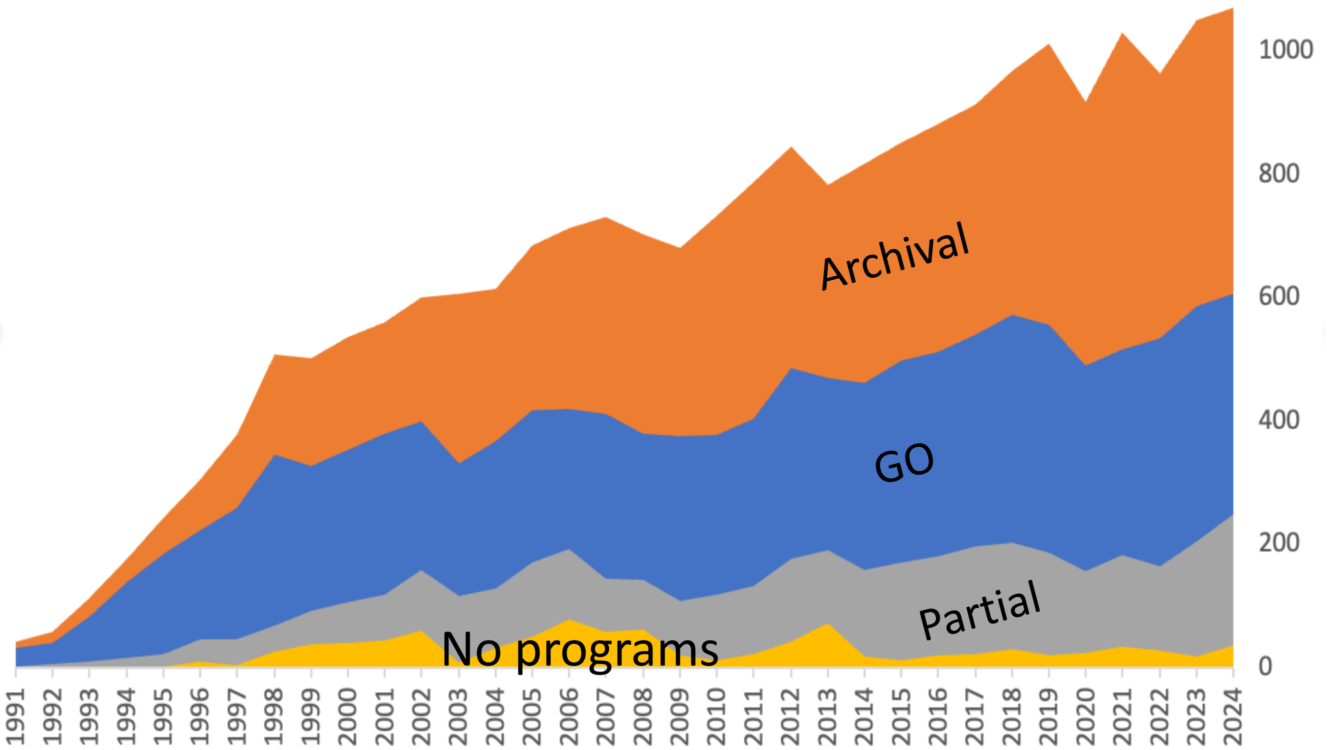
✓ On track to have B-side available by end of FY25

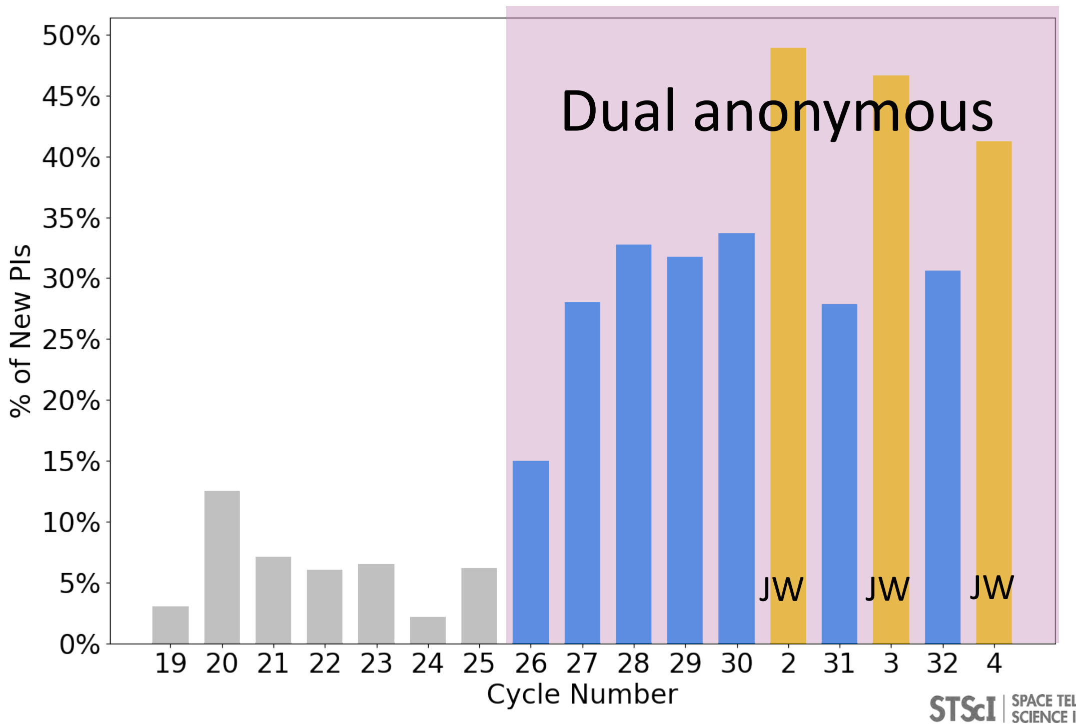
Innovative software solution to hardware problem that restores operational redundancy into the 2030s

Hubble's Scientific Productivity is at an all-time high

- Hubble's scientific productivity at all-time high
  - **Record number of peer reviewed publications in 2024 (1073); 22,000+ papers with >1.3M+ citations**
  - Hubble demand (~6:1) remains strong, second highest of all NASA missions after Webb
  - Hubble continues to expand the community by attracting many new users each cycle

- ***Hubble received a very high ranking in the 2025 Senior Review***





Hubble operations in Cycle 33 and beyond

Over past 10 years, Hubble has produced 30% more science with 30% less spending power.

Hubble is the 2nd most in-demand NASA Astrophysics Mission (after JWST)

Hubble received a very high ranking (Excellent/Very Good) in the 2025 Senior Review

Additional cuts to Hubble's budget will result in significant loss to science.

PBR assigns $85M for FY26 – close to the in-guide budget for the Senior Review

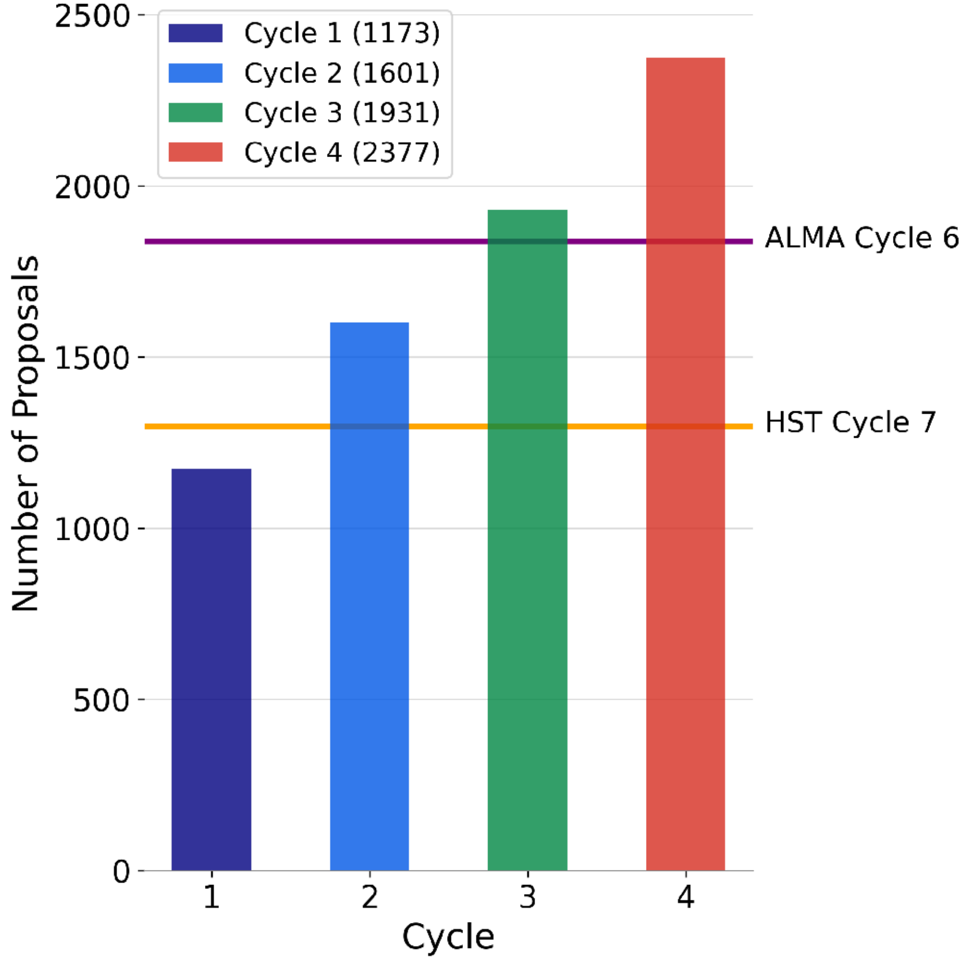
- ~$77M for operations & HST grants
- ~$8M for NHFP

Likely implications for Cycle 33:

- ACS/WFC and WFC3/IR will remain available but at shared risk
  - Maintain anneals, superdarks & superbiases on ACS/WFC; CSM monitoring & bad pixel updates on WFC/IR
  - No updates to photometric zeropoints, CTE, geometric distortion, persistence checks & no user upport
- No further development of HLSPs, no new developments of HAP, HASP
- Grant funding limited to no more than $10M, no AR Legacy programs

STScI will not make changes to operations until we receive contractual direction from NASA

JWST is not even close to hitting peak science or demand



JWST Proposals per Cycle

JWST is performing better than expected, with data pipelines and calibration significantly improved, and **>20 yr lifetime**.

>1200 JWST papers published so far

JWST demand is likely to continue to increase for several more cycles, given experience with Hubble and ALMA.

JWST has a world-wide impact on public imagination, and is a clear demonstration of US and NASA's leadership

<u>We must continue strong support for JWST user community</u> via grants, user support, tools, and pipelines

Inflation and NASA budget issues are significant risk to JWST support starting Oct 2025

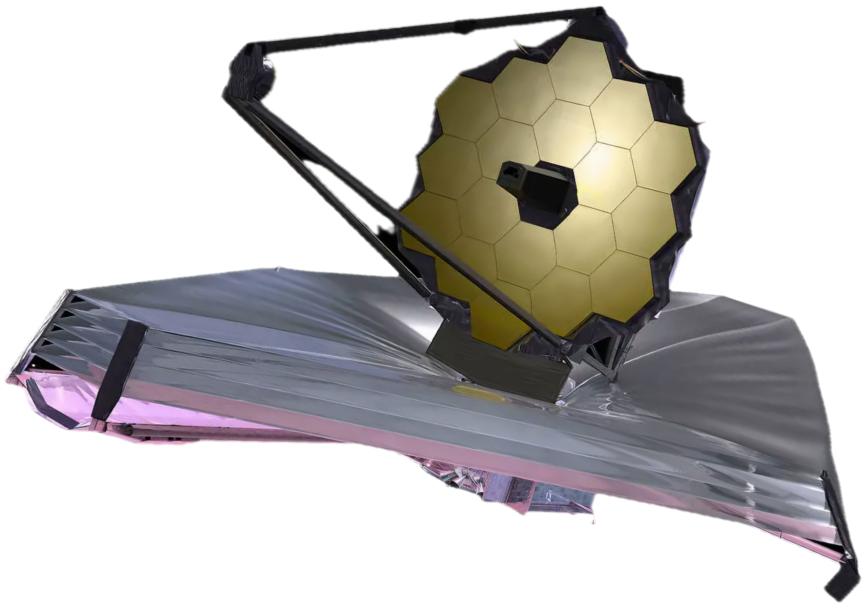
Budget Status

JWST already faced challenges in the remaining years of prime mission (FY26, FY27) and extended mission

- Driven by idealistically low operations budget set by NASA in 2011 and by inflation
    - Nominally set at $127M for operations, $60M for grant
- Combined with the reductions in the PBR, we are seeing likely reductions of **~25-35% to science operations**
- In addition, grant funding is cut to $20 million in the PBR
- STScI has been working with GSFC and HQ on path forward

We do not have specific plans at the current juncture, but **...**

- **All operational areas are potentially impacted**, including:
    - Number of observing modes
    - Support of current observing modes
    - Cadence of calibration updates and improvements
    - Observatory efficiency
    - Timely resolution of anomalies and system problems
    - Observing program reviews and support
    - High-level science products
    - Data analysis tools
    - Engagement with scientific community and public



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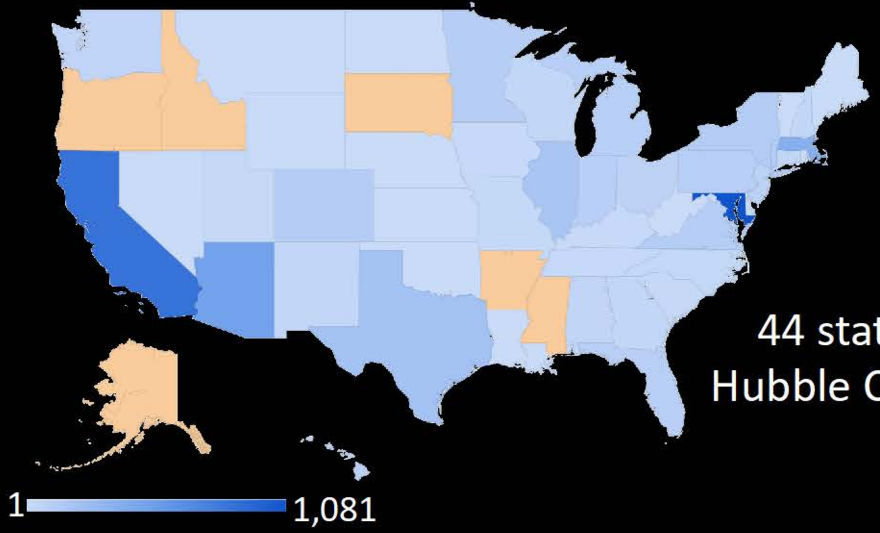
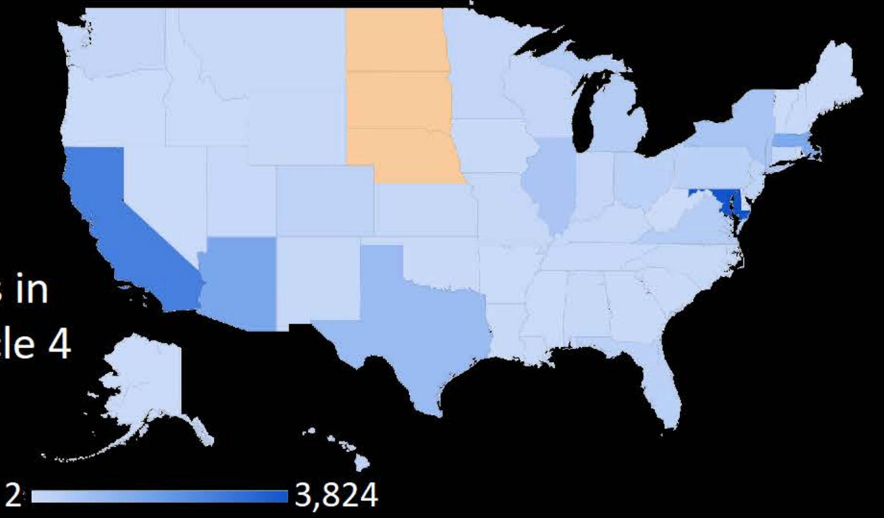
Hubble and Webb science driven by researchers across the US

US investigators on submitted proposals

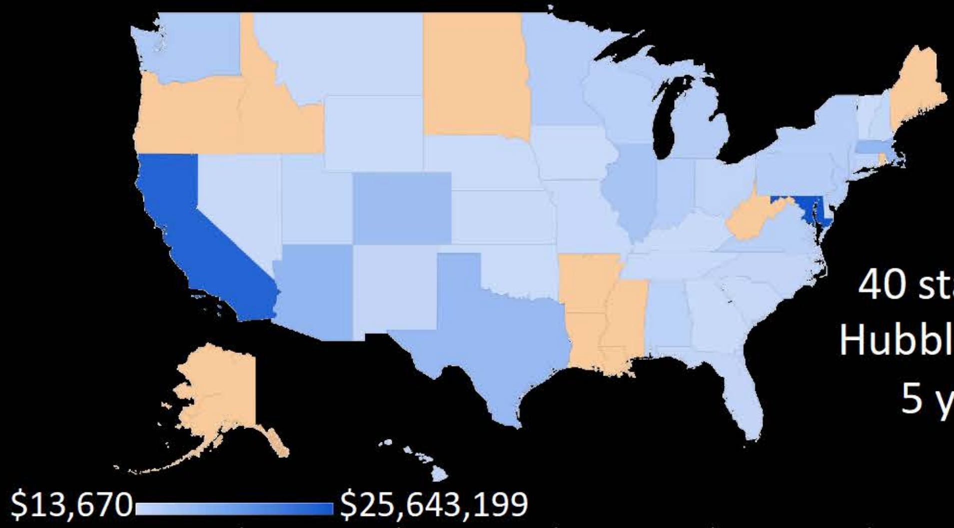


44 states in Hubble Cycle 32

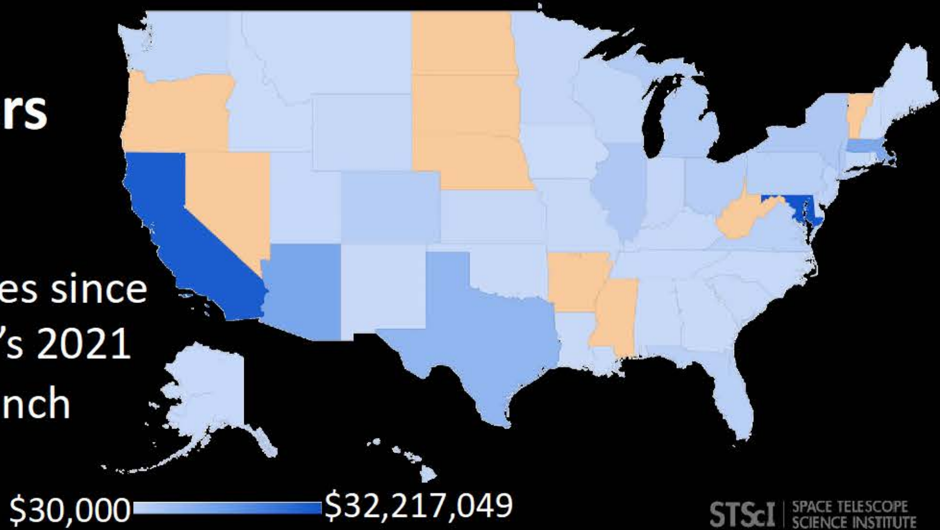


47 states in Webb Cycle 4

Grants to US researchers



40 states in Hubble's past 5 years



41 states since Webb's 2021 launch

Upcoming Hubble and JWST grant cycles

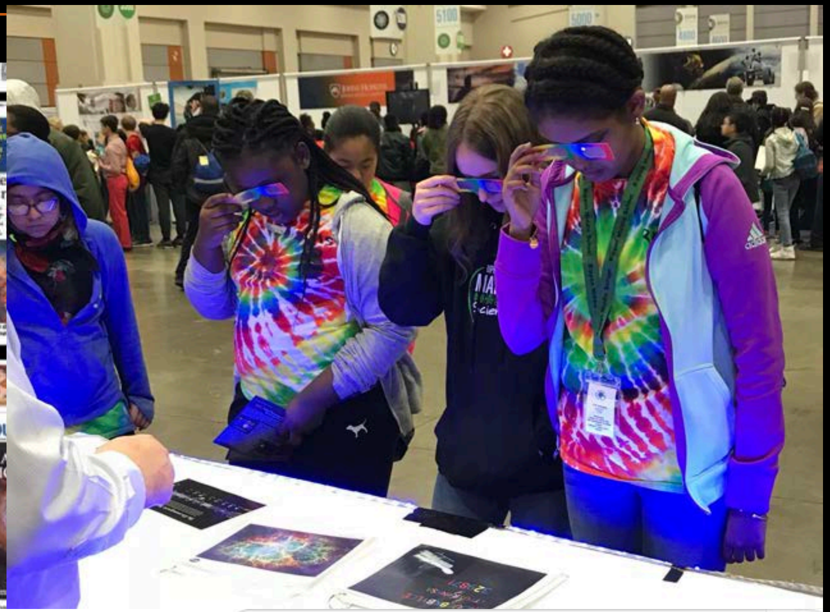
JWST Cycle 4

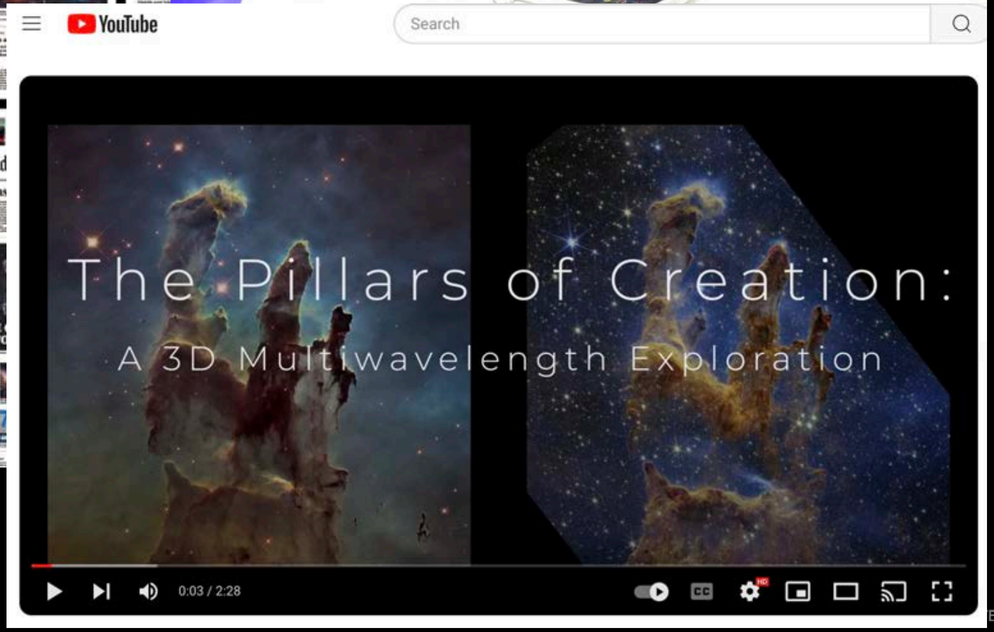
- Cycle 4 grant funding was allocated using a formula
- Budgets have been submitted and are currently under review
- Financial Review Committee meets to finalise recommendations in early July
- Final funding levels may be impacted by the FY26 PBR & notifications may be delayed pending confirmation from NASA

HST Cycle 33

- Cycle 33 TAC is meeting in late June/early July, results by end of July
- Contract value may not be set until Fall
- Grants may not be allocated until early 2026

NASA’s Flagships inspire the World



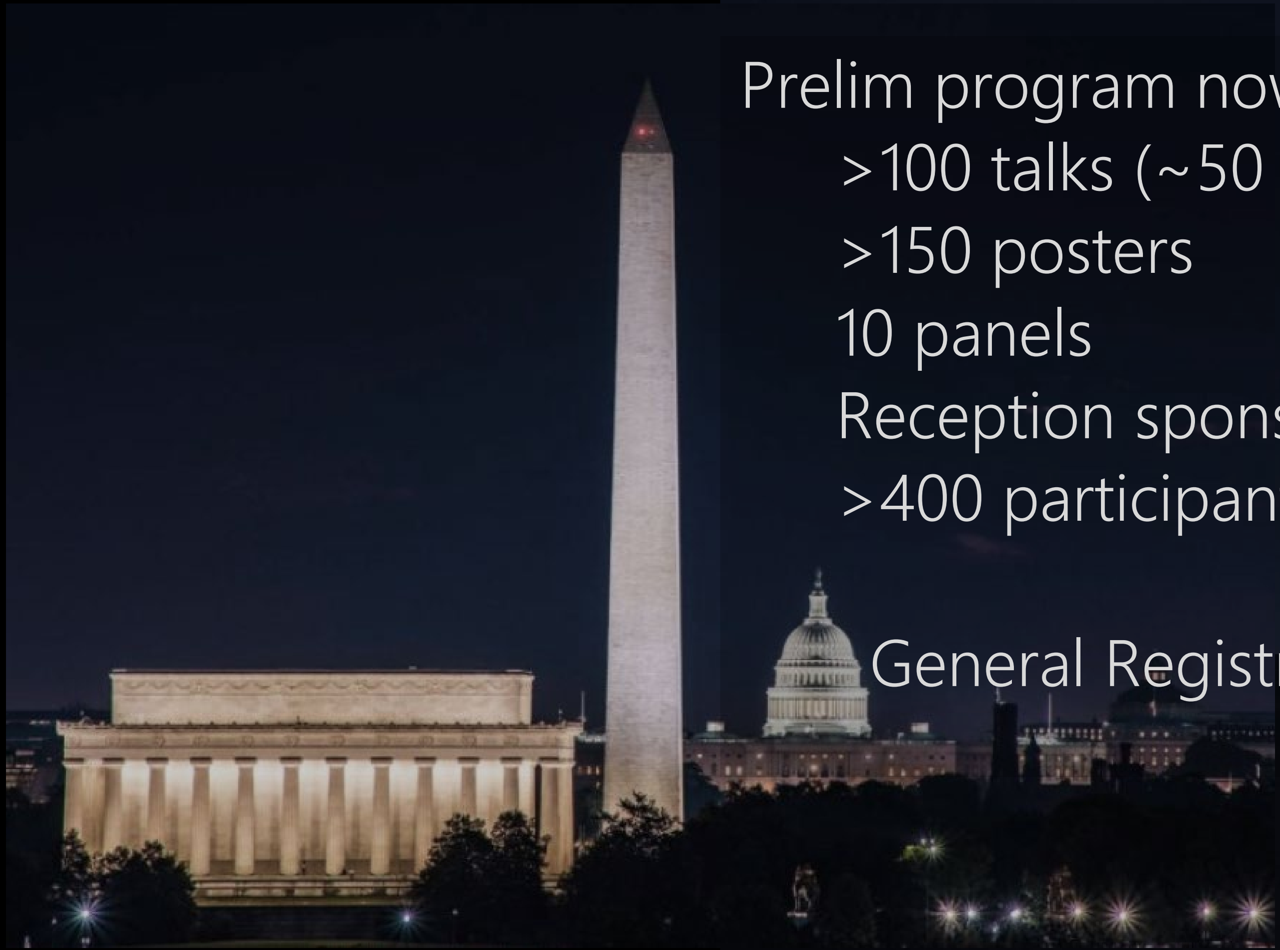


HWO25 | JULY 28 – 31, 2025

Towards the HABITABLE WORLDS OBSERVATORY

VISIONARY SCIENCE AND TRANSFORMATIONAL TECHNOLOGY

JOHNS HOPKINS BLOOMBERG CENTER, WASHINGTON DC



Prelim program now available

- >100 talks (~50 plenary, ~70 parallel)
- >150 posters
- 10 panels
- Reception sponsored by Lockheed, L3, BAE
- >400 participants

General Registration opened yesterday

Check out these links for more information

The AAS Town Hall presentations

Space Telescope User Committee reports (HST)

Questions?

Visit us at the STScI booth

JWST User Committee reports

MAST User Group reports