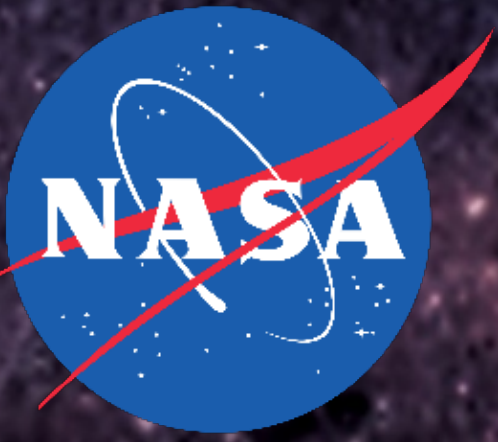




JWST Status Update for the NAS Committee on Astronomy and Astrophysics

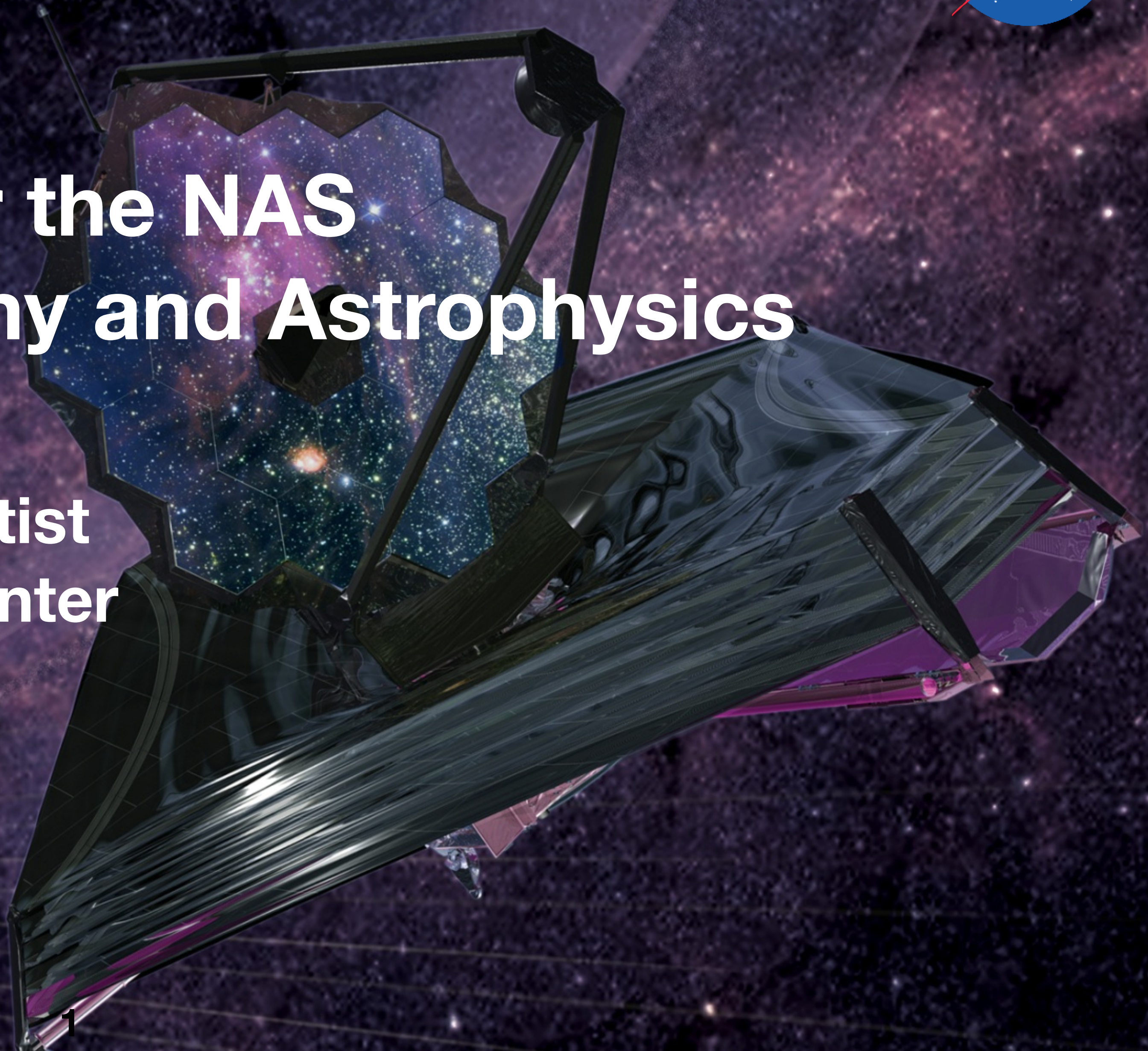
Jane Rigby

JWST Operations Project Scientist

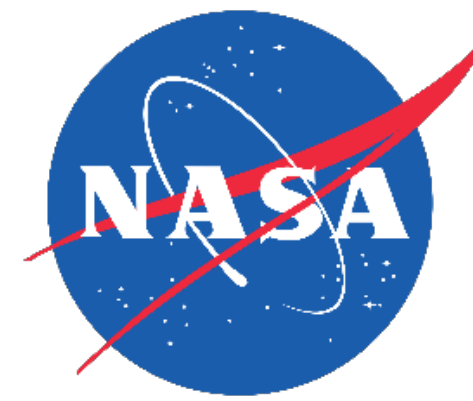
NASA Goddard Space Flight Center

Jane.Rigby@nasa.gov

31 March 2020

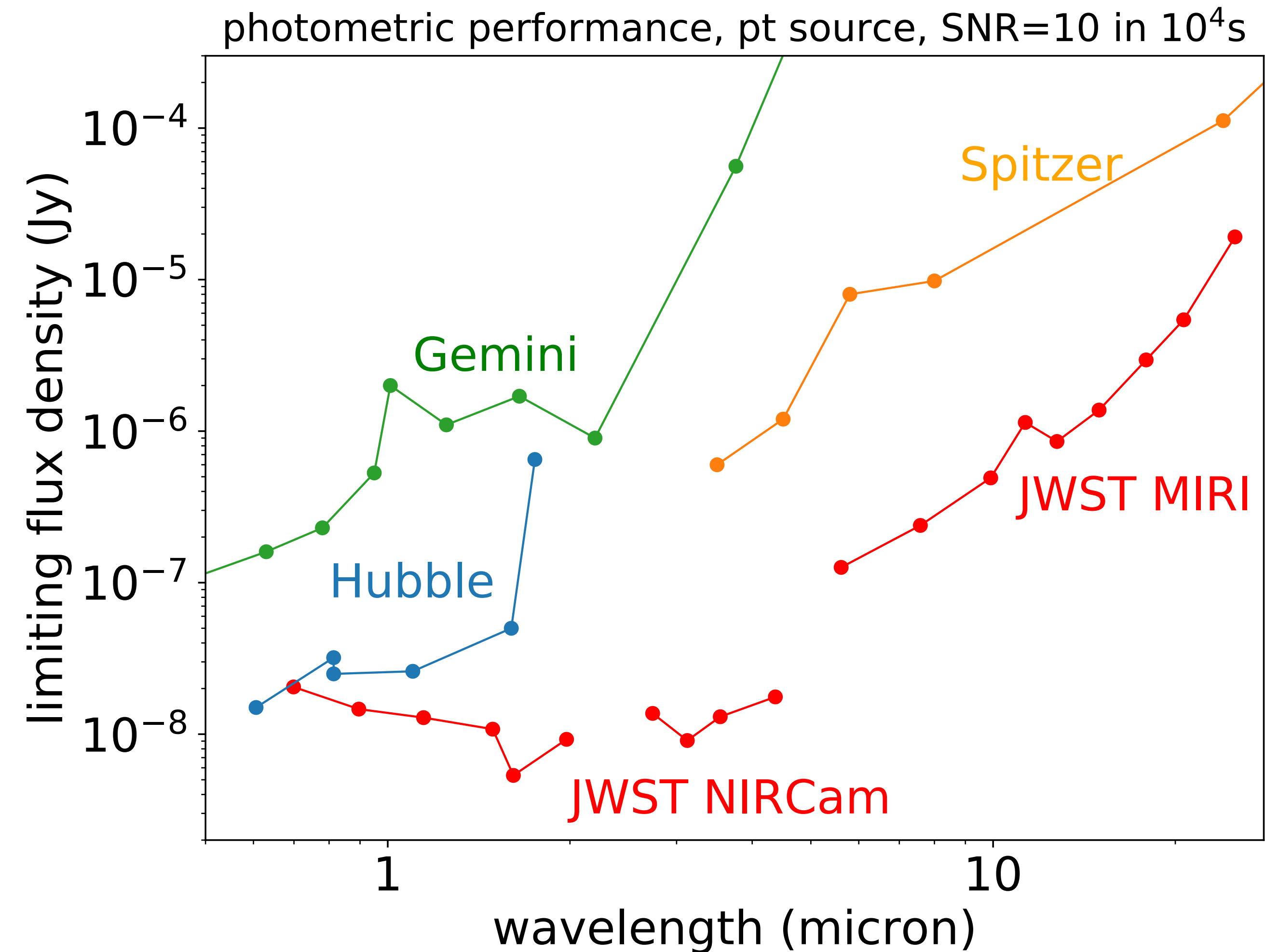


We will be ready to commission and operate JWST, to carry out transformative science.



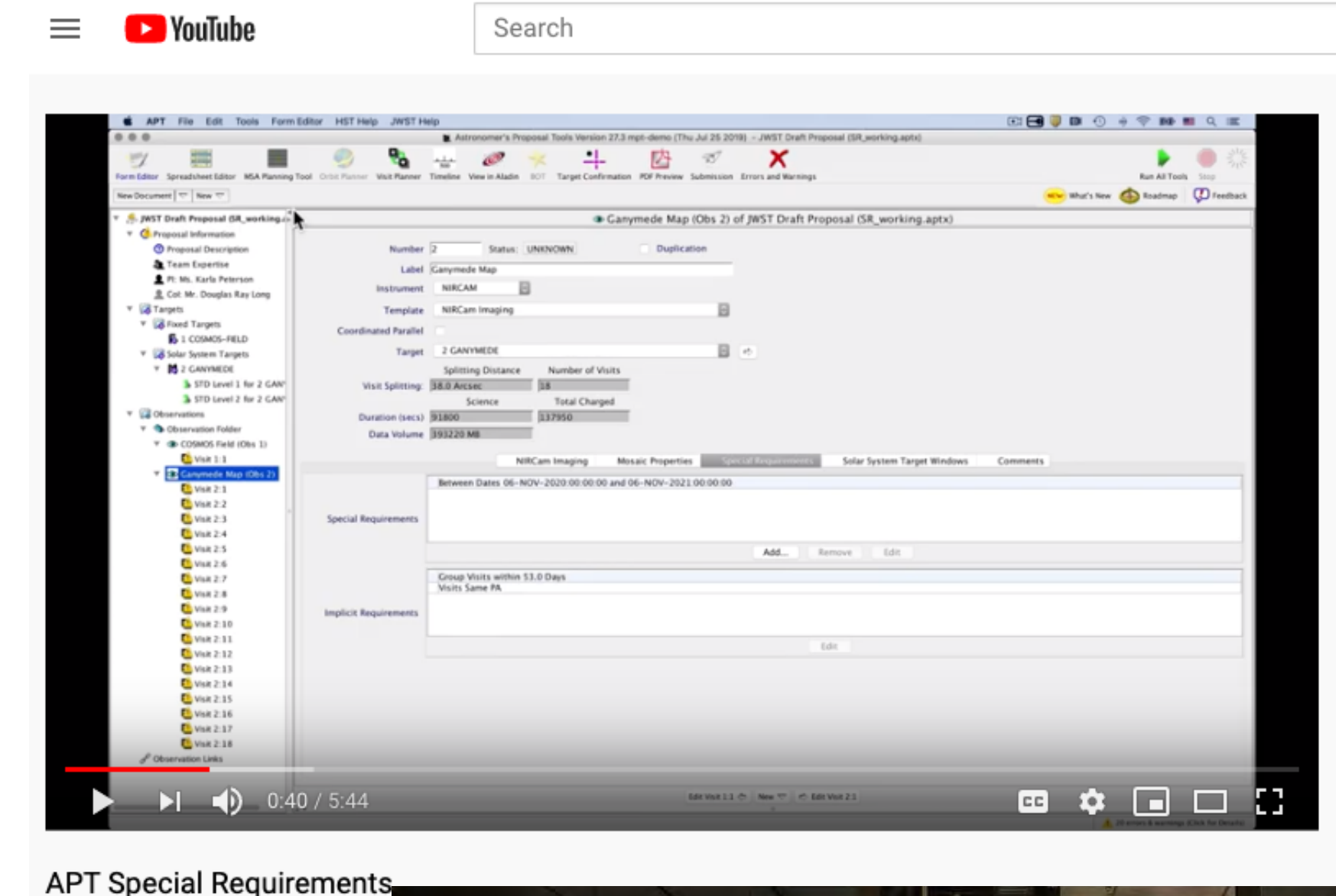
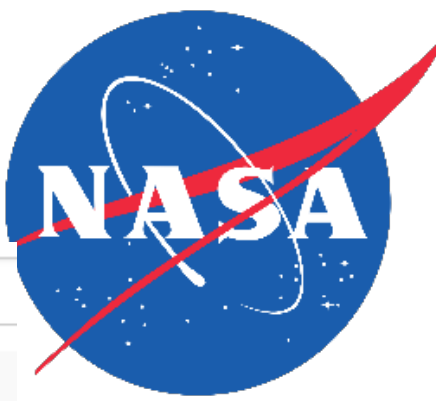
JWST will have far greater sensitivity than previous observatories, and far more sophisticated instrumentation, including integral field and multi-object spectroscopy.

We will be ready to deploy and commission JWST, characterize on-orbit performance, execute science operations, and deliver science-ready data to the community. We are rehearsing extensively.



Credit: NASA / Jane Rigby, using Pandeia 1.5

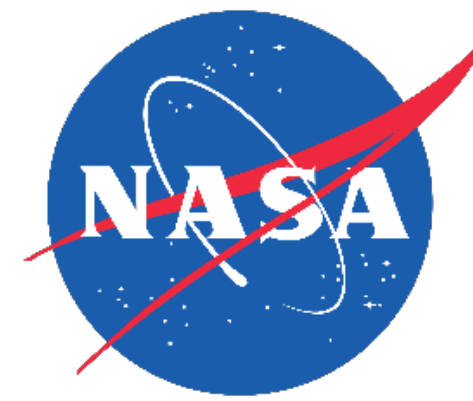
We have prepared the community to write proposals.



Credit: Katey Alatalo, STScI

- Extensive documentation and video tutorials
- A "Getting Started Guide"
- Main tools: Astronomer's Proposal Tool (APT) and Exposure Time Calculator (ETC)
- A workshop at the 2020 winter AAS
- STScI's "train-the-trainer" Master Class trained 28 participants, who each have hosted local workshops. ESA ran a parallel effort in Europe.
- Master Class materials are in a Workshop-in-a-box.

The JWST Cycle 1 call for proposals is out.



[The Cycle 1 Call for Proposals](#) was released 1/23/2020.

The format is web pages. [A PDF is also available.](#)

Proposal deadline:

- Was 1 May 2020.
- Due to coronavirus, delayed to “no earlier than 27 May 2020”.
- We will update the community on Apr. 15.
- Input? Please email me, Jane.Rigby@nasa.gov.

Opportunities in the Call:

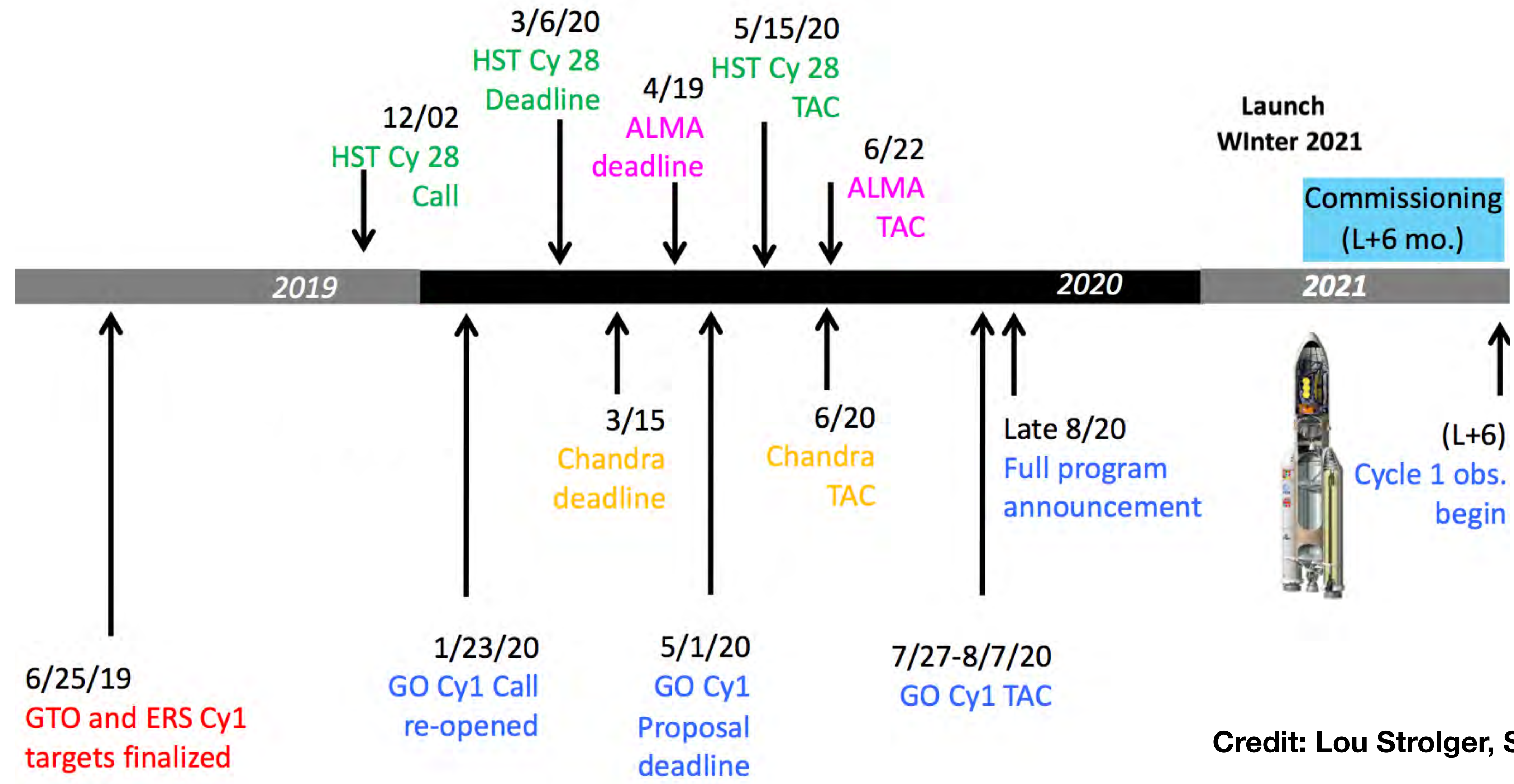
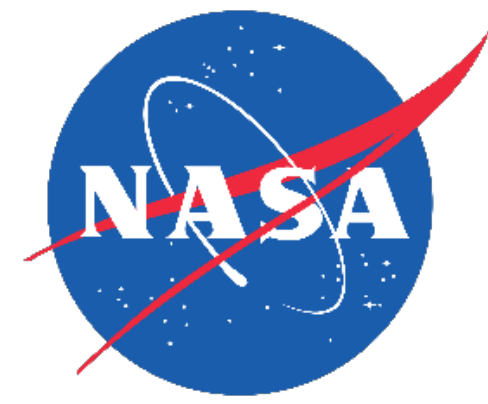
- We anticipate receiving >1000 proposals.
- Approximately 6,000 hr of observing time is available.
- Approximate breakdown by size: 3500 hr Small (<25 hr), 1500 hr Medium (25—75 hr), and 1000 hr Large (>75 hr).
- General Observer (new observations)
- Archival (including theory)



Ariane 5 ECA launch vehicle.
Credit: Arianespace

Any scientist can apply. Review will be dual anonymous.

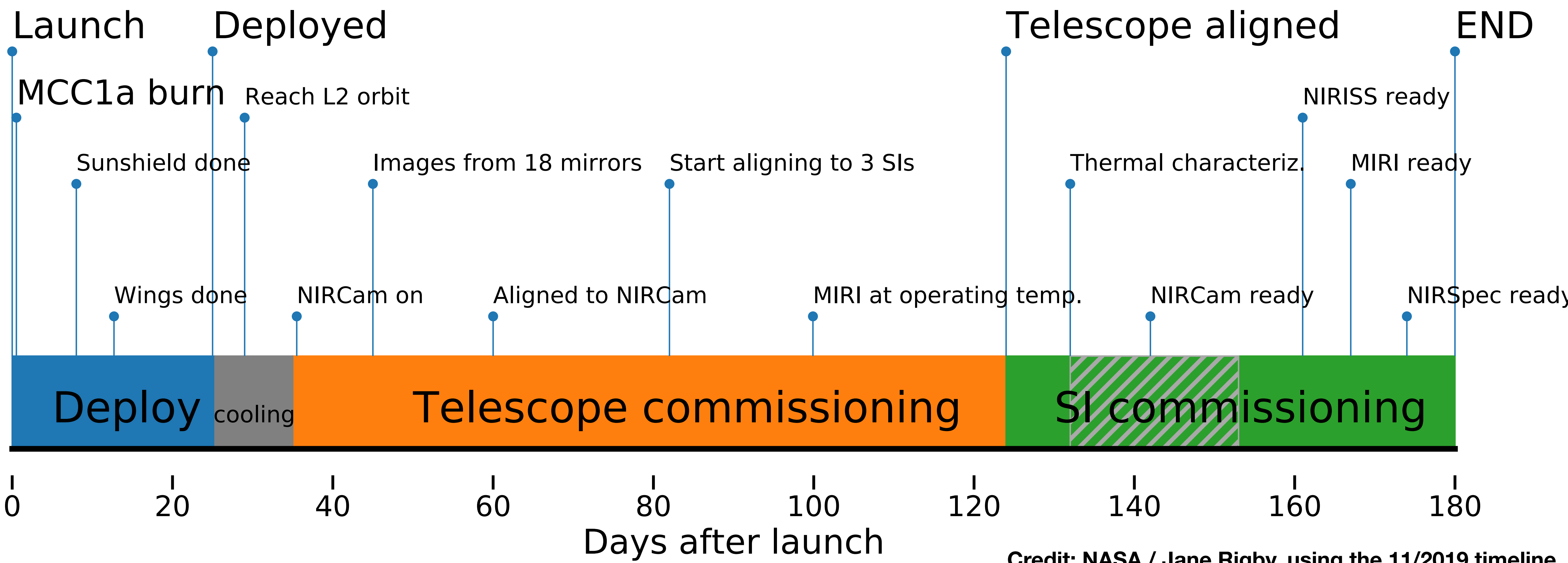
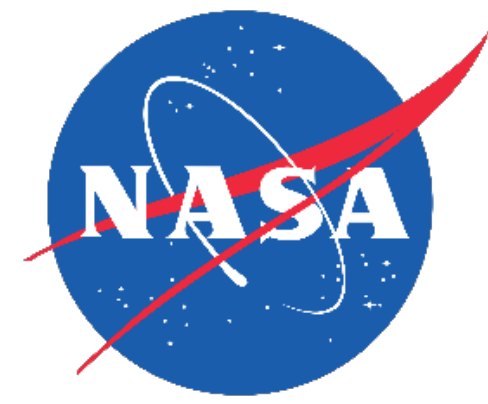
The science proposal timeline (as of 1/2020).



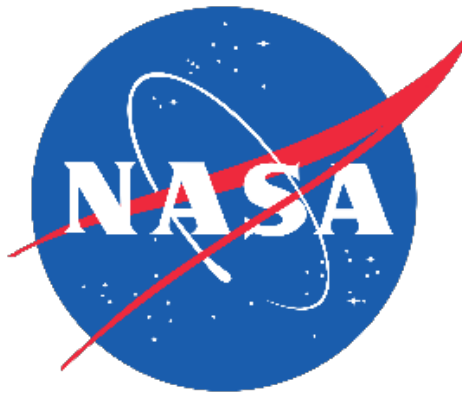
Credit: Lou Strolger, STScI

Note: Cycle 2 Call at ~L+11mo. Cycle 2 proposal deadline ~L+13mo.

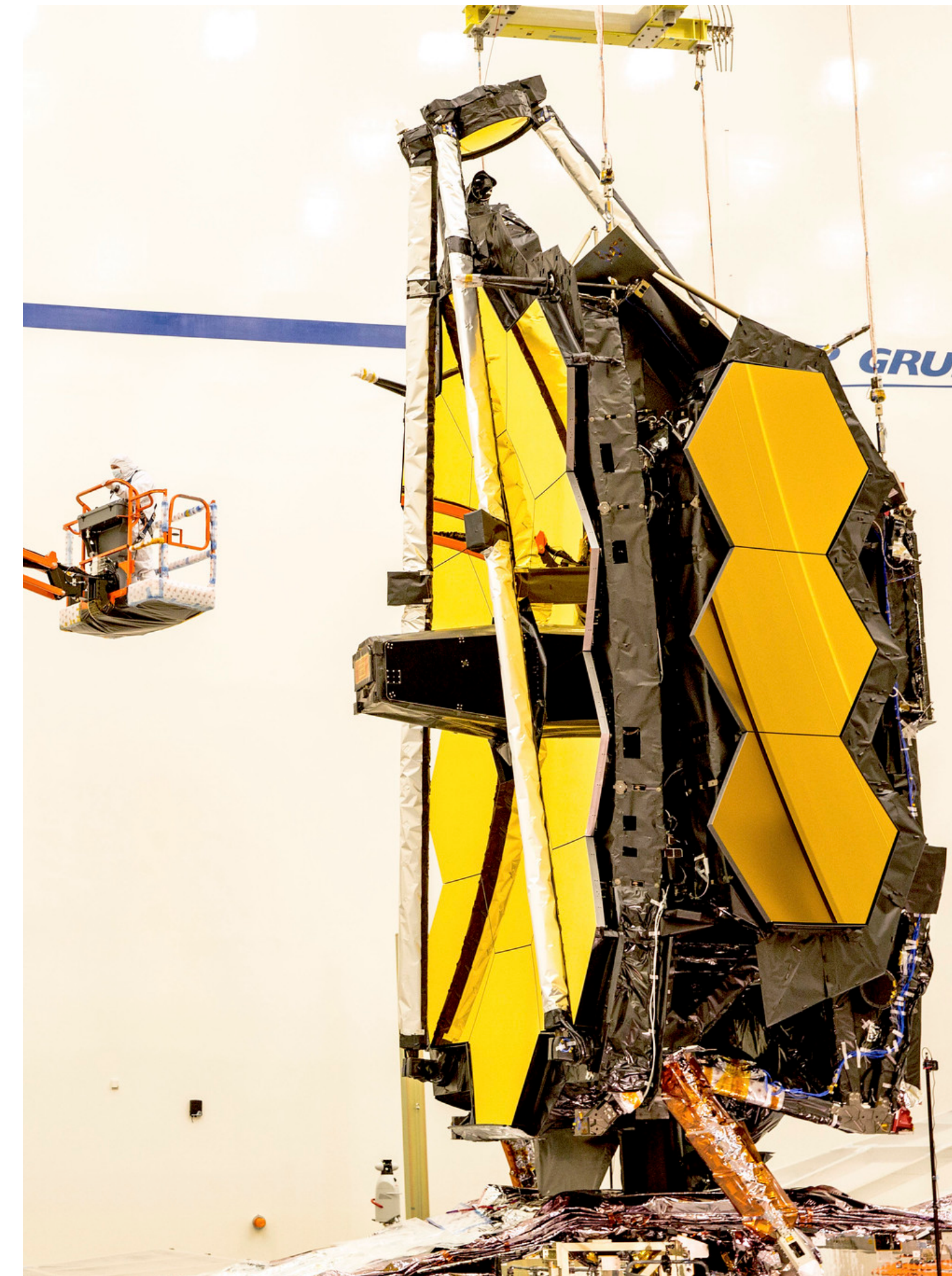
A high-level overview of JWST commissioning



We will characterize JWST's science performance during commissioning.

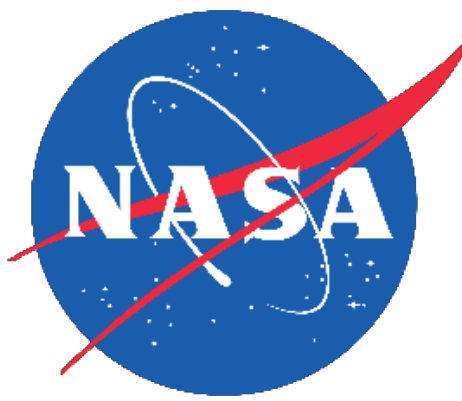


- Commissioning determines that the observatory is working correctly, and that the science instruments are calibratable. Commissioning is not calibration.
- There is a detailed plan to commission the telescope.
- The instrument development teams, working with STScI, have designed comprehensive instrument commissioning activities.
- We will be tracking science performance throughout commissioning, and preparing release notes for users.
- Based on analysis of commissioning data, mode by mode, each science instrument mode will be approved as ready for science operations.
- The SI teams are developing their readiness criteria now, with Project Science and the STScI Commissioning Scientist.



Assembled JWST. Credit: Northrop Grumman

Starting JWST Cycle 1

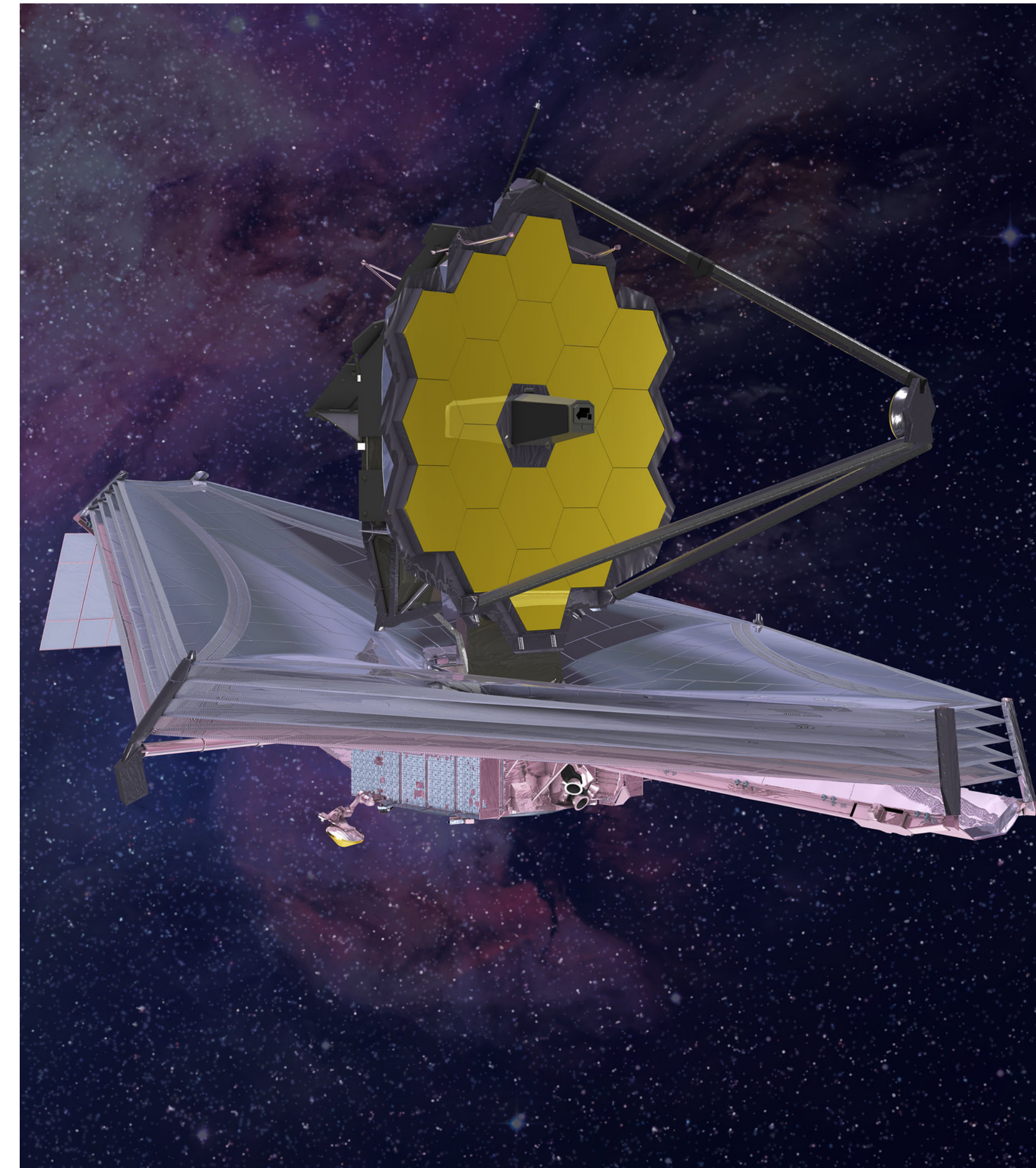


- Six months after launch, commissioning is planned to end, and science operations to begin.
- The Early Release Observations (EROs) will be taken near the end of commissioning. Designed to have wide public appeal and demonstrate that JWST works. Released in a major press conference.
- The Cycle 1 schedule will intersperse observations from GO (6000 hr), GTO (4000 hr), ERS (500 hr), and calibration (~10%).
- Initially, science data will be calibrated based on ground test data, plus initial calibrations from commissioning. Calibration will improve as we go deeper into Cycle 1. Many calibrations will be done in parallel.
- Scheduling JWST is not trivial. 39% of the sky is observable at any time; 100% over the course of a year.

GO: General Observer

GTO: Guaranteed Time Observer

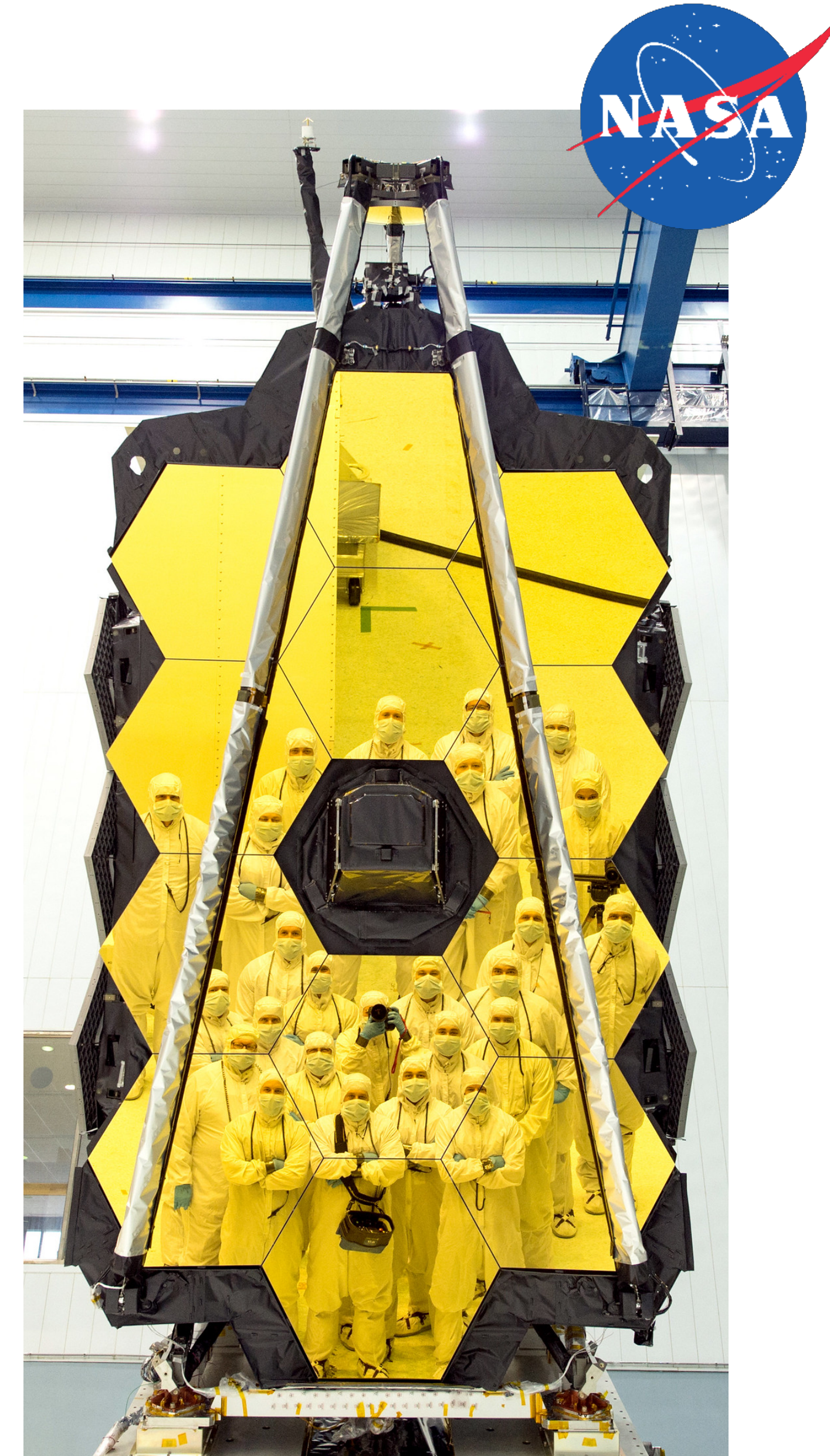
ERS: Director's Discretionary Time Early Release Science



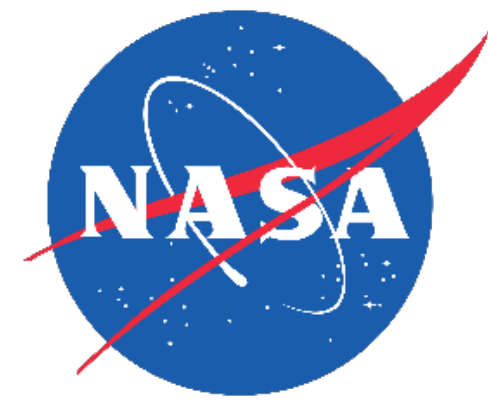
Deployed JWST. Credit: NASA

Some science data will be public soon after commissioning ends.

- Commissioning data goes public at the end of commissioning. Mostly stars for wavefront sensing, but some observations have some scientific value.
- Early Release Science (ERS) programs are front-loaded toward the first half of Cycle 1. Data will be public immediately, and ERS teams will deliver high-level data products ASAP.
- Large GO programs (>75 hr) and some GTO programs will go public immediately.
- Cycle 2 deadline should be ~L+13 months. So, C2 proposals will be informed by ~7 months of science operations.



JWST telescope at Goddard in 2017.
Credit: NASA / Desiree Stover



We are extensively rehearsing each mission phase.

- To repeat Bill, we are conducting extensive rehearsals of each phase of the mission.
- This includes launch, deployments, telescope phasing, science instrument commissioning, and normal science operations.
- The science instrument teams and the Project Science team participate in the relevant rehearsals.



Mission Systems Engineering Room at the MOC. Credit: STScI