

# JSTUC Report for Meeting #18

May 19, 2025

**From:** Casey Papovich (chair), for the JWST Users Committee (JSTUC): Emily Levesque (co-chair), Rachel Bezanson, Jean Dupuis (non-voting), Catherine Espaillat, Leigh Fletcher, Adam Ginsburg, Joel Kastner, Monika Lendl, Charlotte Mason, Erik Rosolowsky, J.D. Smith (Chair emeritus), Johanna Teske, Vivian U, Christina Williams

## 1. Overview

Meeting #18 of the James Webb Space Telescope Users Committee (JSTUC) was held March 27-28, 2025. The scale and breadth of JWST’s scientific output shows it ranks among the most productive, prolific, and requested scientific facilities ever operated. Even as JWST is finishing only its third year of scientific operations, its output has not yet peaked by any metric, including public enthusiasm, the number of papers, press releases, and proposal oversubscription. JWST’s discoveries are impacting nearly all areas of astrophysics and planetary science. While JWST is still reaching its stride, the scientific community is still coming up with new ways to use it to advance the scientific exploration of the universe.

Many of the issues and concerns the JSTUC discussed at depth during the two-day meeting can be characterized as “good problems to have”. The telescope remains healthy, and we commend NASA and STScI for their crucial ongoing efforts to maintain the operational health and high performance of JWST and taking steps to ensure this unique facility remains viable for possibly decades. JWST’s success is due to the commitment of researchers at STScI, NASA, our international partners, and the wider user community. On behalf of JWST users, the JSTUC extends sincere thanks to all members of the JWST team. JWST's achievements are a result of this collective dedication to the observatory.

Over the course of the two-day meeting, the JSTUC discussed with STScI and NASA/ESA/CSA staff a wide range of topics, including instrument performance, telescope observing modes, community engagement and communication, future challenges for JWST, the time allocation process, pipeline capabilities and prioritization, and more. From these discussions, it is abundantly clear to the JSTUC that STScI staff are taking positive steps to respond to previous JSTUC reports. While challenges remain, the JSTUC is thankful for the steps STScI has taken to improve nearly all aspects of the JWST experience. The direct outcome of this effort is the growing number of transformative science results from JWST and the growing enthusiasm of the community.

The JSTUC has recommendations in several areas, including responses to several charges specifically made to the committee. These are listed in the report that follows. The JSTUC looks forward to a continued productive relationship with NASA and STScI as we facilitate the process of discovery with JWST, amplify its public impact, and enhance engagement with the global JWST

community.

## 2. Critical Resources for JWST

JWST is an amazing resource for nearly all areas of astrophysics. There is enormous excitement from the user community and the public surrounding JWST results. The increasing number of proposals for JWST time shows there will be continued pressure for JWST well beyond the five-year prime mission. It is clear to the JSTUC that JWST has not achieved its peak.

The JSTUC is concerned about possible risks that could endanger the scientific output from JWST. One critical issue is the ability to communicate with JWST through the Deep Space Network (DSN). The DSN is a single-point failure for JWST and is a limit on our ability to do science. Every second of JWST has a cost, and the loss of communication with JWST costs the community. This is time we will never get back. NASA should do everything in its power to expand and improve its ability to communicate with JWST, especially at times when access to the DSN is preempted by other activities like the Artemis mission. Improvements in communication also would increase multiplicatively the amount of science that is doable with this limited-lifetime, oversubscribed telescope. The JSTUC supports the expansion of the DSN and supports the exploration of alternative communication possibilities such as the Near Space Network to increase communication opportunities with the telescope.

A second, existential issue is the future of funding for JWST in the final years of its prime mission and as it moves into the extended mission. The JSTUC recommends in the strongest possible terms that STScI, NASA, ESA, and CSA continue their commitment to allocate sufficient resources and funding to support the capabilities of JWST and the analysis of JWST data. Such a commitment to JWST is critical to NASA's central role in advancing US science given the scientific interest, public interest, and investments made in the most advanced observatory ever. Even a flat US budget of \$60M for research has not kept the pace of science by the US community, which is overstretched. Inflation has eroded away the spending power of this funding. Increases in operational efficiency of JWST have translated to more observing time than in prior cycles without any increase in funding. Conversely, substantial cuts of any kind to the budget would significantly harm the scientific output of JWST before it has even reached its peak performance level. A flat budget or cuts will also devastate the ability of the US community to train the next leaders of science and technology. The JSTUC is deeply concerned about the danger that US leadership will decline as JWST research moves overseas without sufficient funding for the JWST mission support and for US JWST users. Maintaining US leadership in science and technology directly translates to US-led innovation and economic growth. To maintain the excellence of JWST research in the US requires increased funding support. NASA, ESA, CSA, and STScI need to take all possible steps to ensure increased research funding for JWST science that maintains current levels and keeps up with inflation.

A third critical issue is the potential loss of any JWST capabilities. The JSTUC notes that all JWST observing modes are in high demand, and all of them have no parallel from any current or

planned telescope on earth or in space. STScI and NASA/ESA/CSA should continue to study, investigate, and act on threats to the health and sensitivity of all JWST observing modes, including continuing to monitor known issues such as the loss of MIRI sensitivity. NASA/ESA/CSA should continue to provide resources to ensure that the community has access to all JWST observing modes.

The JSTUC recognizes that external pressures may be placed on the NASA / JWST budget. We reiterate that cuts to key JWST support personnel, JWST observing modes, or research funding would be devastating to the US community and to future partnership with international agencies. The JSTUC agrees that we, the community, STScI, and NASA, all have the same goal, which is to maximize the scientific output of this great observatory, to inspire the public on our endeavor to understand the cosmos, and to train the next generation of leaders in STEM. In this spirit, the JSTUC recommends that it will remain important to continue the line of communication from STScI/NASA to the community about the impact of changes in the funding situation on science operations and science funding, and to communicate tradeoffs that may be required.

Lastly, the JSTUC expresses its concern about the erosion of external advisory groups to review and advise NASA on funding and other decisions. Such groups are important both for NASA to understand trade-offs and the impact of funding decisions on the community, and such advisory communities can help advocate the impact of funding-related issues in NASA administrative decisions (or for lawmakers). The JSTUC recommends that NASA expand the role of its external advisory groups.

### **3. Time Allocation and Grants Processes**

The JSTUC commends STScI for its changes to the time allocation proposal page limits and to the grant-funding process for US scientists. The current, reduced proposal pages limits appear to have improved the proposal experience for proposers and reviewers, even given the record level of oversubscription for JWST time. The formulaic grant process has streamlined the experience for US scientists and reduced the burden on the grant applications. These steps have received positive feedback from the community and are supported by the JSTUC. The JSTUC looks forward to receiving updates on these changes at future meetings.

Regarding the proposal review process, the JSTUC is aware of some continued concerns from the community. Some panels, specifically that for the Solar System, faced severe challenges in balancing the number of reviewers that were unconflicted on some proposals. In some instances, it was fundamentally difficult to score proposals in an unbiased fashion when so few reviewers were available to evaluate the proposal. The JSTUC encourages STScI to consider ways to improve this process, including the possible formation of mirror panels for Solar System proposals, discussion panels for very-small Solar System proposals, or other subpanels that experience this problem.

Regarding the proposal process, the JSTUC recommends clarification of several issues. The JSTUC has received feedback that leaving these issues to the reviewers to decide invites uneven evaluation criteria.

1. First, the JSTUC recommends that STScI continue to strive for more uniform evaluation criteria for both proposers and reviewers. This includes examples such as:
  - a. Evaluation scoring. Some reviewers expressed concern that the three-grade scoring system is not used uniformly by all evaluators. The JSTUC suggests STScI consider simplifying the grading criteria. The JSTUC appreciates the rubrics and evaluation criteria provided by STScI to reviewers. In the spirit of striving for uniform application of these criteria, the JSTUC suggests STScI stress these criteria and rubrics at multiple points during the review process, perhaps providing these separately from the extensive orientation slides provided to reviewers.
  - b. Certain proposal-initiatives or modes, such as Roman-preparatory proposals (see [Section 7.1](#)) and pure parallel programs (see [Section 7.4](#));
  - c. Coordinated parallel observations. The JSTUC received reports that different proposers and reviewers have differing standards on how tightly integrated the primary and parallel science cases need to be. This could benefit from clarification and consistency in the evaluation criteria.
2. Second, the JSTUC suggests that STScI clarify to reviewers how to evaluate violations of page limits, for example how to evaluate proposals that include information in the “special requirements” section that belongs in the technical or science justification sections.
3. Third, the JSTUC has concerns that an Exposure Time Calculator workbook ID number is included in the Astronomer's Proposal Tool (APT) file. The JSTUC suggests that STScI reevaluate the need for the workbook ID numbers in APT, and to remove them if they are not required. Currently the requirement of a workbook ID number signals to users that someone will check these workbooks. STScI should require these ID numbers only when they are required (for example in cases of target acquisition for certain observing modes). This is related to [Section 6 on the Exposure Time Calculator](#), below.

## 4. Pipeline Data Processing

Pipeline data processing is the critical first step in converting raw JWST data into science usable products. The JSTUC commends STScI staff in their work to improve the pipeline products, and to make pipeline results more reproducible, with updated methods and calibration files. This effort is deeply valuable to the community. STScI staff work hard to broadcast these to the community, including now sending emails to PIs when their data are available that include the best pipeline recommendations for their data. These are positive steps.

The JSTUC recommends that STScI continue to prioritize improvements in and streamlining of the data pipeline to facilitate the production of science-ready data. The JSTUC also recommends that STScI consider additional ways to communicate changes and updates to the community, and

how updates may impact their individual datasets without users having to rerun their data through the entire pipeline.

## 5. Engagement and Communication

The JSTUC commends the effort of STScI to communicate information to the JWST community. STScI has taken positive steps to reach the community, including steps to “lower the barrier” to applying for time with JWST and using JWST data. The JSTUC appreciates that STScI staff solicit input from the JSTUC and from the community on how to better communicate information. STScI is prioritizing the importance of communication, and the JSTUC supports these efforts.

### 5.1. Communication with the community

The JSTUC recognizes the effort STScI staff make to provide all manner of information to the community. This includes emails (observer news, and surveys to PIs at different times post-data), newsletters, JWebinars, summer schools, AAS Town halls and events, the helpdesk, Webb office hours. The JSTUC considers all these efforts to be positive, and commends STScI for this work. The user feedback about these efforts is also mostly positive. It is apparent that STScI is making a heroic effort to engage the community.

The JSTUC also recognizes that it is difficult to get the community to fully reciprocate the engagement and utilize all available resources. The JSTUC recommends that STScI continue this work, advertising resources such as Office Hours as much as possible, and work to keep the JWST documentation (e.g., JDOX) as up-to-date as possible. The JSTUC also recommends that STScI provide and update pointers to FAQs or tutorials that link to JDox articles as a way for users to locate top-level information efficiently.

### 5.2. Summer Schools

The JSTUC supports STScI’s initiative to have JWST-focused summer schools to train researchers on specific JWST capabilities. The JSTUC encourages STScI to continue these efforts, and to continue to consider how to adjust the scope or focus of future summer schools to include a broad swath of the community.

### 5.3. JSTUC Webinars

The JSTUC recognizes that non-STScI scientists may be effective ambassadors of information about JWST to the community. The JSTUC encourages STScI to consider hosting “JSTUC Webinars” where JSTUC members and possibly extending these to include the PIs of JWST programs. The JSTUC and JWST PIs can discuss what their experience has been, and what they have learned through their role on the JSTUC or by planning JWST programs that they didn’t know previously.

## **6. Exposure Time Calculations**

The JSTUC commends STScI on providing an Exposure Time Calculator (ETC) simulator that yields the most accurate expected data sensitivity for all observing modes of JWST. This is important for observers to have the best estimate of the data quality, and it facilitates science outcomes from JWST observations. The JSTUC recommends STScI continues to support this tool and to continue their work to “stress test” the ETC for high-load times such as the days leading up to proposal deadlines.

The JSTUC commends STScI for their ongoing efforts to promote the use of the JWST Interactive Sensitivity Tool (JIST). The JSTUC continues to recommend that the JWST Call for Proposals (CfP) documentation and Astronomer's Proposal Tool (APT) interface be updated to more clearly indicate if and when the inclusion of an ETC workbook link is required in a proposal, and to clarify whether JIST-based calculations are acceptable in proposals. The JSTUC recommends that STScI continue to investigate means for communication / translation of APT observing parameters to ETC-ingestible parameters and vice versa.

## **7. Observing Modes and Initiatives**

### **7.1. Roman Space Telescope Preparatory proposals**

Regarding the Roman Space Telescope preparatory proposal (Roman-prep) initiative, the JSTUC is concerned about how these proposals would be evaluated. The JSTUC is concerned that proposals designated as Roman-prep will be evaluated nonuniformly during proposal reviews. The JSTUC recommends providing specific, explicit instructions to both proposers and reviewers, with information about how proposals identified as “Roman-prep” will impact the review of those proposals.

### **7.2. Rocky Worlds DDT initiative**

The JSTUC is supportive of the Rocky Worlds DDT initiative. This program appears well thought out, with specific, important science goals that can only be accomplished with both JWST and Hubble. The program has included community input. The program has a well-articulated plan for delivering data products to the community. The JSTUC encourages STScI to proceed with this initiative, with continued input from the community, including relevant results from complementary observing programs. The JSTUC also encourages STScI to broaden their efforts to advertise the program to the international astronomical community, and perhaps include more international community members on the advisory committee for this and future initiatives.

### 7.3. Community ToO programs

The JSTUC continues its support of the initiative for special Community ToO programs for rare and high-impact events that are too infrequent for the standard ToO TAC process, and/or are too urgent for a typical DDT process. The JSTUC looks forward to more discussion on this topic at future JSTUC meetings.

### 7.4. Pure Parallel Programs

The JSTUC commends the efforts of STScI to study the restrictions on, and the cost of Pure Parallel (PP) programs on the observatory. The information presented to the JSTUC and the community is invaluable for understanding these constraints for PP programs.

The JSTUC was extremely concerned that no pure parallels were allocated in cycle 4. The JSTUC received significant community input expressing concern about this issue. This indicates to the JSTUC that the PP observing mode remains valued by the community because it has the ability to execute science programs that are not feasible by prime programs at a fraction of the cost of prime proposal time, greatly increasing the efficiency of the telescope. The JSTUC discussed this issue at length and determined that changes may be needed in the current proposal selection process to enable the optimal use of this observing mode. Given the limited life of JWST, and the interest by the community, the JSTUC recommends that STScI explore how best to make this mode available to the community.

Given that STScI has now quantified the costs of PP explicitly, the JSTUC recommends that STScI communicate to both proposers and reviewers clearly stated costs and policies of the PP mode, and include these in APT estimates. These include consequences for exceeding data-rate limitations, overhead increases on the prime programs, and funding caps for PP programs. The JSTUC furthermore recommends that STScI determine how to charge the cost in terms of time and data rate of PP programs appropriately so they can be considered by proposers and reviewers of such programs. An example of this is to clearly inform reviewers of the policy that PP programs must be above the “1N line” to be accepted. The JSTUC also recommends that STScI take steps to enforce these policies regarding data-rate limitations, to ensure that STScI can continue to support PP observing given existing pressure on staff and resources. The JSTUC supports the idea for STScI to communicate this information through formats like JWebinars, and through other tools for the proposers or through other efforts to reach segments of the user community that could exploit PP capabilities, such as the Galactic community.

With the goal of preventing PP time from going unused in future cycles, the JSTUC recommends that STScI explore having community working groups to develop ways to most effectively use PP observing modes. Such a working group could identify novel science cases and ways to reduce the implementation effort required by STScI.

## 7.5. Community-led Long term monitoring Programs

The JSTUC believes there may be a benefit for community-led, long term monitoring programs of time-variable sources, especially as data from the Rubin Observatory become available. The JSTUC encourages STScI to explore this concept, building on the 2023 call for white papers (e.g., the “[HST/JWST Long-term Monitoring Working Group Final Report](#)”) and to consider how this mode could be facilitated.

### **March 2025 JSTUC membership:**

- Chair: Casey Papovich, Texas A&M University
- Co-Chair: Emily Levesque, University of Washington
- Rachel Bezanson, University of Pittsburgh
- Catherine Espaillat, Boston University
- Leigh Fletcher, University of Leicester, UK
- Adam Ginsburg, University of Florida
- Joel Kastner, Rochester Institute of Technology
- Monika Lendl, Université de Genève, CH
- Charlotte Mason, Cosmic Dawn Center, Niels Bohr Institute, University of Copenhagen, DNK
- Erik Rosolowsky, University of Alberta, CA
- J.D. Smith (Chair emeritus), University of Toledo
- Johanna Teske, Carnegie Science
- Vivian U, California Institute of Technology / IPAC
- Christina Williams, NSF’s NOIRLab