

# James Webb Space Telescope Users Committee (JSTUC) Report

## August 25-26 2022

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**Meeting Summary:** This was the first in-person JSTUC meeting since the beginning of the COVID-19 pandemic, and the successful launch of JWST. The JSTUC was presented information on the following topics: JWST operations report (Menzel), Cycle 1 Science Scheduling Report (Workman), NASA HQ Astrophysics update (Clampin), NASA HQ, ESA and CSA JWST Program Perspectives (Smith, Evans, Dupuis), JDox and User Support updates (Henry, Ogle, Bright), Cycle 2 technical additions Report (Valenti), Data Analysis Tools Report (Mullally), Joint Programs with other Observatories Plans (Chen), JWST Outreach and News Report (Pulliam, Hart), Cycle 2 Grants Process (Reid, Lean), Cycle 2 preparations (Chen), Workshops and Webinars Report (Mullally), and Filler Programs Plans (Stiavelli). This report summarizes the key issues that were discussed and the recommendations of the JSTUC on those issues. For a full account, the community is encouraged to review the JSTUC meeting presentations, which are accessible on the [JSTUC website at STScI](#). Below is a list of the topics discussed and the committee's recommendations.

### **Artemis Mission and JWST DSN Needs**

The JSTUC heard about the imminent launch of the Artemis I mission, with a launch window starting on August 29, and its implications for JWST's access to the NASA Deep Space Network (DSN). Currently, JWST has up to 12 hours per day access to DSN Ka-band for data downloads. During the duration of the Artemis I mission access to the DSN may be reduced to as little as 4 hours a day. Depending on the launch date, contact with the telescope might be further reduced.

The JSTUC is concerned that this reduction to DSN access may significantly impact JWST's observing efficiency and science productivity and could even lead to multi-day blackout periods where communication is not possible. JWST is producing terrific science that is appreciated all over the world and the mission is recognized as a major success for NASA, ESA, and CSA. We are particularly concerned that the data accessibility and operational efficiency of JWST will likely be limited by ground assets which are under NASA control. **We encourage NASA to explore all options for establishing sufficient datalinks with JWST during the Artemis mission and to also anticipate the impact of other planned future DSN usage so the science productivity of JWST is not impacted. We encourage NASA to build or upgrade existing ground-based infrastructure needed for JWST datalinks, and to fully explore all DSN**

**datalink contingency options to cover uncommon situations.** These contingencies could include utilizing NASA partner infrastructure like ESA, legacy radio astronomy facilities with large telescopes equipped with Ka-band receivers (e.g., MIT Haystack), or other creative solutions.

In the event that the Artemis mission does lead to a multi-day DSN datalink blackout, observations will not be able to proceed as usual due to limited JWST data recording space. **The JSTUC urges NASA and STScI to take observations in low data rate modes during blackouts. For any blackouts that occur in the near future, the JSTUC endorses STScI contingency plan for observation allocation during this interrupted window.** STScI's plan includes filling that gap with Cycle 1 TAC approved program observations that require the least storage space and then observing STScI selected (non-TAC approved) targets in the lowest data storage mode observations for the rest of the time. We endorse this approach to avoid having the telescope going idle with no data collected. However, **we strongly urge STScI to develop a better contingency plan in the event that a future DSN blackout occurs.** This plan could include developing a program category that is analogous to the HST SNAP program, creating a list of generic targets that would benefit the community.

Furthermore, unanticipated data link difficulties have already put pressure on the DSN connection cadence, , even without the new Artemis constraints. **The JSTUC urges the production of a detailed report on the actual impact of the Artemis I mission on JWST scheduling and operations, and also on current DSN performance, before the next JSTUC meeting.**

### **Micrometeoroid Avoidance Measurements**

The JSTUC heard about the impact of micrometeoroids into JWST's mirrors. JWST has had seven significant impacts from micro-meteors. Six of those impacts were within the predictions. The seventh event was not within predictions. NASA has established a working group to study the implications of the micro-meteor impact rate measured to date in future impact rate predictions. This working group will provide recommendations for telescope operations at the end of September. Those recommendations will include restrictions on telescope pointing directions to minimize micrometeoroid impacts. The JSTUC appreciates the efforts underway to minimize this problem. Restrictions in telescope pointing directions have the potential of affecting currently approved and future science programs. **The JSTUC requests to be notified of the outcome of the working group study and their recommendations so we can provide feedback during the next JSTUC meeting. The JSTUC also urges STScI to inform users about these restrictions as soon as possible, and to implement pointing restrictions in APT before the Cycle 2 deadline, if possible.** It will be helpful to update APT to allow proposers to

see how object visibility will be impacted if micrometeoroid avoidance pointing strategies are implemented.

### **Exclusive Access Time**

The JSTUC was notified of the White House Office of Science and Technology Policy (OSTP) updated U.S. policy guidance to make the results of taxpayer-supported research immediately available to the American public at no cost. This guidance asks agencies to work with OSTP to update their public access and data sharing plans by mid-2023. OSTP expects all agencies to have updated public access policies fully implemented by the end of 2025.

The JSTUC appreciates the variety of goals and societal impacts related to the release of data from taxpayer-funded and public-facing facilities like JWST, including the value that early/immediate data release would provide to some people, including astronomers with no awarded telescope time, citizen scientists, and the public. However, unlike other science missions, JWST is not a survey telescope. Considerable effort, creativity, and individual work goes into proposing science cases. The JSTUC is concerned about the impact that fully eliminating an exclusive access period (EAP) will have on junior researchers and smaller research groups. Student trainees need more time than more senior people to make their way through the analysis and publications of results. The looming competition will disproportionately impact students and early career researchers and could lead to fewer proposals from these groups. Researchers at smaller institutions may not have infrastructure in place to quickly publish results. Eliminating EAPs has the potential of discouraging junior researchers and researchers at smaller institutions from proposing for telescope time. Dual-anonymous proposal review has led to strong gains in diversity of the proposing pool, both in terms of proposers as well as the size and type of their institutions; we would not want to negatively impact this breadth. A potential more general, long term consequence of eliminating EAPs is the reduction of proposals with original scientific ideas, as there will be less incentive for research groups to spend time and effort writing proposals.

The JSTUC also points out that eliminating EAP may directly conflict with NASA's strategic Objective 4.1, to attract and develop a talented and diverse workforce, and its goal to implement a robust inclusion, diversity, equity, and accessibility (IDEA) plan, and may significantly impact junior researchers.

The JSTUC feels that a reduction of the current EAP of 12 months to 6 months might be an acceptable compromise, which still could give junior JWST users and users at smaller institutions some head start in their data. The impact of a reduction in EAPs could perhaps be mitigated by early distribution of funding so teams can be ready to analyze the data when it arrives. This, of course, should take into account the opinion of international partners and their

MOUs. However, the members of the JSTUC are a small, and fairly senior group, and we feel the need to gather more information about the potential impacts and opportunities of removing EAPs. Therefore, **the JSTUC strongly recommends a survey to assess the community's interests and concerns related to potential changes in proprietary data access policy.** We recommend that responses are drawn from a wide range of community members, including, if possible, community members who have not yet proposed for JWST time. **The JSTUC requests visibility and editorial input to the survey questions and the distribution list to ensure that it is distributed widely** and includes smaller institutions, HBCUs, etc. Demographic information should be collected in the survey (career stage, type of institution, etc.) to understand how EAP changes may differentially impact different groups.

### **Parallel Programs**

The JSTUC was made aware that, because of a number of problems with the DSN datalink at the beginning of the mission, STScI decided not to start executing approved Cycle 1 Parallel Programs until they gained a better understanding of the download data volume rates. The plan is to start implementing parallel programs in September, but the JSTUC is concerned that with the limitations to DSN access imposed by the Artemis I mission Parallel Programs will get further delayed. **The JSTUC encourages STScI to do as much as they can to start Parallel Program observations and to include parallels in their analysis of the scientific costs of reduced DSN access.**

### **Filler Programs**

Because of the impact on DSN access time that the Artemis I mission will cause, STScI has put together a plan to move low data volume datasets from approved Cycle 1 programs. The plan is to use those observations as *fillers* so JWST still can perform science observations during the duration of the Artemis I mission without running out of storage space on the onboard computers between DSN downlinks. **The JSTUC fully approves of this plan. If not enough filler programs are available, the JSTUC also recommends observations of STScI selected STScI-selected observations (non-TAC approved) and calibrations to minimize potential idle time.**

### **Scheduling of Calls for Proposals in Future Cycles and TACs**

STScI presented the JSTUC with plans for Cycle 2 and Cycle 3 Science Timelines. Those plans include a hybrid TAC review process for Cycle 2 proposals similar to the hybrid review process used for HST proposals in recent cycles and that was also used for the JWST Cycle 1 TAC. The plans also include three proposed timeline scenarios for the Cycle 3 call for proposals.

The hybrid TAC approach used for HST proposals and in the JWST Cycle 1 TAC and proposal evaluation timelines seem to be working well. **The JSTUC recommends to continue using the same approach in the TAC evaluation of proposals from future JWST Cycles.**

For Cycle 3 the JSTUC was presented with three possible schedules, with proposal submission deadlines on October 27 2023, December 1 2023, and January 26 2024. The presentation included a detailed list of pros and cons for each timeline. The JSTUC appreciates the arguments for and against each timeline. **The JSTUC recommends to follow the October 27, 2023 proposal deadline timeline option for Cycle 3.** The only advantage the JSTUC sees for a later deadline is a modest percentage increase in available public data, but moving the deadline to a later time results in a significant number of challenges.

### **GO/AR Accepted Programs Budget Proposal & Review Process**

The JSTUC was presented with an update on the implementation of the recommendations of the Cycle 1 Budget Taskforce. STScI has created new documentation in JDox, under *STScI Proposer Guide*, to help users better understand how to write their budget proposals. The JSTUC was also asked if there is a way to provide a fair-share formula for proposal budgets.

The JSTUC appreciates STScI taking the Taskforce recommendations into consideration and their work so far on implementing those recommendations. JWST has attracted many new space telescope users who are not familiar with the STScI budget proposal process. During cycle 1 these new users did not have sufficient guidance on structuring and justifying their budgets and on the STScI budget review procedure, which led to drastic budget cuts, unhappy users, and additional workloads for both users and STScI who needed to produce and revise a large number of modified budget submissions.

**The JSTUC needs to continue looking into whether developing a formula to assign budgets to proposals will help.** The current financial review committee process pays close attention and takes into account the needs of individual proposals and it leads to a fair distribution of resources, but problems seem to arise from users not having a clear understanding of how to justify those needs in their budget narrative and from not having enough guidance of what constitutes a *reasonable* budget.

To help the user community better understand the budget submission and review process, and to reduce the need for budget revisions, the JSTUC recommends that STScI continues to develop the JDox guidelines documentation. More specifically, **the JSTUC recommends that STScI provides a budget evaluation criteria rubric and adds to the documentation information about the range of outcomes from previous cycles, i.e. inform the proposers about the total budget available, number of cycle hours, and range of budget allocations for different**

**proposal categories. The JSTUC also recommends, if possible, the implementation of multiple webinars prior to the budget submission deadline to help inform and educate the community on how to write a successful budget proposal. These webinars should include case studies highlighting what are reasonable and unreasonable requests.**

### **Development of Tools and Public Outreach**

The JSTUC was presented with summaries of the JDox documentation updates and a description of updates to the user support website. The JSTUC very much appreciates these efforts.

The JSTUC was also presented with updates on Data Analysis Tools and Webinars, as well as updates on the JWST Outreach and News efforts, and plans to organize the first after-launch in-person community workshop on the first science of JWST. The JSTUC appreciates these efforts, which are key for the broad distribution of science results and broad spread of knowledge.

**The JSTUC recommends that STScI continues surveying the community about their performance satisfaction with documentation, tools, webinars, etc.** The optimal time to survey the community might be right after proposal submission deadlines.

### **Cycle 2 Enhancements**

The JSTUC appreciates the report on the status of Cycle 2 enhancements presented at the meeting. We have been quite interested in these enhanced instrument and operations capabilities since we first started discussing them in 2017 and weighed in with our four highest priorities in early 2018.

The JSTUC is happy to see that one of our priorities from 2018, specifying the TA filter for NIRCam time-series observations, was implemented for Cycle 1, and **we request that remaining high-priority items are looked into and implemented as soon as possible**, in particular it would be helpful for the community if the simultaneous short- and long-wavelength NIRCam coronagraph gets implemented for Cycle 2. We were disappointed to learn that the simultaneous NIRCam DHS + grism spectroscopy mode is not expected to be available in Cycle 2 and that work on high-efficiency readout modes for the near-IR instruments has been tabled due to lack of resources for SIDECAR ASIC coding.

The JSTUC does appreciate that STScI has been working on enabling other enhancements, and we would like to better understand, discuss, and reprioritize this work at a meeting in the near future.

### **General Communications**

**The JSTUC would appreciate that where possible, early notice of key agenda items is provided to support the quality of our input.** An example from this meeting is the impact of the Artemis mission on data downlink rates expected over the next few weeks.

**Calibration file delays:** The JSTUC has received reports that GTO teams have access to updated calibration data well in advance of STScI and the community. Over 1-month delays in obtaining zero point updates have been reported. Changes are coming fast, so delays are understandable, but the **JSTUC urges the project to work directly with GTO teams to make new calibration data available to users as promptly as possible to provide a level playing field.**