

STUC December 2024 Report

STUC Membership

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1. Meeting Summary

The STUC met in person on December 5 and 6, 2024. Several topics were covered including mission status, new opportunities for Cycle 33, and updates on the budget process for Hubble. The observatory continues to operate with extraordinary scientific productivity. Three STUC members have completed their term on the committee, and we are grateful for their contributions: Jeyhan Kartaltepe (Rochester Institute of Technology), Hannah Wakeford (Bristol), and Mike Wong (Berkeley).

We encourage the community to view the presentation slides on the STScI website (<https://www.stsci.edu/hst/about/space-telescope-users-committee/presentations-and-documentation>). News from the meeting was summarized in the recent STScI Newsletter (<https://www.stsci.edu/contents/newsletters/2025-volume-42-issue-01/meeting-of-hubble's-space-telescope-users-committee-stuc>). This report presents comments and recommendations from the STUC, based on topics covered at the meeting.

2. Ongoing Success

The STUC continues to be impressed by and grateful for the tireless work by the teams at STScI and GSFC during an unusually challenging year. The Hubble Space Telescope is operating with extraordinary success, excelling by every metric of evaluation. It is in the golden age of scientific productivity, with a record publication of 1056 journal articles in 2023, increasing the number of publications from both new and archival observations. Demand for Hubble observing time remains high with an over-subscription of 6:1 in cycle 32. Hubble continues to make important discoveries across astrophysics and planetary science topics. It has increasingly made breakthroughs in time domain research based on its ever-growing time baseline of observations. The STUC notes that we appreciate the significant effort going into

science policy to broaden participation and offer new ways of using the telescope to adapt to changing conditions.

3. Hubble Operations

The STUC especially commends the team for the successful transition to Reduced Gyro Mode, which is performing better than the previous use of the mode in 2005-2009. Gyro-6 is in the pointing control loop, with the highly reliable gyro-4 as a powered back-up. Gyro-3, which had been unreliable, is powered on and monitored for potential future use. We would also like to recognize the outstanding ongoing work to retain redundancy (SI C&DC B-side), and efforts to extend the lifetime of instruments (e.g. COS LPs).

Recommendation: The STUC recommends that STScI investigate ways to make it easier for users to get the field of regard for a certain date in the future. This information is needed in particular for planning of ToOs. It would greatly facilitate vetting of multiple candidate targets if there were a tool that's easier than APT, which has no command line (API) access.

Recommendation: The STUC appreciates the effort to expand efficiency by encouraging northern targets to fill otherwise unused time. We recommend STScI continue to ensure that wording of this policy makes clear that it is not a bias against southern targets.

4. ESA Update

The STUC is happy to know that ESA is continuing to support Hubble science at the same level with a new Memorandum of Understanding. The partnership between ESA and NASA is one of the pillars of Hubble's success.

Recommendation: The ESA archive is in process of mirroring High Level Science Products (HLSP) for Webb. The STUC encourages STScI to discuss options for them to do the same thing for Hubble's HLSP.

5. Rocky Worlds

The STUC appreciates the scope of the Rocky Worlds program and the efforts from the team at STScI to continue a strong connection with the community and note that the community driven process of assigning DDT time is working well and should be a model for future projects. Given the types of planets and host stars being studied, Hubble is well suited to partner with JWST in this program to supply much-needed information on the stellar environment. We expect

substantial impact in science from this program enabled by HST with important steps to understanding small exoplanet host stars in the UV as a bridge towards HWO.

6. Budget and Senior Review Proposal

The STUC commends the teams at STScI and GSFC for their great work on the proposal to the Senior Review of operating missions. The proposal was submitted in December, shortly after the STUC meeting, and results are expected in spring of 2025. In particular, the STUC greatly appreciates that STScI listened to community input and focused the proposal on minimal support for endangered modes rather than irreversibly shutting off modes. We especially recognize efforts to protect the existing team. In addition, the STUC strongly supports the strategy of doing closeout activities now, in case they become necessary in the future when less effort would be possible. The STUC is also very glad to see MAST will continue to accept community HLSP.

STScI provided detailed information about the expectations for Hubble GO grant funding going forward. It is clear that in every scenario, the available funding will be drastically reduced from historical levels. The STUC understands the necessity of this change, and we believe the community will support it, especially if it is communicated clearly. Nonetheless, the STUC is concerned about the impact that cuts will have on early-career scientists. The community has historically relied heavily on Hubble to support training the next generation (including future HWO observers). At the \$30M grant funding level, 80 students, 65 postdocs, 28 faculty are supported. At \$10-15M, many jobs are cut. It is also important to remember that papers are the metric of success, and that they require funding.

Recommendation: The STUC feels that it is important to communicate as much as possible as soon as possible to the community. The online Town Halls were a great start. We hope that STScI can keep doing events of this kind. It is crucial to understand the needs of the community, as well as to make sure the community knows that it is being heard. Relatedly, the survey that accompanied the Town Hall was a good channel for information, but limited time prevented a large number of responses. Additional surveys or long-form asynchronous communication options would be helpful.

Recommendation: It is particularly important to clearly communicate expectations for future GO grant funding, and the reasons for the levels that are available. The community will likely receive the message better if it is presented quantitatively.

Recommendation: The STUC encourages STScI to think about how to leverage funding for HWO preparation for support of the same community affected by Hubble grant cuts.

7. Education and Public Outreach

The STUC greatly appreciates the long term success of the STScI EPO group. Their ability to tell the story of Hubble science in a way that inspires the public has been extraordinary. We congratulate the team on the well deserved recognition in receiving the Sir Arthur Clarke Imagination in Service to Society Award.

8. Cycles 32 and 33

Recommendation: We encourage STScI to make clear to the community the current difficulties in getting sufficient numbers of scientists to serve on the time allocation Panels, and the potential implications of this challenge.

9. Dual Anonymous Proposal Review (DAPR)

The STUC commends STScI on the implementation of DAPR, allowing reviewers to better focus on scientific merit in evaluating proposals. The huge increase in the number of new PIs is an exciting and extremely positive development, as is the mitigation of binary gender bias in approved programs.

Recommendation: We encourage STScI to analyze additional demographic information in this context, for example following what has been done for NASA SMD researchers.

Recommendation: We encourage STScI to gather information that could help to disambiguate the effects of gender and seniority in changes in proposal success demographics.

Recommendation: The STUC suggests that STScI gather additional information in order to understand the gender imbalance that persists in Bridge and mid-Cycle proposals and the reasons that such proposals differ from the major Cycle opportunities.

10. Conclusion

The STUC looks forward to the continuing success of Hubble in making major discoveries in a wide range of research areas. We are confident that the Hubble team will navigate the current budget challenges in a way that enables a bright and inspiring future for Hubble science.