

Space Telescope Users Committee (STUC) Report:

April 14, 2020

STUC Members: Jennifer Andrews, Sanchayeeta Borthakurta, Stephane Charlot, Rupali Chandar (Chair), Denija Crnojevic, Francesco Ferraro, Steven Finkelstein, Kevin France, Jamie Kennea, Caroline Morley, Anne Verbischer, Eva Villaver

Meeting Summary:

Due to COVID-19, this was the first STUC meeting held remotely. Presentations were made available ahead of time in order to focus meeting time on questions and discussion. Presentations on the following topics were made available to the STUC: reports from the HST project and mission status including reports on each instrument, statistics and preparations for Cycle 28, updates on the ULYSSES Director's Discretionary Time program and preparations for celebrating Hubble's 30th Anniversary, A demonstration of the new 'Archived Synthetic Data Initiative' or ASDI , and updates on the STScI web pages. This report summarizes the key issues that were discussed and the resulting recommendations. For a full account, the community is encouraged to review the STUC meeting presentations, accessible through <https://www.stsci.edu/hst/about/space-telescope-users-committee>.

Mission Status:

- Even during this time of pandemic, Hubble continues to operate nominally. Ken Sembach said that STScI remains 'open for business', and the [STUC commends the Institute for continuing operations and all accompanying support services seamlessly for the entire community](#)

Honors & Milestones:

- This month marks Hubble's 30th year on orbit. Fittingly, the operations team behind Hubble has been selected to receive the National Air & Space Museum 2020 Michael Collins Trophy for Current Achievement. The award states: "*Through the efforts of the Hubble team the observatory has continued to produce research unachievable with any other instrument. System engineers in Hubble's control center and science operations facility have continued to find creative ways to operate the 30-year-old spacecraft to make this revolutionary science possible, ensuring its capabilities will continue for years to come.*" The STUC also commends the Hubble team for their incredible & sustained efforts.
- Hubble hit an impressive science productivity milestone, with more than >1000 papers based on HST data published per year

- HST Cycle 28 saw an even higher number of proposals submitted than in C27, more evidence that Hubble continues to operate at the top of its game

Telescope Operations and Instrument Status:

- While HST continues to operate nominally in 3-gyro mode, often through heroic efforts, gyro 3 continues to experience growing rate bias levels. The Institute has begun testing an important new 'hybrid' control mode, where maneuvers between science observations would continue to be done in 3-gyro mode, but would switch to the Fine Guidance Sensors and 1-gyro controller to take the observations themselves. This mode has none of the negative impacts of 1-gyro mode and would allow for better performance from the guiding system despite the growing rate bias levels, [The STUC agrees that this hybrid control mode will allow for the Observatory to continue delivering high level observations for the longest amount of time.](#)
- All instruments continue to operate nominally, and each instrument team continues their impressive efforts to improve the quality of the observations obtained by the community, to better calibrate the data and more.
- The Hubble team made an impressive turnaround time of 34 hours to observe a recently triggered Target of Opportunity (a supernova found by TESS). This turnaround was quicker than the shortest advertised time of ~36 hours. ToO will become even more challenging when the observatory goes into 1-gyro mode. [The STUC is interested in gauging the scientific return of 'rapid' ToOs, since they are quite costly in terms of efficiency and the long range plan. At our next meeting, we would be interested to hear how many 'rapid' ToOs \(2-5 day turnaround\) have been triggered in the last decade, and how many published papers have resulted from those observations.](#)
- The STUC is happy that a number of orbits have been allocated for coordinated HST/JWST observations, and that the Institute plans to monitor the number of such requests and make adjustments in future cycles as needed.

Cycle 28 Proposal Review:

- The STUC thanks the Institute for implementing our suggestion that each small proposal have 5 external reviews, since these will not be discussed by the panels themselves. While this process has been successfully implemented for reviewing mid-cycle proposals, this is the first time that such a large number of proposals will be evaluated with no face-to-face discussion. [We encourage the Institute to monitor how well this process works, and follow-up with external reviewers to assess their experience, whether they felt their expertise was well-matched to the proposals they reviewed, and if they have suggestions that might improve the process for the next cycle.](#)

Website:

- The STUC was happy to see that a number of improvements have been made to the website over the past 6 months, and anticipates additional improvements in the near future, particularly in the ability to search for specific information. [We will continue to collect specific examples of items that are difficult to find, and leave open the possibility of putting out a future survey to the community to collect additional examples.](#)

Initiatives led by STscl:

- We are happy to hear about the continued progress of the ULLYSES project. The website and 'quick look' tools will enable the community to maximize the scientific return on this investment by Director Ken Sembach. The implementation of this program has been exemplary.
- The STUC learned about the new 'Archived Synthetic Data Initiative' or ASDI, which aims to provide theoretical/synthetic results in a easy-to-digest format, which would help interpret observations taken with Hubble. The portal will be at sims.MAST, and is in development now. [The STUC feels this is an excellent new initiative, and is quite interested in supporting it. We would like to hear an update at our next meeting, including any specific items/issues that we can help with.](#)