

Space Telescope Users' Committee Report: November 5-6, 2015

STUC Attendees: Stéphane Charlot, Jane Charlton, Hsiao-Wen Chen, Michael Cushing (Chair), Chris Howk, Søren Larsen, Andrea Prestwich, Brian Siana, Amy Simon, David Sing, Ann Zabludoff

Meeting Summary

The STUC saw presentations on a variety of topics including the STScI outlook (K. Sembach), the HST Project (J. Wiseman, P. Crouse), the HST mission (J. Mackenty, H. Jenkner, C. Oliveira), NASA headquarters' perspective on HST (M. Garcia), Cycle 23 (C. Leitherer), science policy (I.N. Reid), ESA's perspective on HST (A. Nota), E/PO efforts at STScI (H. Jirdeh), and the Frontier Fields (A. Koekemoer).

The Hubble mission continues to operate well, in no small part due to the proactive nature of STScI's instrument and observatory monitoring and maintenance. The STUC applauds the continuing efforts to respond to anomalies in a more seamless way, minimizing downtime. The panel also applauds the continued development of tools to make the path from data to science easier (e.g., the development of a spectroscopic legacy archive, more robust grism tools, etc.) and the continued eye towards the development of such products in the new operations contract proposal. We commend the significant progress being made by a working group, lead by C. Oliveira, to understand the COS wavelength calibration issues and urge a continuation of this effort.

New work at the Institute to ensure that the panels and TAC are representative of the potential user community is important and encouraging. In particular, we commend Neill Reid and STScI for their careful work in trying to isolate the source of the gender disparities in proposal acceptance rates present over many cycles. The panel also continues to be impressed with the level of Institute support for the Frontier Fields to provide high-level data products to the community in a timely manner. In particular, the additional calibrations and data characterization that have come (in part) from this program (selfcal darks, astrometry, persistence characterization, etc.) are an enormous asset for improving both past and future programs with these instruments. The STUC also believes that continued full support of Hubble by ESA, beyond the end of the current MoU in 2019, is extremely important, and supports efforts to raise awareness of this among European HST users and their representatives in the relevant advisory bodies. Finally, the STUC was very happy to see that the E/PO work done at STScI will continue because the E/PO group was selected as one of NASA's Science Education Partners.

STUC Recommendations

1. The STUC would like to see a systems perspective of the spacecraft, including likely subsystem failure modes and expected lifetimes.

2. The STUC would like to see a list of instrument calibration issues and the plans for addressing them.
3. The STUC would like to know how the priorities of low-level science products (e.g. basic calibrations) versus the high-level products are set and recommend that if resources are limited, important low-level products should be prioritized over higher-level products.
4. The STUC recommends continued effort in understanding the COS wavelength calibration issues. Specifically, we ask that special attention be paid to the wavelength windows where few lines were available from existing STIS data including an exploration of what new calibration observations might be useable in these windows and possible calibration issues with the NUV channel. In addition, assessing the repeatability of the current solutions and quantifying any variations using repeated observations over multiple visits would be helpful. Finally, given the community's efforts in identifying these issues, we encourage the COS team to distribute the initial results of their analysis to the community early in order to solicit feedback.
5. The STUC recommends that a new call for very-large programs (>500 orbits) be incorporated into the existing Large/Treasure program structure.
6. The STUC recommends the creation of a JWST initiative wherein GO proposals in support of future JWST observations can be submitted. We further recommend that such proposals will have no proprietary period.
7. The STUC supports reducing the default proprietary time from twelve to six months in Cycle 25 but recommends that means be introduced so that successful proposals can request an extension of up to twelve months during the Phase II process.
8. The STUC supports the continuation of the steps taken in Cycle 23 to improve the fairness of the proposal review process, including the removal of the PI name from the front page and the use of only first initials for all investigators. We additionally recommend that the authors be listed alphabetically instead of in the order submitted and that the panel chairs be tasked with making sure that the five proposal assessment criteria are consistently applied to all proposals during discussion and comment writing.
9. While the STUC recognizes that science is still being conducted with the Frontier Fields, we would like a more extensive update on the science highlights at the next meeting. In addition, though it seems clear that STScI intends to do so, we would like to reiterate that STScI should fund additional efforts to provide high-quality and consistent lensing maps of the Frontier Fields to the community.

Calibration and High-Level Products

WFC3 and ACS appear to be working at a nominal and stable level. Continuing updates on ACS and WFC3 calibrations including dark current, variable sky background in the IR window, and geometric distortion are being implemented. For WFC3, the calibration effort has benefited significantly from multi-cycle observations of the Frontier Fields. At the same time, the STUC is happy to see the release of higher-level data products moving forward. However, the panel is unsure how the relative priorities between low-level products and high-level products are being set and we want to ensure that, if resources are limited, that important low-level products are prioritized over higher-level products.

Proposal Demographics & the TAC

A new result presented at this meeting was that a substantial difference exists between the success rate of proposals PI'd by senior women (who received PhDs before 2000) and junior women, junior men, and senior men from "highly productive" institutions (ranked by the Taiwan index, one measure of the total productivity) over the last five proposal cycles. Efforts should continue to improve the fairness of the proposal review process. The gender disparities remained in Cycle 23 despite new and thoughtful procedures introduced into the proposal review. Instructions to reviewers should therefore continue to highlight the potential for unconscious bias. The STUC notes that STScI has led these analyses among the Great Observatories and recommends that discussions continue with the other Great Observatories to better assess gender disparities and possible bias across all missions. Further development of algorithms like PACman to assist Institute staff in selecting and placing reviewers on panels is encouraged. Regardless, the persistent gender bias and looming shortage of reviewers for the joint JWST-HST era require exploration of a larger, broader panel/TAC candidate pool. The STUC also heard a report about a Bayesian-based tool that is designed to sort proposals into panels that potentially could be used as a tool to select panelists with appropriate expertise to serve on panels. The STUC felt that this method has potential to identify an even more diverse and larger group of panelists.

Hubble continues to be in very high demand, with the over-subscription rate at similar levels as the previous cycle. Concerning preparations for the coming cycle, the STUC heard, and supports, several changes to the panel composition; a *Planets and Planet Formation* panel will now be comprised of extrasolar planet and debris disk proposals and a separate single solar system panel will now meet, with the recruitment of panelists conducted after the deadline to minimize conflicts. Due to concerns with large proposal numbers and panelists expertise, IGN will now be graded separately from AGN science. STScI continued to modify how medium proposals are handled in order to address concerns raised in Cycle 23 with the cross-panel reviews and grading by the TAC. In Cycle 24, the individual panels will have an orbit allocation, and the top-ranked medium proposal in that panel will be recommended for execution. As the medium-size category continues to have compelling science cases, the STUC agreed that these changes were necessary and recommend that STScI keep at the problem until a satisfactory process is developed. While the STUC supports reducing the propriety

period from twelve to six months, we also recognize that there are many valid reasons why an extension to twelve months might be necessary, and the Institute should consider such requests seriously. The STUC should be tasked with evaluating the success of the proprietary time extension process after Cycle 25.

The STUC envisions that the new very-large (> 500 orbits) programs will be split over 1-2 cycles and perhaps receive subsidies from DD time. We suggest that STScI consider taking orbits from the next cycle up front to give the TAC more orbits with which to work, that the Institute and PI work closely together on the path to science after selection and in Phase II, and that the Institute provide FTEs as necessary and as requested by the PI and team. The STUC envisions calls over several cycles for these programs.