

STUC Report 5/24/12

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The STUC is pleased with the overall performance of observatory and its instruments, entering the 22nd year of operations. The demand for the observatory is as high as ever, as illustrated by the large oversubscription in this Cycle. We are pleased with the favorable results in the NASA Senior Review report, and commend the HST Mission Head and all others involved in producing the proposal.

The report of the NASA Senior Review of Operating Missions Committee (SRC) was quite favorable for HST. The SRC recognized its continued exemplary science, as evidenced by receiving the SRC's highest scores in "discovery space" and "critical capacity", and the recommendation for extension through 2016. Yet, despite these successes, the HST mission has some difficult considerations ahead in accelerating cost reductions without compromising mission safety. We continue to encourage the Institute to discuss options with the STUC, focusing on efforts that could be initiated now that could reduce expenditures in the future. We are especially pleased to see that the Institute and GSFC operations have already made successful efforts to improve efficiency while maintaining a high and increasing level of science productivity.

The augmentation goals detailed to the SRC, including the source catalog and other enhanced science products, had significant potential and immediate benefits. The STUC encourages the Institute to find ways to implement these goals, defining a clear (and perhaps limited) set of preliminary targets. We recommend that a spectroscopic working group be established to ensure that base spectroscopy products (calibrated and combined 1D spectra) be given an equal priority to enhanced imaging products such as source catalogs.

The STUC supports the Directorate's interest in new legacy programs in HST's few remaining years. This is an ideal time to call for an "ultraviolet astrophysics legacy" initiative, making use of HST's unique and powerful capability in the ultraviolet with COS, STIS, and WFC3-- resources that will diminish in the coming years, and will not be matched in the foreseeable future. We recommend substantial allocations, perhaps from the large-program pool, supporting UV legacy programs in Cycle 21 - 23. An emphasis should be placed on programs that will provide tools and high-level science products that enable future archival research.

HST has made great contributions to deep-field science, and has built a strong legacy in this territory. There is clearly more that could be done to further this legacy, e.g., building upon UV imaging, and UV/NIR spectroscopy, for some fields, and addressing cosmic variance with other fields. There is also an excellent opportunity to collect pathfinder observations in support of JWST science. However, other science of importance could also be further developed. There is a sense in the community that the MCTs provided a fair and compelling opportunity, and many have expressed hopes for another call. We strongly recommend that the Directorate consider a second round of MCT programs,

and allow the community opportunity to weigh in on what large-allocation science would be most compelling.

If, however, the Directorate chooses to continue the deep-field legacy of HST, we recommend that it is done in a way that maximizes community buy-in and science return. The STUC would, therefore, recommend an immediate open call for white-papers addressing science return for different strategies, and an assessment by a diverse working group, in science interest and in seniority. Careful consideration should be made in balancing immediate returns with the longer-range goal of preparing for JWST. The STUC would support the use of director discretionary time towards this investment, and reiterates the necessity for openness in this process (as well as with other DD awards).

The continued high demand for HST time in Cycle 20 speaks to the great importance of HST science. We are pleased by Institute's efforts to insure that a broad range of science is supported, but we also note the difficulty in achieving balance in the size of programs, particularly in the medium (30 - 100 orbits) range. The STUC agrees that there is adversity to these proposals given their size-- panels are less inclined to devoting large allocations (even with subsidies) to single programs, and proposers aware of this adversity are less inclined to devote efforts to proposing for them. There is some sense that the system still provides generally good productivity (per orbit) from small programs, and generally high legacy and archival value from large programs. However there is a notable deficiency in science requiring 40 to 80-orbit investments, and concern that these have systematically missed by HST over several cycles. We recommend that the Institute continue to look into this issue in advance of the call for Cycle 21.

The STUC continues to be impressed by the ESO-ESA/Hubble efforts. Hubble outreach maintains a high visibility in Europe, thanks to these efforts. We are pleased that the important HST data archive mirror in Europe will be retained, and transitioned to ESAC, Spain. European astronomers are using both archive and GO data with important scientific results.

HST continues to produce exceptional, forefront, and high-impact scientific advances, and we look forward to continued success the remaining years of the observatory.