

Hubble Multi-Cycle Treasury Programs

Introduction

The Hubble Space Telescope (HST) was launched in 1990. Over the past 17 years, it has revolutionised diverse fields spanning the gamut of astronomical research. Servicing Mission 4 (SM4) is planned for August 2008. The prime goal of SM4 is to maximise the scientific return from HST over the next 5 years. With that goal in mind, we are considering augmenting the current range of proposal types by adding the new category of Multi-Cycle Treasury Programs – programs that tackle scientific issues that **require** 400 or more orbits. Following the example of the Chandra Observatory, we are soliciting white papers from the community to aid us in determining whether the new proposal category is scientifically necessary.

Background

Two new instruments will be installed in HST, Wide Field Camera 3 (WFC3) and the Cosmic Origins Spectrograph (COS). WFC3 is the first wide-field imager at near-infrared and ultraviolet wavelengths, and COS has unparalleled sensitivity for spectroscopy in the near- and far-UV. Plans are currently being developed for potential repairs to the Space Telescope Imaging Spectrograph (STIS) and the Advanced Camera for Surveys (ACS). These repairs will be made on a best effort basis, and are not guaranteed. However, even with only the new instruments, the post-SM4 HST should be poised to build on past successes and enable new breakthroughs.

HST Multi-Cycle Treasury Programs

HST has offered the category of Treasury Program in every cycle since Cycle 11. Treasury Programs are large-scale proposals that address complex, high-impact scientific issues, providing enhanced datasets that are of lasting value to the broader astronomical community. Over the past 7 cycles, the HST TAC has accepted 12 Treasury Programs. The programs range from detailed investigations of the kinematics and chemistry of Eta Carinae and maps of the Orion Nebula, to surveys of the Coma galaxy cluster and deep imaging of the GOODS and COSMOS fields.

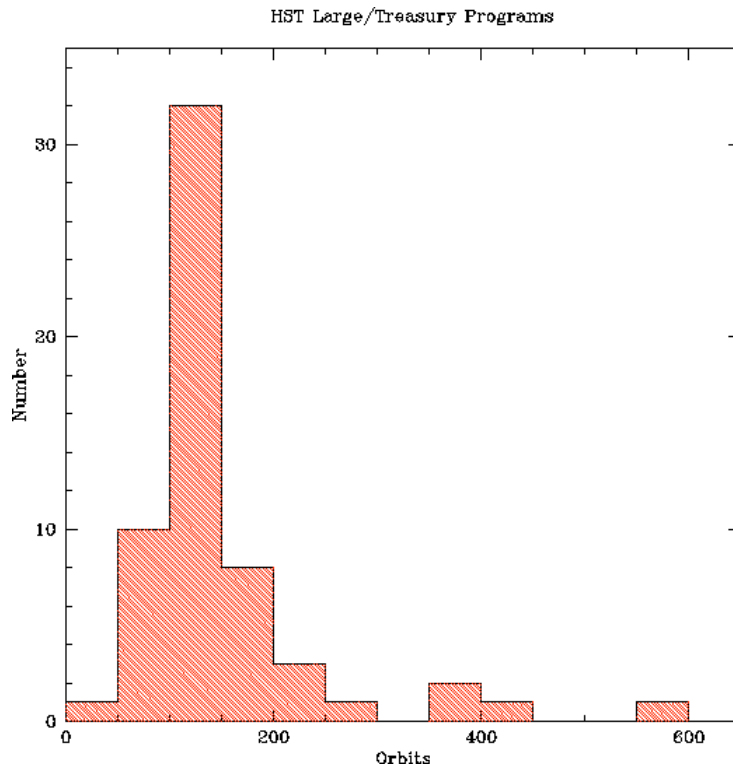


Figure 1 Size distribution of HST Large and Treasury programs

The typical Large or Treasury Program allocated time on HST requests between 100 and 200 orbits (the median value is ~130). The ACS Nearby Galaxy Survey, PANS, GOODS and COSMOS are notable exceptions, with 295, 420, 398 and 590 orbit allocations, respectively. We are interested in determining the potential for additional larger-scale, scientific projects. Those programs should address issues that cannot be accomplished within the time allocations currently available for Large and Treasury Programs. They should require time allocations of at least 400 orbits, and could require over 1,000 orbits.

There are no restrictions or pre-selection of science topics. We encourage submission of ideas for **both** imaging and spectroscopy programs. As Treasury programs, the MCT Programs would have to meet the general guidelines outlined in Section 3.2.6 of the Cycle 16 Call for Proposals, with the additional stipulation that the data would have no proprietary period, and would therefore be immediately accessible to the wider astronomical community.

If Multi-Cycle Treasury (MCT) Programs are implemented, we anticipate issuing a Call for Proposals in early 2009, with proposals due in April/May of that year. This will allow potential proposers to take full account of the performance of instruments available on the post-SM4 HST. The MCT call for proposals would be separate and distinct from the standard Call for Proposals for Cycle 18, which will be issued in late April 2009, with a proposal deadline of late September.

If the MCT Program is implemented, proposals will be assessed by a dedicated MCT Time Assignment Committee, which will meet in July 2009. The MCT TAC will be permitted to recommend the rejection of all proposals if, in their judgment, none merit allocation of this large number of HST orbits. They could also recommend reduction in time from that requested, if such were strongly justified scientifically. However, the general intent would be for them to recommend implementation of 2-3 MCT programs for the full time requested.

If the MCT Program is implemented, we anticipate allocating 2,000 orbits to the program. The time allocated will be distributed over the last 3-4 months of Cycle 17 (150 to 200 orbits) and through Cycle 18 and 19. Up to 600 orbits will be subsidised from Director's Discretionary time. The remaining orbits (up to 1200) will be taken from the GO allocations in Cycle 18 and 19, drawn predominantly from the time currently set aside for Large and Treasury Programs. MCT programs should therefore have relatively little impact on the number of small and medium programs allocated in those cycles.

Call for White Papers on HST Multi-Cycle Programs

We solicit brief white papers from the community of maximum length 3 pages describing science projects that require an HST Multi-Cycle Treasury Program. The white papers should summarise the anticipated science objectives conveying a sense of their import, urgency and timeliness. The white papers should explain why an MCTP is needed to accomplish these objectives (explaining why they can not be achieved under existing Large/Treasury programs). Finally the white paper should provide a preliminary assessment of feasibility - via calculations or simulations showing that the required sensitivity, spatial or spectral resolution, signal to noise, or other appropriate parameters can be acquired.

THE DEADLINE FOR THE SUBMISSION OF WHITE PAPERS IS NOVEMBER 30 2007.

The white papers should assume that the readers are knowledgeable and should not devote time or space to a lengthy introduction, background, or other unnecessary information. The purpose of these white papers is to provide examples of science so compelling that the establishment of an HST MCTP is warranted. If you are aware of any special observing constraints required for your conceptual program, please outline those constraints in your white paper.

If you are opposed to the establishment of this type of program, you may also submit a white paper describing the science that you envision being adversely impacted by an MCT Program.

These white papers are neither proposals nor the equivalent of letters of intent. You are not required to submit a white paper in order to be eligible to propose an HST MCTP if the program is eventually established. However, we strongly encourage you to submit a white paper with your best ideas if you are interested in our establishing an HST MCT

Program. Our decision on whether or not to establish the MCTP will be based primarily on our assessment of the merit of the science described in these white papers.

Following the example of the Chandra Observatory, the white papers will be reviewed by a small advisory committee, comprising scientists who have agreed not to participate, as PI or Co-I, in any potential HST MCT Programs. The team will include two members of the STScI Science Policies Division – Neill Reid, the Division head, and former director Bob Williams – together with two external representatives of the broader astronomical community, Professor Malcolm Longair (Cambridge) and Professor Brad Peterson (Ohio State). We emphasise that the goal of the review is a recommendation on whether or not there is a scientific justification for establishing an MCT Program, *not* a relative ranking of the science topics discussed in the white papers.

All projects and ideas included in the white papers will be held in strictest confidence. The committee will make its recommendation to the Director within 6 weeks of the white paper deadline. A decision whether or not to implement the MCT program will be made by late January 2008, well in advance of the Cycle 17 proposal deadline.

If the Director decides to implement MCT Programs, the Science Policies Division will develop a formal set of guidelines for the program. The guidelines will be posted, reviewed with the STUC, and eventually submitted to NASA for formal concurrence to proceed.

White Paper Submission Process

White papers should be submitted as pdf files via e-mail to:

mctp@stsci.edu and copied to Neill Reid (inr@stsci.edu)

Each submission will be acknowledged within 3 days. If no acknowledgement is received within that time period, please inform us via e-mail.

Questions about this notification should be addressed to mmountain@stsci.edu, copying inr@stsci.edu.