

HST Multi-Cycle Treasury Programs

Neill Reid
Head, Science Mission Office

Rationale

SM4 is the last shuttle servicing mission to HST

- A successful SM4 will give HST its most powerful suite of instrumentation
- Instruments don't last forever → <4 years per string?
[ACS & STIS will be single-string instruments]

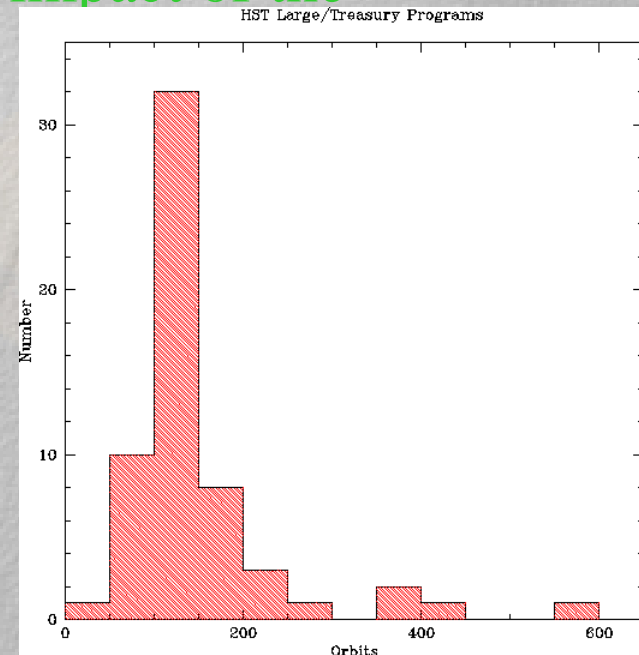
→ Our goal is to maximise the scientific impact of the new HST

Past Large/Treasury programs

- Median size ~130 orbits
- 4 programs > 300 orbits

MCT programs provide an avenue for larger allocations than comfortably fit within the standard process

STUC Meeting
13 Apr 2010



Timeline

- Call for white papers issued on 15 October, 2007
 - Projects that require >400 orbits
- Deadline of 22 November 2007
 - 22 submissions received
- Reviewed by *ad hoc* committee
 - Longair, Peterson, Williams, Reid
 - Recommendation to proceed
 - Director concurs
- Program Announced to the community on 17 January 2008

Multi-Cycle Treasury program: Statistics

- Non-binding NOIs due by August 7
 - 22 received
- Call for Proposals issued on August 13
 - >450 orbits
 - ACS, WFC3, COS, STIS, FGS – not NICMOS
 - Proposal must address high impact science question(s)
 - Up to 750 orbits/cycle (500 GO + 250 DD) for Cycles 18 & 19
 - Option to extend to future cycles
 - Data are non-proprietary
- Call for Proposals issued on August 13
- Phase I deadline: November 18
 - 39 proposals received for 26,801 orbits
 - Oversubscription of 17:1 for nominal 2-cycle allocation
 - 39 PIs + 746 unique co-Is
- Proposals distributed to MCT TAC by Thanksgiving

Proposal Categories

Prop	Orbits	Category
2	1015	AGN/Quasars
1	540	Cool Stars
11	7437	Cosmology
5	3007	Extra-solar planets
2	1090	Hot stars
1	1163	ISM & CS matter
6	4469	QSO abs. lines & ISM
5	3869	Resolved stellar pops
1	490	Solar system
5	3741	Unresolved stellar pops

MCT TAC

TAC members were selected to provide a broad range of scientific expertise:

Chair: Suzanne Hawley

Members: Roger Davies (videocon), Daniel Eisenstein, Ken Freeman, Christine Jones-Forman, Greg Laughlin, Mario Mateo (STUC Chair), Jim Pringle

None of the TAC members was involved in an MCT proposal

Three additional scientists were asked to serve as external reviewers:

Grades and comments for proposals

Not present at the TAC meeting itself, but provide supplementary expertise

Only one reviewer (Bob Williams) provided input → folded in with preliminary grades for triage

Preliminary grades submitted by 29 December 2009

TAC meeting held at the Inn at the Colonnade, January 8 & 9 (Friday & Saturday)

Most MCT TAC members did not visit STScI

Addenda

TAC Meeting attended by Matt Mountain, Ken Sembach & Neill Reid (STScI);
Mal Niedner & George Sonnenborn (HST Project);
Logistical support from Brett Blacker & Darlene Spencer (STScI).

As with any time allocation on HST, the TAC is advisory to the STScI Director, who is formally designated as the allocating official by NASA.

One third of the allocation is Director's Discretionary time

Program selection criteria

MCT specific criteria (from the CP)

- Does the proposal offer the potential of solving a key, high-impact scientific question or questions?
- Can the science goals **only** be achieved as part of a Multi-Cycle Treasury Program, rather than through the standard HST time allocation process?

An additional criterion

- What is the legacy value of the program dataset?

Each TAC member should weigh these criteria as they believe is most appropriate

What do we want from the TAC?

The MCT call may be a unique opportunity and the MCT TAC has broader discretion to advise the STScI Director

That advice includes:

1. A rank ordered list of the top 5-6 MCT proposals
2. Comments on which science areas require MCT-scale programs for advancement
3. Suggestions of more nuanced implementation schemes
 - Adjustment/combination of similar proposals
 - Science areas that might profit from more technical investment and/or exploration

TAC Conclusions

- TAC identified six key science areas:
 - Legacy observations of galaxy clusters (*)
 - Resolved stellar populations in nearby galaxies (*)
 - Galaxy assembly and deep near-infrared imaging surveys (*)
 - Probing dark energy through high red-shift supernovae surveys (*)
 - Exoplanet research
 - UV observations of the ISM/IGM
- Five proposals rated as MCT science from 4 science areas (*)
 - Proposals in other areas better suited to standard Large/Treasury
 - Galaxy assembly/supernovae searches identified specifically as areas where there was the potential to enhance the science return by merging proposals

Recommendations

- Four proposals were identified for implementation as 3 science programs
 - “Through a Lens, Darkly – New constraints on the fundamental Components of the Cosmos”: A multicolor (14-band) imaging survey of 25 galaxy clusters (M. Postman, STScI) 524 orbits
 - “A Panchromatic Hubble Andromeda Survey”: UV/optical/near-IR imaging of one quadrant of M31 (J. Dalcanton, U. Washington) 828 orbits
 - Modified & reduced from original submission
 - A deep near-infrared survey: WFC3 IR imaging of multiple fields in a tiered structure to probe galaxy assembly, coupled with a high redshift supernova survey (PI: S. Faber, UCSC; co-PI: H. Ferguson, STScI) 902 orbits
 - Combination of two MCT programs
 - PIs of the individual proposals were provided specific guidelines on how to merge the programs
 - Merged proposal will be reviewed for consistency with the guidelines by STScI Director & MCT TAC Chair
- All data taken for these programs are non-proprietary

Ratification

- Full report submitted by TAC Chair
 - Report circulated to STIC Chair, AURA Board Chair & NASA HQ
- Implementation plan circulated to TAC for concurrence
 - Several supportive comments received, no objections
- Implementation plan circulated further for comment
 - HST Project
 - STIC Chair, AURA Board Chair, {STUC Chair on TAC}
 - NASA HQ (J. Morse & E. Smith)
- Given full concurrence, Director contacted successful PIs
- Results released to the community on HST website in late January
 - Phase I proposals included only partial information on proposed observations (consistent with other Treasury submissions)
 - Each program submitted an extended abstract, providing basic observing structure; information posted by February 16th
 - Programs are developing their web sites

Schedule

- Phase II proposals due by late-April
 - Details available for Cycle 18 TAC
 - MCT proposals will have priority in duplications with Cycle 18 programs
- Observations will be scheduled over at least Cycles 18, 19 and 20
 - Scheduling constraints may push some observations to Cycle 21, especially for M31 proposal