The HST TAC Process in Cycle 28 and Beyond

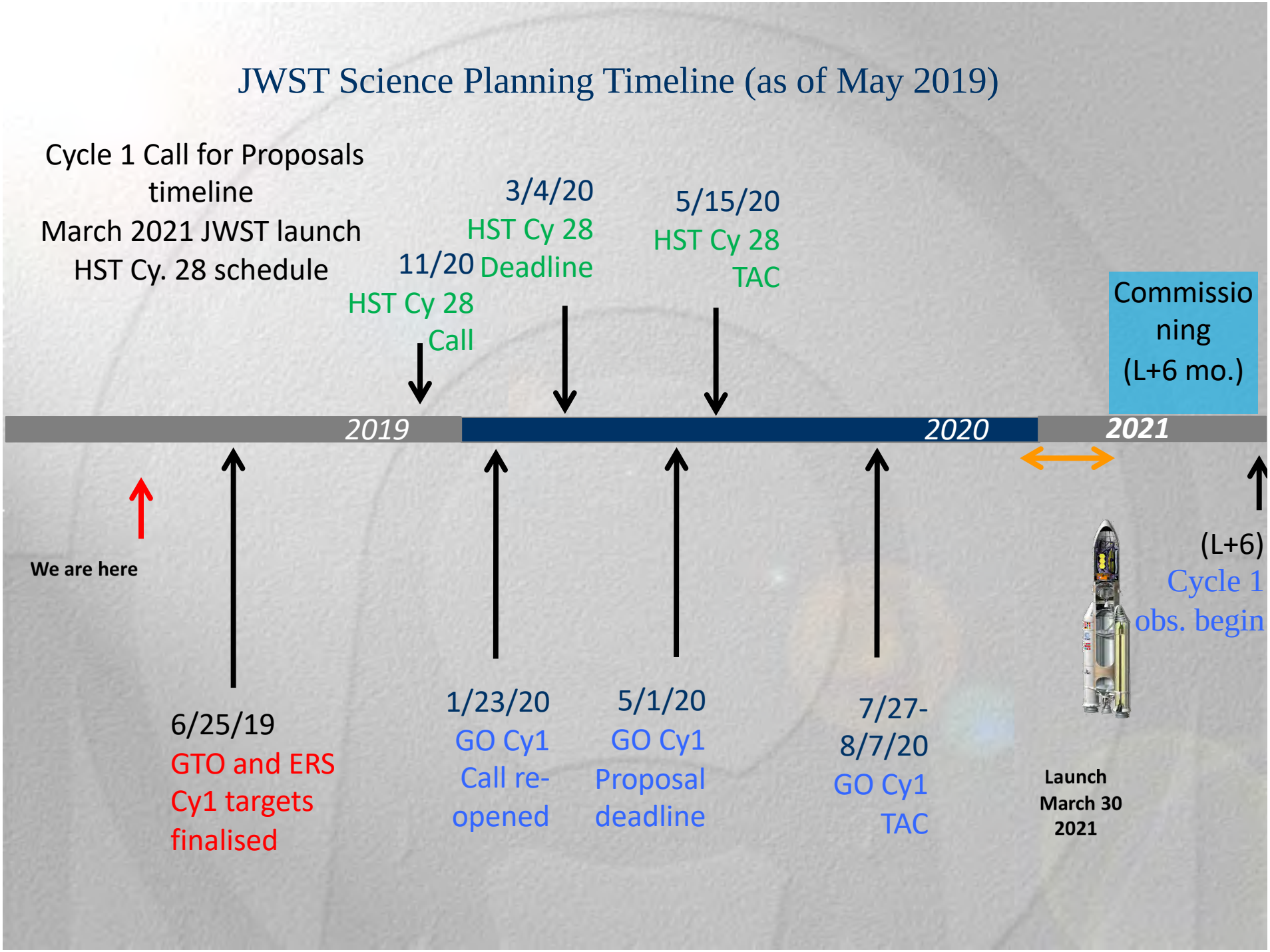
13 May 2019

Context

- Peer review is the standard process to select observing programs.
- This work requires substantial individual effort and is a significant drain on community resources.
- With HST and JWST operating in parallel, a better way to distribute the workload is needed.
- The primary goals in developing a revised proposal review process are to
  - reduce the overall level of work for individual members of the community;
  - reduce the scale of the face-to-face TAC meeting;
  - continue to minimize the potential of introducing bias;
  - reduce the workload for STScI staff.

- *It is paramount that any changes do not undermine community confidence in the integrity of the review process.*

JWST Science Planning Timeline (as of May 2019)



Baseline: Elements of the Current Process

Annual TAC review

- HST proposals are grouped into seven broad scientific categories:
  - Solar System, Planets and Planet Formation, Stellar Physics, Stellar Populations, Galaxies and the IGM, Massive Black Holes and their Hosts, Cosmology.
- Small (<35 orbits) and Medium (35 to 74 orbit) observing proposals and regular Archival proposals are graded by 15 topical panels.
  - Orbit allocation based on proposal/orbit pressure
  - Specific number of mediums/panel (usually 1)
- Large and Treasury proposals and Archive Legacy proposals are reviewed by the super-TAC.

Mid-cycle review

- Small proposals sent to 3-5 expert external reviewers
  - ≤ 10 orbits Cy 23-26, ≤ 15 orbits Cycle 27+
  - Different reviewers for each proposal, absolute grading system for consistency
  - Single ranked list (all topics), cutoff set based on averaged grades (generally ≤ 2)

Revised Process (1)

- Hybrid approach: dividing proposals between external review and on-site discussion.
  - Enables consolidation of the recruitment activities for the regular cycle, Mid-cycle, and DD reviews.
- External reviewers will provide the assessment and grading of a subset of Small proposals including Snap, AR, Mid-cycle and DD.
  - **These proposals are ranked based solely on the external reviews.**
- One-site panels reviews for remaining Small proposals, Medium, AR Legacy, Large and Treasury
  - **These proposals are ranked solely by the on-site panels**.
- Exception – all Solar System proposals will be reviewed by the on-site panel (due to the small proposal pool)

Revised Process (2)

Externally reviewed proposals:

- External reviewers would be asked to sign on for a two-year period, in which they would review no more than 25 (tbc) proposals each per year (regular cycle, mid-cycle, DD combined).
- Regular cycle proposals will be grouped by science topic and sent to 4-5 specialist external reviewers
  - Reviewers grade on an absolute system (excellent → poor)
  - Grades are collected, averaged and ranked list compiled for that topic
  - Orbit allocation by topic based on proposal/orbit pressure
- Highest ranked proposals would be marked as recommended for acceptance
  - "Accepted" proposals made available to panel chairs prior to the on-site meetings

Revised Process (3)

On-site panels

- There are seven on-site panels, with 9 members, including Chair and co-Chair.
- Each panel is allocated a specific number of slots for Medium proposals and an orbit allocation based on the proportional proposal/orbit pressure.
- After completing their review, panels can cross-reference against the externally-reviewed “accepted” proposals to check for duplication/science balance
  - Panel chairs/STScI staff have forewarning on potential conflicts
- The panel Chairs and co-Chairs, together with the TAC Chair and three At-Large member, constitute the on-site super-TAC that reviews Large/Treasury/Legacy proposals.
- No change to the review process for Medium proposals.
- No change to the super-TAC process.

Implementation

This approach is scalable, i.e., we can choose the balance between external reviews and on-site panel discussion

- Where do you draw the line between external reviews & on-site discussion?
  - How large a proposal "requires" in-person discussion?
- Consider Cycle 24 statistics
  - 891 GO, including 373 ≤ 10 orbits, 519 ≤ 15 orbits
  - 36 SNAP, 90 AR, 64 Theory, 13 Legacy AR
  - 100 Mid-cycle proposals, 50 DD proposals

Existence proof – set the cutoff at ≤ 15 orbits

- External reviews
  - 859 proposals with GO + AR + SNAP + Theory + Mid-cycle + DD
  - 4 reviews/proposal ➔ 3460 reviews
  - 20-10 proposals/reviewer ➔170 to 350 reviewers
- On-site panel reviews
  - ~340 proposals for 7 panels or ~50 per panel
  - ~60 proposals for the super-TAC

Schedule (TBC)

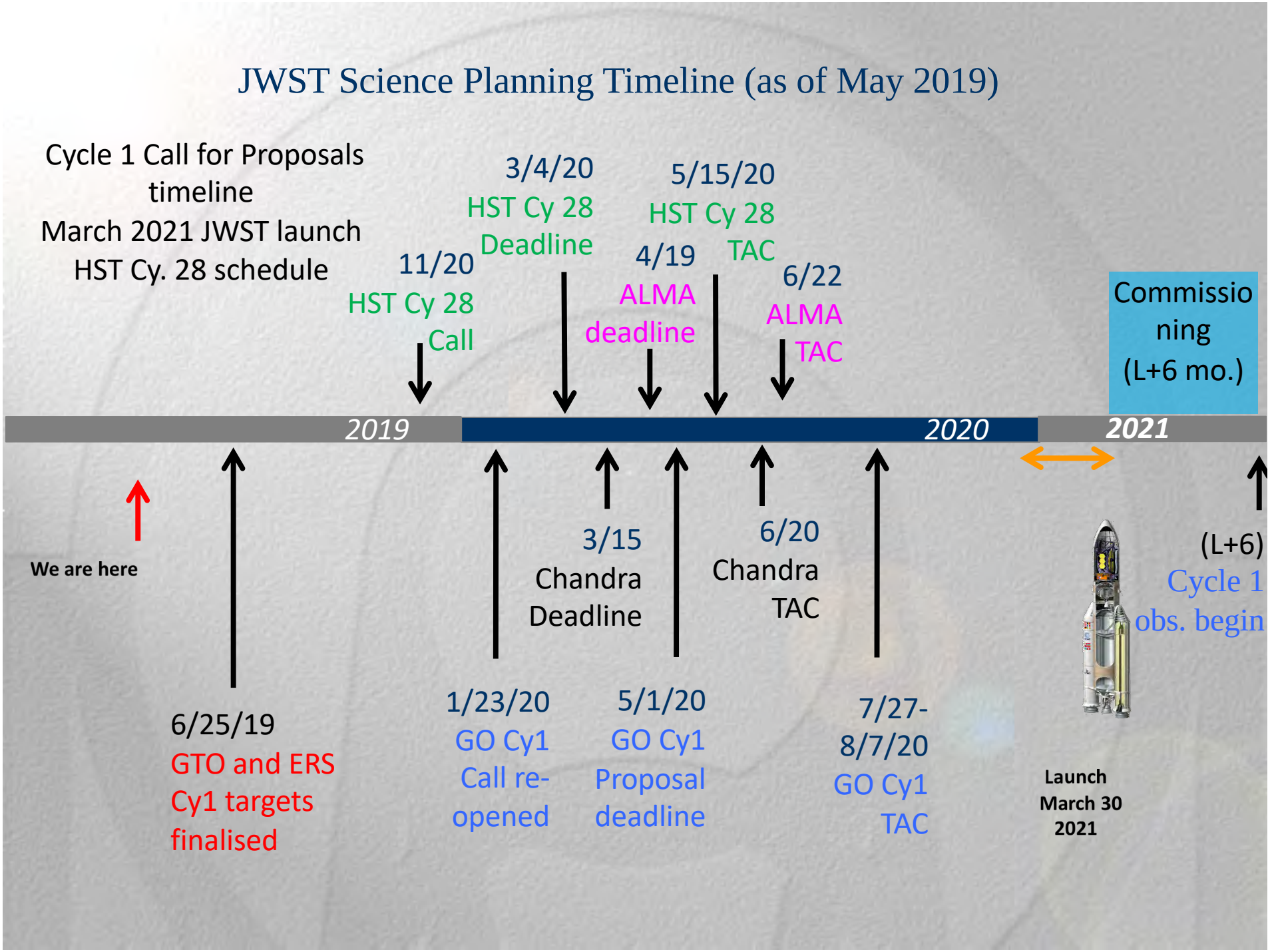
09/27/19 HST Cycle 27 Mid-cycle proposals #1
11/20/19 HST Cycle 28 Call released
01/17/20 HST Cycle 27 Mid-cycle proposals #2
01/23/20 JWST Cycle 1 GO CfP re-opened
03/04/20 HST Cycle 28 deadline
03/16/20 HST Cycle 28: Proposals to panels & reviewers
04/24/20 HST Cycle 28: Preliminary grades from panels; final grades from reviewers
05/01/20 JWST Cycle 1 GO proposal deadline
05/05/20 HST Cycle 28: Distribute triage lists
05/15/20 HST Cycle 28 TAC
05/20/20 JWST Cycle 1: Proposals to panels
05/27/20 HST Cycle 28: Notifications to PIs
06/30/20 HST Cycle 28; Phase II
07/26/20 JWST Cycle 1 TAC

Advantages and Challenges

- Reduces the number of panelists from ~150 to ~65
- The panel review and external review proceed in parallel
  - Balance point can be set *a priori* in the call or once proposals are in house
- Builds on experience with 4 years of Mid-cycle reviews
- Proposal numbers per panel are lower, reducing the workload for panelists
- Maintaining a standard pool of reviewers will simplify the selection process for mid-cycle & DD reviews
- No option for dealing with direct conflicts – but anonymizing proposals should obscure those conflicts to other panelists
- There may be reluctance by the panelists and reviewers to make a commitment for two years.

BACKUP

JWST Science Planning Timeline (as of May 2019)



Baseline: Elements of the Current Process (1)

Scientific Categories:

- HST proposals are grouped into seven broad scientific categories: Solar System, Planets and Planet Formation, Stellar Physics, Stellar Populations, Galaxies and the Intergalactic Medium, Massive Black Holes and their Hosts, Cosmology.
- Small (<35 orbits) and Medium (35 to 74 orbit) observing proposals and regular Archival proposals are graded by the panels.
- Large and Treasury proposals and Archive Legacy proposals are reviewed by the super-TAC.
- Each topical panel is allocated a number of orbits based on the orbit and proposal pressure, together with a specific number of Medium proposals; the orbit allocation can be used to support additional Medium proposals.

Baseline: Elements of the Current Process (2)

Panel Review:

- Proposals are assigned to 15 topical panels (incl. mirror panels), staffed by scientists from the community who participate in the face-to-face panel meeting.
- Each panel has10 members (incl. Chair) with a range of expertise. Panelists are assigned a subset of proposals for review. They undertake the following tasks:
  - Provide preliminary grades for all assigned proposals prior to the meeting. Those grades are combined and used to eliminate the lowest ranked proposals;
  - Review all remaining proposals where no conflict exists, discuss and grade at the face-to-face meeting; panelists lead the discussion on proposals where they are identified as the primary or secondary reviewer;
  - Review the final rank-ordered list and adjust, if necessary, to take into account the science balance;
  - Collate feedback comments for proposals where they are the primary reviewer.
- The panel chairs constitute a separate panel, chaired by the TAC Chair, which reviews Large, Treasury, and Legacy proposals following similar procedures.

Baseline: Elements of the Current Process (3)

External Reviewers:

- STScI has been using external reviewers over the past years for ranking Mid-cycle proposals.
- Each proposal is graded by four to five external reviewers with appropriate expertise.
- Each external reviewer grades a limited number of proposals, sufficient to provide perspective on the overall range, but not so many as to cause an undue burden.
- Grades are on an absolute scale (1 to 5) and involve the following:
  - Scientific merit and potential contribution to the advancement of knowledge in the field
  - Importance to astronomy in general
  - Confirmation that the science can only be done with Hubble
  - Urgency of performing the proposed observations
- Reviewers submit comments which are passed on to the proposers.
- Typically we receive about 60 proposals which are assigned to about 80 external reviewers for more than 400 reviews.