Science Policy

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SMO

Outline

- Mid-Cycle proposals
- HST 2020 initiatives
- Exoplanet Advisory Committee
- Proprietary periods
- HST & JWST in 2018
- TAC demographics
- Summary

Mid-Cycle Proposals

Mid-Cycle proposals

Announced in early August

Proposals are required to meet the following criteria:

- Could not have been submitted in the most recent standard call
- Scientifically urgent

In addition,

- Proposals are limited to requesting no more than 5 orbits;
- Observations should have minimal constraints to maximize scheduling flexibility;
- Observations taken for accepted programs will have a proprietary period of no more than 3 months;
- Proposers may apply for all available instruments. Proposals must be compliant with the technical restrictions described in the Cycle 23 Call for Proposals.
- Up to 200 orbits available for this program

Proposals rolled up for review twice a year

- October 1, aim to complete reviews by November 7
- January 31, aim to complete reviews by March 7

Mid-Cycle 23-1 response

- 46 proposals submitted by midnight, October 1
  - ~20 on October 1
  - Broad range of science topics
  - Total of 174 orbits requested

AGN	COS	CS	DEB	EXO	HS	IEG	ISM	RSF	RSP	SS	USP
5	6	1	2	12	4	4	1	2	1	3	4

- Proposals reviewed for compliance by Science Policies Group
  - One proposal identified as an extension of an existing proposal → reviewed by TTRB
  - One proposal for a transient → transferred to DD
  - Six proposals failed to explain why they could not have been submitted to Cycle 23
  - 38 proposals sent out for review

Mid-Cycle 23-1 review

- Reviewers drawn primarily from Cycle 22 or 23 TACs
  - Four reviewers per proposal
  - No more than 4 proposals per reviewer
  - 79 reviewers contacted, 22 declined
- Standard format for review

Please answer the following questions. Grades should be assigned on a scale of 1 to 5 (integer values only), where

- 1 = Excellent 2 = Very Good 3 = Good 4 = Fair 5 = Poor

- What is your assessment of the scientific merit of the proposed and its potential contribution to the advancement of scientific knowledge
  - Grade:
- What is your assessment of the program's overall importance to astronomy?
  - Grade:
- What is you assessment of the scientific urgency of the observations?
  - Grade:
- Can the program science goals be achieved only through observations with Hubble Space Telescope?
  - Yes/No
  - If No, please specify the alternative source of observations.

- Please provide brief feedback on the main factors of the proposal that support the grades selected above:

- Currently collating the reviews

HST 2020: Initiatives

Call for white papers

Brief white papers were solicited from the community describing initiatives that will enhance significantly Hubble's scientific legacy from the next 5 years of observations. We received a total of 20 white papers by the March 4th deadline

- Wide range of science topics

Some common themes:

- More scope for "riskier" programs
  - Generally in terms of science return e.g. longer-term programs
- Opportunities for larger-scale programs
  - 12/20 white papers mentioned this theme
- Support for future missions
  - JWST called out specifically, but not exclusively
- Time domaine programs

Review & recommendations

White papers reviewed in consultation with the STUC (Mike Cushing & Jane Charlton)

➔ Three recommendations

- STScI should continue the UV initiative on HST, focused on wavelengths shortward of the atmospheric cutoff.
  - Included in Cycle 24 CP
- As part of the Cycle 24 HST Call, STScI should include an explicit call to the community for observing proposals that are in support of future JWST programs.
  - JWST Initiative in Cycle 24
- STScI should provide an opportunity for the community to submit very large proposals, with a particular emphasis on science topics that are unique to HST, including UV science.

Supporting observations for JWST

- Hubble offers capabilities at UV and optical wavelengths that complement JWST capabilities
  - Some science goals may be achieved only by combining HST & JWST observations
    - But Hubble data alone may offer a limited science justification
  - Those goals may cover a broad range of science topics
    - Argues against creating a separate category of proposals with a specific pool of orbits
- We are implementing a JWST Initiative for Cycle 24
  - Available for all GO programs – not SNAP, AR & Theory
  - Proposals within in this category must be tackling science questions that can *only* be addressed by combining HST and JWST observations
  - Proposals will be assessed on the science case for the joint program i.e. including both Hubble and JWST observations
  - No specific quota for any panel or the TAC

JWST Initiative

From the Cycle 24 Call for Proposals:

•The James Webb Space Telescope (JWST) will be launched in October 2018. JWST will offer extensive photometric and spectroscopic capabilities spanning the wavelength range 0.7 to 28 microns. Some science programs undertaken with JWST can be enhanced by, and may even require, additional observations. The JWST Initiative is designed to provide an opportunity to obtain observations with Hubble that complement and enhance the scientific impact of JWST observations. In some cases, Hubble observations are essential to achieving critical science goals for future JWST programs. Small (Section 3.2.1), Medium (Section 3.2.2), Large (Section 3.2.3) and Treasury (Section 3.2.4) GO Proposals can be identified as supporting the JWST Initiative. SNAP, Archival and Theory proposals do not qualify for this initiative.

•Proposers should use the Special Requirements section to describe the connection with specific JWST observations. If the Hubble observations are critical to the success of the future JWST program, the science goals of the full program should be described in the Scientific Justification, including an explanation as to why Hubble observations are deemed essential to achieve those goals. The panels and the TAC will consider the connection between the proposed Hubble and JWST observations as part of the review process. If the Hubble observations are deemed essential to achieving the overall science goals, the proposal will be assessed based on the science expectations for the full program including both Hubble and JWST observations.

•Proposers must check the JWST Initiative box in APT to identify whether their proposal qualifies for this initiative.

Very large programs - concept

Largest programs in recent cycles:

- Cycle 21: 230 orbits (Ayres: spectral library)
- Cycle 22: 160 orbits (Malhotra: FIGS)
- Cycle 23: 190 orbits (Coe: RELICS)

Clear disinclination to support very large programs by the TAC

Appetite for larger programs (350 orbits+) within the community

Options:

- Multi-Cycle Treasury programs
  - Separate call & review
  - Multiple programs – long-term commitment
  - Distribute orbits over multiple cycles
  - Possible subsidy from DD time
- Incorporate with existing Large/Treasury program structure
  - Include within the Cycle 24 review, with explicit instructions to TAC
  - Limited number of programs, completed within 1-2 cycles
  - Possible subsidy from DD time

Very large programs - implementation

We will encourage submission of Very Large (>350 orbit) Treasury Programs in Cycle 24

- Submissions will be identified as Treasury Programs & reviewed by the Cycle 24 TAC
  - Proposers must describe the impact on the scientific return if the program is only completed partially
- The TAC will be instructed to identify at least one for implementation
  - Caveat: TAC has the option of flagging all very large programs as not suitable for execution
- Program orbit allocation will be split equally between Cycle 24 and Cycle 25
  - Orbits drawn from the Cycle 24 & 25 Large/Treasury pools
  - Subsidy from Director's Discretionary Time might be available
  - STScI may provide support for the production of higher-level data products

Very large programs - implementation

What's new

•Very Large Treasury proposals: STScI encourages the community to submit proposals for very large Treasury programs, requesting at least 350 orbits. Those proposals should be submitted as Treasury proposals, requesting orbits in Cycle 24. They will be reviewed by the TAC with the aim of identifying at least one program for support. The orbit allocation for very large Treasury programs will be shared between the Cycle 24 and Cycle 25 GO Large/Treasury allocations, with a possible additional subsidy through Director's Discretionary Time.

Section 3.2.6

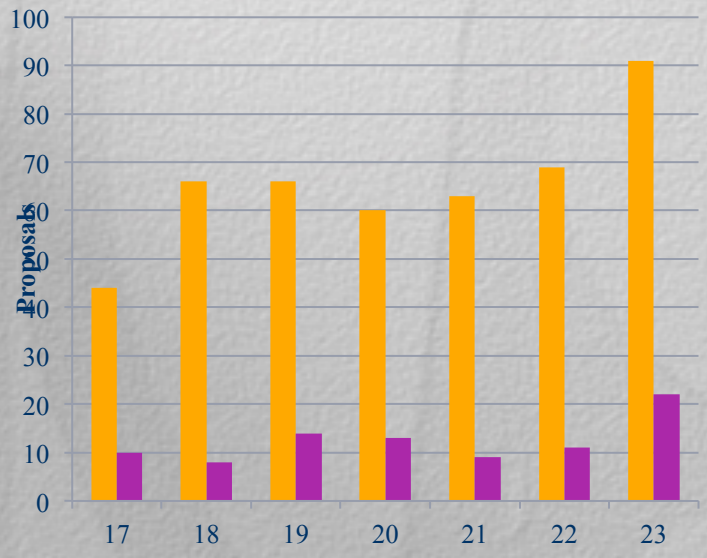
Add a third bullet to the "additional characteristics" section on page 20

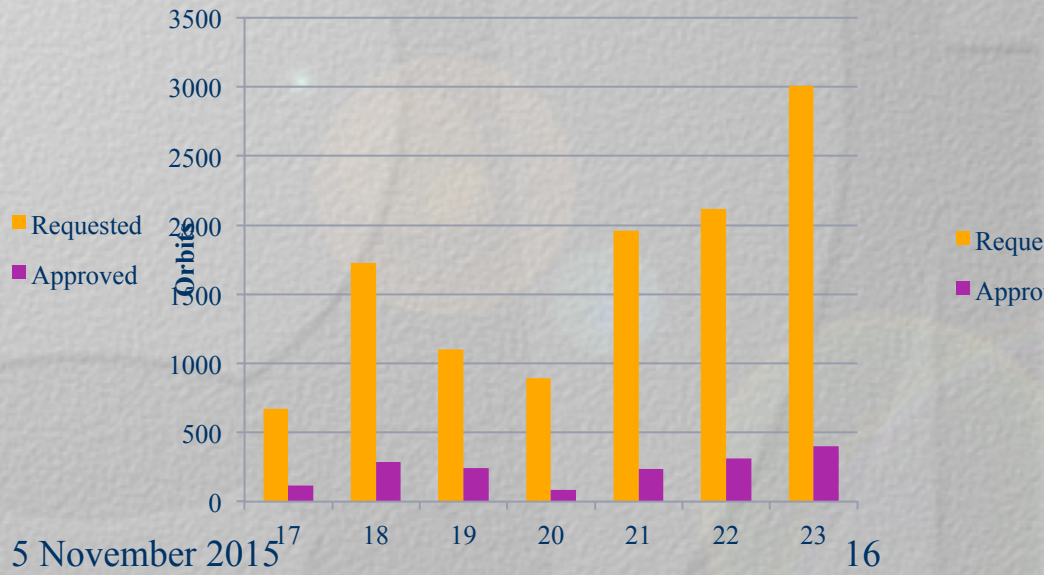
•In Cycle 24, STScI encourages the submission of very large Treasury proposals, requesting at least 350 orbits. Those proposals will be reviewed by the TAC with standard Treasury proposals, with the aim of selecting at least one program for implementation. The orbit allocation for that program will be shared between the Cycle 24 and Cycle 25 GO Large/Treasury allocations, with a possible additional subsidy through Director's Discretionary Time. The scientific justification for very large Treasury proposals must include a discussion of the impact of the science goals if the program is terminated prematurely.

Exoplanet Advisory Committee

Context

Exoplanet observations have played a major role in HST's science program over the last decade. Over the years, the proposal pressure for exoplanet observations has increased significantly.





Charter

The Exoplanet Advisory Committee is charged with the following primary tasks:

- Review the evolution of HST usage by the exoplanetary community and match against factors such as changes in the time allocation process and in instrument capabilities;
- Solicit input from the community on the role that HST can play in exoplanet science and on methods for allocating observing programs;
- Investigate potential mechanisms to coordinate HST observational programs with priorities among the exoplanet science community;
- Identify key exoplanet observations that should be obtained by HST for legacy science and/or in preparation for JWST.

The committee will summarise its conclusions in a report to the Director and an associated presentation to the STUC in early 2016.

Membership

Chair:

Drake Deming (U. Maryland)

Members:

Zachary Berta-Thompson (MIT)
Nicolas Cowan (McGill)
Jonathan Fortney (UCSC)
Eliza Kempton (Grinnell)
Heather Knutson (Caltech)
Leslie Rogers (Chicago)
David Sing (Exeter)

Anticipate virtual meetings, starting in mid-November

Default Proprietary Periods for HST Observations

Proprietary time

- What is the purpose of proprietary time?
  - Established to protect the intellectual property rights of the scientists who developed the proposal, competed successfully for observing time and implemented the scientific program.
  - Designed to give the proposal team a reasonable opportunity to reduce, analyze and publish their observations without jeopardy of their efforts being pre-empted by a competing team.
- What is the purpose of (inter)national observatories?
  - To support scientific endeavours within the community as a whole
  - To maximise the scientific return by maximising data access

The proprietary period set for observations made with international observatories represents a balance between the benefits to the proposal team and the benefits to the community as a whole

Proprietary time on HST

- Current defaults
  - 12 month proprietary time for Small/Medium
    - PIs can request shorter proprietary times
  - 3 months for Mid-cycle proposals
  - 0 months for Director's Discretionary Time
  - 0 months for Large programs
  - 0 months for Treasury programs
  - Proprietary time can be requested for Large/Treasury programs – justification is reviewed and approved/ rejected by the TAC

Improving Data Access

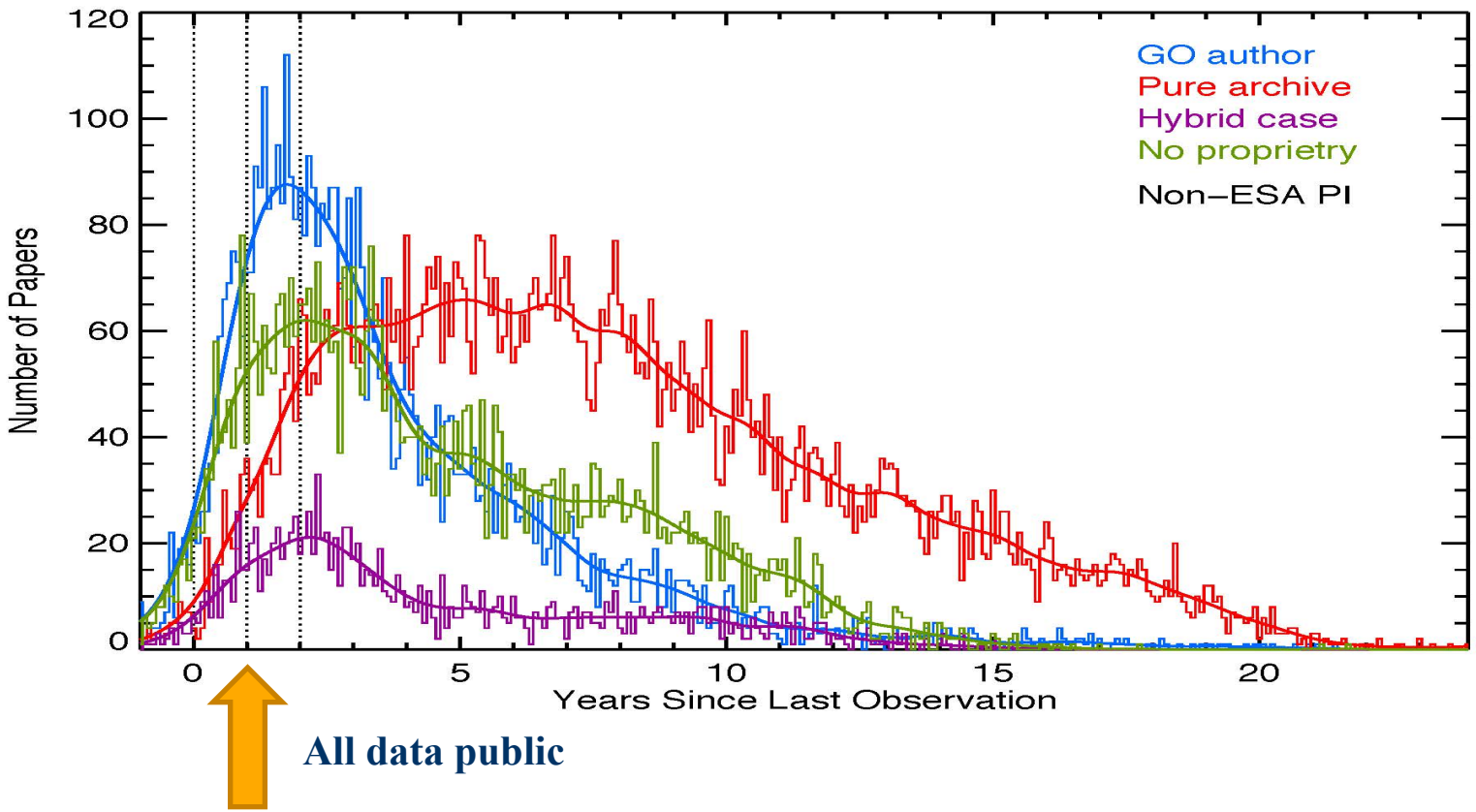
- HST is aging
  - We want to maximise the opportunity for the community to capitalise on HST observations.
  - A 12-month proprietary period limits community access
    - Cycle 24 proposal deadline is April 15 2013
    - Over half of the Cycle 22 observations (March-September, 2012) remain proprietary
    - Rolling TAC provides additional opportunities to respond to new discoveries from archival HST observations
- Other missions have taken action to reduce proprietary times in the late stages
  - Herschel moved from 12 months proprietary time in year 1 to 6 months in subsequent years, with a bridging scheme

Changing proprietary times

- Discussions on shortening proprietary time often leads to concerns about being "scooped" of science results
- What is the typical time between observation and publication for PI/co-Is?

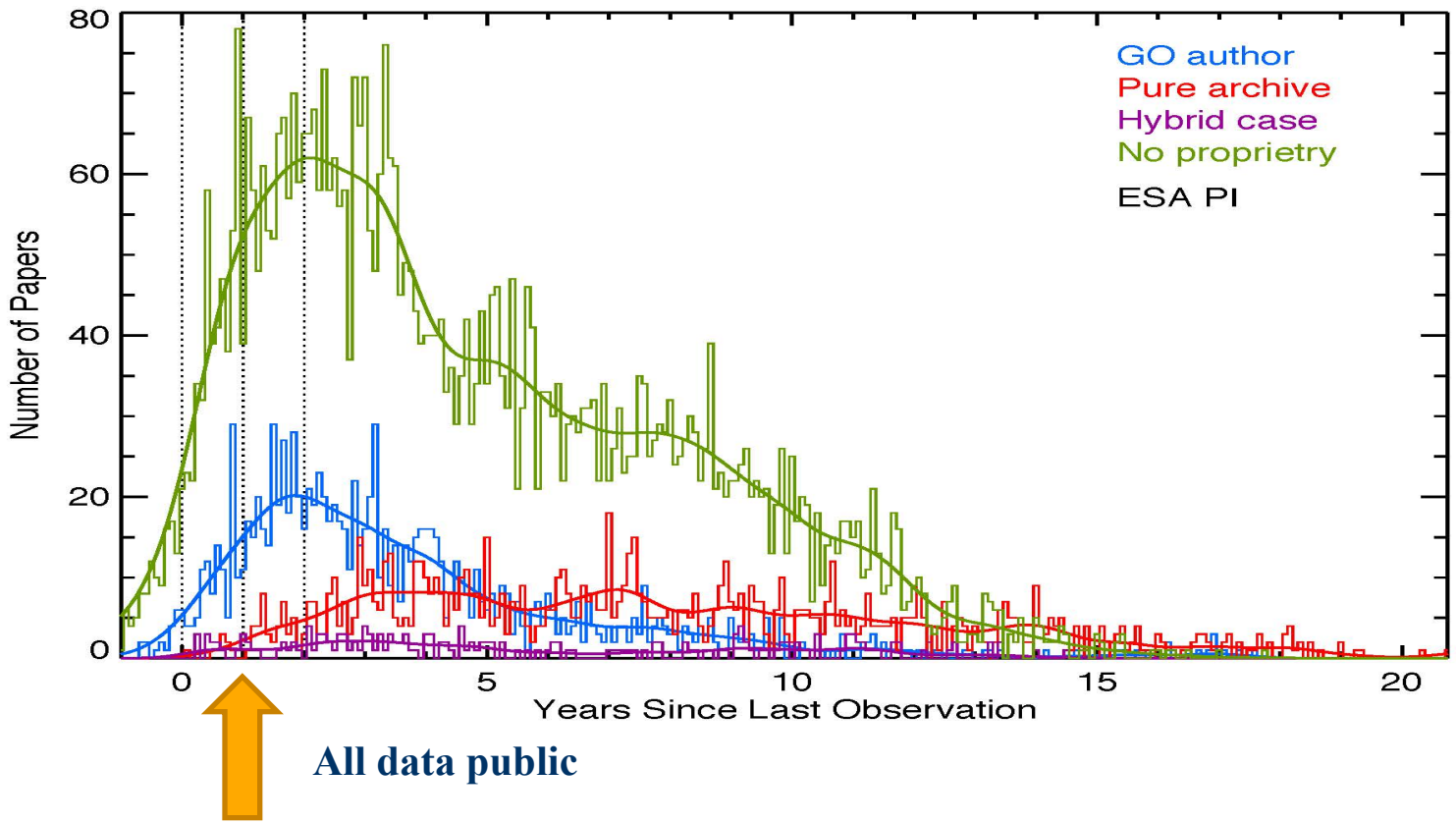
Publication lag (1)

~75% of GO-led papers are published after all data are public

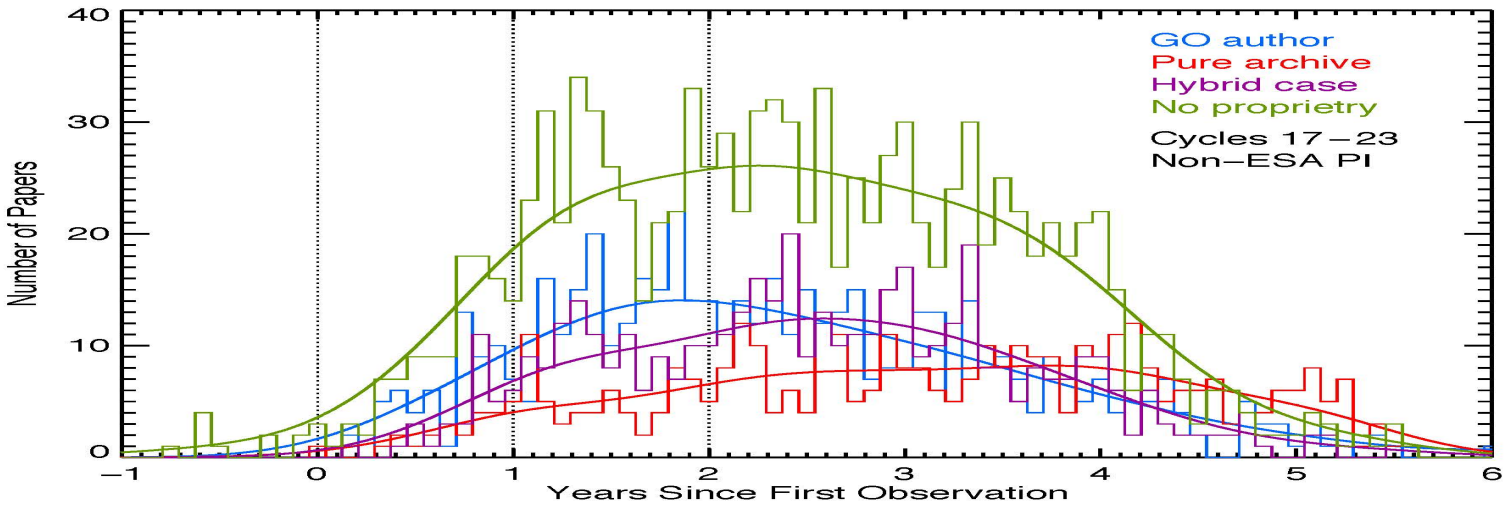


Publication lag (2)

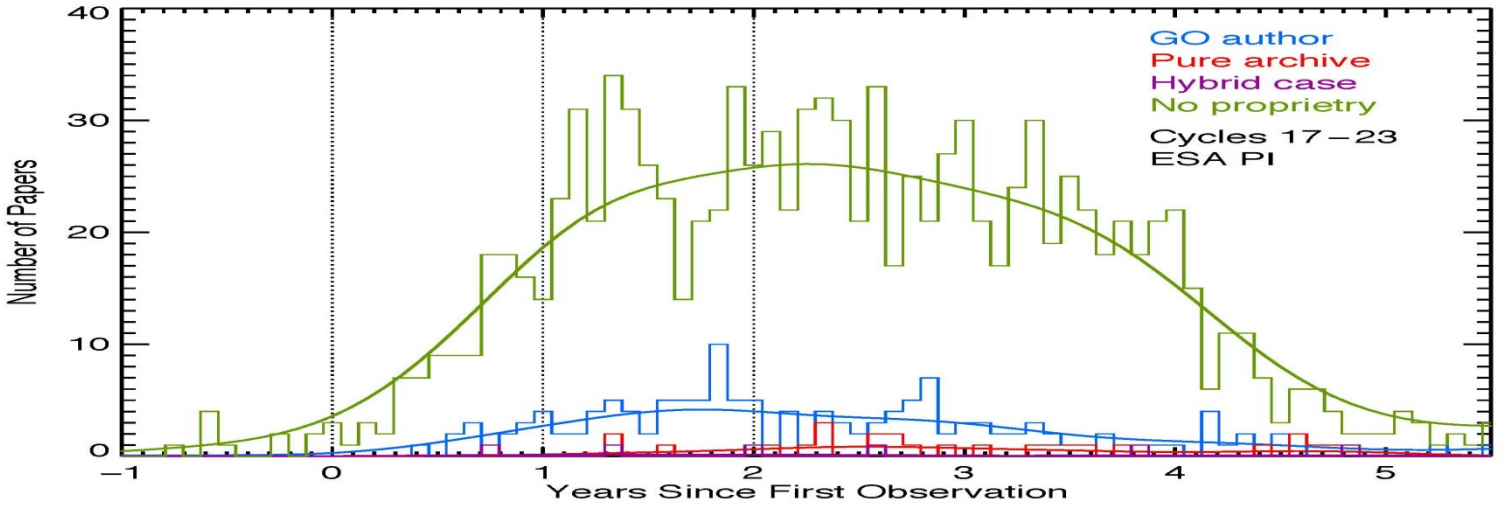
Similar profile for programs with ESA PI



Publication lag (3)



Same profile for recent cycles



Changing proprietary times

- Discussions on shortening proprietary time often leads to concerns about being "scooped" of science results
- What is the typical time between observation and publication for PI/co-Is?
- ~75% of papers are published after all observations are public
- ~60% are published more than 2 years after the last observation
- Same profile for programs with ESA or non-ESA PI

➔ Proprietary time doesn't protect all papers

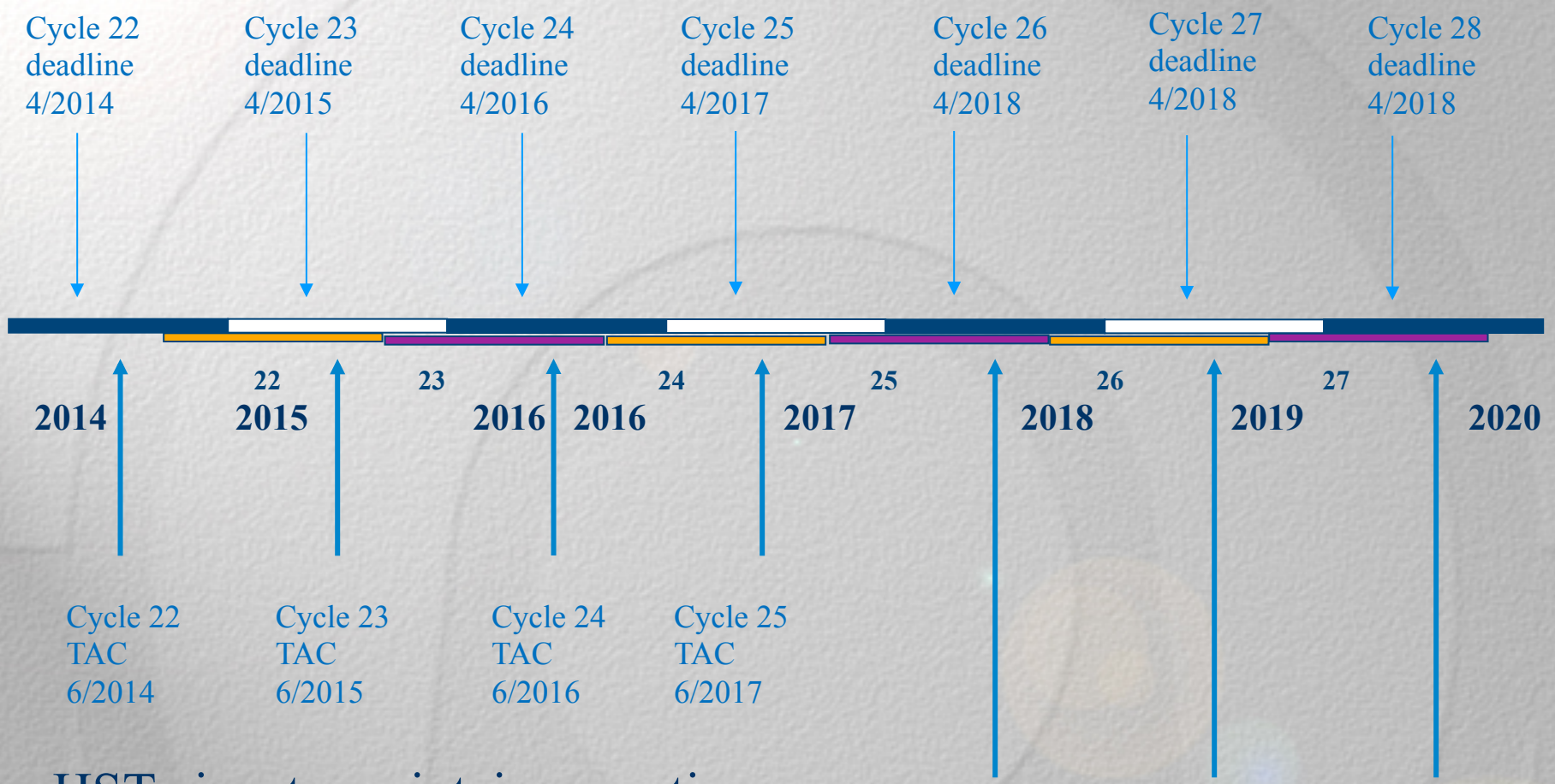
Hypothesis: proprietary time gives sufficient protection to allow the GO team to get a head start on data reduction and analysis

Actions

- Starting in Cycle 25, we will reduce the default proprietary period for Regular GO Programs to 6 months
  - Maintains an initial period of protection for the proposal team
  - Enables all observations taken in Cycle N-2 to be publicly available at the Cycle N deadline
  - 6 months of Cycle N-1 data will be available for archival programs in Cycle N
  - Proposers will have the option of presenting a scientific justification for a longer proprietary period, for review by the TAC

HST & JWST TAC processes 2018

Taking the long view

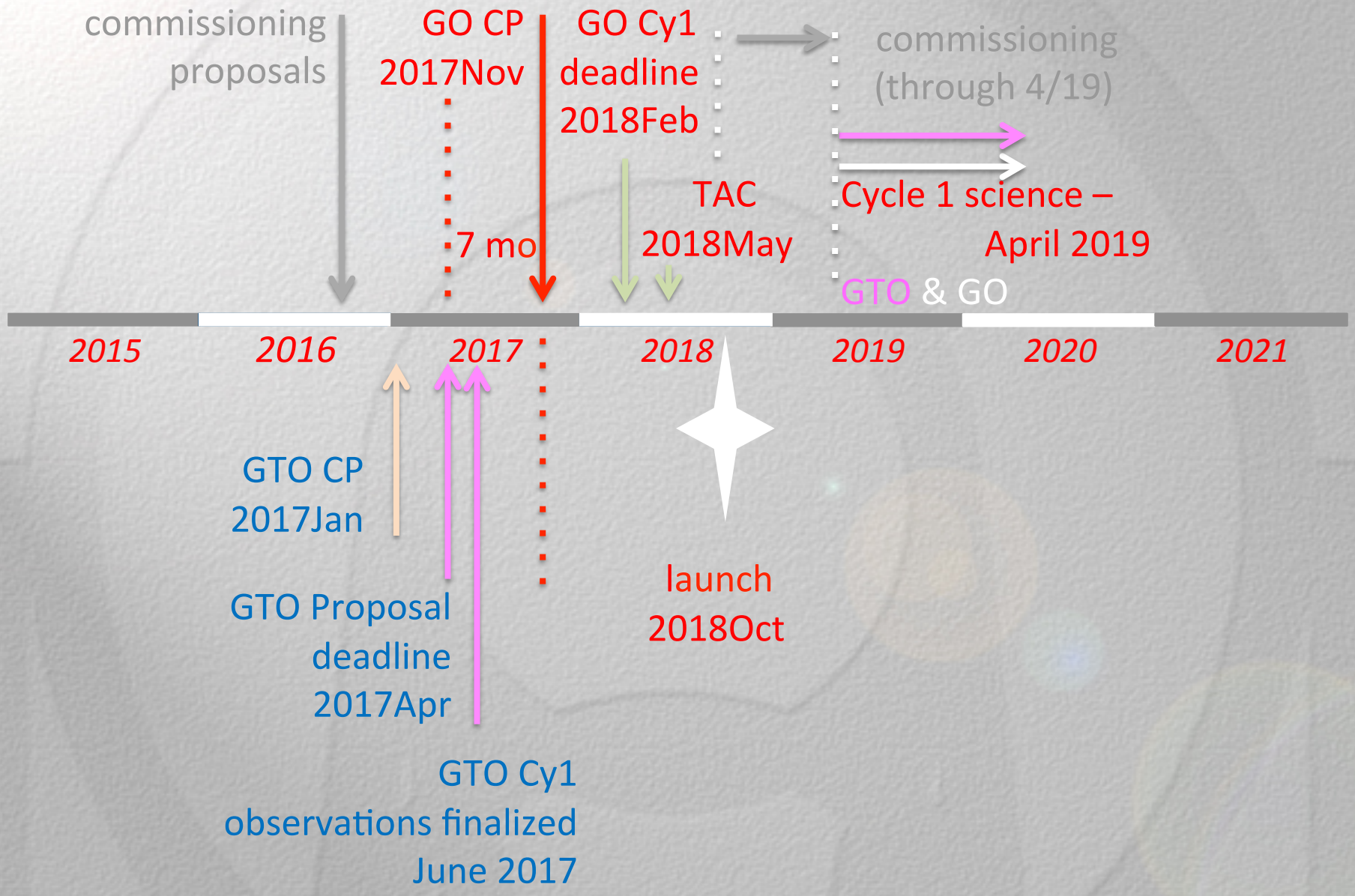


HST aims to maintain operations through 2020

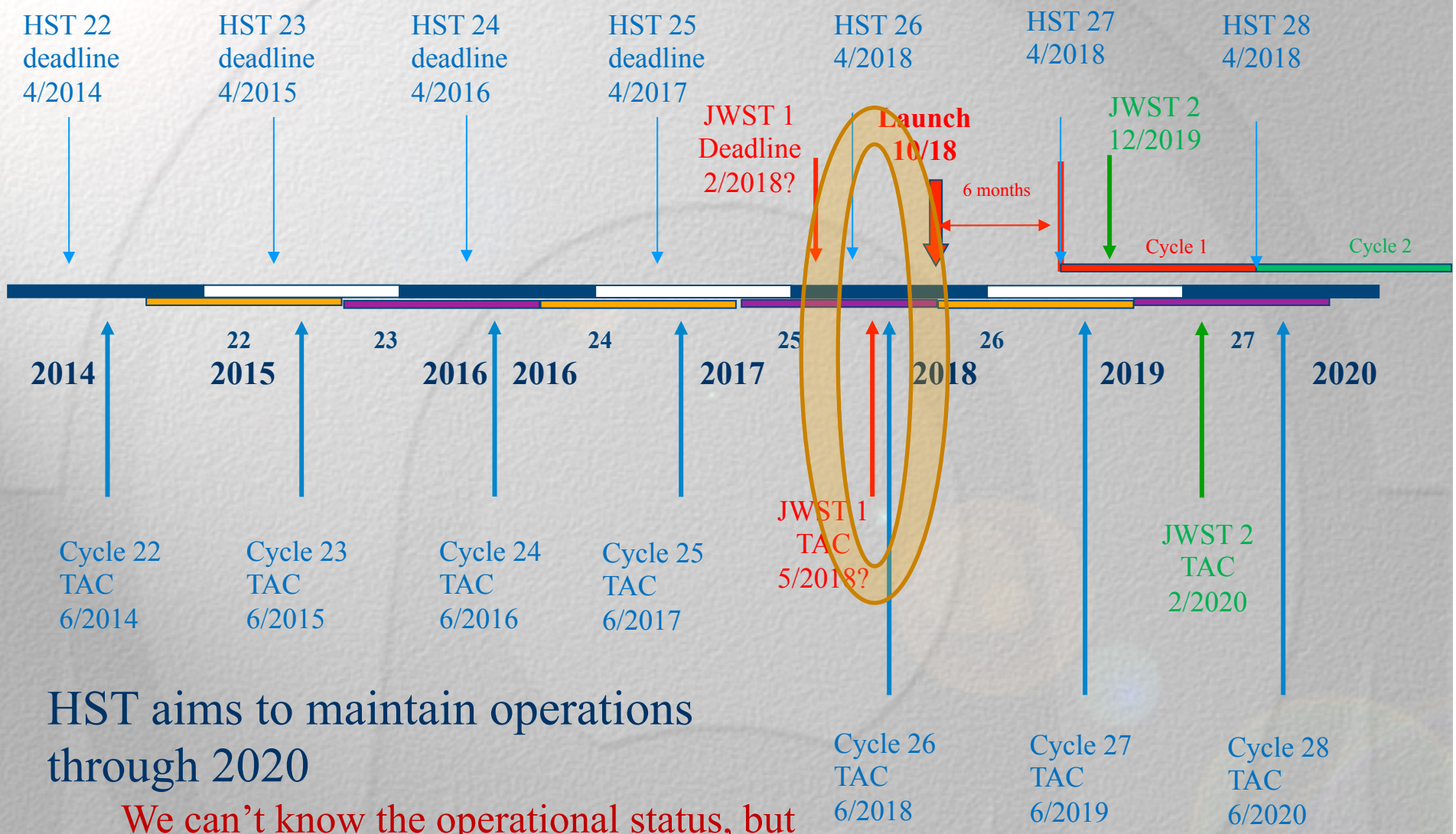
We can't know the operational status, but need to plan for a best case scenario

JWST Science Planning Timeline

(draft schedule as of October 2015)



Now add JWST

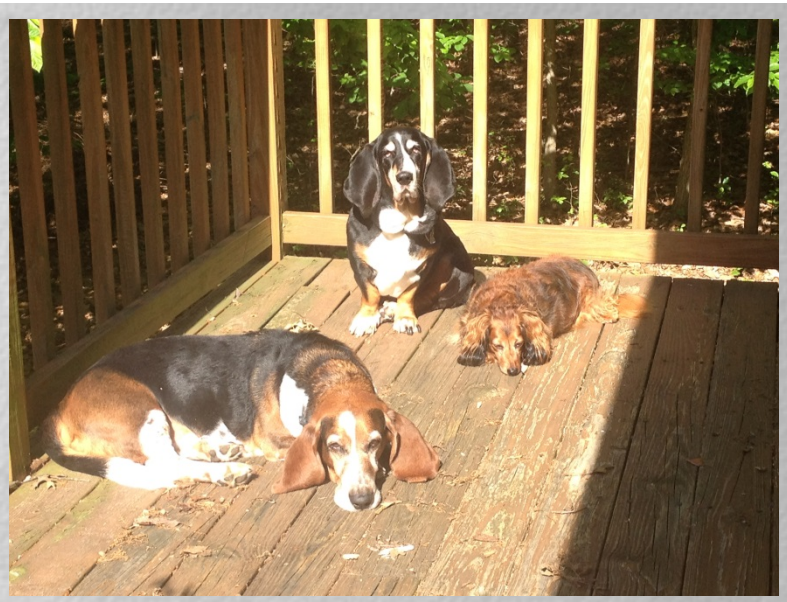


HST aims to maintain operations through 2020

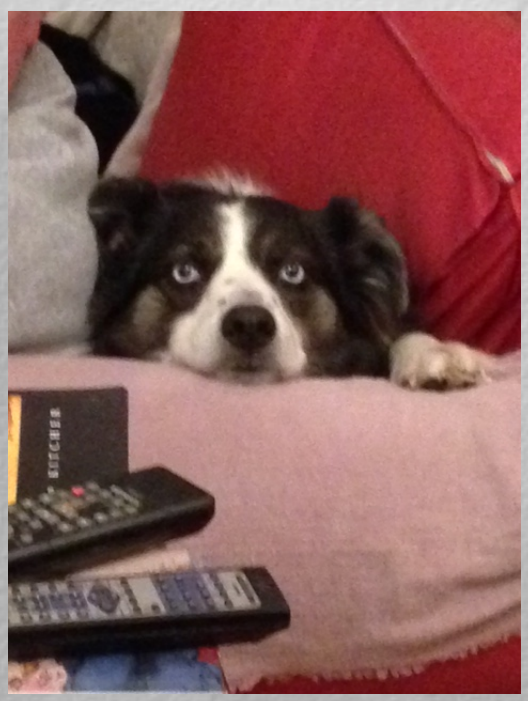
We can't know the operational status, but need to plan for a best case scenario

Logistics

- Running the JWST and HST TACs back-to-back would likely to lead to significant challenges
  - Proposal ingest
  - Proposal review
  - Program scheduling
  - Budget submission, review & grant allocation
- Establishing a working group to review options
  - Includes representatives from STScI (science policies, HSTMO, JWSTMO, PPS, scheduling, grants), HST Project & JWST Project
  - The working group will examine the proposal submission & review schedules and consider options for streamlining the review process
  - The working group will report back to the STUC in April 2016



Demographics



Cycle 23 format

PDF file is 1155.pdf

Hubble Space Telescope Cycle 22 GO Proposal **1155**

A Kuiper Belt Object for the New Horizons Mission

No PI name

Scientific Category: SOLAR SYSTEM

Scientific Keywords: Astrometry, Kuiper Belt Objects, Support of NASA Planetary or Exoplanetary Missions

Instruments: WFC3

Proprietary Period: 0 Proposal Size: Large

Orbit Request Prime Parallel

J Spencer : A Kuiper Belt Object for the New Horizons Mission

Investigators:

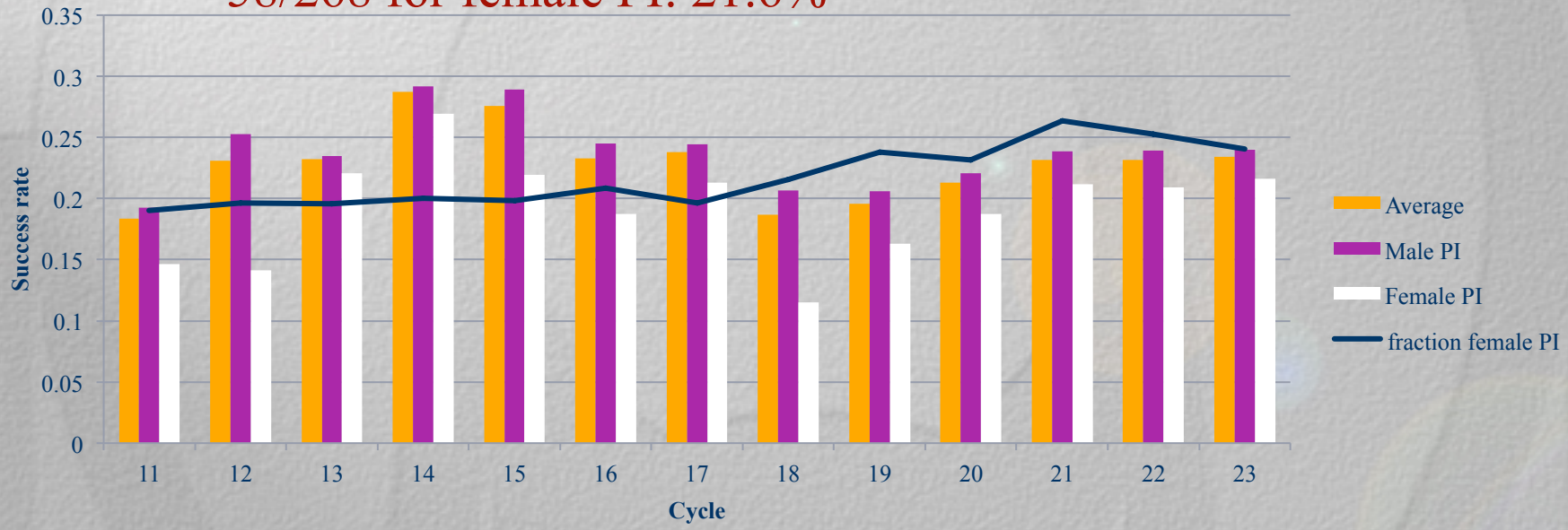
Initials, no first names

	Investigator	Institution	Country
PI&	J Spencer	Southwest Research Institute	USA/TX
CoI	H Weaver	The Johns Hopkins University Applied Physics Laboratory	USA/MD
CoI	S Benecchi	Planetary Science Institute	USA/AZ
CoI	S Stern	Southwest Research Institute	USA/TX
CoI	M Buie	Southwest Research Institute	USA/TX
CoI	A Parker	University of California at Berkeley, Dept. of Astronomy	USA/CA
CoI	J Kavelaars	National Research Council of Canada	CAN
CoI	K Noll	NASA Goddard Space Flight Center	USA/MD
CoI	M Showalter	SETI Institute	USA/CA
CoI	D Borncamp	Space Telescope Science Institute	USA/MD
CoI*	J Petit	Observatoire de Besancon	FRA
CoI	C Fuentes	Northern Arizona University	USA/AZ
CoI	D Tholen	University of Hawaii	USA/HI
CoI	M Belton	National Optical Astronomy Observatory, AURA	USA/AZ

Number of investigators: 14
* ESA investigators: 1
& Phase I contacts: 1

Cycle 23 results

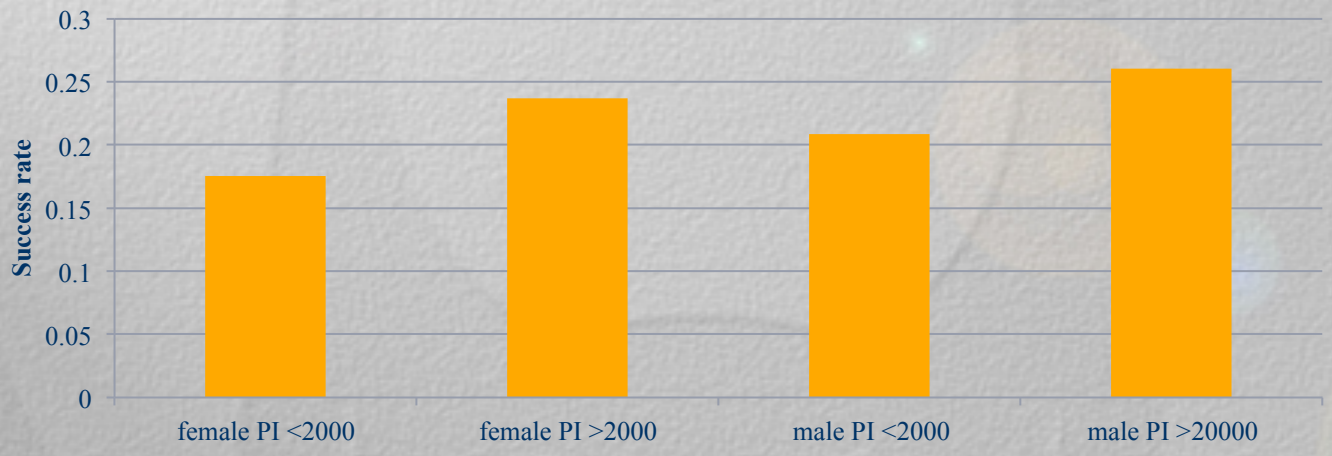
- 1115 total proposals including 268 with female PI
  - 24% → down by 1% from Cycle 22
- Results
  - 261/1115 recommended for acceptance: 23.4%
  - 203/847 with Male PI: 24.0%
  - 58/268 for female PI: 21.6%



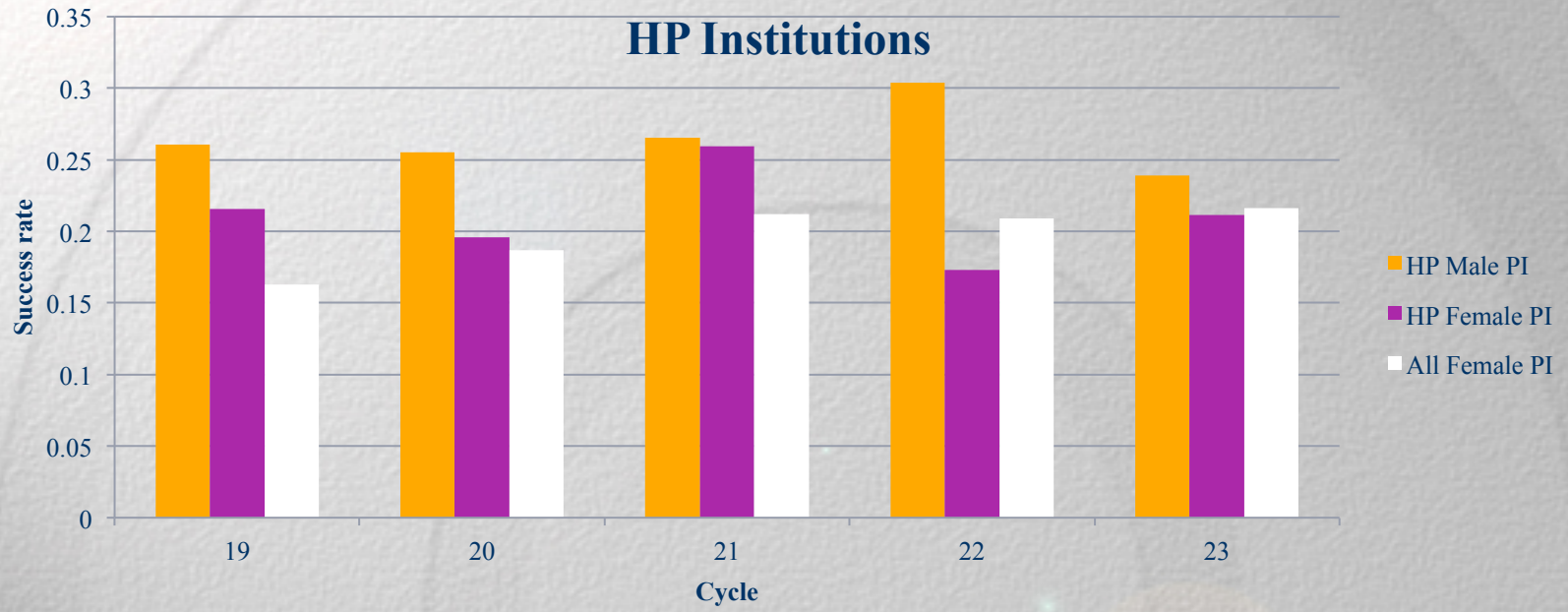
Cycle 23 -seniority

Separating by PI Phd date

	Accept	Reject	% success
Female PI pre-2000	13	61	17.6%
Female PI post-2000	46	148	23.7%
Male PI pre-2000	74	281	20.9%
Male PI post-2000	128	364	26.0%



Statistics for "highly productive" institutions



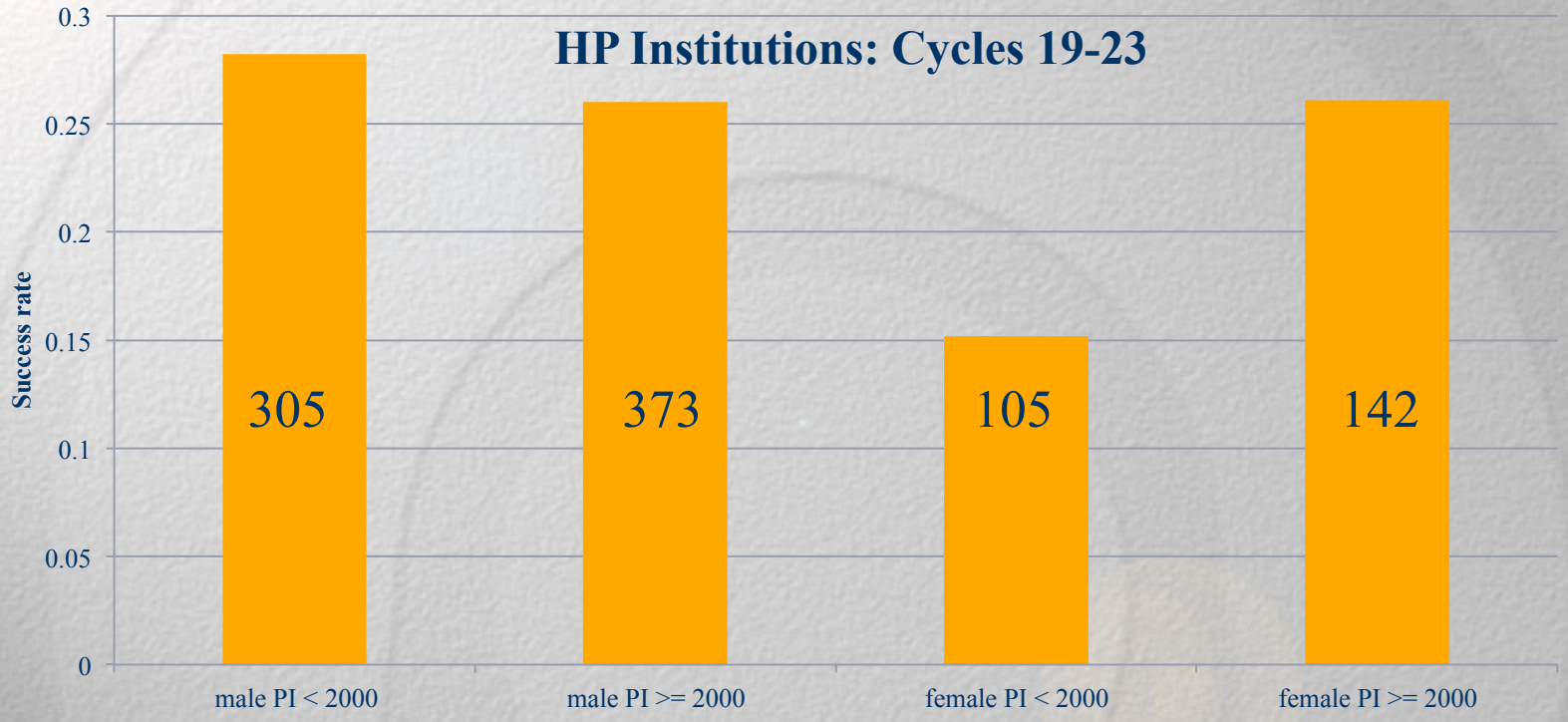
181-190 proposals/cycle from HP institutions:

~25% have female PIs - comparable with the overall average

Proposals submitted by PIs from HP institutions have a higher success rate than the overall average.

The success rate of female PIs from those institutions is generally higher than the average success rate for female PIs, but lower than that of male PIs from those institutions

HP Institutions: seniority



Integrating over cycles 19 to 23 (925 proposals)

One of these things is not like the others

Plus ça change, plus la mème chose

- What next?
  - Talk to professionals
  - Proposal format
    - Leave as is?
    - List investigators alphabetically without identifying PI
    - Remove names of investigators
- Any proposed changes will be discussed with other NASA observatories
  - Chandra, Spitzer, SWIFT

Summary

- Mid-Cycle proposals
  - Finalising review, results out soon
- HST 2020
  - UV Initiative, JWST Initiative & Very Large Treasury
- Exoplanet Advisory Committee
  - Start meeting soon, report in April
- Proprietary time
  - Reduce default to 6 months in Cycle 25
- HST & JWST TACs in 2018
  - Working group will review coordination, report in April
- Demographics
  - ??