



April 14, 2016

Dr Ken Sembach, Director  
Space Telescope Science Institute  
3700 San Martin Drive  
Baltimore, MD 21218

*Re: Update regarding JSTAC discussion of the Proprietary Time/Exclusive Use period for JWST*

Dear Director Sembach:

Over the last 6 years the JSTAC has highlighted the adverse impact on the scientific productivity of JWST that would result from a long proprietary period. The impact has been communicated through three letters to the Director—an initial exposition of the issue in Feb 25 2010, further development in June 21, 2010, and later, in a lengthy letter with a more extensive enunciation of the issues and impacts, on March 27, 2014—and through two presentations to the JWST SWG on July 22, 2013 and April 01, 2014. The recommendation for a 6-month Proprietary Time/Exclusive Use period has elicited extensive discussion, reflecting this topic's importance relative to the charge for the JSTAC of "maximizing JWST's scientific productivity."

Since the early 2014 letter and SWG presentation, a number of aspects of a reduced proprietary time/exclusive use period have been discussed further with the SWG, with the NASA NAC Astrophysics Subcommittee, as well as among the three JWST partners. There have been many developments since the JSTAC's last formal communication in the 03/2014 letter (which was based upon the discussion at the JSTAC's 12/2013 meeting). Two important events were the endorsement of a reduced (to 6 months) proprietary time/exclusive use period by the JWST SWG and by the NAC Astrophysics Subcommittee.

Given the long period since the last extensive discussion in 12/2013, a presentation was prepared for the JSTAC for its 12/2015 meeting. This covered the background and the many developments in the two years since the late 2013 meeting, provided additional information regarding time to publication, and informed the JSTAC of the current status of the discussions. The 12/2015 presentation was updated to reflect the discussion and comments made in the 12/2015 JSTAC meeting, and then sent to the JSTAC, and a number of interested others, in late January 2016 (with positive feedback as to its value as a summary of a complex topic).

The JSTAC would like to convey this presentation to you as part of its record on this important topic.

Sincerely yours, on behalf of the Committee,

A handwritten signature in black ink, appearing to read "Garth Illingworth".

Garth Illingworth  
Chair, JSTAC

JSTAC members:

Roberto Abraham	University of Toronto
Neta Bahcall	Princeton University
Natalie Batalha	NASA Ames Research Center
Stefi Baum	Rochester Institute of Technology
Roger Brissenden	Smithsonian Astrophysical Observatory
Timothy Heckman	Johns Hopkins University
Malcolm Longair	Cavendish Laboratory, University of Cambridge
Christopher McKee	University of California, Berkeley
Bradley Peterson	Ohio State University
Joseph Rothenberg	JHR Consulting
Lisa Storrie-Lombardi	Spitzer Science Center, Caltech
Monica Tosi	INAF – Osservatorio Astronomico di Bologna

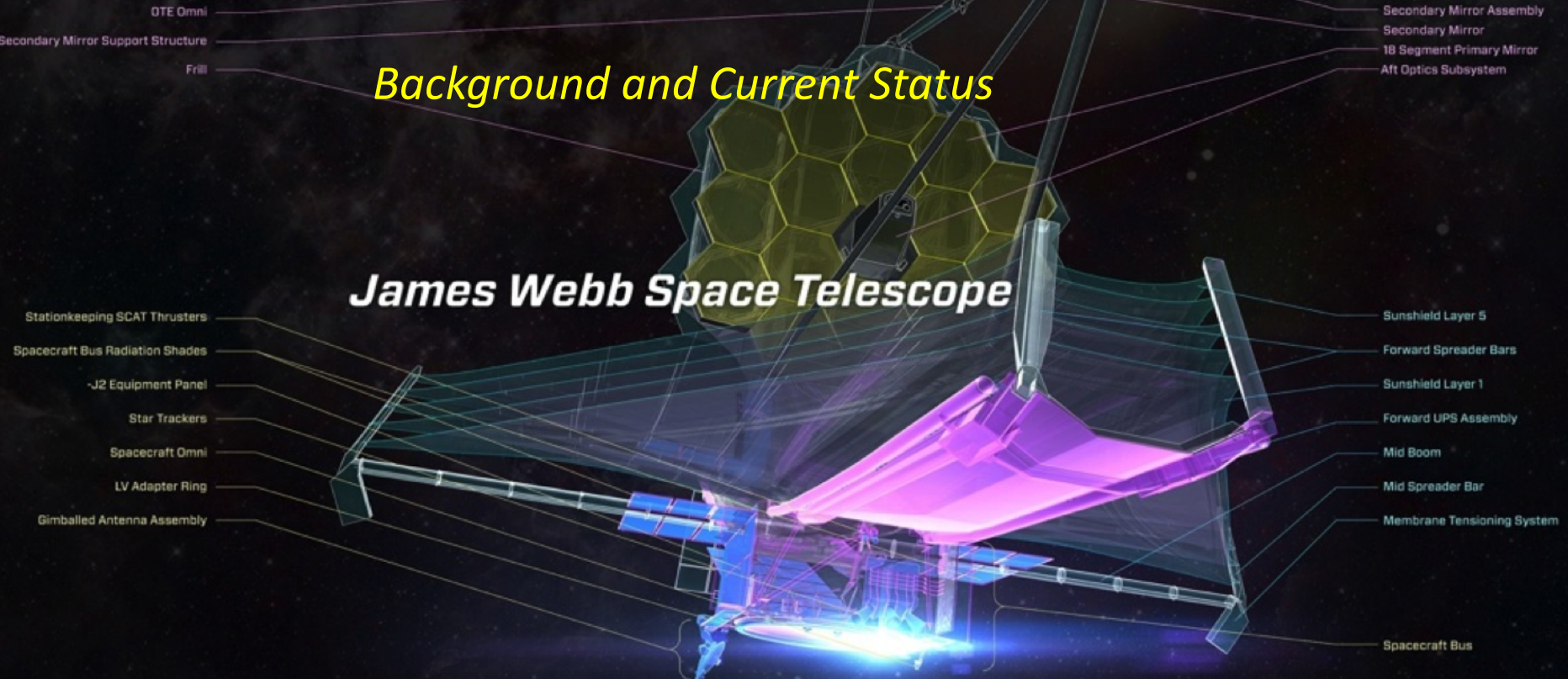
JSTAC Ex-officio observers from the Agencies:  
(whose contributions to this letter were limited to factual input)

Hashima Hasan	NASA HQ
John Mather	NASA GSFC
Mark McCaughrean	ESA
Alain Ouellet / Jean Dupuis	CSA
Eric Smith	NASA HQ

# Proprietary time/Exclusive use period

## Background and Current Status

### James Webb Space Telescope



Update of a presentation given to JSTAC

Garth Illingworth

December 02-03, 2015 meeting



# ***Context***

JWST is one of the most technically demanding and expensive science programs ever undertaken.

As we progress towards launch, the technology and management challenges that are being overcome by the JWST project at NASA and within the contractors and partners are dramatic examples of the technical prowess that exists within the US and its partners, Europe and Canada.

It is imperative that we develop and enable operational approaches that maximize the science return from this mission given the level of public funding and international visibility.

## ***JSTAC discussions of “maximizing JWST science”***

The JSTAC has been discussing and recommending a number of ways to enhance the science return from JWST.

Among these are the First Look/ERS program, supporting development of data analysis tools and pipelines, length of proprietary/exclusive use time, providing careful assessments of the needed GO funding, supporting parallel observations, plus many others.

A short proprietary period/exclusive access period is a crucial aspect of maximizing the scientific return from JWST.

# ***JSTAC concerns re the impact of a 12-month proprietary period***

The negative impact that a one-year proprietary period would have on the science returns from JWST was recognized and discussed in one of the very first letters from JSTAC to the STScI Director in 2010. The recognition that a one-year proprietary/exclusive access period would seriously impact opportunities for follow-up and iteration was a wake-up call.

For example, the complete Cycle 1 dataset would not become public and available for follow-up until just before the Cycle 4 call for proposals, near the end of JWST's required lifetime. Observations from Cycles 1 and 2 would be the only ones that can be followed up during JWST's 5-year required life. These examples exemplify how a long proprietary period would severely impact the obvious scientific value of doing follow-up observations that build on earlier data.

## ***JSTAC concerns re the impact of a 12-month proprietary period***

Clearly the greatest science return will come from the new discoveries on JWST if the broad astronomical community is able to follow-up rapidly on new results from JWST datasets. Rapid access to data, with time to process it and obtain results before the next call-for-proposals is critical to effective iteration. Observations over several cycles will enable JWST to explore new discoveries in depth during its 5-year required life.

JSTAC concluded after further discussion and analysis that a one year proprietary/exclusive access period is just not appropriate for a 5 year mission and recommended a shorter period. See the March 2014 JSTAC letter:

[http://www.stsci.edu/jwst/advisory-committee/JSTAC-Recommendations\\_GO\\_Time\\_Period.pdf](http://www.stsci.edu/jwst/advisory-committee/JSTAC-Recommendations_GO_Time_Period.pdf)

## ***12 months proprietary time is unusual***

Major Astrophysics missions have routinely used 12 months proprietary/exclusive use periods for most data (0 months for Large, Legacy, Treasury and DD time ). However, such a lengthy period is extremely unusual across the NASA Science Mission Directorate (SMD).

- 1) All Heliophysics and all Earth Science missions are zero exclusive use (internationally agreed).
- 2) Most Planetary missions are less than 12 months (0 to 6 months).
- 3) Many Astrophysics programs are already zero (Fermi), as will WFIRST. HST will become 6 months. Spitzer is now at 0.

12 months is clearly anomalous within SMD at NASA, and inconsistent with current national trends regarding data access (“open access”).

## ***JSTAC recommendation***

After much discussion of numerous alternative models JSTAC endorsed a proprietary period of 6 months (and 0 months in Cycle 1).

*The JSTAC recommends that STScI implement a proprietary/exclusive access period for GOs for JWST that is 6 months throughout its life, modified just for Cycle 1 to a default of 0 months, with the option for proposers to request up to 6 months, so as to ensure that some data is available quickly from Cycle 1 programs for Cycle 2 proposers.*

*The JSTAC reaffirms its July 21, 2010 recommendation that the proprietary/exclusive access period for Large/Treasury/Legacy and Director's Discretionary programs remain at 0 months, as is the current situation for HST.*

## ***SWG endorsement***

The JSTAC recommendation regarding proprietary time was conveyed by the STScI Director to the NASA JWST Program Office by the STScI Director. The JSTAC recommendations were discussed with the JWST Science Working Group.

The SWG endorsed the change to 6 months but with a change for the Cycle 1 recommendation from “0 up to 6 months” to a uniform 6 month proprietary/exclusive use period. This was transmitted to the NASA JWST Program Office by the JWST Project Scientist.

## ***APS recommendation***

The change to a 6-month period was subsequently discussed with the SMD Astrophysics Sub-Committee (APS) who endorsed a change to 6 months (only one member of the APS voted “no”):

*Recommendations: The APS had only one specific recommendation as a result of this meeting:*

*The APS recommends the change of the proprietary time for JWST Guest Observer (GO) programs from 12 months to 6 months.*

## ***Current developments***

The 6-month recommendation has also been discussed within Canada and positively received. The science community within Canada widely accepts a change to 6 months proprietary/exclusive use period.

Hubble is adopting 6 months proprietary/exclusive use period as of Cycle 25. Spitzer in its extended mission has 0 months as its proprietary/exclusive use period.

Some feedback from ESA indicates that there is some reluctance to change, but further discussions with colleagues at ESA and in Europe are needed, particularly to help explain the rationale for the 6-month proprietary/exclusive use period.

# *Risks*

To continue with 12 months proprietary/exclusive use period for such an expensive mission is anomalous and it is reasonable to expect that it will be seen as inappropriate by policy makers and decision makers if not changed.

The scientific return from JWST will be hampered by a long proprietary/exclusive use period and the impact of this realization could also reduce the enthusiasm of policy-makers and the public for future large astrophysics missions.

## ***(1) Some concerns heard – re students***

One of the arguments against such a position has been that it can impact students and postdocs by “their” data being used by others.

Yet nearly 40% of all Hubble data has had 0 months as its proprietary/exclusive use period (Treasury, Large, Legacy and DD time, etc.). Students and postdocs have consistently been major players in the use of, for example, the HUDF, GOODS, CANDELS, Frontier Fields, MCT datasets and have not risen up in frustration about being unable to be at the forefront or being scooped (the reverse seems to be the case – there are indications that they welcome being able to work on large cutting-edge science programs as part of teams).

## ***(2) Some concerns heard – re funding***

Another concerns funding: Concerns from some in Europe/ESA about the different funding situation and the advantage of the US community in getting funding earlier appear not be borne out by the data on publications and proposal success rates.

For Hubble, ESA scientists have been increasing the fraction of the GO time that they capture through proposals – it is now around 24-25% (up from ~15% in the past).

Also see the discussion later on the time-to-publication and the implication of that analysis for different funding models and proprietary time/exclusive use periods.

### ***(3) Some concerns heard – re GTO advantage***

A further concern that has been expressed is that it is unfair for GOs to have 6-month proprietary periods when the GTOs retain 12 months.

First, to put this in context, the GTO time is <8% of the total time available over the five year life of JWST . Decisions relating to the most effective way to use JWST for the remaining 92% of the time should not be driven by what the 8% are doing. That would not lead to scientifically optimal solutions.

Second, there are concerns about the GTOs dominating a field since they will have proprietary data on the best targets from which they can build competitive and winning GO programs (and hence the GTOs could come to dominate the GO pool in key areas as well!).

## ***6 months helps counter the “GTO advantage”***

The GTO 12-month proprietary/exclusive use period is not an argument to have everybody else also be on 12 months. In fact, the approach that will help reduce the GTO competitive advantage is to ensure open, accessible data to GOs.

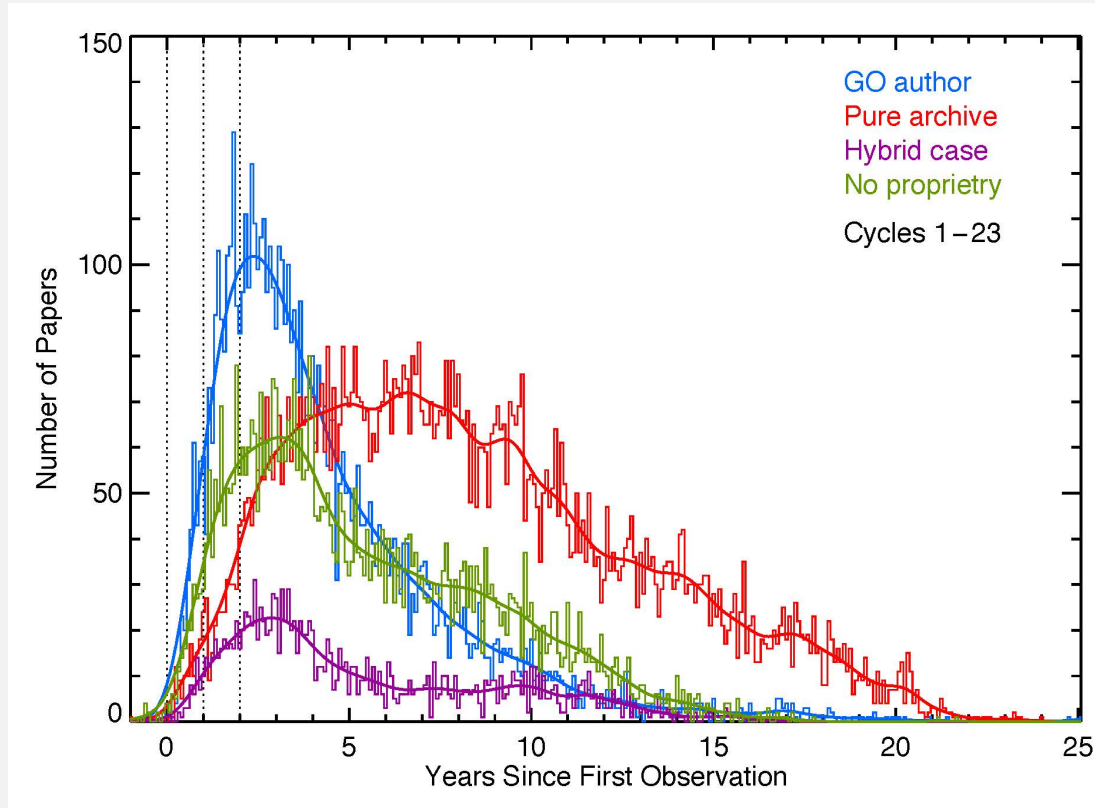
The way the community becomes fully competitive with the GTOs is to have open datasets available as soon as possible so that the GO community can build up new target sets, new survey areas and experience with all the modes.

***The competitive advantages of 12 month GTO time are best offset by maximizing readily available data for the GO community with 6 month and 0 month datasets.***

# *The publication statistics are telling us that proprietary time is not a key factor*

Most tellingly, the publication data indicate that the time from data being taken to publication is typically >2 years.

[as per the charts that the JSTAC has seen at a number of its meetings – and also updated at the Dec 2-3 2015 meeting]

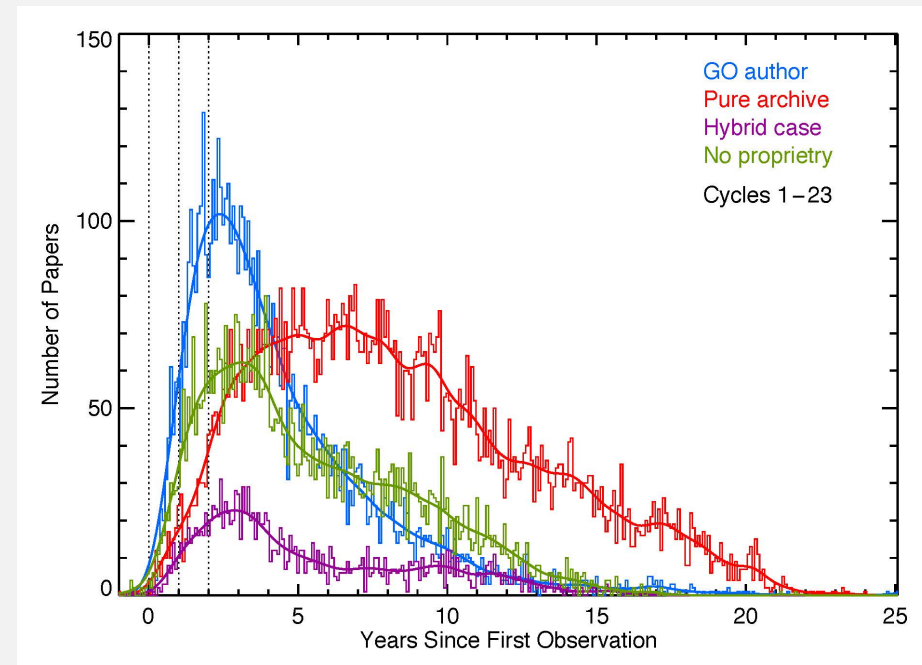


The peak is at ~2 yrs but the mean/median is > 2 yrs. These charts include data with different proprietary periods (0 to 12 months).

# ***The publication statistics are telling us that proprietary time is not a key factor***

Clearly any proprietary period being discussed (0-6-12 months) is not a major driver on when results are (or will be) published.

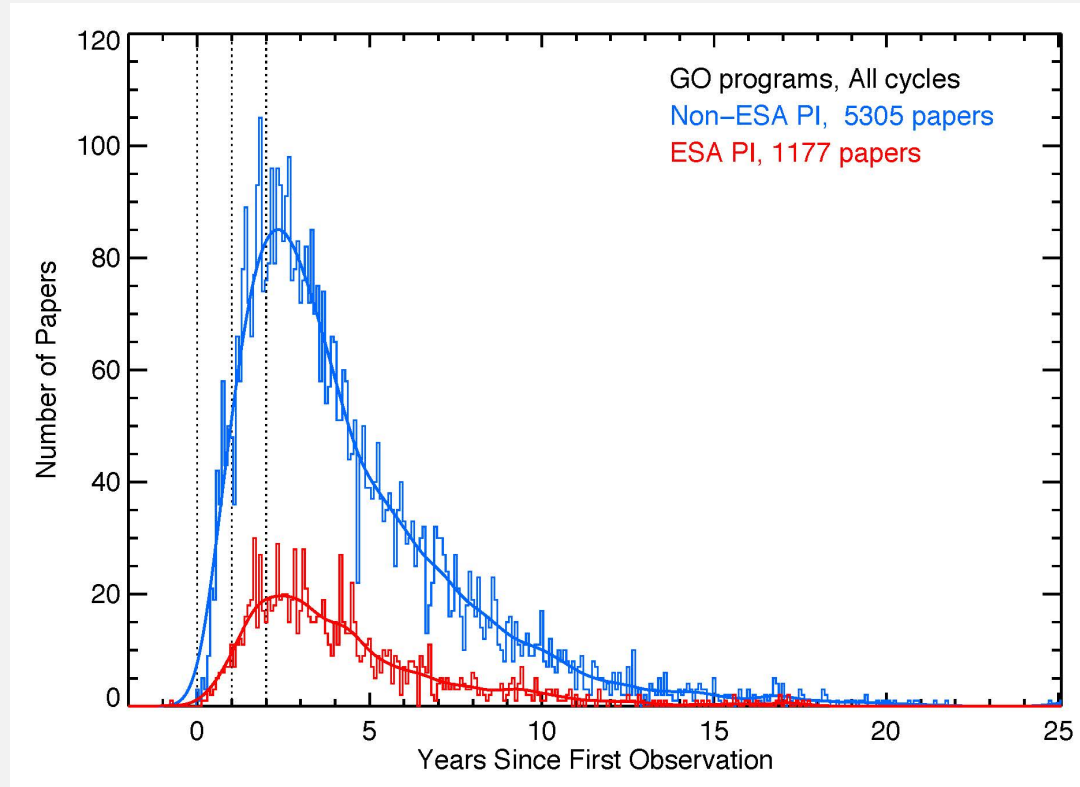
*Yet a long proprietary period will impact the science returns by keeping data unavailable for follow-up for a number of proposal cycles.*



The time to publication is essentially the same, regardless of type and proprietary time (archival data is even longer as expected).

# *The publication statistics indicate that there is no difference in the time to publication for ESA and non-ESA scientists*

Most importantly, given some concerns from the scientists in Europe, is that there is effectively no difference between ESA PIs and non-ESA PIs.

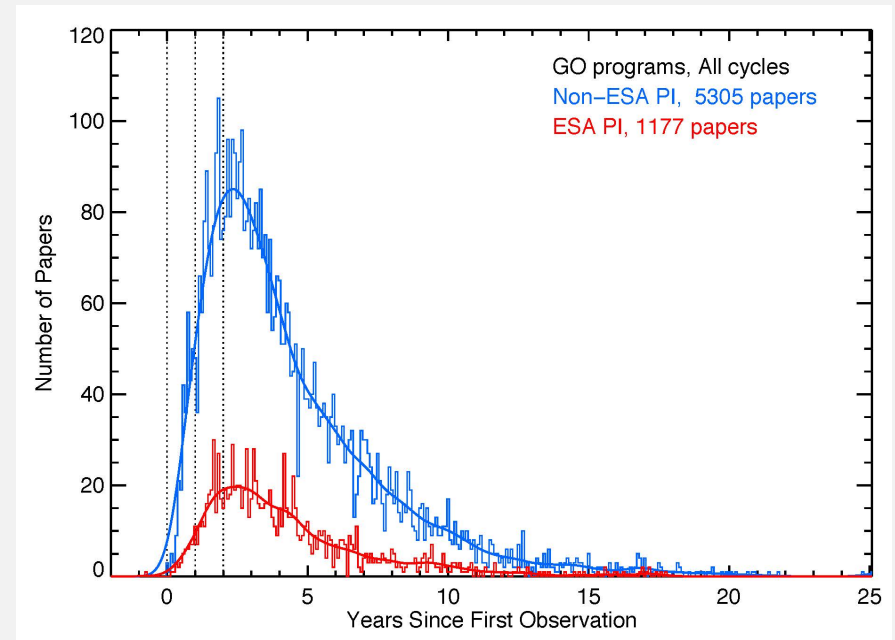


*In particular, differences in funding models are not reflected in the publication rate data.*

# ***The publication statistics indicate that there is no difference in the time to publication for ESA and non-ESA scientists***

As noted, any proprietary period being discussed (0-6-12 months) is not, and most likely will not be in future, a major driver of when results are published, regardless of the location of the proposer.

[JSTAC heard that the publication timescales are similar at the other Great Observatories]



***However, a long proprietary period will greatly impact the science returns from JWST.***

## ***Broader context and risk***

In an age of “big data” and data mining, where open datasets are being widely seen as providing future opportunities in the scientific realm (as well as broadly providing a wide range of business opportunities and enhancements in the effectiveness of government programs), it is quite anomalous to have a NASA/ESA/CSA flagship international mission retaining one of the longest proprietary/exclusive use periods of any science program.

*In particular, it would look quite anachronistic for the NASA/ESA/CSA Flagship mission that has a lifecycle cost to NASA of \$8.8B to stay with unusually long proprietary/exclusive use periods.*

## ***Current situation and optimal outcome***

Key committees in the JWST program, the JWST SWG, the NASA APS, as well as the JWST Project Science team, STScI, and the Canadian science community have expressed support for a change to a shorter 6-month proprietary/exclusive use period.

It is hoped that discussions within the European science community also result in similar support for a change to a 6-month proprietary/exclusive use period for JWST.

A change to 6-months proprietary/exclusive use period would be win-win for science, for JWST, and for the public perception that the science community is doing all they can to get the best return on their nation's investment in JWST.