Update on Hubble Space Telescope

Space Telescope Users Committee (STUC)

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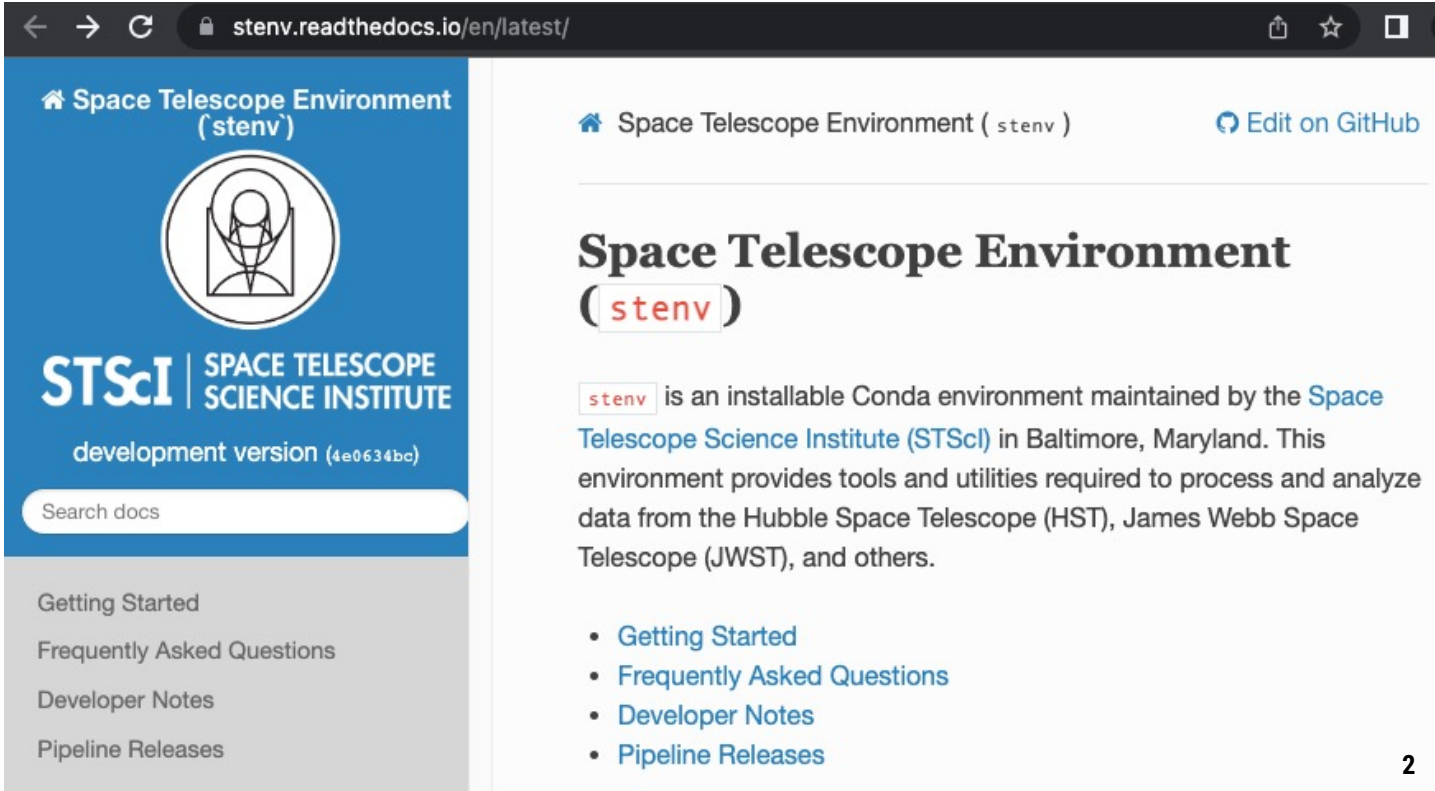
OPAG / Laurel MD / 2023-May-03
Background image: Bjoraker et al. (2022, *Remote Sensing*)

Calibration software

- Distributed through stenv.yaml instead of Astroconda channel
- Supposedly helps with Python > 3.7 dependencies
- (Python 3.7 security release support ends June 2023)



HST+JWST

HST remains vital and innovative, + complementary power with JWST

- SpaceX / STScI / NASA study on boosting HST orbit
- But public views JWST as HST replacement (anecdotal)

Levenson presentation, STUC Oct 2022

Cycle 31 proposals due May 24

The Cycle 31 Call for Proposals

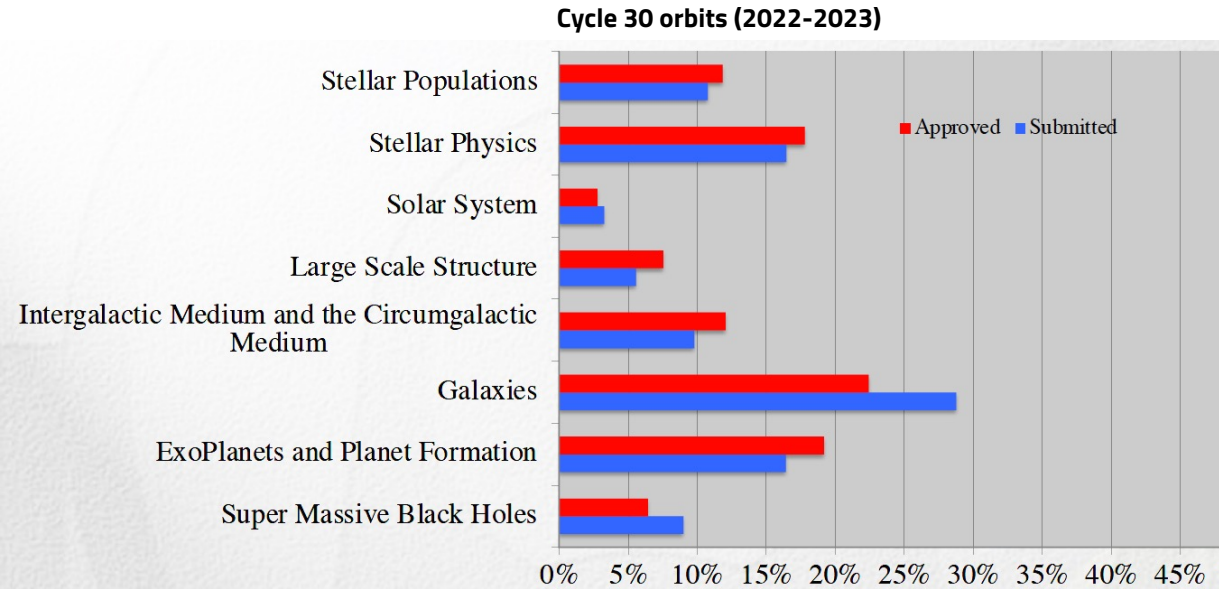
Cycle 31 will extend from December 1, 2023 to September 30, 2024. We will accept proposals for the following instruments: ACS, COS, FGS, STIS, and WFC3.

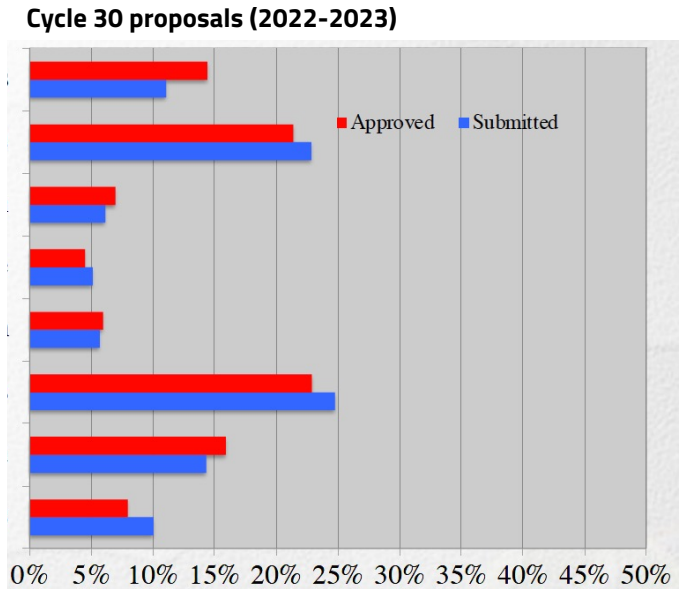
We anticipate allocating up to 2300 orbits in this cycle. See Hubble Space Telescope Call for Proposals for Cycle 31 for further details.

This solicitation for proposals will be open through Wednesday May 24, 2023 at 8:00pm EDT. The Astronomer's Proposal Tool (APT), which is required for Phase I Proposal Submission, was made available for Cycle 31 Phase I use on February 23, 2023. Results of the selection will be announced by late August.

- More target of opportunity / interruption support, flexible Thursdays
- Joint HST+JWST proposal type
- Combined GO+AR is OK now

Proposal pressure by topic





Leitherer presentation, STUC Oct 2022

Cycle 30 outer planet systems

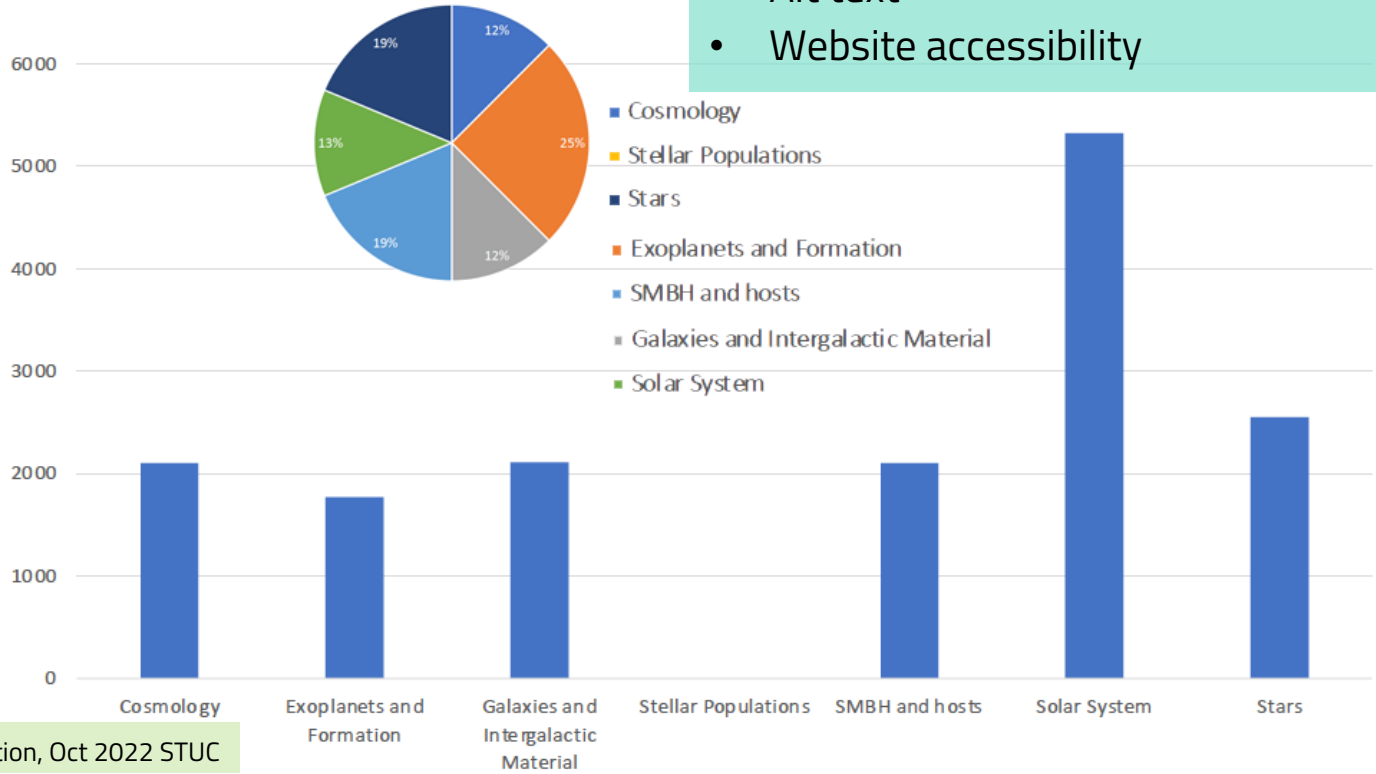
HST Solar System Science Programs

Mon May 1 03:30:06 EDT 2023

Cycle	Type	ID	PI	Title	Allocated Orbits
31	GO/DD	17294	Amy Simon	Hubble 2020: Outer Planet Atmospheres Legacy (OPAL) Program	41
30	GO	17302	Qicheng Zhang	Mapping the Debris of Comet 96P/Machholz	7
30	GO	17297	David Jewitt	Evolution of the DART Dimorphos Debris Field	15
30	GO/DD	17293	David Jewitt	The Boulder Field of Didymos	16
30	GO/DD	17292	Jian-Yang Li	Long-Term Evolution of Dimorphos's Dust Tail Created by the DART Impact	9
30	GO/DD	17291	Colin Chandler	Investigating a Vanishing Active Centaur	1
30	GO	17289	David Jewitt	Macroscopic Debris from the DART impact	4
30	GO	17288	David Jewitt	A New Asteroid Pair	4
30	GO	17275	Michael Wong	The closure of two climate cycles in Jupiter's atmosphere during the Juno era	8
30	GO/DD	17254	Jacqueline Keane	Determining the Driver of Activity in a Newly Discovered Main Belt Comet	2
30	GO	17215	David Jewitt	Asteroid Bennu Large Particle Trail	8
30	GO	17214	Laurent Lamy	Unravelling the auroral diversity and magnetospheric dynamics of Uranus while approaching solstice	12
30	GO	17206	Benjamin Proudfoot	Investigating Planet Formation in the Cold Classical TNOs Through Non-Keplerian Analysis	8
30	GO	17187	Naomi Rowe-Gurney	Observing the Ice Giants with Hubble WFC3 to Enhance Cycle 1 James Webb Space Telescope Data	12
30	GO	17163	William Sparks	Probing the icy regoliths of Europa with imaging polarimetry	8
30	GO	17150	Samantha Trumbo	Targeted Observations of Ceres' Occator Crater with HST/STIS	1
30	GO	17142	Samantha Trumbo	Europa's UV absorptions: oceanic or exogenic origins?	8
30	GO	17099	Lorenz Roth	Ganymede's water atmosphere in eclipse	7
30	GO	17089	Amanda Hendrix	Characterizing Primitive Asteroids	6
30	GO/DD	16995	Amy Simon	Hubble 2020: Outer Planet Atmospheres Legacy (OPAL) Program	41
30	GO	16993	Jessica Agarwal	Interconnection between outgassing, fast rotation and mutual orbit in binary main-belt comet 288P	3
30	GO	16989	Jonathan Nichols	Observing Jupiter's FUV auroras during the Juno Extended Mission	12
30	GO	16987	Lawrence Sromovsky	Spectroscopic diagnosis of changing back yard giant exoplanets.	4
29	GO/DD	16929	David Jewitt	Disintegration of Long-Period Comet C/2021 A1	4
29	GO	16924	Simon Porter	Colors and Astrometry of Two New Horizons Target Scattered Disk Objects	5

Outreach

Estimated Reach by Topic

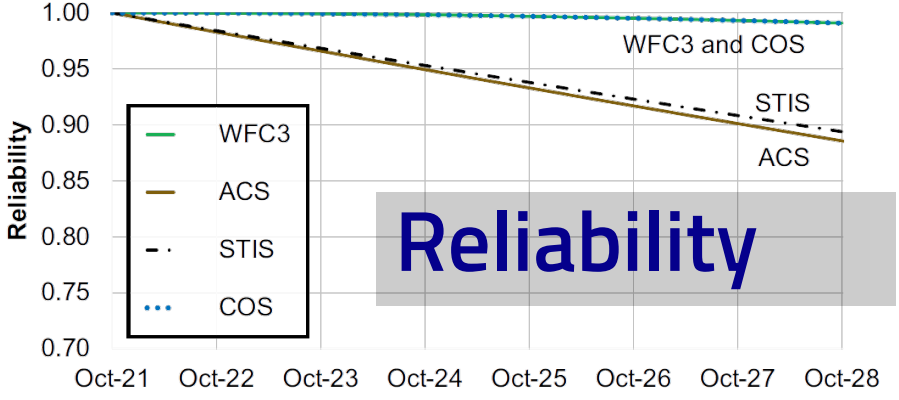


Outreach office has been increasing accessibility

- Tactile exhibits
- Alt text
- Website accessibility

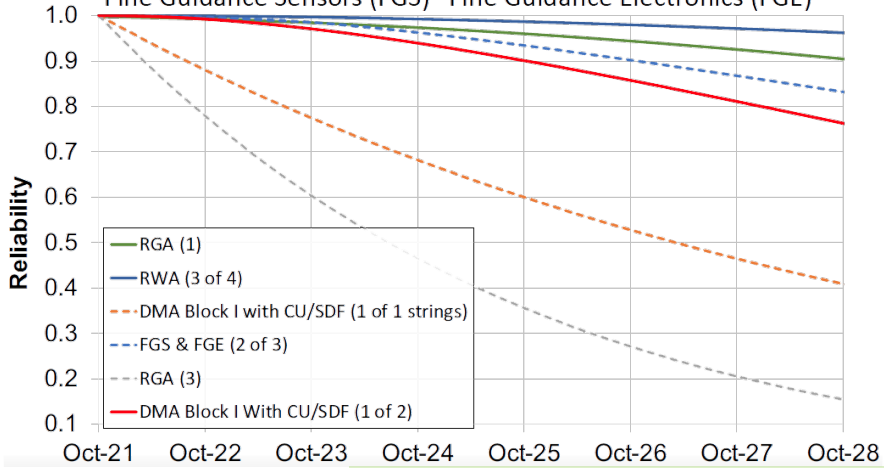
Pulliam presentation, Oct 2022 STUC

Wide Field Camera 3 (WFC3) Cosmic Origins Spectrograph (COS)
Advanced Camera for Surveys (ACS) Space Telescope Imaging Spectrograph (STIS)



Reliability

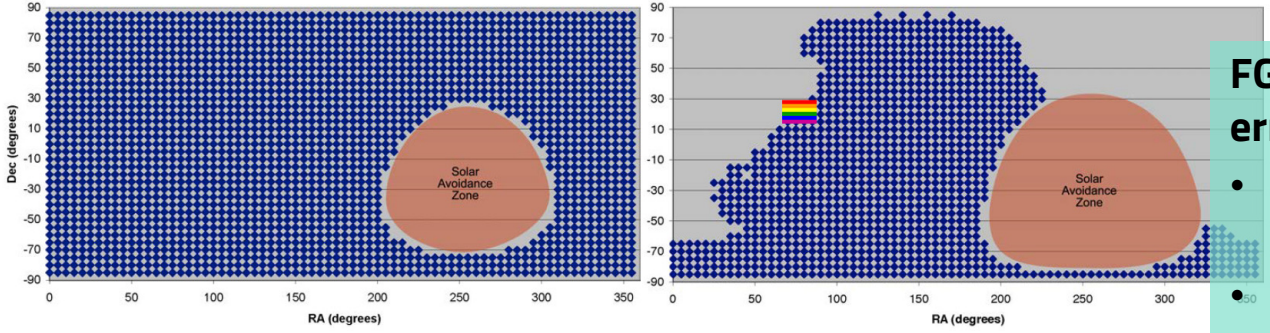
Rate Gyro Assembly (RGA) Reaction Wheel Assembly (RWA)
Data Management Array (DMA) Command Unit / Science Data Formatter (CU/SDF)
Fine Guidance Sensors (FGS) Fine Guidance Electronics (FGE)



Tom Brown presentation, STUC May 2022

Planning Observations in Two-Gyro Mode

Figure 2.1: Sky Availability on 5 December 2005



2-Gryo Handbook

FGS-2 “servo compensation errors”

- Affects moving target observations more
- Adding “maintenance slews”

3 remaining enhanced gyros have outlived any prev. standard gyros

Funding

Budget Status

FY22	FY23	FY24	FY25	FY26	FY27	FY28
$98.3	$93.3	$98.3	$98.3	$98.3	$98.3	$98.3

Wiseman+Crouse presentation, Oct 2022 STUC

- Hubble project budget expected to remain flat into the future
- Analysis support was $32.5M in FY22

Approved Amount	Available at Award	Available when 90% expended
Up to $30,000	100%	
Up to $50,000	50%	50%
Greater than $50,000	20%	20% in equal increments

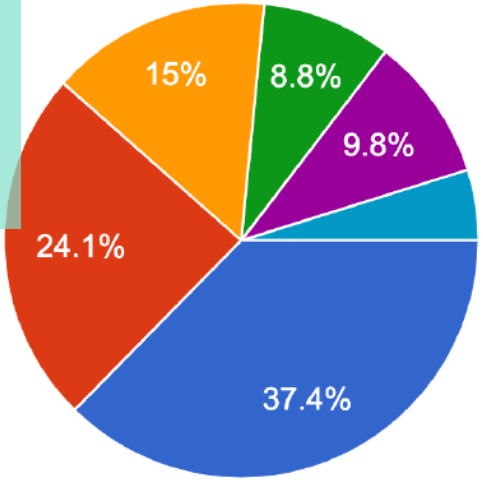
Brown presentation, Oct 2022 STUC

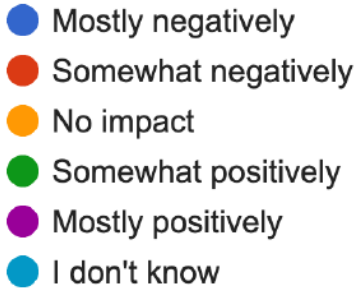
- Analysis funds are awarded in small increments
- Institutions hate it
- Needed to avoid “uncosted carryover”

Survey on zero exclusive access period

- Survey closed Feb 15
- 1171 responses
- Community did not broadly support reducing HST and JWST EAP to 0
- Report forthcoming on demographics of survey response

How would 0 EAP affect your/your group's research plans?



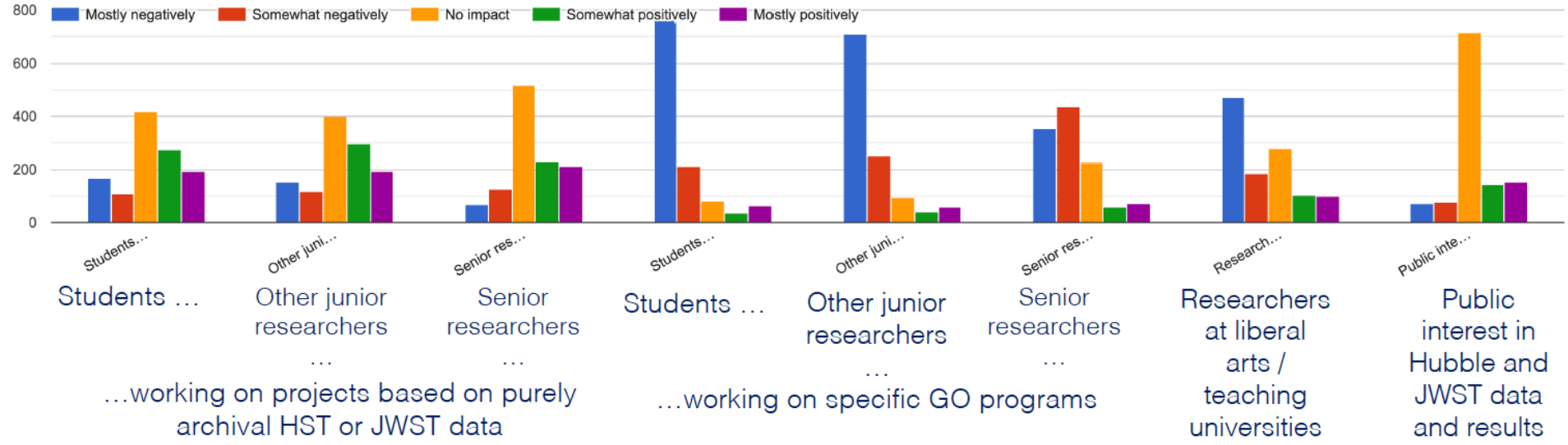


Majority negative, but 1:5 positive.

Laura Watkins presentation, JSTUC March 2023

Survey on zero exclusive access period

How do you think 0 EAP would affect certain groups?



Laura Watkins presentation, JSTUC March 2023