



How to write *(successful)* proposals

Isabel Rebollido (ESA/ESAC)

COSPAR JWST Workshop
Bangalore - October 2025



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Original talk by Luis Colina (CAB)

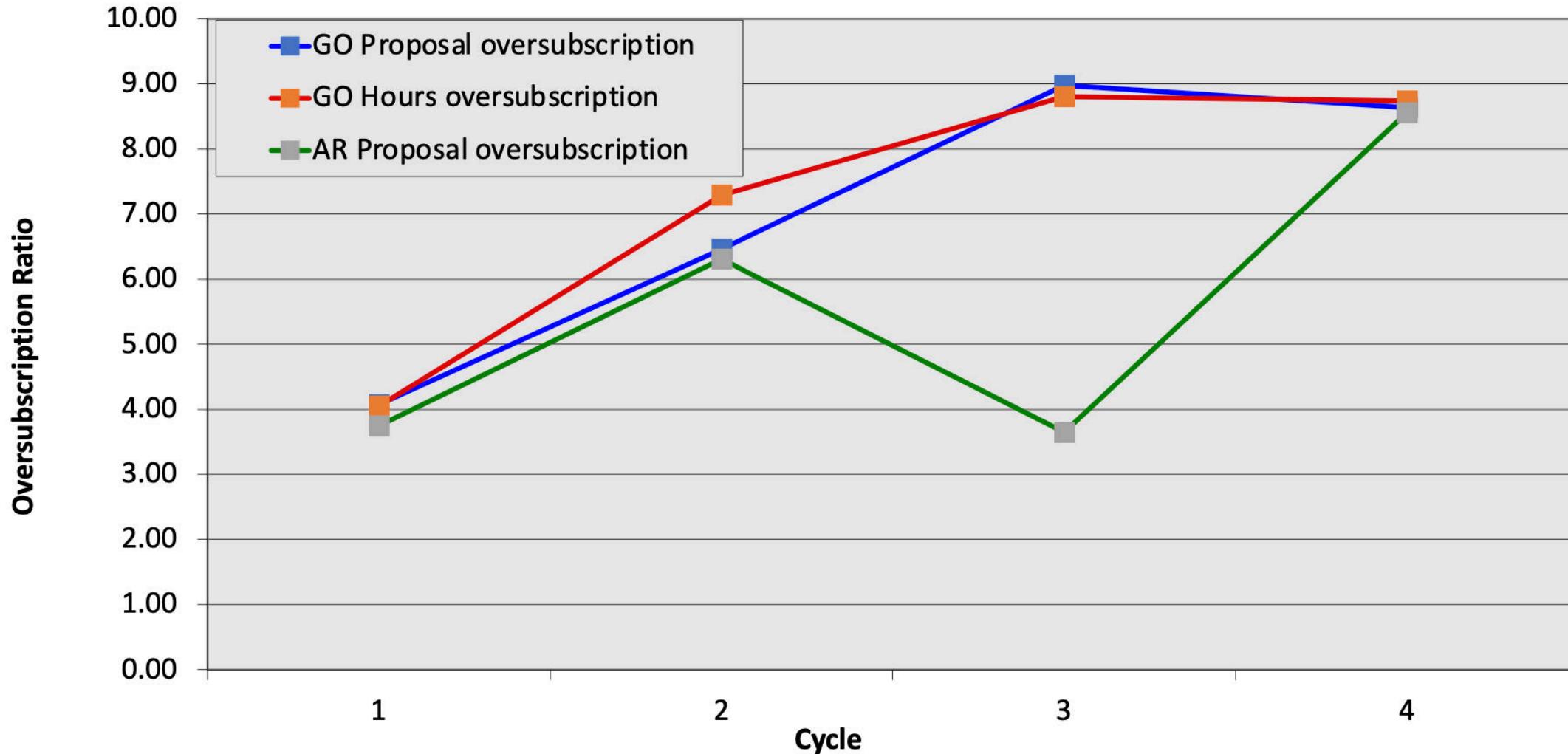
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JWST PROPOSALS. PRESSURE FACTOR

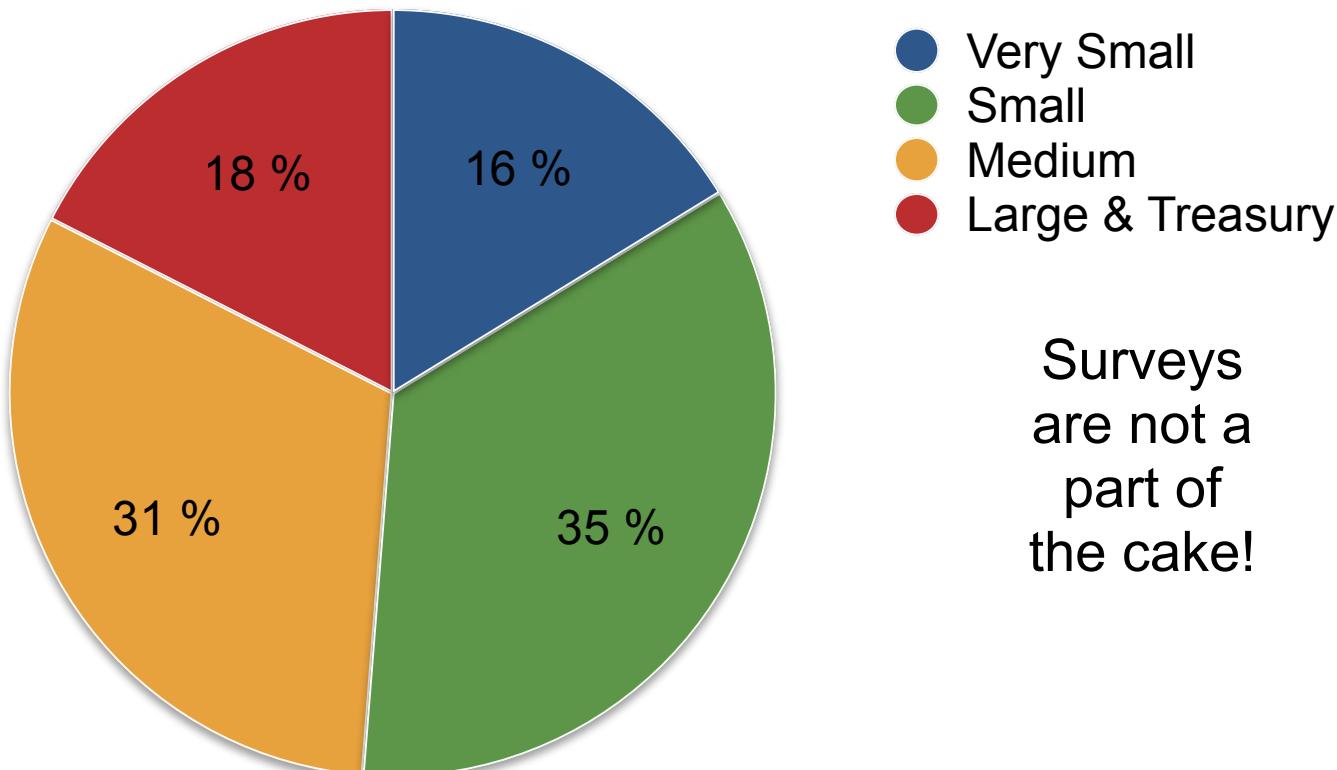
Oversubscription by Cycle



JWST PROPOSALS. PROPOSAL TYPE DISTRIBUTION

TYPES OF PROPOSALS AND TIME DISTRIBUTION (CYCLE 3)

- VERY SMALL: < 20 hours / total of 1300 hours available
- SMALL: > 20 hours < 50 hours / total of 2800 hours available
- MEDIUM: > 50 hours < 130 hours / total of 2500 hours available
- LARGE & TREASURY: > 130 hours / total of 1400 hours available
- SURVEY: the known “filler” or “snapshot” programs

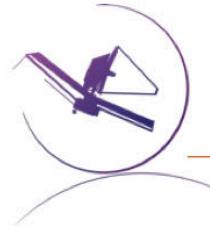


JWST PROPOSALS. PROPOSAL TYPE DISTRIBUTION

SCIENCE REQUIREMENTS

- VERY SMALL, SMALL & MEDIUM: compelling science case achievable within a small amount of time
- LARGE: lead to clear advance in our understanding in an important area of astronomy
- TREASURY: potential to solve multiple scientific problems with same set of data & lasting science value
data & products processed beyond standard JWST pipeline
- SURVEY: obs. of particular target not guaranteed / samples covering wide RA (>12h)
individual obs limited to a maximum of 100 minutes of science integration
- **ALL: need scientific justification (4 to 7 pages) + ETC calculations + APT**
- **PIs: up to two providing a clear role/leadership/responsibilities for each***

*American PIs can opt to funding!



Methodology

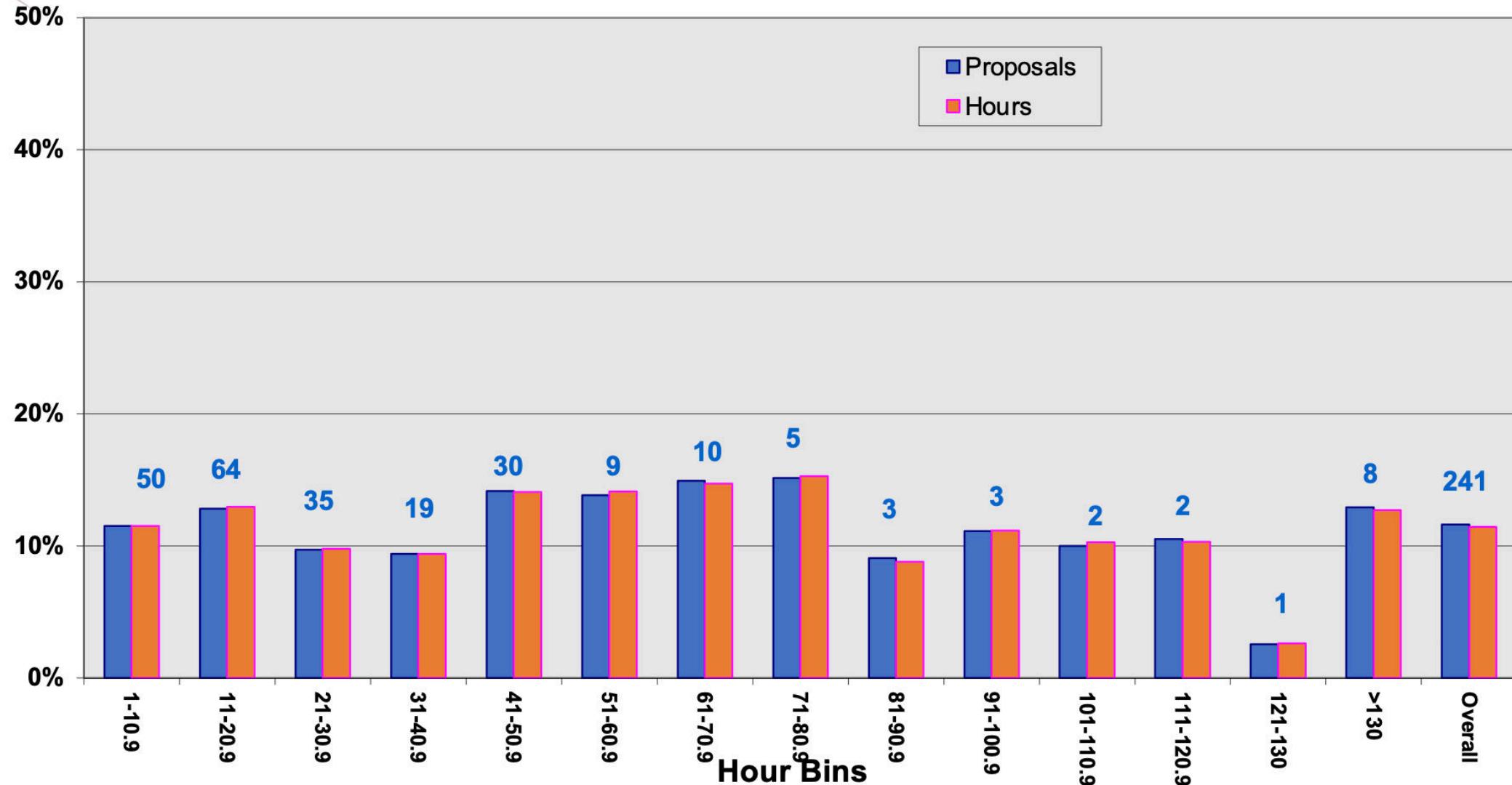
Hours	Submitted	CfP anticipated breakdown
Total	75138	8500
Very Small	10299	1950
Small	26454	2900
Medium	25610	2250
Large	12775	1400

Oversubscription ~1:9



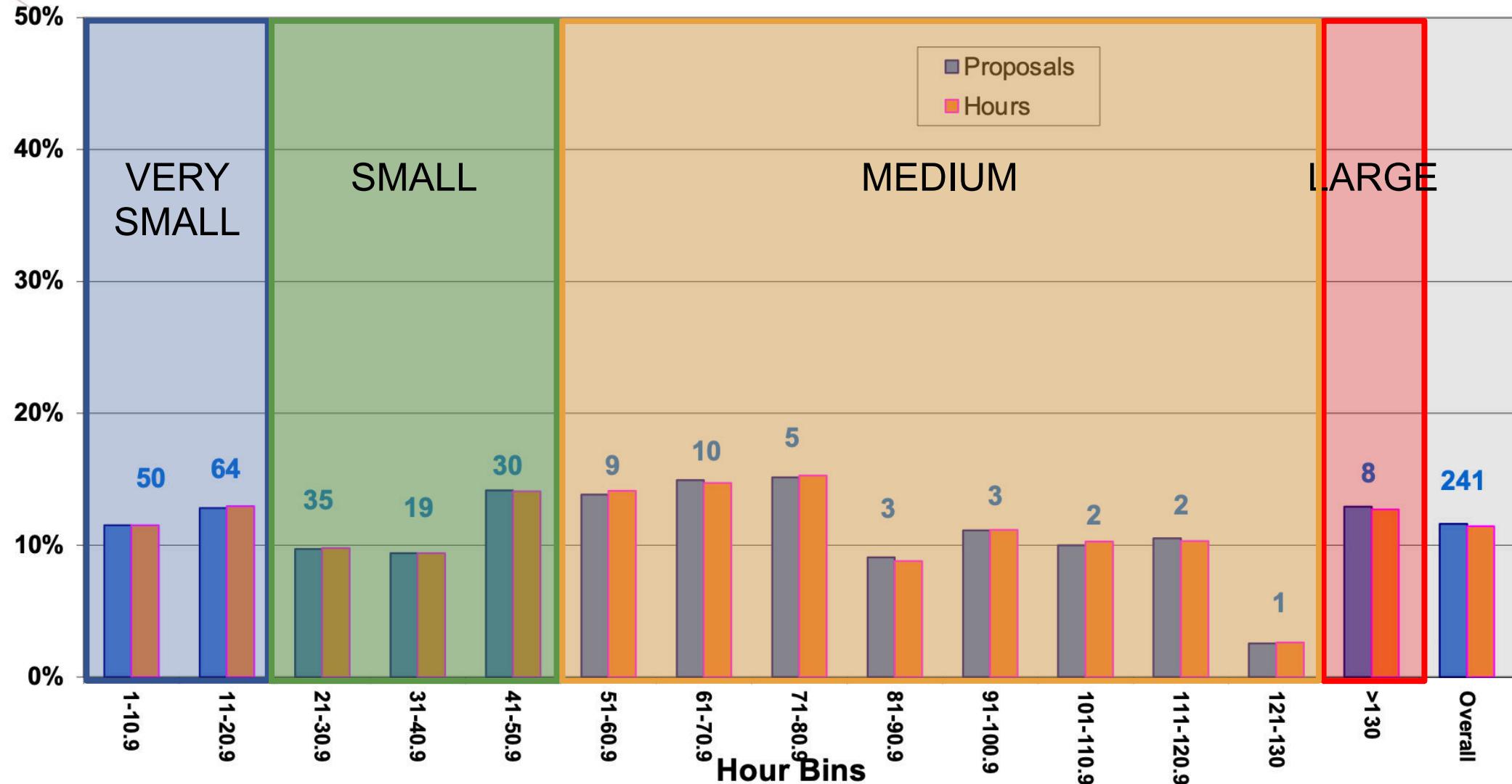


Acceptance Fraction by Size



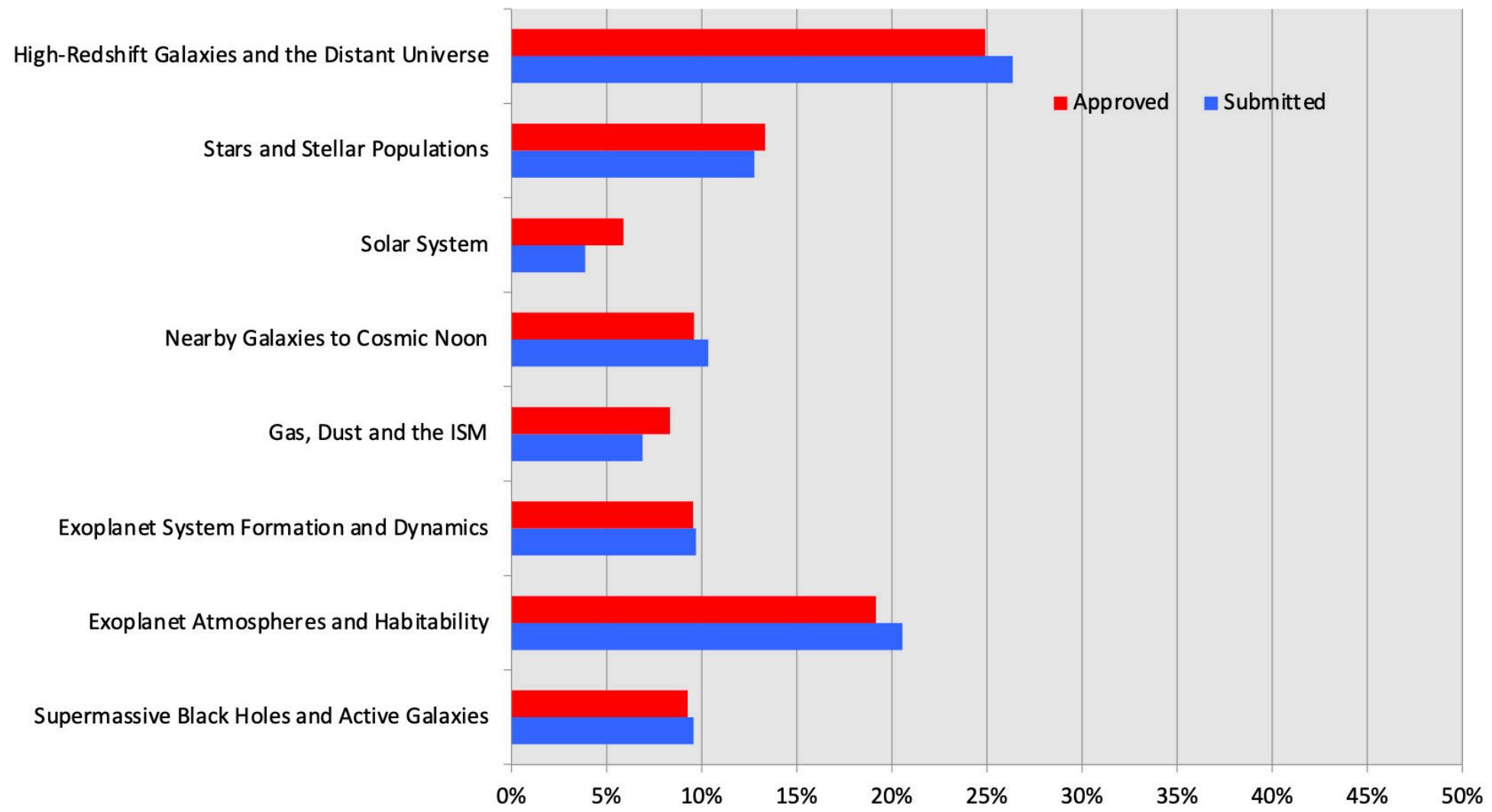


Acceptance Fraction by Size





Science Category Distribution for Hours





Instruments

Instrument	Mode	Prime %	Coordinated Parallel %	Total	Instrument Prime Usage	Instrument Prime + Coordinated Parallel Usage
MIRI	MIRI Coronography	1.6%	0%	1.5%		
	MIRI Imaging	4.9%	4.0%	4.8%	34.7%	32.5%
	MIRI LRS	10.5%	0%	9.7%		
	MIRI MRS	17.7%	0%	16.4%		
NIRCam	NIRCam Coronography	1.5%	0%	1.4%		
	NIRCam GrismTimeSeries	0.7%	0%	0.6%		
	NIRCam Imaging	14.0%	38.8%	15.8%	18.8%	20.3%
	NIRCam TimeSeries	0.6%	0%	0.6%		
NIRISS	NIRCam WFSS	2.0%	0%	1.9%		
	NIRISS Imaging	0%	57.3%	4.1%		
	NIRISS AMI	0.2%	0%	0.15%		
	NIRISS SOSS	3.1%	0%	2.8%	3.2%	7.1%
NIRSpec	NIRISS WFSS	0%	0%	0%		
	NIRSpec BrightObjectTimeSeries	10.1%	0%	9.3%		
	NIRSpec FixedSlitSpectroscopy	3.5%	0%	3.3%		
	NIRSpec IFUSpectroscopy	10.8%	0%	10.0%	43.3%	40.2%
	NIRSpec MOS	18.9%	0%	17.5%		

Imaging 23.5% vs 76.5% Spectroscopy



Countries of Cols

Country	Submitted	Approved	Country	Submitted	Approved	Country	Submitted	Approved
Argentina	11		Greece	50	8	Portugal	17	4
Australia	412	41	Honduras	1		Russia	23	
Austria	147	17	Hong Kong	2		Saudi Arabia	1	
Bangladesh	4	1	Hungary	51	5	Serbia	6	3
Belgium	177	23	Iceland	5	1	Slovenia	83	14
Botswana	1		India	101	8	South Africa	13	
Brazil	44	3	Iran	1		Spain	777	121
Bulgaria	3		Ireland	123	14	Sweden	339	43
Canada	852	121	Israel	115	14	Switzerland	539	83
Chile	335	44	Italy	1602	170	Taiwan	87	6
China	496	60	Japan	777	102	Thailand	27	4
Columbia	3		Kazakhstan	1	1	The Netherlands	714	92
Croatia	2	2	Korea	78	5	The Vatican	1	1
Cyprus	5		Mexico	53	5	Turkey	18	
Czech Republic	18	5	Morocco	1		Ukraine	1	
Denmark	486	65	Namibia	1		United Arab Emirates	1	
Ecuador	4		New Zealand	2		United Kingdom	2354	288
Finland	30	3	Norway	14	3	United States	14047	2031
France	1052	118	Pakistan	1		Venezuela	1	
Germany	1364	143	Poland	36	5	Vietnam	2	
CSA Cols	858	123				Unique Cols	6531	2047
ESA Cols	10189	1257	Total Cols	27512	3676	Unique Investigators	6845	2173



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Columbia	3		Kazakhstan	1	1	The Netherlands	714	92
Croatia	2	2	Korea	78	5	The Vatican	1	1
Cyprus	5		Mexico	53	5	Turkey	18	
Czech Republic	18	5	Morocco	1		Ukraine	1	
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Gender Stats

Cycle 3

- Fraction of submitted proposals with female PIs consistent with previous cycle 31.8%
 - JWST Cycle 2 – 32.4%; HST Cycle 31 – 30%
- Higher fraction of female-PI accepted proposals 34 % (86/253)
 - JWST Cycle 2 - 29.5% (74/251)
 - JWST Cycle 1 - 30.1% (86/286)
 - HST Cycle 31 - 33% (53/159)
- Triaged Proposals
 - 148/609 for female PIs, 24.3%
 - 338/1304 for male PIs, 25.9%

	JWST Approved	Cycle 3 Reviewed	Success Rate	JWST Cy2 Approved	JWST Cy2 Submitted	Success Rate
Proposals	253	1913	13.2 %	251	1593	15.8%
Female PIs	86	609	14.1 %	74	516	14.3%
Male PIs	167	1304	12.8 %	177	1077	16.4%



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No statistics for Cycle 4!

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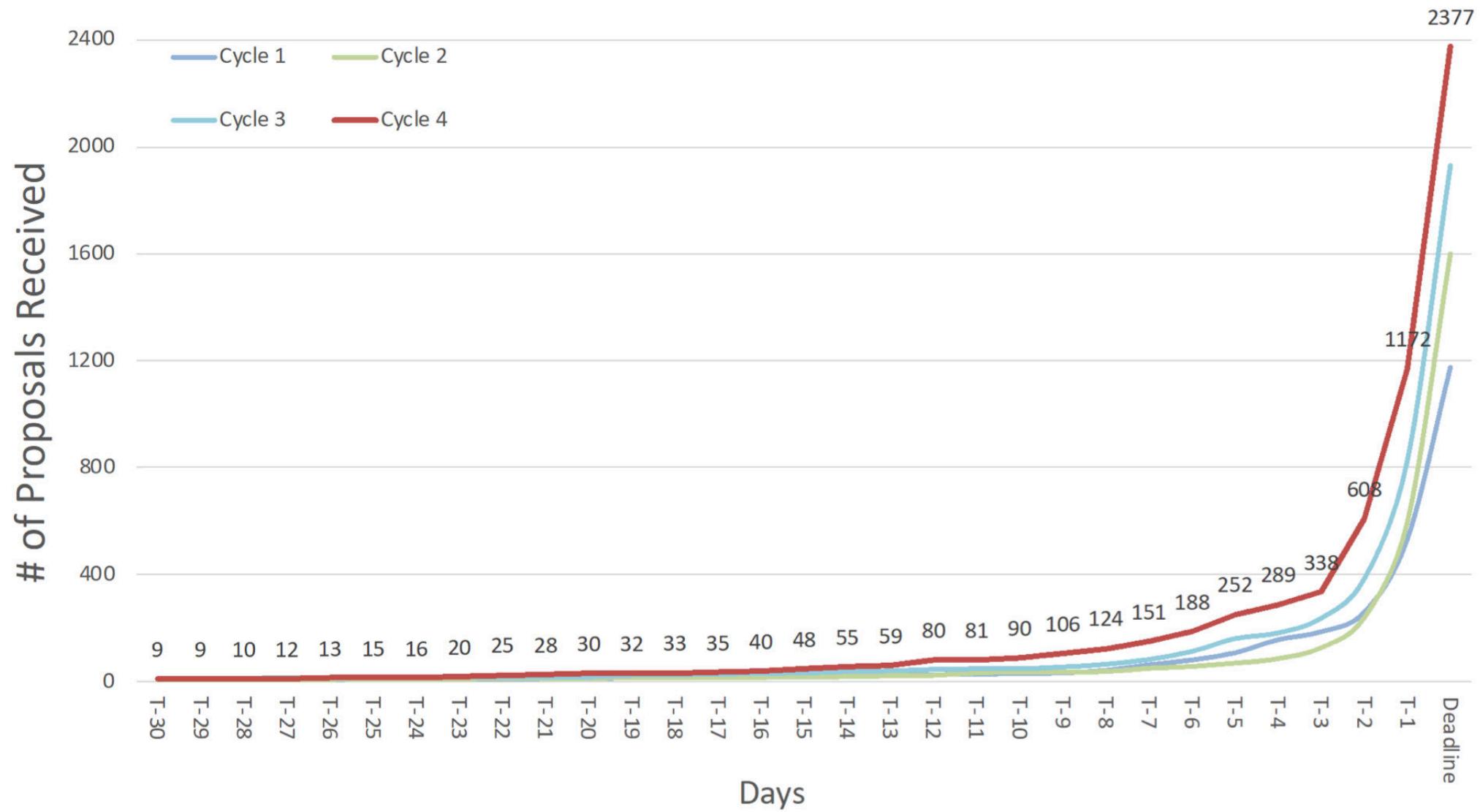


Executive Summary

- Non-Compliance Violations (DAPR, Page Limits or Others)
 - 30 proposals were rejected for non-compliance and excluded from discussion and statistics (See slide 35)
 - These were already reviewed by the Associate Director for Science. Appropriate feedback has been prepared.
- 274 Recommended Proposals
 - GO - 1 in 8.6 for proposals and 1 in 8.7 for Hours
 - Survey: 8 for 1050 targets recommended; 1 in 6.3 for proposals and 1 in 23 for targets
 - Archival Research $25/217 = 1$ in 8.7 for proposals
- Instruments: MIRI 32.5%, NIRCam 20.3%, NIRISS 7.1%, NIRSPEC 40.2%
 - Imaging 23.5% vs Spectroscopy 76.5%
- 41% of PIs are 1st time HST or JWST PIs (104 of 252 unique)



JWST Proposal Submissions



PREPARING A JWST PROPOSAL. THE TIME ALLOCATION PROCESS

Your proposal is submitted to STScI and evaluated by the Time Allocation Committee (TAC)

You need to understand how the TAC works

PREPARING A JWST PROPOSAL. THE TIME ALLOCATION COMMITTEE

Your proposal is submitted to STScI and evaluated by the Time Allocation Committee (TAC)

TIME ALLOCATION COMMITTEE (TAC)

- TAC consist of review panels (several for some areas) and executive committee
- Review panels are experts on each of the science categories
- Executive committee consist of TAC chair, chairs of panels and three members-at-large

PREPARING A JWST PROPOSAL. THE TIME ALLOCATION COMMITTEE

Your proposal is submitted to STScI and evaluated by the Time Allocation Committee (TAC)

PROPOSALS ARE EVALUATED DIFFERENTLY DEPENDING ON THE TIME REQUEST

- Proposals smaller than 15h are evaluated by external distributed panels
- Review panels distribute small ($> 15h$) and medium size proposals on their science area
- Executive committee evaluates Large, Treasury and Legacy proposals
- Evaluation proceeds according science quality and feasibility

JWST PROPOSAL. THE EVALUATION CRITERIA

Primary Criteria for All Proposals

- The **scientific merit** of the program and its potential contribution to the advancement of scientific knowledge;
- The program's **importance to astronomy in general**.
- A demonstration that the **unique capabilities of JWST** are required to achieve the science goals of the program.

Additional Criteria for All GO Proposals

- The rationale for selecting the **type and number of targets**. It is very important to strongly justify both the selection and the number of targets in your proposal, as well as the number of hours requested.
- The **technical feasibility** of the project and the likelihood of success. Quantitative estimates of the expected results and the needed signal to noise ratio of the data must be provided.

Additional Criteria for Large GO, Treasury GO, and Legacy AR proposals

- The level of **coordination of the overall work** described and the production of appropriate databases and/or tools.
- The **utility** of the data higher-level data products and/or tools.

JWST PROPOSAL. THE SCIENCE JUSTIFICATION TEMPLATE

Template with empty sections. Need to fill in free format within the page limits



■ Scientific Justification



■ Technical Justification

■ Special Requirements (if any)

■ Justify Coordinated Parallel Observations (if any)



■ Justify Duplications (if any)

■ Analysis Plan (AR only)

BEFORE START WRITING THE PROPOSAL

Need to build a compelling and competitive idea + technically feasible proposal in your head

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- Is JWST really needed?

- Are similar JWST data already available?

- Is your science project feasible with JWST?

BEFORE START WRITING THE PROPOSAL

Need to build a compelling and competitive idea + technically feasible proposal in your head

- Is JWST really needed?
 - + What are your specific science goals?
 - + What is your target(s)?
 - + Is JWST absolutely needed for your science?
 - + Can the science you proposed be done from the ground or from other space facilities?
- Are similar JWST data already available?
 - + Check the archive for public data that could be used for your science.
 - + If data exist, why do you need more?
- Is your science project feasible with JWST?
 - + Is any of the available operating modes adequate? Which one?
 - + Is more than one mode available? Identify the best one and justify it
 - + Is your target adequate for JWST? Too faint or bright?
 - + How long will take to get the required SNR for your science? Reasonable amount of time?
 - + Run ETC and APT to establish a total first estimate of time cost: what type of proposal?

JWST PROPOSAL. THE SCIENCE JUSTIFICATION TEMPLATE

Title and abstract (only 6-8 lines of text)

- + Is your presentation card to the panelist/reviewer. **First good impression**
- + Should **attract the attention** of the reviewer wishing to know more about your project
- + Select a (concise) title that already gives information about the project
- + The abstract should include a) your target/simple/field, b) the general instrumental configuration and c) brief summary of your goal(s) and why are relevant for astronomy

Scientific Justification

- **Limited number of pages (4-6) to present the project.** A proposal is like a short science letter
- **Panelists have a short amount of time.** Help the reviewers to read/understand/grade proposals. **Reviewers are not necessarily experts on the specific topic of your proposal**

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 - + Need to capture the attention of the reviewer transmitting your enthusiasm for the project
 - + Write a clean, nice looking, readable proposal such that the project is easy to understand
 - + Don't get into many nitty-gritty details. Keep balance and focus on the broad picture
 - + Have clear figures presenting the key science aspects of the proposal. Avoid busy figures requiring a lot of attention to understand what is represented

JWST PROPOSAL. THE SCIENCE JUSTIFICATION TEMPLATE

Scientific Justification

- Have a short introductory section
 - + Background and state of the art with relevant references
- Main section about what you want to accomplish, why and how
 - + Why is your science case important
 - + What new knowledge brings to the specific area and overall
 - + What new information provides the program that will advance our knowledge
 - + State clearly your specific goals. How will be achieved with the proposed observations?
Presentation in the form of bullet points.
 - + Why the target or sample? Explain your selection of sample of objects. Parameter space?
- Few supporting figures are essential
 - + Clean and organized presentation is important. Helps the reader to follow the flow of the arguments and proposal easily
 - + Bold, underlined or colors (moderately) fonts useful to remark relevant sentences and/or identify subsections within the science justification

JWST PROPOSAL. THE SCIENCE JUSTIFICATION TEMPLATE

Technical Justification

- + Indicate in detail the need for the instrument, configuration and set-up requested
- + If more than one instrument, indicate why your selection is the optimal
- + Specify the fluxes and SNR expected and the amount of time needed
- + Use ETC and mention the version used and results

Justify Duplications

- + Check the JWST archive for potential duplications
- + Duplication constraints depends on the instrument + operating mode
- + Need to explain in detail if additional data are required
- + Visit <https://jwst-docs.stsci.edu/jwst-opportunities-and-policies/jwst-general-science-policies/jwst-duplicate-observations-policy#gsc.tab=0> for details and evaluation

PREPARING A JWST PROPOSAL

You have to be convinced that your proposal is a winner

- Elaborate a mature, well constructed and feasible science program
- Believe in your **compelling** idea. You have to convince TAC members against other similar proposals

Don't wait until the last moment (two weeks before deadline) to prepare a JWST proposal

- Requires previous knowledge of all Webb instruments and configurations
- Requires previous knowledge of various tools. Get familiar with ETC, APT, background, etc
- Requires to build a compelling science justification.
- Requires a detailed APT file by the deadline. Technical details are very important
- Give enough time (week or more) for cols to comment and improve the science justification

You have to be aware that the pressure factor is very high

- Don't consider your idea as a failure if your proposal is not accepted
- Many excellent proposals don't get time. We all have experienced the frustration of rejected proposals
- Don't dismay. Try it again next cycle improving with feedback from TAC, new data/analysis

The Astronomer's Proposal Tool

Top Tool Bar

The screenshot shows the main window of the Astronomer's Proposal Tool. At the top is the "Top Tool Bar" with various icons and buttons. Below it is the "Tree Editor" on the left, displaying a hierarchical list of proposal components. The central area is the "Active GUI Window", which is currently editing the "Proposal Information of JWST Draft Proposal". This window contains fields for Title, Abstract, Proposal ID, Category, Pure Parallel Proposal, Cycle, Science Time, Charged Time, Data Volume, Proposal Size, Exclusive Access Period, Allow Restricted, Scientific Category, Alternate Category, and Science Keywords. A note at the bottom of the window says, "To aid proposal review, please select as many keywords as can be applied. Select up to 10 science keywords." At the bottom right, there is a status bar indicating "10 errors & warnings (Click for Details)".

Top Tool Bar

New JWST Proposal | New Co-I |

Form Editor Spreadsheet Editor MSA Planning Tool Orbit Planner Visit Planner Timeline View in Aladin BOT Target Confirmation PDF Preview Submission Errors and Warnings

Run All Tools Stop

What's New Roadmap Feedback

Tree Editor

JWST Draft Proposal (Unsaved)

- > **Proposal Information**
- Targets
- Observations
- Observation Links

Active GUI Window

Proposal Information of JWST Draft Proposal

Title

Abstract
Remaining characters: 1700

Proposal ID

Category GO Calibration Roman Preparatory Science Treasury
 GO-Archival Multi-Observatory Long-Term Monitoring

Pure Parallel Proposal

Cycle 5

Science Time (hours) 0.0

Charged Time (hours) 0.0

Data Volume (MB) 0.00

Proposal Size Very Small (This proposal will be reviewed by an external panel)

Exclusive Access Period Default Default is 12 Months

Allow Restricted (this session only)

Scientific Category None Selected

Alternate Category None Selected (Optional)

Science Keywords

To aid proposal review, please select as many keywords as can be applied.
Select up to 10 science keywords.

Edit Previous New Edit Proposal Description

10 errors & warnings (Click for Details)

JWST WANTS YOUR BOLD IDEAS TO DISCOVER
THE UNKNOWN UNIVERSE. APPLY FOR GO6!

