STScI | SPACE TELESCOPE SCIENCE INSTITUTE

EXPANDING THE FRONTIERS OF SPACE ASTRONOMY

Lessons learned from the JWST Cycle 1 TAC process

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Statistics & Process

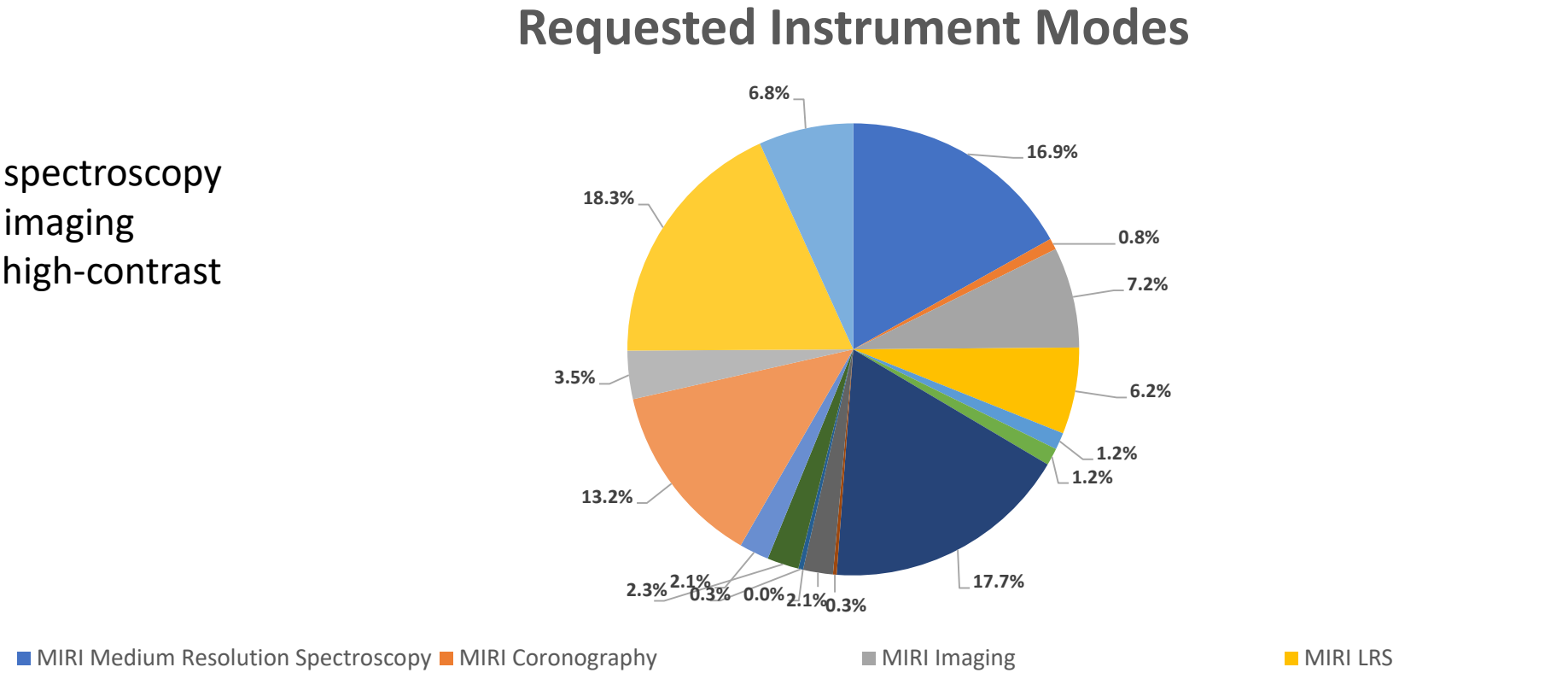
Summary

- The JWST Cycle 1 GO/AR deadline was on November 24 2020
  - Proposers could request an extension to December 3
  - A total of 1173 complete submissions were received
- The 1173 complete proposals include
  - 1084 GO proposals for ~24,500 hours
  - 75 AR or Theory proposals
  - 374 proposal led by ESA PIs (31.9%)
  - 44 proposals led by Canadian PIs (3.8%)
  - 12766 Co-investigators in total
  - 4332 Unique investigators (PI, co-PI & co-I)
  - 1985 investigators have **not** been on a past HST proposal
- Representation from
  - 44 Countries
  - 45 US states + DC and the Virgin Islands
- We conducted a post-deadline survey for community feedback
  - Still under analysis, but some initial results presented here

See this link for more information on proposal submissions: https://www.stsci.edu/files/live/sites/www/files/home/jwst/science-planning/user-committees/jwst-users-committee/_documents/jstuc-1220-cycle1-submission-stats-chen.pdf

Instrument modes – prime only

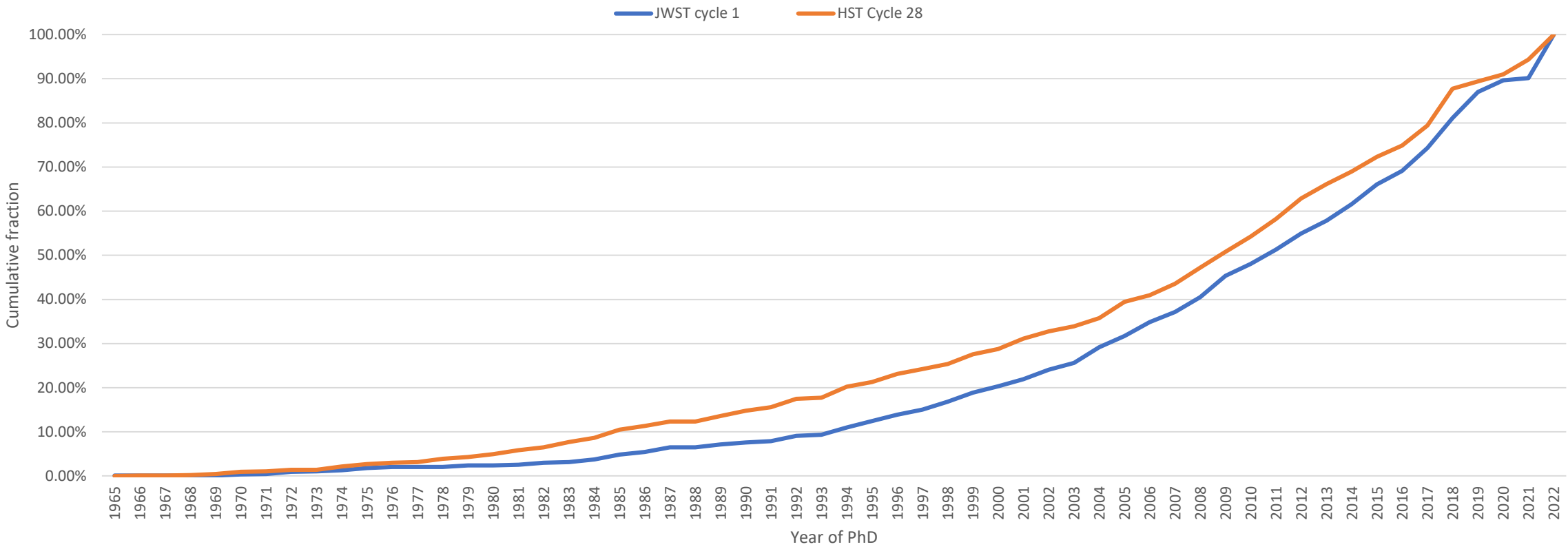
72.6% spectroscopy
24.9% imaging
2.3% high-contrast



Seniority

JWST Cycle 1 Principal Investigators skew towards more junior demographics than for HST Cycle 28

- Median year of Phd = 2010 versus 2008 for HST Cycle 28
- 122 student PIs (10.4%) versus 97 (9%) for HST Cycle 28



TAC review process

- 18 topical panels for smaller proposals – each panel has a time allocation (N hours)
- All proposals are in dual anonymous format
- Executive committee (panel chairs + at-large) review larger-scale proposals
- Preliminary grades submitted ~10-14 days before the meeting
  - Initial ranked list determined but not communicated to the panel
- Initial ranked list used to identify bottom ~40% of proposals
  - Those proposals are marked for triage
  - Panelists can raise triaged proposals (one proposal each) for discussion during the virtual meeting
- Remaining proposals are discussed at the virtual meeting & panelists re-grade
- The proposals are ranked once the grading is complete
- Panels can re-rank based on science balance, panel consensus
  - 1N line marks the panel recommendations to the ST Director
  - Panels rank to 2N to provide contingency
- Once the re-ranking is complete, the team expertise is available for panel review

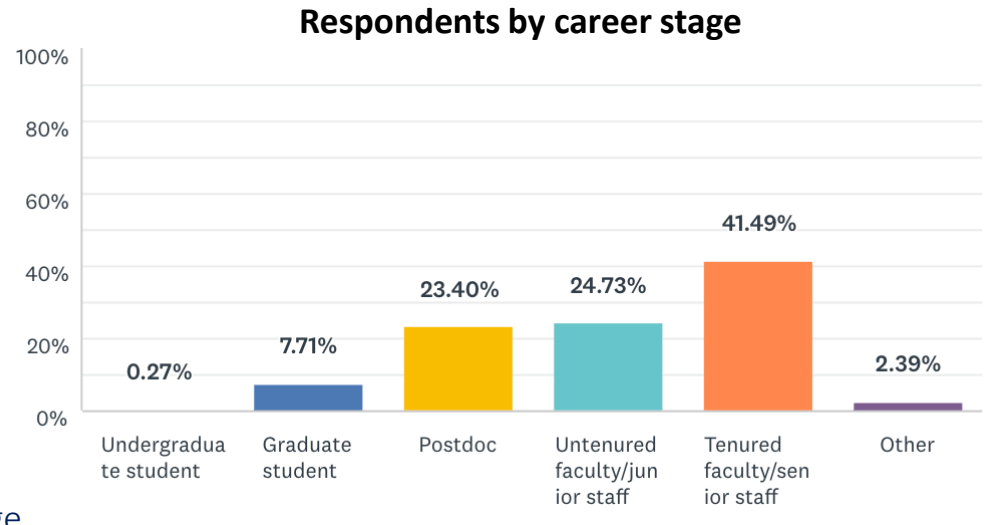
JWST TAC logistics

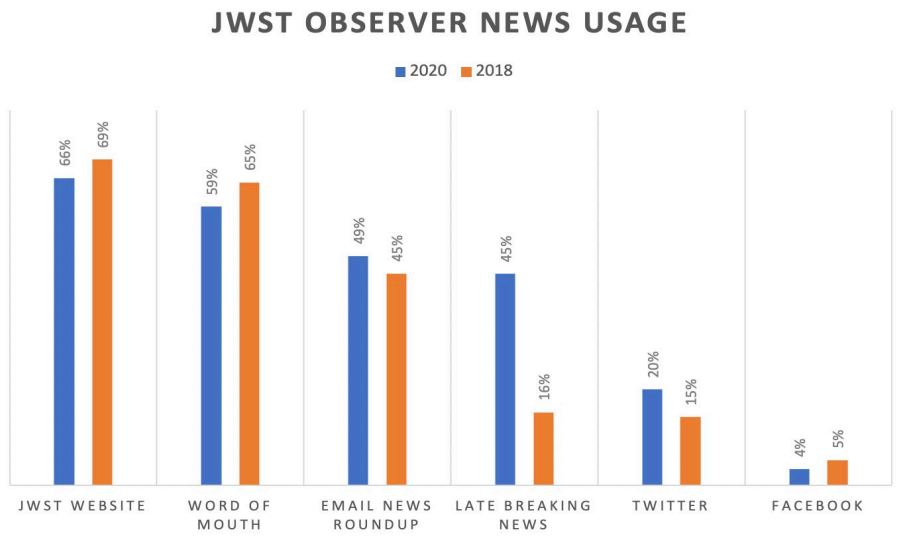
- TAC meeting took place virtually on February 16-19 (10 Galactic panels), February 23-26 (8 Extragalactic panels) & March 1-4 2021 (Executive Committee – 2 TAC co-chairs)
  - 204 astronomers from the community
  - 12 observers from NASA Project, ESA, CSA
  - Each panel supported by STScI staff members as panel support scientists and levelers
  - ~100 STScI staff in support – science policies, panel support staff, IT, instrumentation, scheduling, levelers
- Each TAC panel had a dedicated bluejeans link and associated slack channel
  - Additional slack channels for observers, levelers, PSS, SPG, TAC co-chairs & others
- All proposals receive feedback on strengths and weaknesses
  - Extended deadline for completing comments (March 5 for panels, March 13 for exec Committee)

Lessons learned/Feedback

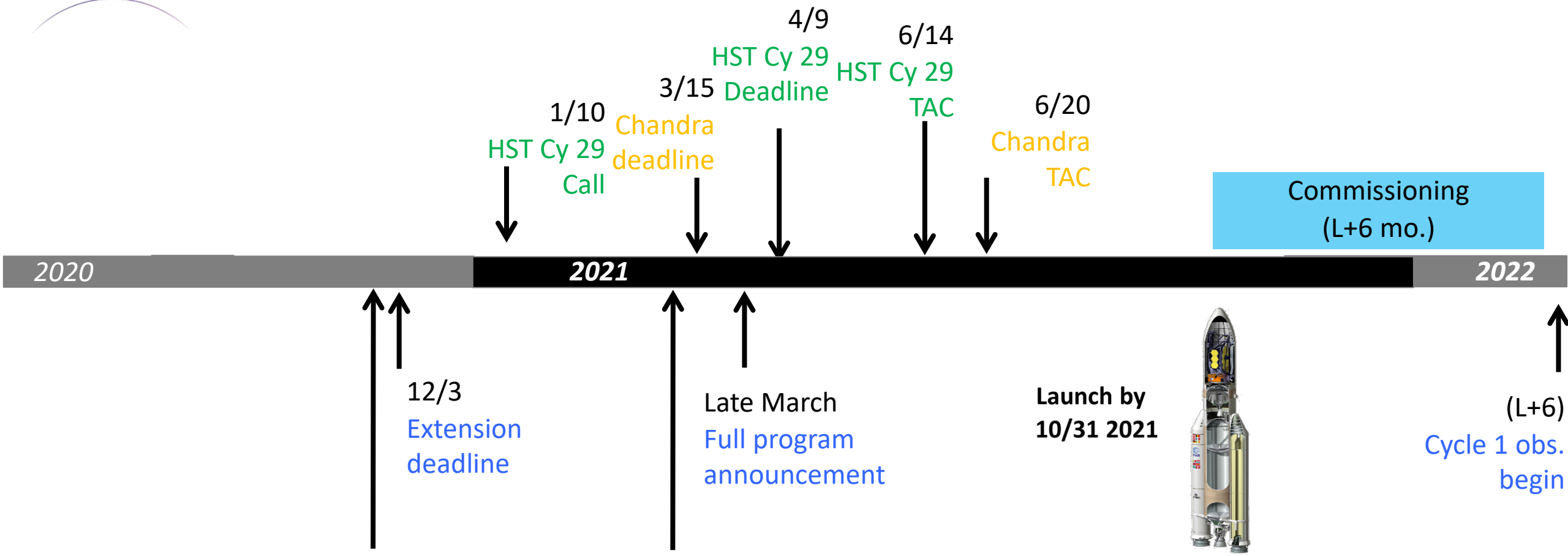
Cycle 1 GO proposal survey / technical

- 376 responses – compared to ~1200 proposals and ~4300 investigators
  - 87% used the email link, the remaining social media (Twitter, primarily).
  - 64% USA, 26% ESA, 3% Canada
  - Respondents weighted to later career stages
  - ~50 proposal process features individually ranked
  - >50 pages of free-form comments
- 37% attended a JWST Master Class workshop
  - corresponding to ~1600 total observers reached by the MC program when scaling to 4300 investigators
- The survey revealed clear differences in preferences and ratings as a function of career stage
  - Junior career showed higher rate of social media use, higher rank of online documentation system (JDox)
- A great majority of users successfully used the proposal planning system
  - Highly rated features:
    - JWST Help Desk support
    - Master Class workshops
    - Collaborative features of the exposure time calculator
    - Example programs
  - Potential issues identified
    - Speed and interface usability of exposure time calculator
    - Discoverability of ancillary tools
    - Navigation of documentation





Science Timeline – JWST Cycle 1

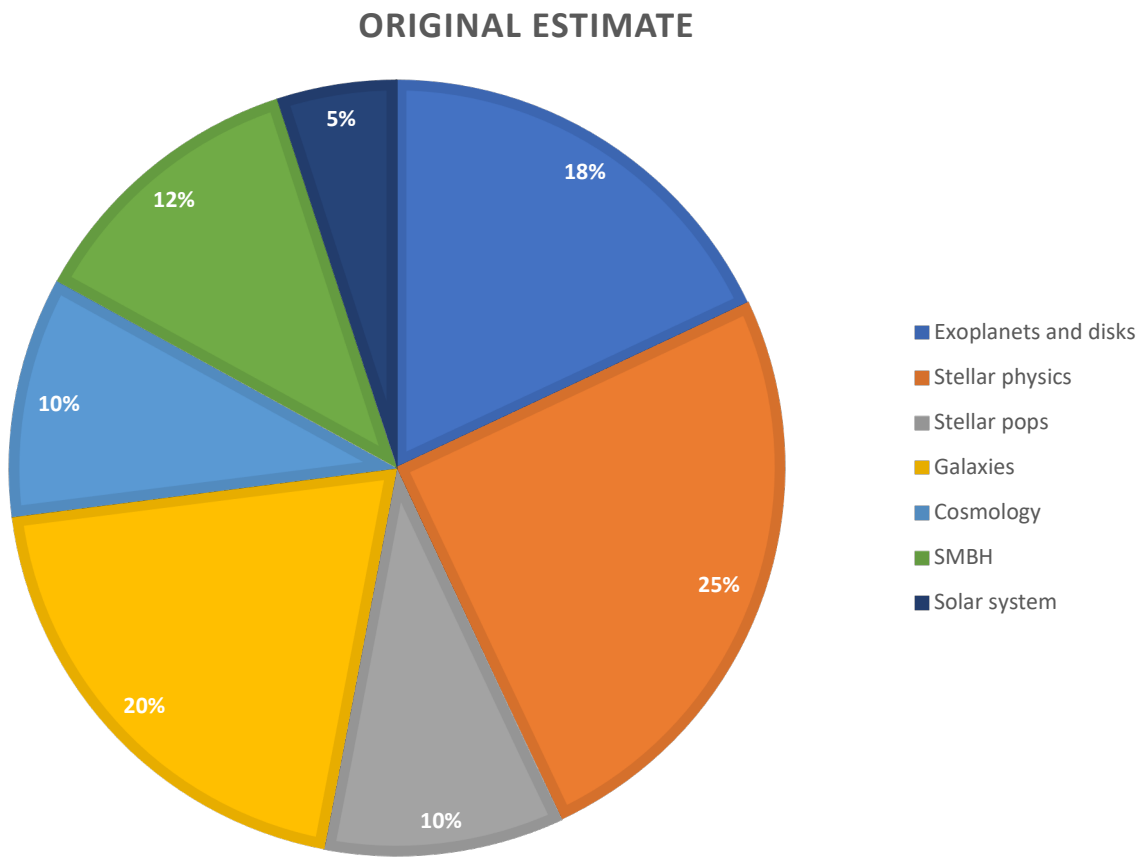


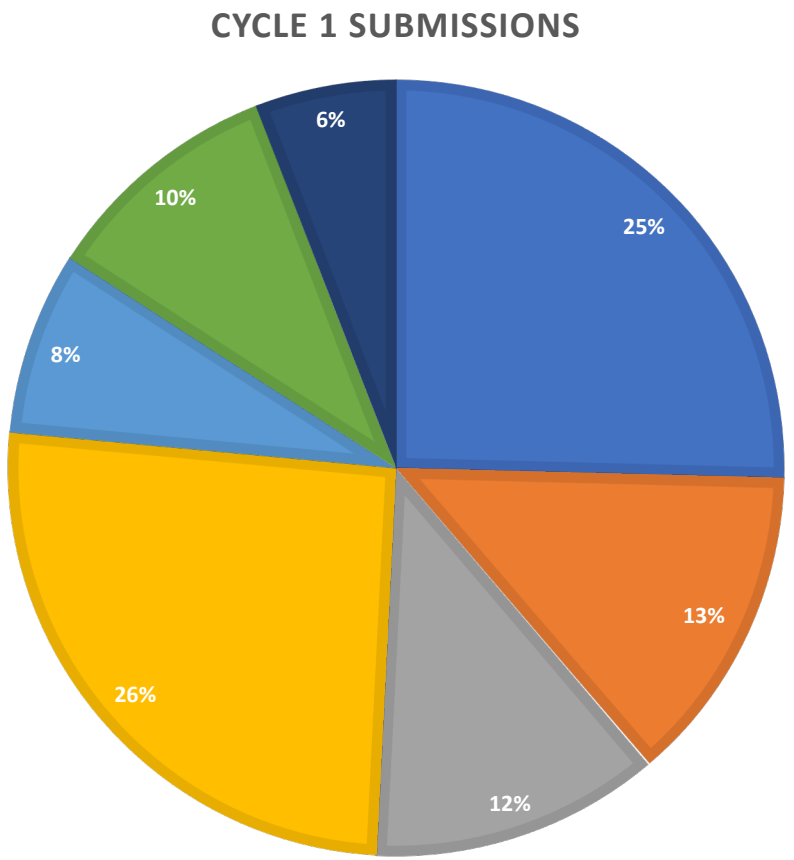
The proposal deadline

- The pre-Thanksgiving deadline was not optimal
  - ~11% of respondents to the post-deadline survey indicated they were unable to submit proposals; ~60% were affected adversely.
  - Extension to December 3rd was implemented to provide some mitigation
  - 39 requests for extensions from 23 PIs – all granted
  - 38 proposals submitted by the extended deadline
- The November 24 deadline was essential for completing proposal assignments in a timely fashion
  - The distribution by topical area did not match predictions in some respects
  - Recruited new TAC members and re-structured the panels by ~Dec 5
  - Checking science categories and assigning proposals to panels complete by December 18
  - Proposals distributed to panelists before the holidays

Science categories - results

- We underestimated the proportion/number of “Exoplanet and Disks” & “Galaxies” proposals
- We overestimated the proportion/number of Stellar Physics and SMBH proposals





Virtual TAC meeting: preparations

- Recruiting
  - Pro: It's easier to recruit TAC members when no travel is involved
  - Con: It's easier for community members to say yes when no travel is involved
- Participation
  - Remote participation can lead to a more diffuse focus
    - Some panelists maintained local activities (eg teaching classes, picking up children)
    - Everything is exacerbated by the pandemic (schools, work from home, ..)
  - Chairs **must** develop a schedule for each panel to account for individual availability
    - Pro: more clarity for panelists on what's happening when
    - Con: more work for chairs
- Communication
  - More flexibility in accessing briefing materials– on-line, orientations in advance & recorded
  - More flexibility in communication – slack, email, website documentation
  - More opportunity for confusion in how to find materials
  - More materials for panelists to digest before meeting
- In sum:
  - More work for everyone in preparing for a virtual meeting
  - Better-prepared panelists when the meeting happens

Virtual TAC meeting: execution

- Multiple backup plans for communication are necessary
  - Virtual panels have more geographic vulnerability to weather events (Storm Uri)
  - Slack was invaluable as an asynchronous communication tool
- Four days (nominally 6 hours per day) gave sufficient time for the review
  - Allows time for panels to ramp up and take appropriate breaks
  - All panels were able to complete all their tasks
- Coordinating meetings for cross-panel issues (eg similar proposals) is more complicated
  - Panels move at different speeds
  - But these matters can be addressed asynchronously
- Documentation
  - TAC instructions are now on-line & public as part of Jdox
    - They will remain on-line & accessible
  - Multiple areas of feedback where we can clarify and improve those instructions.

Proposal quality

- TAC members were instructed to ask STScI for advice on technical questions
  - Relatively few issues raised prior to and during the meeting
  - Currently carrying out “sniff tests” on selected proposals, as recommended by the JSTUC
  - Checking for residual duplications and potential scheduling issues
  - To date, very few proposals have been identified as having substantive technical/scheduling issues, but verification is still underway
- Science assessment
  - General consensus from the panels is that the proposals represent high quality science
  - None of the panels drew their “do not support” lines above the 2N lines
  - TAC Chairs will provide formal feedback
- Thanks to everyone involved, particularly panel chairs & TAC co-chairs, for the time, energy & extraordinary effort invested in the process
- Stay tuned for the announcement of the science program

Future science timeline

Science Timeline – JWST Cycle 2

1/7
HST Cy 30
Call

3/15
Chandra Cy 24
deadline

4/8
HST Cy 30
Deadline

6/13
HST Cy 30
TAC

6/20
Chandra
Cy24 TAC

1/6
HST Cy 31
Call

3/15
Chandra Cy 25
deadline

4/7
HST Cy 31
Deadline

Commissioning
(L+6 mo.)

2021 | 2022 | 2023

Launch by
10/31 2021

L+6
Start of Cycle
1 science
observations

L+8
GTO Cy2 Call
for proposals

L+11
GO Cy2 Call
for proposals

L+13
GO Cy2
Deadline

L+15.5
GO Cy2 TAC

L+18
Cycle 2
starts

HST & Chandra dates are estimates

Backup

Cycle 1 Proposal Review Schedule

Date	Milestone
November 24, 2020	Cycle 1 Proposal Deadline
December 14, 2020	STScI releases proposals to panelists for review and preliminary grading
January 8, 2021	Deadline for panelists to identify additional conflicts of interest (and to recommend proposals that should be moved to another Science Category)
January 28, 2021	Orientation meeting for Panel Chairs
February 3, 2021	Deadline for Galactic panelists to submit preliminary grades for proposals that they are assigned
February 4, 2021	Orientation meeting for Galactic Panelists
February 6, 2021	STScI releases the list of proposals that will be discussed in the Galactic panels; panelists should review all those proposals in preparation for the panel meeting.
February 10, 2021	Deadline for Extragalactic panelists to submit preliminary grades for proposals that they are assigned
February 11, 2021	Orientation meeting for Extragalactic Panelists
February 12, 2021	Deadline for Executive Committee to submit preliminary grades for Large and Treasury proposals that they are assigned
February 13, 2021	STScI releases the list of proposals that will be discussed in the Extragalactic panels; panelists should review all those proposals in preparation for the panel meeting.
February 15, 2021	STScI releases the list of proposals that will be discussed in the Executive Committee meeting; Committee members should review all those proposals in preparation for the panel meeting.
February 16 - 19, 2021	Galactic panels meet
February 22 - 25, 2021	Extragalactic panels meet
March 1 - 4, 2021	Executive Committee meets
March 11, 2021	Deadline for Panel Chairs to submit final consensus reports
April 7, 2021	STScI releases Cycle 1 GO Science Program

Key Dates

- December 14th, 2020: Distribution of the proposals to the reviewers
- February 3rd – 10th, 2021: Preliminary grades due at STScI
- February 16th – 29th, 2021: Virtual TAC Meetings
- No later than April 7 2021: STScI Releases Cycle 1 GO Program

Selection Criteria and Scoring System

Selection Criteria

- The scientific merit of the program and its contribution to advancement of knowledge – How does the proposed investigation impact our knowledge with the specific sub-field?
- The program's impact for astronomy in general – Are there implications for other science areas and/or insights into larger-scale questions?
- A demonstration that the unique capabilities of JWST are required to achieve the science goals – suitability for JWST; how much of an advantage does JWST data offer over other facilities? This applies to both GO and AR proposals; Theory proposals should have broad applicability to JWST observational programs.

Scoring System

Grade	Impact within the sub-field	Out-of-field impact	Suitability
1	Potential for transformative results	Transformative implications for one or more other sub-fields	Science goals can only be achieved with JWST
2	Potential for major advancement	Major implications for one or more other sub-fields	Major advantages in using JWST over other facilities
3	Potential for moderate advancement	Some implications for one or more other sub-fields	Some advantages in using JWST over other facilities
4	Potential for minor advancement	Minor impacts on other sub-fields	Minor advantages in using JWST over other facilities
5	Limited potential for advancing the field	Little or no impact for other sub-fields	JWST offers little or no advantage over other facilities or the advantages of using JWST are unclear.