



# JWST

## User Documentation for Cycle 1: OPPORTUNITIES AND POLICIES

This PDF was last updated on February 12, 2018.  
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# JWST Cycle 1 Proposal Opportunities

The James Webb Space Telescope will offer proposal opportunities for General Observers (GO), [Guaranteed-Time Observers \(GTO\)](#), and [Early Release Science Programs \(DD ERS\) during Cycle 1](#). JWST is scheduled for launch in Spring 2019. Science observations will commence after a 6 month commissioning phase, with Cycle 1 proposals deadlines in 2017/2018.

We invite scientists to participate in the first cycle of investigations with the James Webb Space Telescope (JWST). JWST is an international collaboration between [NASA](#), the [European Space Agency \(ESA\)](#), and the [Canadian Space Agency \(CSA\)](#). JWST is operated and managed by AURA's [Space Telescope Science Institute \(STScI\)](#). The links below provide information, policies, deadlines, and instructions for proposing opportunities with JWST in Cycle 1.

- [General Observer \(GO\) and Archival Research \(AR\) Program \[PDF\]](#)
- [Director's Discretionary Early Release Science \(DD ERS\) Program](#)
  - [Call for Notices of Intent to propose](#)
  - [Call for Proposals \[PDF\]](#)
- [Guaranteed Time Observation \(GTO\) Program \[PDF\]](#)

## Important Dates

Rows are color coded by opportunity, where red = GTO, green = DD ERS, and white = Cycle 1 GO

Release of the Cycle 1 Call for GTO Proposals	January 6, 2017
Release of the Cycle 1 Call for DD ERS Notices of Intent	January 6, 2017
DD ERS Letters of Intent due	March 3, 2017, 8pm ET
Cycle 1 GTO Science Descriptions and Observation Specifications due	April 1, 2017, 8pm ET
Release of the Cycle 1 Call for DD ERS Proposals	May 19, 2017
APT version 25.1 Released (with updated Cycle 1 overhead calculations)	June 1, 2017
GTO Observation Specifications Published (public)	June 15, 2017
APT version 25.2 Released (primarily HST updates)	June 21, 2017
GTO APT Technical Reviews and Revisions Begin	July 28, 2017
DD ERS Proposal Deadline	August 18, 2017, 8pm ET
DD ERS Results Released	November 2017
GTO APT Technical Reviews and Revisions Completed	November 15, 2017
APT version 25.4 Released (further updates for Cycle 1 GO Call)	November 20, 2017
Submissions of GTO APT proposals completed	November 30, 2017
Release of the Cycle 1 Call for GO Proposals	November 30, 2017
GTO APT Files advertised (public)	December 15, 2017
DD ERS APT Files advertised (public)	December 2017
Cycle 1 GO Proposal Deadline	April 6, 2018
Cycle 1 Budget Deadline	August 30, 2018

# James Webb Space Telescope Call for Proposals for Cycle 1

The policies governing the JWST Cycle 1 General Observer (GO) and Archival Research (AR) programs in Cycle 1 are established in this Call for Proposals.

## Late Breaking News

None at this time. Entries here will summarize changes in the documentation that may affect proposal preparation.

## About this Document

We invite scientists to participate in Cycle 1 of the James Webb Space Telescope (JWST). The telescope and its instruments were built under the auspices of the National Aeronautics and Space Administration (NASA), the European Space Agency (ESA), and the Canadian Space Agency (CSA). Management of JWST's scientific program is carried out by the Space Telescope Science Institute (STScI). JWST observing programs are allocated against wall-clock time, with up to 6,000 hours available for general observers in this cycle, divided by program sizes as 3,500 hours for [Small programs](#) ( $\leq 25$  hours), 1,500 for [Medium programs](#) ( $> 25$  and  $\leq 75$  hours), and 1,000 for [Large programs](#) ( $> 75$  hours). Observing time has already been allocated for [Guaranteed Time Observations](#) (GTO) and [Director's Discretionary Early Release Science](#) (DD-ERS) programs. This document establishes the goals, requirements, and policies for the [General Observer](#) (GO) and [Archival Research](#) (AR) programs in Cycle 1.

The table of contents for the web version of this document is on the right side of the page, and links there can take you to any page from any other page (click the arrow to expand the entire table of contents under "James Webb Space Telescope Call for Proposals for Cycle 1"). The links at the top of each page correspond to sections within that given page.

A [PDF](#) of this document and other documents in this site are provided on [JWST Opportunities and Policies](#) as a courtesy. The online documentation is the authority, and will be updated with the latest information.

## Important Dates

The Cycle 1 proposal deadline is Friday, April 6, 2018, 8pm Eastern Time.

The Time Allocation Committee will meet in late June 2018, with results announced in July 2018.

The Budget deadline is Thursday, August 30, 2018, 8pm Eastern Time.

Cycle 1 observations will start after a 6 month commissioning period. The start date will depend on when JWST launches within the March 31 - June 29 2019 launch window. Cycle 1 will have a duration of one year. Time-constrained observations can be submitted for the period October 1 2019 to December 31 2020.

## Who's Responsible

Members of the Science Mission Office at STScI are responsible for the oversight of the JWST science program selection process. The members involved include Neill Reid (Associate Director for Science and Head of the Science Mission Office), Amaya Moro-Martin, Louis-Gregory Strolger, Brian Williams, and Technical Manager Brett Blacker. The Science Policies Group also includes Claus Leitherer, Alessandra Aloisi, Andy Fruchter, and Molly Peeples. As delegated by NASA Headquarters, the selection official for JWST proposals is the STScI Director.

## Where To Get Help

Submit questions to the JWST helpdesk at [jwsthhelp.stsci.edu](http://jwsthhelp.stsci.edu). Consult JWST documentation at [jwst-docs.stsci.edu](http://jwst-docs.stsci.edu), and see [jwst.stsci.edu](http://jwst.stsci.edu) for additional tools and resources.

Next: [JWST Cycle 1 Proposal Checklist and Resources](#)

## Related Links

[JWST General Science Policies](#)

[JWST Cycle 1 Proposal Opportunities](#)

# JWST Cycle 1 Proposal Checklist and Resources

JWST Cycle 1 proposers are encouraged to follow this checklist for writing and submitting proposals for the James Webb Space Telescope (JWST).

## Know the deadlines

Rows are color coded by opportunity, where red = GTO, green = DD ERS, and white = Cycle 1 GO

<a href="#">GTO Observations Specifications Released</a>	June 15, 2017
<a href="#">DD ERS Results Released</a>	November 13, 2017
APT version 25.4 Released (further updates for Cycle 1 GO Call)	November 20, 2017
Release of the Cycle 1 Call for GO Proposals	November 30, 2017
GTO APT Files Published (public)	December 2017
DD ERS APT Files Published (public)	December 2017
Cycle 1 GO Proposal Deadline	April 6, 2018, 8pm ET
Cycle 1 TAC meets	June 18-22, 25-29 2018
Cycle 1 Results Announced	July 2018
Cycle 1 Budget Deadline	August 30, 2018, 8pm ET
Launch (L)	March - June, 2019
Commissioning	L to L+6 months
Approximate Start of Cycle 1	L+6 months

Know where to find the [JWST User Documentation](#)

[JWST General Science Policies](#)

## [JWST Observatory and Instrumentation Documentation](#)

[JWST Observatory Overview](#)

[Mid-Infrared Instrument, MIRI](#)

[Near Infrared Camera, NIRCAM](#)

[Near Infrared Spectrograph, NIRSpec](#)

[Near Infrared Imager and Slitless Spectrograph, NIRISS](#)

## [JWST Observation Planning Documentation](#)

## [JWST Data Calibration and Analysis Documentation](#)

# Learn the JWST observation planning tools.

- Proposers should assume nominal performance from JWST, as described in the [JWST User Documentation](#), and as assumed by the [JWST Exposure Time Calculator \(ETC\)](#).
- [JWST Exposure Time Calculator \(ETC\)](#) – The JWST ETC is a [web-based tool](#) for estimating how much exposure (science) time will be required for different JWST instrument modes and configurations to achieve the desired science goals. Users may save and share their calculations in workbooks.
- [Astronomer's Proposal Tool \(APT\)](#) – APT is a stand-alone software package required for preparing JWST observations and submitting JWST Cycle 1 proposals. Training material on APT [can be found here](#). The JWST NIRSpec MSA Planning Tool, JWST Visit Planner, and Aladin visualization tool are included in APT. [Download APT here](#).
- [JWST Target Visibility Tools](#) – The entire sky is available to JWST observations over the course of a year, but only approximately 40% is accessible at any given time. Targets that need to be observed at a particular time, time separation, or aperture position angle on the sky may have significantly constrained visibility or may even be unschedulable. There is a simple tool to perform a quick assessment of schedulability of proposal targets prior to developing an APT proposal. Much of this is already integrated into APT, so accessing the separate tool may be unnecessary for most users. There are more specialized tools to help users plan coronagraphy observations and Pre-imaging observations for NIRSpec MOS mode, and there is also a tool to compute and visualize the background levels versus date for a given target.
- [WebbPSF](#) – Stand-alone software calculates the JWST Point Spread Function for a range of instrument modes and assumptions. Stock PSFs are also available. However, the [JWST ETC](#) uses a pre-computed library of PSFs, rendered by WebbPSF, and so accessing the separate tool may be unnecessary for most users. [Download WebbPSF here](#).
- [JWST Background Model](#) – The JWST Backgrounds page describes the various forms of background



emission, both from astrophysical sources and from the telescope itself, that users should familiarize themselves with when planning a proposal. This page also discusses how these backgrounds are handled in the ETC.

## Design a JWST observing program in APT

- [Download and install the latest version of APT.](#)
- Create a New JWST proposal in APT and fill out the Proposal Information section
- Enter your target or targets
- Create a new Observation Folder and a new Observation with an [observation template](#) or with the NIRSpec MSA Planning Tool.
- View an Observation with the Aladin visualizer tool.
- Run the Visit Planner for one or more Observations.
- Resolve any errors or warnings in APT.
- When all observations have been entered and run successfully through the Visit Planner, run [Smart Accounting](#) for the full proposal to compute your total time allocation request.
- Check for [duplicate observations](#) with the list of approved [GTO Observations](#) and [ERS observations](#).
- In some cases it may not be possible to fully specify a proposal at the time of submission (e.g. to resolve all errors and warnings in APT). Proposals that may be exempted from the [nominal single-stream process](#) will be described in the [special submission requirements section](#) of each call for proposals.

## Write your science proposal

Create [the PDF attachment](#) of the proposal narrative, which includes a number of required text sections such as the Scientific Justification and Technical Justification.

## Submit your JWST proposal.

- Attach the PDF of your scientific proposal to the APT program on Proposal Information form.
- Preview the entire proposal by selecting the APT PDF Preview tool. This view will merge the information provided in APT along with the PDF attachment, and is what the Telescope Allocation Committee (TAC) will review.
- Submit your completed proposal with APT. Select the [APT Submission Tool](#) in the top tool bar and follow the instructions. In the Submission Log window you will see a message giving the time of the submission, the assigned proposal ID (if a new proposal), and the submission status.
- After the initial submission, proposals can be re-submitted as needed (up to the stated deadline). Resubmitting does not change the proposal number received upon the initial submission.

Wait.

After you submit your proposal, all investigators will receive an automatic email acknowledgment that the submission was received successfully. If you do not receive that email within minutes of your submission, please check the APT Submission Log Window for a problem. In addition, all investigators will receive an additional email indicating whether your proposal was successfully processed after the submission deadline. If you do not receive this acknowledgement within 72 hours of the deadline, please submit an incident to the JWST Help Desk, <http://jwsthhelp.stsci.edu/>, as your submission was NOT RECEIVED and the TAC WILL NOT see your proposal; please provide the submission ID information from the APT Submission Log window. If there are any problems associated with your PDF attachment or APT information submitted, you will be contacted by email separately.

Notification of your proposal's status (approved or rejected) generally occurs within ~3 weeks of the Telescope Allocation Committee meeting.

## Next steps for approved programs

U.S. investigators with approved JWST programs are eligible for funding. See [JWST Cycle 1 Proposal Policies and Funding Support](#) for further details. Successful JWST observing proposals will be reviewed by a STScI instrument scientist and program coordinator. Programs may require adjustments or revisions after the award. Proposers should submit programs that are executable, but STScI expects iterative optimization between the institute and the PI of accepted Cycle 1 programs. The Instrument Scientist and Program Coordinator will iterate with proposers to finalize the observations in accordance with the TAC recommendations, under the approval of the STScI Director.

Next: [JWST Cycle 1 Proposal Policies and Funding Support](#)

# JWST Cycle 1 Proposal Policies and Funding Support

This page describes the policies for JWST Cycle 1 General Observer (GO) and Archival (AR) proposals. GO and AR proposals are solicited in all areas of Astrophysics.

## Proposer Types and Submission Eligibility

Investigators of any nationality or affiliation may submit and be included on JWST proposals. Institutional endorsement is not required for proposal submission. All proposals are reviewed without regard to the nationalities or affiliations of the investigators.

Each proposal must have a Principal Investigator (PI), who is responsible for the scientific leadership of the project. A Co-Principal Investigator (Co-PI) option is also available, allowing two or more proposers to share the scientific responsibility of the project. Any other individuals who are actively involved in the proposal should be listed as Co-Investigators (Co-Is). The proposal itself must be submitted through APT, by either the PI or any Co-I.

Proposals by non-U.S. PIs that have one or more U.S. Co-Is must designate one of the U.S. Co-Is as the Administrative PI. This person will have overall oversight and responsibility for any budget submissions by the U.S. Co-Is. All proposals have the option of designating a Contact Co-I, who will serve as the contact person for that proposal. However, the PI remains responsible for oversight of the award, the proper conduct of research, the appropriate use of funds (regardless of whether or not the PI received support through the award), and the administrative requirements such as the submission of progress reports. Up to two Co-PIs can be identified with appropriate justification clearly specifying the leadership roles and responsibilities of each Co-PI.

An agreement between NASA and ESA states that a minimum of 15% of JWST observing time (on average over the lifetime of the JWST project) will be allocated to scientists from institutions in ESA member states. Similarly, an agreement between NASA and CSA states that a minimum of 5% of JWST observing time (on average over the lifetime of the JWST project) will be allocated to scientists from Canadian institutions. It is anticipated that these requirements will continue to be satisfied via the normal selection process, as it has been with the Hubble Space Telescope.

Observing proposals from student PIs should be accompanied by a letter from the student's faculty advisor certifying that:

- The student is qualified to conduct the observing program and data analysis;
- They are in good academic standing.

This letter from the advisor should be e-mailed before the proposal deadline to [student-pi@stsci.edu](mailto:student-pi@stsci.edu). The faculty advisor's statement is not required in cases where a student is listed in the proposal as a Co-I.

STScI does not require the signature of an Authorizing Official (AO) on JWST GO/AR Proposals. However, some institutions do require AO approval of all submitted proposals. It is the responsibility of each PI to follow all applicable institutional policies concerning the submission of proposals.

## Funding Support and Funding Eligibility

Subject to availability of funds from NASA, STScI will provide financial support to eligible U.S. investigators on approved JWST Cycle 1 programs. Budgets are not due at the Cycle 1 GO/AR proposal deadline, but are required by the budget submission deadline, August 30, 2018, 8pm Eastern Time.

“U.S. investigators” (including postdocs and graduate students) are defined as named PI’s or Co-I’s who are:

1. U.S. citizens residing in the United States, or abroad if salary is being paid only by a U.S. institution. (STScI funds are not intended to support U.S. investigators who live abroad full-time even if they do not receive a salary from a non-U.S. institution. Investigators in this status may not affiliate with a U.S. institution merely for the purpose of requesting STScI grant funds.), or
2. U.S. permanent residents and foreign national investigators working in the United States if salary is being paid only by a U.S. institution.

STScI funding cannot be used in any way to support research efforts by non-U.S. investigators or institutions. Regardless of where they reside, an investigator who has a formal or contractual affiliation (funded or unfunded) with a non-U.S. institution is considered a “non-U.S. Investigator” and may not apply for funding.

ESA member-state proposers should seek funding from their respective home institutions or national funding agencies.

## Proposal Confidentiality

Proposals submitted to STScI will be kept confidential to the extent allowed by the review process. For accepted proposals, the following information will become publicly accessible: names of PI, Co-PIs, and Co-Is, project titles, abstracts, description of observations, special scheduling requirements, and details of all targets and exposures. The APT files of approved proposals become publicly accessible in their entirety.

## Data Rights and Duplications

Depending on the Proposal Category (see [JWST Cycle 1 Proposal Categories](#)), observers may have exclusive access to their science data during an exclusive access period. For Small and Medium GO Proposals, this period is normally 12 months following the date on which the data are archived. At the end of the exclusive access period, the data become available for analysis by any interested scientist through the MAST Archive.

Submitters of Small and Medium GO Proposals who wish to request a shorter exclusive access period of 3



or 6 months, or who are willing to waive their exclusive access rights altogether, should specify this in the 'Special Requirements' section of the proposal (see [JWST APT Special Requirements](#)). Because of the potential benefit to the community at large, particularly (but not exclusively) in the case of Survey programs, proposers should give this possibility serious consideration (it is one of the selection criteria for Survey Programs; see [JWST Cycle 1 Proposal Selection Process](#)).

Data taken under the Treasury, Calibration, and Large Program categories will by default have no exclusive access period. Any request for non-zero exclusive access periods for programs in these categories must be justified in the [APT Special Requirements](#) and will be subject to review by the TAC.

Observations taken as part of the GO program cannot duplicate those specified by [Guaranteed Time Observations \(GTOs\)](#) or the [Director's Discretionary Early Release Science \(DD ERS\)](#) program unless there is a scientific justification for the additional observations. Generally, an observation is considered a duplication if it is on the same astronomical target or field, with the same instrument in the same mode, with the same spectral resolution and spectral range, and an on-target exposure time within a factor of 4 of the previously-scheduled observation. Any duplicate observations must be explicitly justified in the proposal. Further details are provided in the [JWST Duplication Policy](#).

Next: [JWST Cycle 1 Proposal Categories](#)

# JWST Cycle 1 Proposal Categories

A General Observer (GO) or Survey proposals may be submitted for any amount of observing time on JWST. Proposals may also be submitted to financially support the analysis of Archival JWST data (AR), to develop data science software to benefit the community of JWST users, or to financially support theoretical research in support of JWST observational programs.

## Overview of Proposal Categories

JWST observations can be requested with a General Observer (GO) Proposal. GO proposal categories include Small, Medium, Large, Calibration, Long-Term, Treasury, and Survey. Funding for JWST-related projects that do not require new JWST observations can be requested with an Archival Research (AR) Proposal. An AR proposal can be either a Regular AR, Calibration AR, Legacy AR, Theory, or a Community Data Science Software Proposal. All GO and AR proposals are peer-reviewed by a Telescope Allocation Committee (TAC), as described in [JWST Cycle 1 Proposal Selection Process](#). Investigators may also request Director's Discretionary (DD) time at any time for unanticipated and scientifically compelling astronomical observations.

## General Observer (GO) Proposals

A GO Proposal may be submitted for any amount of observing time, counted in hours, including all overheads. GO Proposals are classified as Small ( $\leq 25$  hours), Medium ( $> 25$  and  $\leq 75$  hours) and Large ( $> 75$  hours). The classification into these categories is the total charged time for the observatory, including overheads. Proposals in these categories can request observing time in future cycles as a [Long-Term Proposal](#) when this is scientifically justified, however the program's total time, and hence its category, will be determined from the sum total of time for all cycles in the request. The additional category of [Treasury Proposals](#) is designed to stimulate certain types of ambitious and innovative proposals that may not naturally fit into the Small, Medium, or Large Proposal categories.

Submitters of Medium, Large, and Treasury Proposals should note that all JWST observations are accepted with the understanding that the timescale on which the observations will actually be obtained will depend on scheduling opportunities and demands on JWST resources. Programs with scheduling constraints may require execution over an extended period. In general, proposals are either accepted or rejected in their entirety. Accordingly, proposers are urged to request the actual number of hours required to achieve the proposal science goals. Laboratory astrophysics relevant to JWST observations is an acceptable component of a GO proposal. Ground-based observations that complement JWST observations may also be included as a component of a GO proposal, but note that these observations must be obtained independently, as STScI does not award time on ground-based facilities.

## Small GO Proposals

Small GO Proposals are those that request less than or equal to 25 hours of total time. It is anticipated that approximately 3500 hours will be available to the review panels for allocation to Small Proposals in Cycle 1. Small Proposals will have a default exclusive access period (formerly called a "proprietary period" in HST proposals) of 12 months.

## Medium GO Proposals

Medium GO Proposals are those that request above 25 hours but less than or equal to 75 hours of total time. The Medium Proposal category exists to ensure that compelling science programs that demand a medium-size hour request have a comparable chance of success to both Small and Large GO proposals. It is anticipated that approximately 1500 hours will be available for GO medium proposals in Cycle 1. Medium Proposals will have a default exclusive access period of 12 months.

## Large GO Proposals

Large Proposals are those that request more than 75 hours of total time. These programs should lead to a clear advance in our understanding in an important area of astronomy. They must use the unique capabilities of JWST to address scientific questions in a comprehensive approach that is not possible in smaller time allocations. Selection of a Large Proposal for implementation does not rule out acceptance of Small or Medium Proposals to do similar science, but target duplication and overall program balance will be considered.

Approximately 1000 hours will be made available to Large and Treasury Proposals in Cycle 1. Data taken for Large Proposals will, by default, have no exclusive access period. Proposals may request an exclusive access period, and that request should be justified in the "Special Requirements" section of the proposal. Such a request will be subject to review by the TAC.

## Calibration GO Proposals

JWST is a complex observatory, with many possible instrument configurations. Calibrations and calibration software are maintained by STScI for the most important and most used configurations. However, STScI does not have the resources to calibrate fully all potential capabilities of all instruments. Additionally, the astronomical community has expressed interest in receiving support to perform calibrations for certain uncalibrated or poorly calibrated modes, or to develop specialized software for certain JWST calibrations. In recognition of this, STScI is encouraging outside users to submit Calibration Proposals, which aim to fill in some of the gaps in our coverage of the calibration of JWST and its instruments.

Calibration Proposals should not be linked to a specific science program, but should provide a calibration or calibration software that can be used by the community for existing or future programs. A specific science program that has special calibration requirements is not a Calibration Proposal; such a proposal should be submitted as a normal GO Proposal and the necessary calibration observations should be included in the science program. Users submitting Calibration Proposals must contact the appropriate instrument team at

STScI (via the helpdesk) to discuss their program prior to submission. Failure to do so will result in automatic rejection of the proposal.

Successful proposers will be required to deliver documentation, data products and/or software to STScI to be made available to the community to support future observing programs or archival research. Funding is available to support Calibration Proposals in the same manner as for normal science programs, with the following exception: Scientists affiliated with STScI are not eligible for any funding to support their role (as PI or Co-I) in a Calibration Proposal.

Calibration Proposals will be reviewed internally at STScI by the Instruments Division. The internal review will provide the TAC with an assessment of the feasibility of the proposal, how the proposal complements/extends the existing calibration program, and the type of science impacted by the proposed calibrations. Proposers should summarize the relevance and overall scientific utility of the calibration techniques and products described in their proposal.

Investigators interested in the submission of a Calibration Proposal are encouraged to study the JWST User Documentation to determine the level at which STScI provides calibration and characterization. The data obtained for a GO Calibration Proposal will nominally have no exclusive access period, as is the case for regular calibration observations. Proposers may request an exclusive access period (which should be explained in the "Special Requirements" section of the proposal), but such a request will be subject to panel and TAC review and will only be granted in exceptional circumstances. Calibration Proposals can also be submitted as Survey Proposals or Archival Proposals. AR Proposals are appropriate in cases where the necessary data have already been taken, or for programs that do not require specific data but aim to develop specialized software for certain JWST calibration and data reduction tasks.

## Long-Term GO Proposals

Small, Medium, Large, and Treasury GO Proposals may request JWST observing time in more than one cycle if a clear scientific case can be made. Long-Term Proposals must be limited to cases where long-baseline, multi-epoch observations are clearly required to optimize the scientific return of the project. Long-Term Proposals require a long time baseline, but not necessarily a large number of JWST hours, to achieve their science goals. Examples include astrometric observations or long-term monitoring of variable stars or active galactic nuclei.

Proposers may request time in up to three cycles (1, 2, and 3). Long-term Proposals should describe the entire requested program and provide a cycle-by-cycle breakdown of the number of hours requested. The Cycle 1 review panels and TAC will only be able to award a limited amount of time in future cycles, so a detailed scientific justification for allocating time beyond Cycle 1 must be presented. Scheduling concerns are not a sufficient justification. The sum of all hours requested in Cycles 1, 2, and 3 determines whether a Long-Term Proposal is Small, Medium, or Large, with the appropriate exclusive access periods applied (12 months for Small and Medium, and 0 months for Large). Target-of-Opportunity Proposals are eligible to be Long-Term for rare phenomena if certain conditions are met (see [JWST Cycle 1 Observation Types and Restrictions](#)). GOs with approved Long-Term Proposals need not submit continuation proposals in the subsequent cycles.



# Treasury GO Proposals

Treasury Proposals are those designed to create datasets of lasting value to the JWST project. A Treasury Program is defined by the following characteristics:

- The program should focus on the potential to solve multiple scientific problems with a single, coherent dataset. It should enable a variety of compelling scientific investigations.
- The program should produce data products that are processed or calibrated significantly beyond the capabilities of the JWST Calibration Pipeline to maximize the scientific impact of the program. Examples include tiled images, multi-band object catalogs, or coordinated observations on other facilities (for which some funding can be provided). Funding for the proposed data products will depend on their timely availability. They should be delivered to STScI in suitable digital formats for further dissemination via MAST.
- Data taken under a Treasury Program will usually have no exclusive access period, although brief exclusive access periods may be requested if that will enhance the public data value. Such requests are subject to TAC approval.

The following additional characteristics are particularly encouraged:

- Development of new techniques for data reduction or analysis.
- Creation and dissemination of tools (software, Web interfaces, models, etc.), beyond what is offered to the community by STScI, for the scientific community to work with the data products.

The emphasis will be on observations whose value is maximal if taken soon. However, Treasury Proposals may request observing time to be distributed in future cycles if scientifically required (similar to the situation for Small, Medium, and Large Long-Term GO Proposals). In Cycle 1 approximately 1000 hours of JWST time will be available for Large and Treasury Proposals. Treasury Programs will be selected by the TAC as part of the normal peer review process. Successful proposals will be reviewed by STScI to ensure observing efficiency. Investigators submitting Treasury Proposals must select the Treasury Program flag on the APT cover page and include additional technical details on the scheduling aspects of their program in the "Description of the Observations" section in APT. Note that a proposal can be both Large and Treasury.

The "Scientific Justification" section of the proposal should include a description of the scientific investigations that will be enabled by the final data products and their importance. The "Technical Justification" section of the proposal should not only include a detailed rationale of the observations, but also plans for data analysis and a description of how the data products will be made available to STScI and the community, the method of dissemination, and a realistic time line.

# Survey GO Proposals

Survey programs are designed to increase the observing efficiency of the telescope by allowing for short "filler" observations when gaps are identified in the scheduling process. They are analogous to Snapshot programs on the Hubble Space Telescope. Accepted Survey Proposals are allocated time to cover observations of targets drawn from a large sample. However, there is no guarantee that any individual target will be observed because the observations are placed on the Long Range Plan after the observing

sequence has been determined for GO/GTO programs. The number of observations actually executed will depend on the availability of appropriate schedule gaps. In general, only a small fraction of the targets will be observed. We anticipate that up to 200 hours may be available for Survey observations in JWST Cycle 1; the TAC will select programs requesting up to 1200 hours to provide appropriate sky coverage. All accepted Survey programs will terminate at the end of Cycle 1.

There is no commitment on the part of STScI to obtain any specific completion factor for Survey programs.

Survey programs have the following characteristics:

- Proposers request time to cover observations of a specific number of targets; those targets can be drawn from a larger sample.
- PIs are not required to give a complete list of all targets and their coordinates at the time of submission. Example observations should be provided at the time of submission. You must specify the number of targets and describe their distribution on the sky, and unambiguously identify the targets (e.g., reference to target lists in papers) or give a detailed description of the target characteristics. Accepted programs will be required to submit a full target list within one month of notification. Survey programs may not be used for targets of opportunity.
- Observations of any particular target cannot be guaranteed; the point of the Survey program is to have many different options from a class of objects that can be inserted into the observing schedule. Survey Proposals must target sources over a wide range of Right Ascension ( $> 12$  hours), to ensure that potential targets are always nearby. Examples of programs that are not well suited to Survey Proposals (because they do not help improve scheduling efficiency) are surveys of targets confined to an area of a few square degrees (e.g., the LMC) or surveys limited to a few areas (e.g., surveys of two or three specific galaxy clusters).
- Moving targets are acceptable.
- Individual observations should be limited to a maximum of 30 minutes of science integration time, not counting instrumental overheads.
- Each observation must be schedulable at least 90 days out of the year.
- In the case of duplication, Regular GO proposals have priority over Survey Proposals since observations of individual Survey target are not guaranteed.
- Proposers may not assign priorities to individual observations in a Survey program. Targets will be selected for execution based on available observatory resources as determined by STScI. This selection will occur as part of the normal scheduling process.
- In general, shorter-duration and spatially well-distributed Survey targets have a higher number of scheduling opportunities and a higher chance of being executed than longer duration and/or spatially clustered Survey observations.
- Survey Proposals cannot request time in future cycles.
- Small and Medium Survey Proposals are assessed by the review panels, in conjunction with other GO programs. Survey programs requesting more than 75 hours will be treated as Large Programs, and reviewed by the TAC.
- Calibration Proposals may also be submitted as Survey Proposals. As with GO Calibration programs, all data obtained will have no exclusive access period unless proposers specifically request and justify an exclusive access period. Successful proposers will be required to deliver documentation, and data products and/or software to STScI to support future observing or archival programs. Users submitting Calibration Proposals are required to contact the appropriate instrument group to discuss their program prior to submission.

Survey proposals can be Small, Medium or Large. Small and Medium Survey proposals have a default exclusive access period of 12 months. However, because of the potential benefit to the community at large, proposers should give serious consideration to the possibility of requesting a shorter access period of 3 or 6 months (it is one of the selection criteria for Survey Programs; see [JWST Cycle 1 Proposal Selection Procedures](#)). Large Survey proposals have no exclusive access period.

## Archival (AR) Proposals

Observations that are no longer in the exclusive access period are freely available for analysis by scientists through retrieval from the Mikulski Archive for Space Telescopes (MAST). For JWST Cycle 1, this includes all Director's Discretionary Early Release Science datasets, which have no exclusive access period. The JWST Archival Research (AR) Program can provide financial support for the analysis of such data sets. AR Proposals must outline a management plan and detailed budget for analyzing the data. Proposals for AR funding are considered at the same time, and by the same reviewers, as proposals for observing time, on the basis of scientific merit.

## Regular AR Proposals

The general goal of a Regular AR Proposal is to analyze a subset of data from MAST to address a specific scientific issue. In general, the scientific questions addressed should differ from those tackled by the original programs that obtained the data. A strong justification must be given to reanalyze data if the new project has the same science goals as the original proposal. There is no limit to the amount of funding that may be requested in a Regular AR Proposal. For reference, it is expected that the majority of awards will fall under \$150,000, with a median of about \$75,000. However, STScI actively encourages the submission of more ambitious AR programs for which larger amounts of funding may be justified. Budget plans should be commensurate with the level of work required to carry out the goals of the proposal. Laboratory astrophysics relevant to JWST observations is an acceptable component of an archival proposal.

## Legacy AR Proposals

A Legacy AR Proposal is defined by the following characteristics:

- The project should perform a homogeneous analysis of a well-defined subset of data in MAST.
- The main goal should be to provide a homogeneous set of calibrated data and/or ancillary data products to the scientific community.
- The results of the project should enable a variety of new and important types of scientific investigations.

We encourage the development of open source community software tools for dissemination to the community.

The main difference between a Regular and a Legacy AR Proposal is that the former aims at performing a specific scientific investigation, while the latter will also create data products and/or tools for the benefit of the community. While Legacy AR Proposals will be judged primarily on the basis of scientific merit, the

importance and broad applicability of the products produced by the Legacy Proposal will be key features in judging the overall scientific merit of the proposal.

It is a strict requirement for Legacy AR Proposals that the proposed data products be created and distributed to the community in a timely manner. Data products should also be delivered to STScI in a format consistent with the [MAST High-Level Science products Contributions Guidelines](#) for dissemination via MAST.

It is anticipated that Legacy AR Proposals will be larger in scope and requested funds than most Regular AR Proposals. While there is no lower limit on the requested amount of funding, it is expected that most Legacy AR Proposals will require at least \$150,000, and possibly up to a few times this amount, to accomplish their goals. Commensurate with the expected scope, Legacy AR Proposals are allowed to be multi-year projects, although this is not a requirement. Multi-year projects will be funded on a yearly basis, with continued funding beyond the first year subject to a performance review. Legacy AR Proposals will be evaluated by the TAC in conjunction with Large and Treasury GO Proposals.

The ‘Scientific Justification’ section of the proposal should include a description of the scientific investigations that will be enabled by the final data products, and their importance. The ‘Analysis Plan’ section should describe the plans for data analysis, the data products that will be made available to STScI and the community, the method of dissemination, and a realistic time line.

## Calibration AR Proposals

Calibration Proposals may also be submitted as AR Proposals. AR Proposals are appropriate in cases where the necessary data have already been taken, or for programs that do not require specific data but aim to develop specialized software for certain JWST calibration and data reduction tasks. Users submitting Calibration Proposals must contact the appropriate instrument group (accessible via the [JWST Helpdesk](#)) to discuss their program prior to submission.

## Theory Proposals

The opportunity exists under the JWST AR Program to obtain financial support for theoretical research. Research that is primarily theoretical can have a lasting benefit for current or future observational programs with JWST, and it is appropriate to propose theory programs relevant to the JWST mission.

A Theory Proposal should address a topic that is of direct relevance to JWST observational programs, and this relevance should be explained in the proposal. Funding of mission-specific research under the JWST Theory Program will be favored over research that is appropriate for a general theory program (e.g., the NASA Science Mission Directorate Astrophysics Theory Program; ATP). The primary criterion for a Theory Proposal is that the results should enhance the value of JWST observational programs through their broad interpretation (in the context of new models or theories) or by refining the knowledge needed to interpret specific observational results (a calculation of atomic cross sections may fall under the latter category). The results of the theoretical investigation should be made available to the community in a timely fashion.

As with the other AR Proposals, there is no limit to the funding that may be requested in Theory Proposals.



For reference, it is expected that the majority of awards will fall under \$150,000, with a median of about \$75,000. The effort detailed in the Management Plan of the proposal should be commensurate with the level of funding to be requested in the budget submission. Theoretical research should be the primary or sole emphasis of a Theory Proposal. Analysis of archival data may be included, but should not be the main aim of the project. GO or AR Proposals which include a minor component of theoretical research will be funded under the appropriate GO or AR Program.

A Theory Proposal may be submitted by a non-U.S. PI if there are one or more U.S. Co-Is who request funding.

Award amounts for Theory Proposals are anticipated to be similar to those made for Regular AR Proposals. STScI also allows the submission of more ambitious proposals for which larger amounts of funding may be justified.

The ‘Scientific Justification’ section of the proposal should describe the proposed theoretical investigation and also its impact on observational investigations with JWST. Review panels will consist of observational and theoretical astronomers with a broad range of scientific expertise. They will not necessarily have specialists in all areas of astrophysics, particularly theory, so the proposals must be written for general audiences of scientists. The ‘Analysis Plan’ section of the proposal should discuss the types of JWST data that will benefit from the proposed investigation, and references to specific data sets in MAST should be given where possible. This section should also describe how the results of the theoretical investigation will be made available to the astronomical community, and on what time-scale the results are expected.

## Community Data Science Software Proposals

The details of how the data products are created from the JWST calibration pipeline, and some software tools for working further with data, are available on [JWST Data Calibration and Analysis Documentation](#). There is an opportunity under the JWST AR Program to obtain financial support for the development of additional data science software products that will be made available to the community for the purposes of analyzing JWST data. There are numerous possibilities for the types of products that could be developed. Examples include: scripts to mitigate artifacts from specific detectors, tools to identify and extract fluxes/magnitudes from multiple sources within a field, utility software for working with JWST data products, or codes to produce background-subtracted spectra or software to interact with JWST archive services. Please contact the Data Science Mission Office ([dsmo@stsci.edu](mailto:dsmo@stsci.edu)) for additional guidance. The primary criterion for a Community Data Science Proposal is that the results should broadly enhance the value of JWST observational products for anyone in the astronomical community. The results of the data science software development should be made available to the community in a timely fashion through an appropriate distribution platform. Open source software using a standard license (link to <https://opensource.org/licenses>) is encouraged. The software should have thorough internal documentation at a level consistent with software best practices, and, if computationally intensive, should be compatible with a cloud computing service.

There is no limit to the amount of funding that may be requested, but it is expected that the amounts will be at a similar level to those in the Regular AR category. The effort detailed in the Management Plan section of the proposal should be commensurate with the level of funding requested.

A Community Data Science Software Proposal may be submitted by a non-U.S. PI if there are one or more

U.S. Co-Is who request funding.

The 'Scientific Justification' section of the proposal should describe the proposed software plan and also its impact on observational investigations with JWST. Review panels will consist of observational and theoretical astronomers with a broad range of scientific expertise. They will not necessarily have specialists in all areas of astrophysics, particularly software development, so the proposals must be written for general audiences of scientists. The 'Analysis Plan' section of the proposal should discuss the types of JWST data that will benefit from the proposed investigation, and references to specific data sets in MAST should be given where possible. This section should also describe how the results of the investigation will be made available to the astronomical community, and on what time-scale the results are expected.

## Joint Proposals

There will be no joint proposals with any other observatories for JWST Cycle 1.

## Director's Discretionary (DD) Time Proposals

Up to 10% of the available JWST observing time in a given cycle may be reserved for Director's Discretionary (DD) allocation. In Cycle 1, a substantial fraction of that time has been invested in the Director's Discretionary Early Release Science program. Scientists wishing to request DD time can do so at any time during the cycle (post-launch).

Observations obtained as part of a DD Program generally do not have an exclusive access period, and are made available immediately to the astronomical community. However, DD proposers may request and justify such periods in their proposals. Upon receipt of a DD Proposal, the STScI Director will usually seek advice on the scientific merit and technical feasibility of the proposal from STScI staff and external specialists. A proposal for DD time might be appropriate in cases where an unexpected transient phenomenon occurs or when developments since the last proposal cycle make a time-critical observation necessary.

DD Proposals for timely follow-up of new discoveries will also be considered even if the astrophysics of the phenomena do not require such rapid follow-up. In such cases, the proposers must demonstrate that the observations will provide a critical link in the understanding of the phenomena and that carrying them out quickly is particularly important for planning future observations with major facilities. They should then also indicate their plans for quickly making the scientific community aware of their discoveries, to enable subsequent wider community follow-up.

DD observations should not generally be requested if any of the following is true:

- The observations could plausibly have been proposed in the most recent regular proposal cycle, possibly as a Target-of-Opportunity Proposal.
- The observations were proposed in a recent regular proposal cycle, and were rejected.
- The proposed observations could wait until the next proposal cycle with no significant reduction in the expected scientific return.

Subject to availability of funds from NASA, STScI will provide financial support for U.S. PIs and Co-Is of approved DD Programs.

## Possible Cycle 1 JWST Supplementary Call

The proposal deadline for Cycle 1 Observing proposals will be at least a year in advance of JWST's launch and 18 months in advance of the first science observations. To take account of potential significant new discoveries during this period, STScI and the JWST Project are developing a Call for Supplementary Proposals to be issued shortly after JWST's launch and deployment. The detailed implementation of any such program will be explored in consultation with the JWST Users Committee.

Next: [JWST Cycle 1 Observation Types and Restrictions](#)

## Related Links

[JWST General Science Policies](#)

[JWST Cycle 1 Proposal Opportunities](#)

# JWST Cycle 1 Observation Types and Restrictions

Most observations will be scheduled as primary observations, which are observations that determine the telescope pointing and scheduling/orientation. Primary observations can use a variety of observation types with special requirements. There is also the opportunity for parallel observations, either coordinated with the primary instrument observations for a set of complementary science goals, or independent from the goals of the primary target as pure-parallels.

## Coordinated and Pure-Parallel Observations

Parallel observing refers to simultaneously operating more than a single science instrument. For JWST GO proposals, there will be two basic modes of parallel operations: [coordinated parallels](#) and [pure parallels](#).

Coordinated science parallel observations are those in which simultaneous observations may be made with instruments other than the primary instrument. Coordinated science parallel observations must have science goals that support or complement the prime science programs, and must be explicitly justified in the proposal. In Cycle 1, the following coordinated parallel modes will be supported:

1. [NIRCam Imaging](#) and [MIRI Imaging](#),
2. [NIRCam imaging](#) and [NIRISS Wide-Field Slitless Spectroscopy \(WFSS\)](#),
3. [NIRCam imaging](#) and [NIRISS imaging](#) (NIRCam must be the prime instrument),
4. [NIRCam imaging](#) and [NIRSpec MOS](#) (NIRSpec must be the prime instrument),
5. [MIRI imaging](#) and [NIRISS WFSS](#).

Only direct imaging with standard narrow, medium, or broad band filters is allowed for NIRCam and MIRI observations in these coordinated parallel modes. Additional instrument combinations may be available in future cycles.

Pure-parallel observations utilize instruments other than the primary instrument on observations from unrelated proposals. Unlike coordinated parallels, pure parallel observations are proposed as entirely separate programs of investigation. Pure parallels use parallel observing slots created by observations of programs that do not use coordinated parallels. Pure parallel observations will not be allowed to influence the dither patterns or other aspects of the observing strategy of the primary observations to which they are attached, since the primary observations will belong to entirely separate science proposals.

Pure-parallel programs may propose for observations with NIRCam imaging and WFSS, NIRISS imaging and WFSS, and MIRI imaging. The observations will be paired with suitable accepted GTO, ERS and GO programs. Not all instrument combinations will be supported in Cycle 1. Table 1 shows the priority order for template combinations that are currently expected to be available in Cycle 1. Table 2 lists other template combinations that may be considered for implementation in later cycles.



Table 1. Expected template combinations for pure-parallel observing programs

Prime template	Pure parallel template
MIRI imaging	NIRCam imaging
NIRCam imaging	NIRISS WFSS
MIRI imaging	NIRISS WFSS
NIRCam imaging	MIRI imaging
NIRSpec MOS	NIRCam imaging
NIRSpec MOS	MIRI imaging
NIRSpec IFU	NIRCam imaging
NIRSpec IFU	MIRI imaging
NIRSpec IFU	NIRISS WFSS
NIRCam imaging	NIRISS imaging
MIRI imaging	NIRISS imaging
MIRI imaging	NIRCam WFSS
NIRISS WFSS	NIRCam WFSS

The NIRISS WFSS and NIRCam WFSS modes require direct imaging observations along with the dispersed Grism spectral data frame. As of the Cycle 1 Call for Proposals release, it has not been determined how to accommodate these direct imaging exposures in the context of pure parallel observing. Hence, accepted proposals requesting these modes will be on a shared risk basis, pending the development of an acceptable implementation model.

Table 2. Combinations of modes not allowed in cycle 1 but possibly allowed in cycle 2 based on future assessments and development

Prime template	Pure parallel template
<a href="#">NIRISS WFSS</a>	MIRI imaging
<a href="#">NIRISS WFSS</a>	NIRCam imaging
NIRCam WFSS	MIRI imaging
NIRCam WFSS	NIRISS WFSS
NIRSpec fixed slit	MIRI imaging
NIRSpec fixed slit	NIRCam imaging
NIRSpec fixed slit	NIRISS imaging
NIRSpec fixed slit	NIRISS WFSS
NIRSpec IFU	NIRISS imaging
NIRSpec MOS	NIRISS imaging

Templates that will never be allowed to have pure parallels attached are the following: NIRCam Time Series, NIRCam Grism Time Series, MIRI coronagraphy, MIRI MRS, MIRI LRS, NIRCam coronagraphs, NIRSpec Bright Object Time Series, NIRISS AMI, and NIRISS SOSS. (Note: NIRISS Imaging is not offered as a primary mode.)

See the [JWST APT Coordinated Parallel Observations](#), and [JWST APT Pure Parallel Observations](#) pages for details on implementing parallels in APT, and the [JWST Parallel Observations](#) article in Observation Planning.

## Time Constrained Observations

Time constrained observations with JWST are observations explicitly required to begin within a specified date and time interval, or specified phase for sources with known periods. They impose restrictions on the JWST scheduling system depending on the length of the constrained interval surrounding a start date and time. Time critical observations are those required to start within a constrained window that is less than 1 hour. Due to their impact on the schedule, time critical observations will incur an additional overhead of 1 hour per visit. Observations with execution windows greater than or equal to 1 hour are not considered to have a significant impact on the scheduling, and therefore do not incur any additional overheads. See [JWST Observing Overheads and Time Accounting Overview](#) for a description of accounting, including Smart Accounting, and overhead terms.

There are several kinds of time constrained observations that could be considered time critical in some way. Some scientific examples might include observations of specific phases of variable stars, many

transiting exoplanet observations, and some solar system observations. Observations that require a particular telescope orientation (or position angle) are implicitly time constrained; annual visibilities at a specific orientation are typically limited to 10 days or less. The [JWST Target Visibility Tool](#) may be useful in determining these time constraints on a fixed orientation at a given date of observation.

Coordinated JWST observations with other observatories are by definition time constrained observations, which may or may not be time critical. Linked subsequent observations do not necessarily incur additional overheads, unless they are also specified as time critical visits with critical scheduling windows. Linked observations that are scheduled to occur within 4 hours of a previous observation will be considered time critical observations, incurring the additional overhead.

Proposals may request time constrained observations for a specific date or range of specific dates, when scientifically justified, and can be specified in APT with [Timing Special Requirements](#). See [JWST Time-Series Observations](#) for planning monitoring sequences.

For Cycle 1, proposers can submit proposal for time-constrained observations that occur between October 1 2019 and December 31 2020. Observations will be executed for programs that can be scheduled after the actual start of Cycle 1 science observations.

## Solar System Observations

JWST can observe most targets within our Solar System, although there are a few exceptions. The Sun, Earth, Mercury, Venus, and the Moon cannot be observed due to the orientation of JWST's sunshade. Similarly, due to limits in the observatory's allowable solar elongation angle field of regard (85° to 135°), some solar system targets are visible only at set times of the year, as is the case with fixed targets. See more information on the [Field of Regard Considerations for Moving Targets](#), and [JWST Moving Target Observations](#) for information in planning these types of observations.

NIRSpec MSA-based observations of moving targets may only be proposed using the MOS Longslit observing method with the Wide Aperture Target Acquisition or Verify Only TA options. MSA-based Target Acquisition (TASQ) is not possible on moving targets.

## Target of Opportunity Observations

A target for JWST observation is deemed a Target of Opportunity (ToO) if it is associated with an event that may occur at an unknown time, and in this way ToOs are distinct from time constrained observations.

ToO targets include objects that can be identified in advance, but which undergo unpredictable changes (e.g., some dwarf novae), as well as objects that can only be identified in advance by class (e.g., novae, supernovae, gamma ray bursts, newly discovered comets, etc.). ToOs are generally not suitable for observations of periodic phenomena (e.g., eclipsing binary stars, transiting planets, etc.). ToO proposals must present a detailed plan for the observations to be performed in the technical justification of the PDF submission, if the triggering event occurs. A ToO activation may consist of a single observation or of a set of observations executed with a pre-specified cadence.

ToO response times are specified in the [APT General Special Requirements](#). The minimum turn-around time for Non-disruptive ToO activation, without significant impact to the schedule, is 14 days. The minimum turn-around time for Disruptive ToO activation is 48 hours, measured from the time when the activation request is submitted to start of the first observation. Disruptive ToOs can be triggered with turn-around times less than 14 days, provided all of the proposal details (except possibly the precise target position) are available in advance. However, because of the significant effect disruptive ToO observations potentially have on the JWST schedule, each cycle will be restricted to a total of 8 disruptive activations. Moreover, due to their scheduling impact, Disruptive ToOs required to be triggered within 3 days will incur an additional overhead of 0.5 hours (30 minutes) per activation. Up to 8 disruptive ToO observations are available for GO programs in Cycle 1. There is no limit on the number of Non-disruptive ToOs per cycle.

Information on activating an approved target of opportunity program is in [JWST Target of Opportunity Program Activation](#).

Proposers may apply for Long-term status for ToO Programs (for up to three cycles) only if the target phenomena have a low probability of occurrence during one cycle. The request must be justified in the [APT General Special Requirements](#).

## Observations of Targets That Have Not Yet Been Discovered or Identified

Investigators may wish to propose for JWST observations of targets that have not yet been discovered or identified. In general, such proposals are allowed only if there is a certain time-criticality to the observations, where proposing for the same observations in the next regular review cycle (after the target has been discovered) would be impossible or would make the observations more difficult (e.g., the object fades rapidly, or its temporal behavior is important), or would lead to diminished scientific returns. Those criteria are generally satisfied for GO observations of ToO targets, and there may also be other circumstances in which proposals for such targets are justified. However, in the absence of demonstrated time-criticality, observations will generally not be approved for targets that have not yet been discovered or identified. Examples of targets that are not suitable for this type of proposal include color-selected galaxies, transiting exoplanets or stars newly discovered in the course of an ongoing survey.

## Follow-up Observations of JWST Pre-Imaging

Same-cycle follow-up spectroscopic observations of sources identified through JWST NIRCam imaging programs are permitted. For example, a proposal may request imaging with NIRCam as a means of identifying a specific type of target (e.g. high redshift galaxies) for subsequent spectroscopy with NIRSpec. The proposal must include the imaging observation defined in APT, and specify the expected number density and magnitude distribution in the anticipated discovery of new targets.

Next: [JWST Cycle 1 Proposal Preparation](#)



# JWST Cycle 1 Proposal Preparation

Cycle 1 Proposals must be submitted through APT, and must include an uploaded PDF file containing the Proposal Narrative. Templates for proposal submission are provided.

## Science Justification Templates

Templates for JWST Cycle 1 Proposal PDF attachments:

- [Microsoft Word](#)
- [LaTeX](#), and [jwstproposaltemplate.sty](#).
- and the LaTeX [PDF](#) output

Note: The templates have intentionally different margins, to accommodate about the same amount of text per page.

The Cycle 1 proposal must be submitted electronically. [The Astronomer's Proposal Tool \(or APT\)](#) is the interface for all submissions for JWST.

The proposal consists of two parts:

- A completed APT proposal form (see [JWST Astronomers Proposal Tool Overview](#)); and
- An attached PDF file containing the [Proposal Narrative](#).

Both are submitted directly from within APT. The PDF attachment must be prepared with the templates provided, without changing fonts or margins. Those proposals which do not adhere to these restrictions will be penalized in the review process; non-compliant pages will be removed and not be made available to reviewers. Do not change the format of any of the templates provided by STScI. In the table below, the page limit for the Scientific Justification refers to the limit for all text, figures, and tables for that section. An additional four pages may be used for the Technical Justification, along with the Analysis and/or Management Plan sections, and references. Proposers are encouraged to include figures and tables embedded within the text of each appropriate section. Tables must use 12pt font, and figures should be large enough to be legible.

Proposal Category	Page Limit for the Scientific Justification	Total Page Limit for PDF Attachment
Small GO, Calibration, and Survey	4	8
AR (Regular, Theory, or Community Data Science Software)	4	9
Medium GO	5	10
Large and Treasury GO, Legacy AR	7	12

Calibration GO and Long-Term GO proposals should determine whether their program is small, medium, or large, depending on the hours requested, and use the appropriate page limits.

## Proposal Narrative

The PDF attachment must contain a Proposal Narrative with sections that discuss the following topics.

1. Scientific Justification: This section should present a balanced discussion of background information, the program's goals, its significance to astronomy in general, and its importance to for the specific sub-field of astronomy it addresses. The members of the review panels will span a range of science expertise, so one should write this section for a general audience of scientists. Depending on the type of proposal, the following items should also be included:
  - Treasury GO, Legacy AR, and Pure Parallel proposals should address the value to the astronomical community of the data products that will be generated by the program.
  - Survey proposals should provide a complete description of the target sample.
  - AR proposals should describe how the project improves upon or adds to the previous use of data.
  - Theory proposals should include a description of the scientific investigations that will be enabled by the successful completion of the program, and their relevance to JWST.
  - Calibration proposals should describe what science will be enabled by the successful completion of the program, and how the currently supported core capabilities, their calibrations, and the existing data processing are insufficient to meet the requirements of this type of science.
  - Community Data Science Software Proposals should describe how the software packages that will be developed are relevant to and necessary for the reduction or interpretation of JWST data.
2. Technical Justification: Describe the overall experimental design of the program, justifying



the selection of instruments, modes, exposure times, and requirements. Describe how the observations contribute to the goals described in the scientific justification. Quantitative estimates must be provided of the accuracy required to achieve key science goals. For those modes that require target acquisition, proposers should verify that the exposure specifications provided meet the stated criteria for success. Successful target acquisitions are crucial for the success of the specified observations, and must be verified. In most cases, the [JWST ETC](#) is sufficient to determine the necessary exposure time. This description should also include the following:

- a. Special Observational Requirements (if any): Justify any special scheduling requirements, including time-critical observations. Target of Opportunity observations should estimate the probability of occurrence during Cycle 1, specify whether long-term status is requested, identify whether ToOs are disruptive or non-disruptive, and state clearly how soon JWST must begin observing after the formal activation.
  - b. Justification of Coordinated Parallels (if any): Proposals that include [coordinated parallel observations](#) should provide a scientific justification for and description of the parallel observations. It should be clearly indicated whether the parallel observations are essential to the interpretation of the primary observations or the science program as a whole, or whether they address partly or completely unrelated issues. The parallel observations are subject to scientific review, and can be rejected even if the primary observations are approved.
  - c. Justification of Duplications (if any): as detailed in the [JWST Cycle 1 Proposal Policies and Funding Support](#) and the [JWST Duplicate Observations Policy](#). Any duplicate observations must be explicitly justified.
3. Analysis Plan: (required only for AR, Calibration, and Theory Proposals) All AR Proposals should provide a detailed data analysis plan and describe the datasets that will be analyzed. Inclusion of a target list is not required.

Legacy AR Proposals should also discuss the data products that will be made available to the community, the method of dissemination, and a realistic time line. It is a requirement that data products be delivered to STScI in suitable digital formats for further dissemination via the MAST Data Archive or related channels. Any required technical support from STScI and associated costs should be described in detail.

Theory Proposals should discuss the types of JWST data that will benefit from the proposed investigation, and references to specific data sets in the MAST Data Archive should be given where possible. They should also describe how the results of the theoretical investigation will be made available to the astronomical community, and on what timescale the results are expected. Calibration Proposals should discuss what documentation, and data products and/or software will be made available to STScI to support future observing programs. Proposers should explain how their programs complement ongoing calibration efforts by the STScI instrument groups. They should contact the relevant instrument groups to ensure that efforts are not duplicated, and if they are, justify why the duplications are necessary.

4. Management plan: (required for AR, Theory, and Community Data Science Software Proposals) Provide a concise, but complete, management plan. This plan will be used by the review

panels to assess the likely scale of the proposed research program. Proposers should include a schedule of the work required to achieve the scientific goals of the program, a description of the work that will be done by the team.

During the budget review process, the Financial Review Committee will compare the requested costs with the commensurate work outlined in the Management Plan. Support for resources outside the original scope of work will not be considered.

For a checklist of items to complete when writing your JWST proposal, see [JWST Cycle 1 Proposal Checklist and Resources](#).

Next: [JWST Cycle 1 Single-Stream Proposal Process](#)

# JWST Cycle 1 Single-Stream Proposal Process

JWST proposals are submitted via a single-stream process through the Astronomer's Proposal Tool, where all information about the proposed science and observations are provided up front at the time of submission.

## Proposal Process

For most proposals, JWST follows a "single-stream" approach where a single submission is made for each proposal by the deadline. A single-stream process for JWST proposal submission has been adopted for three reasons:

1. Similar to Spitzer, JWST visits will be continuously scheduled in an event-driven process, as opposed to discrete orbits. JWST proposers must therefore specify more information up front than Hubble proposers so that the total time required for an observing program can be determined and made available to the TAC. This includes accounting for slews and instrumental [overheads](#) that are often hidden from Hubble observers since they occur during Earth occultation.
2. For cycle 2 and beyond, a single-stream process minimizes the time between proposal deadlines and the start of an observing cycle, as it is expected that only certain classes of proposals may be revised after submission. This, in turn, maximizes the amount of Webb data that's available when the subsequent round of proposals is written, thus accelerating the intellectual cycle as new discoveries guide the direction of new JWST observations. Cycle 1, however, is the exception because proposal submission occurs well before JWST launch and commissioning. In this case, a single-stream submission allows a longer and more thorough review of accepted proposals and more opportunities to provide support to successful proposers.
3. A "single-stream" approach enables the rapid construction of the long range plan (LRP). This helps to quickly incorporate accepted proposals into the scheduling system and allows to promptly assign execution position angles to observations that need these constraints (e.g. all NIRSpec MSA-based observations).

The proposal system has been developed to enable users to, in many cases, enter essentially complete proposals at initial submission. Accepted proposals can then flow directly into the scheduling system with little delay. This is similar to the process at other space observatories such as Spitzer and Chandra, but is different from the two-step proposal system familiar to many HST users. Note that this single-stream process is independent from the budget proposal process. Accepted proposals will still have to submit a budget in line with the dates outlined in [JWST Cycle 1 Proposal Checklist and Resources](#).

Proposers should be aware that they may need or wish to modify their accepted proposals based on the results of the JWST commissioning process. Proposers will be contacted by STScI should the need arise to modify a proposal. After acceptance of a proposal, proposers may wish to make minor changes (such as

different dither patterns, guide stars, or readout modes). These changes should be discussed with the assigned program coordinator or instrument scientist.

## Requirements

A faster turnaround can be achieved if proposals can be scheduled for observing soon after they are recommended by the JWST Time Allocation Committee (TAC) and accepted by the STScI Director. This means that most submitted proposals must include sufficient information to define scheduling constraints for all visits (where each visit is directed at a specific target).

Following Spitzer's example, astronomers will submit their observing requirements using a set of templates for specific instrument modes. These templates are available in the [Astronomer's Proposal Tool \(APT\)](#). The submitted observing requirements include a full list of targets, specifications of the observations (instruments, filters, exposure times, dithers, observational sequence), and all user-requested scheduling constraints (including roll angle and other timing constraints). Complete APT files are required at submission so that APT can compute the [direct overhead duration](#), which is defined by the sum of slews, the guide star and target acquisitions, mechanism motions, and small angle maneuvers, which are summed together to determine the total instrument overheads. The sooner that information is available, the sooner an initial LRP can be prepared using all visits in all the accepted programs.

In a few cases, APT may issue warning flags when APT template values are not adequately determined, or when it is not possible to fully determine whether a proposal is schedulable. Even in those cases, the complete APT file will contain sufficient information to estimate direct [overheads](#) and observing constraints. If this program is accepted, a program coordinator or instrument scientist can quickly address these issues prior to scheduling. Generally, APT will generate a TAC review report that does not contain any technical flags.

Proposals may be submitted with warning flags, although proposers are strongly encouraged to resolve as many issues as possible. For proposals with errors, contact the JWST Help Desk to resolve them before submission.

## Exceptions

Proposals that cannot be fully specified at the time of submission are exempted from the single-stream process described above. Details on the types of proposals that are exempted and the kind of information that is required for submission are specified in [JWST Cycle 1 Special Submission Requirements](#). Note that these exceptions partly depend on APT functionality (expected to evolve with time) and therefore these special requirements might change from one Call to another.

## How APT Can Help

Several strategies are being employed to help JWST users prepare APT files for initial proposal submission. Training materials and demo proposals can be found in the [APT Help page in JDOx](#).

# Observation templates in APT

In APT, once a user selects an instrument and an observing mode, the APT GUI changes to show only those parameters that need to be set for that mode. Each instrument and mode combination thus has an observation template format specific for that mode. Note: coordinated parallels require two instrument mode definitions in the same observation template. Once the relevant parameters for that observation have been specified, the template is complete and ready for further processing. Each instance of a template represents a single observation (although an observation may have one or many visits encoded within that observation, a process that is handled automatically for the user).

## Schedulability and guide star availability checks

Using APT, a proposer must carry out guide star and schedulability checks, verifying that the observations are schedulable given the specified constraints. When one or more templates have been filled out, the user runs the [Visit Planner](#) step in APT. This important step executes a range of checks that look into the schedulability of the proposed observation(s). In addition to observatory viewing constraints, this check also assesses the availability of guide stars as a function of time, thus producing valid windows where the observation can schedule. The proposer may not choose specific guide stars or exact scheduling windows, as the schedulers need flexibility to prepare the most efficient LRP. If no guide stars are available for a given observation, the proposer may still submit the proposal for review; STScI staff will work with the team to determine whether mitigation is possible if the proposal is recommended for approval.

## Minimization or elimination of time-consuming optimization steps

APT is tasked with nearly all of the "heavy lifting" in the proposal process. The user specifies observations, and if the proposed observations require many visits to be performed, this is handled internally in APT, by breaking the observations into visits as necessary, performing the relevant accounting of [overheads](#) through [Smart Accounting](#), and reporting the results back to the user. (An HST user may be familiar with the phase II process of trying various combinations, or ordering of their proposed observations to make best use of their orbit allocation. None of that will be required for JWST).

Next: [JWST Cycle 1 Special Submission Requirements](#)

## Related Links

[JWST General Science Policies](#)

[JWST Cycle 1 Proposal Opportunities](#)



# JWST Cycle 1 Special Submission Requirements

Some observation types may require special accommodations for full specification in the Astronomers Proposal Tool.

There are known limitations in submitting observations using some observing modes through APT. Those special submission requirements are described here. Most updates to planning guides, or more specific submission tips, will be posted as articles in the [JWST Help Desk](#), particularly in the [Knowledge Base](#).

## Mosaic Observations

Proposers are required to submit complete APT files of programs requesting mosaics by the proposal deadline, as this is the only way to estimate the total time requested. In addition, complex programs like large mosaics that involve timing constraints impose significant restrictions on the Long Range Plan and therefore need to be incorporated into the schedule as early as possible. Proposers should be aware that:

1. The [Guide Star Catalog](#) used by APT at the time of the release of this Call may be insufficient to find guide stars for all the mosaic tiles at the same time. In those cases, when running the program through the [Visit Planner](#) in APT, warnings are triggered and the mosaic tiles cannot be scheduled simultaneously. If guide stars are not available for all the tiles at the same orientation, proposers should refer to the [mosaic documentation](#) for guidelines on how to proceed (see for example documentation discussing [mosaic planning](#) and [tile splitting](#)). Please note that it is important to resolve as many as possible of these scheduling warnings before submission because otherwise smart accounting will not work and APT will assume each tile is a separate observation, each requiring a major slew, greatly overestimating the requested time.
2. If tile splitting is required for scheduling purposes, proposers are recommended to set the Position Angle at a value that allows the largest number of tiles to be scheduled simultaneously. Proposers should be aware that a fixed position angle imposes constraints on scheduling observations in the Long Range Plan. Consequently, if the proposal is accepted, STScI may adjust the Position Angle of the mosaic to minimize disruptions to the schedule. If a specific Position Angle is necessary to achieve the science objectives, this should be clearly indicated in the PDF of the proposal. Proposers are discouraged to request this unless necessary to achieve science objectives.
3. Proposers should bear in mind that if tile splitting is necessary, observations of problematic tiles will be made at a different Position Angle from the majority of the mosaic. This may create gaps in the coverage. If the science goals require full coverage, the proposer should indicate this clearly in the PDF of the proposal because it may require adjusting the size and/or dithering pattern of the tiles that need to be scheduled separately.

STScI staff will work with proposers to resolve, as far as possible, any outstanding issues and optimize the



observing efficiency for accepted proposals.

## NIRSpec MOS Observations

The target selection process for NIRSpec MOS observations must take account of how objects are projected onto the micro-shutter array, and therefore depends on the orientation of the observations and the optical distortions present along the NIRSpec optical path. In general, to ensure program schedulability, NIRSpec MOS science observations should be submitted with no orient constraint in proposals. We recommend that proposers who wish to constrain their observation orient define a preferred orientation within a range of no less than  $30^\circ$  (or  $\pm 15^\circ$ ), with an appropriate scientific justification. The exact execution orientation for any observation will not be determined until that observation is placed on the Long Range Plan (LRP) for Cycle 1. As a result, NIRSpec MOS observations cannot be fully specified at the time of submission. Proposers must submit in their proposals an associated source list for the final target assignment within any given pointing (see [JWST Cycle 1 Observation Mode Restrictions](#)). Once the orientation has been defined for successful proposals, the proposer will be informed and can select the individual targets for MOS observation. A full description of the NIRSpec MOS APT submission process is given in the [NIRSpec MOS JDox pages](#).

## Coronagraphic Observations

Proposers should be aware that:

1. The PSF calibrator star that must be fully specified in the proposals might be changed prior to executing an accepted program if both the proposer and STScI agree that this change is beneficial to the science yield of the program, under the condition that the science goals are unaffected and requested time is not increased.
2. The overheads associated with a given observation depend on the exact observing sequence and the ordering of the exposures. Proposer should make their best effort to optimize the program by minimizing overheads following the guidelines in the [High Contrast Imaging documentation](#). As with all GO proposals, if the proposal is accepted, the Instrument Scientist may also suggest changes to achieve this goal.

## Background Limited Observations

By requirement, the JWST Science & Operations Center (S&OC) will schedule background-limited observations when the Zodiacal background for each target is relatively low. Users may indicate that observations are background-limited by using the Background special requirement in APT. The [Background-Limited JWST Observations](#) page provides a method to determine whether an observation is background-limited, and advice on whether to opt in to the Background special requirement. Proposers should be aware that the background special requirement is effectively a scheduling constraint, and as such may conflict with other user-applied scheduling constraints.

# Overhead Override Requests

Proposers should be aware that in rare cases there may be inaccuracies in the total charged duration reported in their APT submission. Known issues will be described in [APT User Documentation](#); proposers should check that site for updates until the time of submission, as well as the [Late Breaking News](#) section of the Call. In some cases, specific guidelines will be given with regard to adjusting the charged duration reported by APT; in those cases, the proposer should report and justify their corrected charged duration in the PDF of the proposal. For overhead inaccuracies not covered by the guidelines, please contact the [JWST Help Desk](#). All overhead override requests will be subject to a review by STScI.

Next: [JWST Cycle 1 Observation Mode Restrictions](#)

## Related Links

[JWST General Science Policies](#)

[JWST Cycle 1 Proposal Opportunities](#)

# JWST Cycle 1 Observation Mode Restrictions

Most observational modes will be available for Cycle 1 programs, however some have specific special restrictions for implementation.

## NIRSpec Multi-Object Spectroscopy

The multiplexing capabilities offered by the NIRSpec Multi-Object Spectroscopy (MOS) modes, using the Micro-shutter Array (MSA), represent a major opportunity for JWST observers. NIRSpec MOS programs might involve observations of anywhere from a handful of sources to more than 100 targets. Larger-scale programs introduce significant complexities in planning, scheduling and implementing specific observations.

**Orientations, optical distortions and target selection:** The target selection process for NIRSpec MOS observations must take account of how objects are projected onto the micro-shutter array, and therefore depends on the orientation of the observations and the optical distortions present along the NIRSpec optical path. The flight optical distortion maps can only be measured after launch. The exact orientation for any observation will not be determined until that observation is placed on the Long Range Plan (LRP) for Cycle 1. Consequently, at the time of the Cycle 1 GO submission deadline, proposers will not be able to specify which of their targets will actually be observable. However, for the purposes of submitting an MSA proposal, proposers should run the Target Visibility Tool for their proposed field, and use a sample position angle of the telescope during a period of visibility to demonstrate to the TAC that multiple targets are visible for a given telescope orientation.

**Catalog sizes:** The number of targets within a given observing catalogue that can be observed during a single NIRSpec MOS observation is limited by the availability of suitably-positioned micro-shutters to accommodate the appropriate nod and dither patterns, and, if relevant, by the need to avoid overlapping spectra on the detector. Taking this into account, the NIRSpec team has conducted analysis to determine that up to ~190 objects can be targeted at low spectral resolution ( $R=100$ , no overlap) and ~55 at high spectral resolution ( $R\sim 1000$  and  $2700$ , no overlap). This work also shows that approaching these asymptotic multiplex values requires a large input catalog with high target densities of ~720 sources arcmin<sup>-2</sup> and 240 arcmin<sup>-2</sup>, respectively, corresponding to ~7,000 and ~2,400 targets within the NIRSpec field of view. Thus, observers who wish to maximise the multiplex capabilities of NIRSpec MOS should provide catalogs that include many more targets than can actually be observed ([Jakobsen et al. 2017](#)). Conversely, in many cases a substantial number of potential targets will remain unobserved at the conclusion of a program.

These considerations lead to several operational consequences:

- In order to accommodate the full range of possible orientations and small pointing adjustments, observers should specify a potential target list covering an area of radius at least 3 arcminutes for any particular pointing. If possible, the catalogue should be oversized in the number of targets to maximize the NIRSpec MOS multiplexing; this will not be possible for all science cases.
- By policy, proposers do not reserve access to the field of view covered by a NIRSpec MOS observation. Consequently, proposers may not reserve the full list of targets associated with any accepted observing proposal. At the time of submission, proposers may assign weights for the preference of their targets, but there is no guarantee that any more than one priority target will be observed.
- By policy, proposals for MOS observations may be submitted with source catalogues that overlap with those of previously accepted proposals. Proposers must identify potential duplications with prior programs, and must provide an appropriate scientific justification and a demonstration that sufficient targets are available to justify the additional observations. If the Telescope Allocation Committee accepts such a proposal, the previously accepted proposal will have priority in target selection; thus, in JWST Cycle 1, GTO programs have priority in target selection over DD ERS programs, which have priority over Cycle 1 GO programs.
- Multiple proposals using overlapping source catalogues may be proposed and accepted by the Telescope Allocation Committee during the same cycle. In such cases, the TAC will provide a clear specification of the relative priority of those proposals with regard to target selection.

Duplicate observations with JWST are generally not allowed without an approved scientific justification. However, in order to maximize the scientific return, NIRSpec MOS observations may include a limited number of duplicate observations of individual targets without specific scientific justification. The latter sources may not exceed 10% of the total targets within a given NIRSpec MOS observation as implemented for execution. The final target lists will be reviewed for compliance and, if necessary, subjected to adjudication by the STScI Director.

NIRSpec observations that require the MSA-based Target Acquisition in fields with a high density of targets ( $> \sim 1$  star per sq. arcsec) or with many bright targets ( $< \text{ABMag } 19.1$  at higher density than 1 star per 10 sq. arcsec) are not permitted.

## Mechanism Usage

APT templates generally yield observations that minimize the use of mechanisms within the science instruments, while yielding the best observing efficiency. Nonstandard use of templates may overuse mechanisms. For example, mosaics with large overlap between tiles can use mechanisms far more than standard dithers. Accepted programs will be reviewed to ensure that mechanism usage is consistent with preserving mechanism lifetime. Exceptions must be strongly justified on grounds other than improved observing efficiency.

## Data Volume and Rate Limitations

Some observations will generate a high data volume per visit, high data rates that may exceed limits in the storage capacity of the solid state recorder, the data write speed to the solid state recorder, or the [instantaneous data rate limits in the instrument command and data handling subsystem \(48 Mbps\)](#). In

some cases, APT has implemented limitations to avoid exceeding these limits, but other observing options enabled by APT could create problems. For example, APT will create an error if the visit exceeds the capacity of the solid state recorder. If this is the case, the user is required to change the observing strategy to comply with solid state recorder storage limits. Users should keep in mind, however, that data volume and data rates issues can only be fully identified downstream and the Visit Scheduling Subsystem and the Visit Planning Subsystem are designed to take these issues into consideration. Proposers should be aware that accepted programs may have to be modified to comply with data volume and data rate limits.

To facilitate the scheduling of the observations, users are encouraged to keep the data volume under 28.2 Gbytes in a 12 hour period (0.654 MB/s). APT will generate a warning if the proposed data volume is too high. Please refer to [APT documentation](#) on how to obtain data volume and data rate information.

Next: [JWST Cycle 1 Proposal Selection Process](#)

# JWST Cycle 1 Proposal Selection Process

JWST Cycle 1 proposals will be reviewed by panels of scientists from the international astronomical and planetary science communities that will make recommendations to the STScI Director.

## How STScI Conducts the Proposal Review

JWST programs are selected through competitive peer review. A broad range of scientists from the international astronomical community evaluate and rank all submitted proposals using a well-defined set of criteria and paying special attention to any potential conflicts of interest. The review panels and the Telescope Allocation Committee (TAC) offer their recommendations to the STScI Director. The STScI Director is the Selecting Official for JWST. Based on the recommendations, the Director will make the final allocation of observing time.

## The Review Panels

The review panels will consider Small GO ( $\leq 25$  hours), Medium GO (25-75 hours), Calibration GO, Survey, Regular AR, Calibration AR, Community Data Science Software, and Theory proposals. Each review panel has an allocation of a specific number of hours, depending on the overall proposal number submitted in a given area. Medium Proposals are reviewed by the panels and ranked together with the Small Proposals, but are charged differently to the panel's allocation. Each panel will be allowed (but not required) to recommend one Medium Proposal that falls above the hour allocation line at no cost to the panel's allocation total. However, any subsequent Medium Proposals that are ranked above the allocation line will be deducted from that allocation. The panel recommendations generally do not require further approval of the TAC, and scientific balance will be determined within each panel rather than by the TAC. The panels do not adjudicate Large GO ( $>75$  hours) or Treasury GO proposals, but they will send comments on those proposals to the TAC.

Panelists are chosen based on their expertise in one or more of the scientific topics covered by the panel. Each panel spans several scientific categories. In Cycle 1, we anticipate having panels covering the following areas: Solar System, Planets and planet formation, Stellar Physics, Stellar Populations (resolved) and the Galactic/nearby galaxy ISM, Galaxies and the IGM, Massive black holes and their host galaxies, and Cosmology. Examples of the topical areas covered by each panel are given in the following table:

Panel	Science topics
Cosmology	Cosmology, dark matter, GRBs, cosmic infrared background, galaxy clusters, gravitational lensing, high-z universe, deep field surveys, large-scale structure
Massive black holes and their host galaxies	AGN, QSOs, feedback mechanisms
Galaxies and the IGM	Studies of galaxies as systems including nearby galaxies, interacting galaxies, elliptical galaxies, starbursts, luminous IR galaxies (LIRGS/ULIRGS/HLIRGS), galaxy evolution, dwarf galaxies, unresolved stellar populations
Stellar populations (and the ISM)	Resolved stellar populations, gas and dust in the Galactic interstellar medium and in nearby galaxies, H II regions, star clusters, star forming regions
Stellar physics	Studies of individual stars including massive stars, YSOs & protostars, evolved stars, compact objects, cool stars, brown dwarfs
Planets and planet formation	Exoplanets, debris disks, protoplanetary disks
Solar system	Trans-Neptunian objects, asteroids, comets, planets, moons

Within a panel, proposals are assigned to individual expert reviewers based partly on the keywords given in the proposal and partly on analysis of the proposal text. The Science Mission Office at STScI reserves the right to re-classify proposals.

## The Telescope Allocation Committee

The TAC will include the TAC chair, the panel chairs from all panels, and three at-large members to ensure broad expertise across the full range of scientific categories. The primary responsibility of the TAC is to review Large GO and Treasury GO programs, and any other particularly large requests of resources, and will be the arbiter of any extraordinary or cross-panel issues.

## Selection Criteria

Reviewers are instructed to focus on the science case presented in the proposal.

Evaluations of JWST proposals are based on the following criteria:



- The scientific merit of the program and its potential contribution to the advancement of scientific knowledge;
- The program’s importance to astronomy in general. This should be stated explicitly in the “Scientific Justification” section of the proposal;
- The strength of the data analysis plan;
- 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: Reviewers will be instructed to recommend or reject proposals as they are and to refrain from object or hour trimming. Therefore, 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 reasonability of requested resources.
- 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 and Treasury GO Proposals

- The level of coordination of the overall work plan and the production of appropriate databases and/or tools.

#### Additional Criterion for Survey Proposals

- Willingness to waive all or part of the exclusive access period. While this is not the primary criterion for acceptance or rejection, it can provide additional benefit to any proposal and will be weighed by the reviewers as such.

#### Additional Criterion for Calibration Proposals

- The extent to which these observations or analyses enable new types of scientific investigation with JWST and the importance of those observations.

#### Additional Criteria for all Archival Proposals

- The improvement or addition of scientific knowledge with respect to the original use of the data. In particular, a strong justification must be given to reanalyze data if the new project has the same science goals as the original proposal.
- The demands on STScI resources, including funding, technical assistance, archiving and dissemination of products.
- A well-developed analysis plan describing how the scientific objectives will be realized.
- The appropriateness of the management plan and its consistency with the funding level for the proposed category.

#### Additional Criteria for Treasury GO Proposals

- The extent to which the data products will enable additional scientific investigations and the importance of those investigations.
- The level of data products produced and plans for their timely dissemination to the community.

#### Additional Criteria for Theory Proposals

- The extent and importance of JWST science investigations enabled by the theoretical analysis and results.
- The level of planning for timely dissemination of theoretical results, and possibly software or tools, to the community.

#### Additional Criteria for Community Data Science Software Proposals

- The relevance of the proposed software development to JWST science investigations and/or data reduction or interpretation.
- The level of planning for timely dissemination of the proposed software products to the community.

Next: [JWST Cycle 1 Awarded Program Implementation](#)

## Related Links

[JWST General Science Policies](#)

[JWST Cycle 1 Proposal Opportunities](#)

# JWST Cycle 1 Awarded Program Implementation

Accepted JWST observations will be implemented into the long range program and checked for technical feasibility.

Once the STScl director has approved the full list of JWST programs for the next cycle, a first version of the LRP may be constructed with the information provided in the single-stream proposals and also in the programs excepted from the nominal single stream process, as rough scheduling windows can be determined based on their target lists. This first draft of the LRP is useful for identifying conflicts in the schedule between approved programs and for identifying other issues not flagged by APT. Any reviews of the approved programs may be prioritized based on the LRP scheduling window, with programs with targets that have scheduling windows early in the cycle receiving top priority. Complex large programs with timing constraints (e.g., large mosaic images, exoplanet transit observations, coordinated observations with other facilities) impose significant constraints on the LRP; thus, it is important to incorporate these into the schedule as early as possible.

When all the LRP-ready programs are submitted, they will be reviewed to ensure that the submitted observing plan is consistent with the TAC allocation and that the approved programs are checked for duplications. Additionally, programs which are likely to cause severe persistence may be flagged so that they may be scheduled so as not to impact subsequent programs. The scheduling process attempts to optimize the overall JWST efficiency. STScl will not contemplate requests to advance or postpone the scheduling of individual programs based on other considerations, with the possible exception of compelling scientific arguments.

Unlike HST instruments, JWST instruments do not require 'health and safety' reviews. Challenging JWST programs may require additional reviews, which may be done after the LRP is built. These operationally-complex programs are primarily those which require target acquisitions such as coronagraphy and spectroscopy. NIRSpec MSA configuration reviews would not impact the JWST proposal cycle timeline, as these would occur throughout the year as the pre-imaging is obtained.

After the initial program reviews and construction of the LRP, additional reviews by program coordinators and instrument scientists to further validate each program could be executed throughout the cycle without impacting the intellectual cycle of JWST. Any significant changes to an approved JWST program must be evaluated by the [telescope time review board](#) and will only be approved if they significantly improve the scientific return of the program.

## Unscheduled Programs

Proposers should be aware that after acceptance of a proposal, the actual execution of the observations may in some cases prove impossible. Possible reasons include:

- The accepted observation may be found to be infeasible or extremely difficult for technical reasons only discovered after the approval; ToO and time-critical observations can be particularly complex to plan and execute, and will be completed only to the extent that circumstances allow.
- The observing mode or instrument selected may not be operational.
- Suitable guide stars or scheduling opportunities may not exist.

The STScI Director reserves the right to disallow at any time any or all observations of an approved program if it is demonstrated that incorrect or incomplete information was provided in the proposal that may have significantly influenced the approval recommendation by the review panels or the TAC.

## Obtaining JWST Data

Once observations have been completed and archived, data can be retrieved from [MAST via several options](#). Access restrictions may apply for data within an exclusive access period. See [Obtaining JWST Data](#) for more information.

## Archival Research Support

STScI generally provides limited assistance in the reduction and analysis of archived data. Upon request, an Archive Scientist from MAST can work with PIs to identify and guide the development of enhanced data products or software for community distribution via MAST; provide guidance on enhanced meta-data and Digital Object Identifier (DOI) tagging to improve data discovery; and provide assistance with large data volumes and/or multi-mission use of MAST archival data. The PIs for Treasury or Legacy AR proposals will be automatically contacted by MAST Archive Scientists. Although an Instrument Scientist is not usually assigned to a funded AR Program, STScI will do so upon request. The Instrument Scientist will serve as a single point of contact to help resolve calibration issues specifically, rather than more general archival support provided by MAST. Proposers should plan to conduct the bulk of their archival research at their home institutions, and should request funds accordingly. Limited resources preclude extensive assistance in the reduction and analysis of data by non-funded archival researchers.

## Failed Observations

HST observations fail at the rate of a few percent, and we anticipate that a few percent of JWST observations will fail as well. Some of these failures result from occasional guide stars that cannot be acquired, or from an instrument anomaly, or the telescope happening to be in a safe mode when a particular observation was scheduled. Such failures, which are obviously beyond the proposer's control, can usually be scheduled for a repeat observation. When this is the case, the proposer receives a notice of the failure and information on obtaining a repeat observation. A smaller fraction of failures do not have a clear cause, and may not be evident from our internal reviews of data quality. If you believe your observation has failed or is seriously degraded, then you may request a repeat for your program. The request must be filed within 90 days after the observations are taken. In cases where the failure resulted

from proposer error (e.g., incorrect target coordinates), a repeat will not be granted. In cases where the failure was a result of incorrect instrument performance, or incorrect information provided by STScI, a repeat is usually granted.

## Publication of JWST Results

It is expected that the results of JWST observations and Archival Research will be published in the scientific literature. All refereed publications based on JWST data must carry the following footnote (with the first phrase in brackets included in the case of Archival Research):

“Based on observations made with the James Webb Space Telescope, obtained [from the Mikulski Archive for Space Telescopes] at the Space Telescope Science Institute, which is operated by the Association of Universities for Research in Astronomy, Inc., under NASA contract NAS 5-03127. These observations are associated with program # \_\_\_\_.”

If the research was supported by a grant from STScI, the publication should also carry the following acknowledgment at the end of the text:

“Support for program # \_\_\_\_ was provided by NASA through a grant from the Space Telescope Science Institute, which is operated by the Association of Universities for Research in Astronomy, Inc., under NASA contract NAS 5-03127.”

The relevant program ID should be entered in these phrases where indicated.

Because of the importance of maintaining the accuracy and completeness of the JWST bibliography, a link to an electronic version of each preprint of publications based on JWST research should be sent via email to the following addresses:

- Chief Institute Librarian, Space Telescope Science Institute, 3700 San Martin Dr., Baltimore, MD 21218, USA ([library@stsci.edu](mailto:library@stsci.edu))
- Office of Public Outreach, STScI, 3700 San Martin Drive, Baltimore, MD 21218, USA ([cpulliam@stsci.edu](mailto:cpulliam@stsci.edu))

This requirement includes both refereed and non-refereed publications, but not abstracts or poster papers.

Authors should also include a digital object identifier (DOI) provided by MAST in all papers that use JWST data. This DOI should point to the data analyzed in the paper. It is suggested that authors include the DOI at the end of the "Data" section of the manuscript, e.g.,

"The James Webb Space Telescope data described here can be found at \_\_\_\_"

Where the DOI link should be entered where indicated. Including the DOI link will not alter the exclusive access period of the data. MAST provides a service for generating these DOIs, and should be contacted at [archive@stsci.edu](mailto:archive@stsci.edu)

## News Release of JWST Results

JWST observers have a responsibility to share interesting results of their JWST investigations with the public. STScI's News branch in the Office of Public Outreach (OPO) is chartered to support NASA in disseminating JWST science and technology information to the general public. In this capacity, OPO offers scientists expert assistance in preparing news releases and the opportunity to share their newsworthy results with hundreds of millions of people. Investigators who believe they have results of public interest should contact Christine Pulliam ([cpulliam@stsci.edu](mailto:cpulliam@stsci.edu)).

Investigators are reminded that NASA maintains the Right of First Refusal for all JWST news releases. We encourage the submission of suggestions for news items as soon as scientific results have been submitted for publication, or as an abstract for a science conference. NASA's policy is to distribute all news fairly and equitably, giving wide access to scientific findings, and enabling a broad impact. OPO works with the scientists' home institutions to ensure that news items are disseminated nationally as well as locally. The STScI Public Outreach news officers should be made aware of potentially newsworthy science results by principal investigators before the acceptance of JWST publications, with sufficient time for consideration of a news release.

## Visits to STScI

Most GOs will find that they can analyze their data most efficiently at their home institution, using the JWST Help Desk (<http://jwsthelphelp.stsci.edu>) to resolve issues that are not clear from the available documentation. However, observers may find it useful to visit STScI for 2-3 days to learn how to deal with their data. Also, in cases of particularly complex or difficult programs, observers may consider visiting STScI before the proposal deadline. Visits can be arranged through the JWST Help Desk. Observers who visit STScI will be assisted by STScI staff to the extent that resources permit.

Next: [JWST Cycle 1 Proposal Science Categories and Keywords](#)

## Related Links

[JWST General Science Policies](#)

[JWST Cycle 1 Proposal Opportunities](#)

# JWST Cycle 1 Proposal Science Categories and Keywords

JWST proposers use APT to select one of six science categories and identify a number of associated science keywords. Categories are used to assign the proposals to a set of mirror panels, while keywords are used to match proposals and panelists according to expertise and to track what type of science JWST supports.

The science policies group will sort proposals according to the science categories and keywords listed below for the time allocation review. For additional information on the science topics covered in each panel, see [JWST Cycle 1 Proposal Selection Process](#)

Solar System:
Biomarkers
Chemical Composition
Comets
Giant Planets
Kuiper-Belt Objects
Minor Planets
Planetary Atmospheres
Planetary Satellites
Space Weather
Terrestrial Planets
Transits

Stellar Physics:
Accretion Disks And Jets
Astrometry

Planets And Planet Formation:
Biomarkers
Chemical Composition
Coronagraphy
Disks
Exoplanet Host Stars
Extrasolar Planets
Giant Planets
Planetary Atmospheres
Planetary Satellites
Space Weather
Terrestrial Planets
Transits



Atmospheres
Binaries
Brown Dwarfs
Chemical Abundances
Circumstellar Matter
Cool Stars
Dust
Evolution
Evolved Stars
Gamma-Ray Bursts
HII Regions
Hot Stars
Interstellar Medium
Low-Mass Stars
Main-Sequence Stars
Massive Stars
Molecular Clouds
Neutron Stars And Pulsars
Planetary Nebulae
Pre-Main Sequence Stars
Radiative Transfer
Supernovae
Transients
Variable Stars

Galaxies and the IGM:

Stellar Populations (and the ISM):
Astrometry
Bulges, Spheroids, And Ellipticals
Chemical Abundances
Color-Magnitude Diagrams
Cool Stars
Distance Ladder
Dust
Dwarf Galaxies
Evolution
Galactic Center
Globular Clusters
HII Regions
Halos
Hot Stars
Interstellar Medium
Irregular Galaxies
Local Group Galaxies
Magellanic Clouds
Microlensing
Planetary Nebulae
Star Clusters
Star-Formation Histories

Bulges, Spheroids, and Ellipticals
Chemical Abundances
Circumgalactic Medium
Cooling Flows
Damped Lyman-Alpha Absorption
Dark Matter Halos
Disks
Dust
Dwarf Galaxies
Emission-Line Galaxies
Galaxy Formation and Evolution
Galaxy Environments
Gunn-Peterson Effect
Spectral Energy Distributions
Interacting/Merging Galaxies
IR-Luminous Galaxies
Irregular Galaxies
Lyman-Alpha Forest
Local Group Galaxies
Magellanic Clouds
Metal Absorption Systems
Photometric Redshifts
Quenched Galaxies
Scaling Relations
Simulations And Models
Star Clusters

Massive Black Holes And Their Host Galaxies:
Accretion Disks
AGN Host Galaxies
BAL Quasars
Emission Lines
Feedback
High-Luminosity AGN/Quasars
Jets
Liners
Low-Luminosity AGN/Seyferts
M-Sigma Relation
Quenched Galaxies
Radio AGN
Reverberation
Supermassive Black Holes
Winds And Outflows
X-Ray AGN

Starburst Galaxies
Star-Formation Histories
Stellar Halos
Stellar Populations
Structure And Morphology

Cosmology:
Chemical Abundances
Clusters Of Galaxies
Cosmological Parameters And Distance Scale
Cooling Flows
Extragalactic Legacy And Deep Fields
First Light Stars And Galaxies
Gamma-Ray Bursts
Gravitational Lensing
Groups Of Galaxies
Intracluster Medium
Large-Scale Structure
Reionization
Simulations And Models
Supernovae

## Related Links

[JWST General Science Policies](#)

[JWST Cycle 1 Proposal Opportunities](#)