JWST Duplicate Observations Policy

JWST proposals that request observations which duplicate planned or existing JWST observations are identified and adjudicated according to STScI/NASA policy.

Introduction

Duplicate observations may be permitted if they are scientifically justified; in general, duplications in General Observer (GO) programs must be recommended for execution by the Telescope Allocation Committee and all duplications in General Observer (GO) programs and Guaranteed Time Observer (GTO) programs must receive explicit approval by the STScI Director.

The expected audiences for this report are the members of the GO and GTO community, the STScI Proposal Planning and Scheduling team and the STScI Webb Instrument Team. Other STScI teams may find this report useful in optimizing the design of their components of the JWST system.

Special policies apply to cases in which a proposed observation with the James Webb Space Telescope would duplicate another observation either already obtained or scheduled to be obtained. The prime purpose is to maximize the scientific return from JWST by making the most efficient use of the available observing time through minimizing scientifically-unjustified repeat observations. The goal is not to protect specific scientific programs: as with other NASA Great Observatories, JWST will execute observing programs that address the same science goals through different observation techniques if those programs are recommended for approval through the review process and approved by the STScI Director.

The policies and procedures described here apply to prime and parallel observations and to both GO and GTO programs.

Definition of a Duplicate Observation

An observation is a duplication of another observation if it is on the same astronomical source or field, with the same instrument in the same hardware mode (i.e. generally using the same Astronomer's Proposal Tool template), with similar sensitivity and similar spectral range. It is the responsibility of both GO and GTO observers to check their proposed observations against the catalog of previously executed or accepted observations and provide a suitable justification for any duplication.

Single source observations

Single source observations are defined as including some coronagraphy, long-slit spectroscopy and some observations with integral field units (IFUs). A duplication is an observation of the same source with the same instrument configuration and an exposure time within a factor of 4; for present purposes, “exposure time” is defined as the total photon collection duration given by the Astronomer's Proposal Tool. Spectroscopic observations of an individual source are flagged as potential duplications if there is major overlap (>50%) in the spectral range with previous observations of the same source. NIRSpec fixed slit or IFU spectroscopic observations can be duplications of NIRSpec Multi-Object Spectroscopy (MOS) observations of the same astronomical source with similar wavelength coverage and resolution.

Areal Observations

Areal observations are defined as including direct imaging, some coronagraphy, wide-field slitless spectroscopy and some observations with integral field units (IFUs). Observations are identified as duplications if they are taken with the same instrument configuration and with an exposure time within a factor of 4, and if the telescope pointing results in major overlap (>50%) of the Field of View.

NIRSpec MOS observations

Duplications in NIRSpec MOS observations are defined on a slit-by-slit/source-by-source basis. A duplication is an observation of a previously observed source with the same instrument configuration, major overlap (>50%) in the spectral range and an exposure time within a factor of 4. NIRSpec MOS observations of individual sources may be considered duplications of NIRSpec single-slit observations or IFU observations with similar wavelength coverage and spectral resolution.

Duplication Policy

Proposed observations that meet the criteria outlined above are potential duplications and should be identified as such by the GO or GTO proposer. Any such observations must be justified in the appropriate section of the proposal. *Duplicate observations are permitted if they are scientifically justified*: examples might include repeat observations of intrinsically variable objects, or duplicate imaging observations made over a time baseline to determine astrometric motions. Duplications in GO programs are generally subject to review by the Telescope Allocation Committee (TAC) and require approval by the STScI Director. Duplications between GTO and GO programs will be adjudicated by the STScI Director, in consultation with NASA Headquarters.

JWST includes instruments that offer similar instrumental configurations. In particular, NIRCam and NIRISS imaging modes have similar pixel scales and share a number of filters. Observations with different instruments are not formal duplications. Potentially-redundant cross-instrument configurations are listed in the Appendix, and STScI will provide guidance to the TAC on their relative capabilities. The TAC will provide a recommendation on whether newly-proposed observations in GO programs are complementary or scientifically redundant. If current cycle GTO observations are ruled to duplicate accepted, scheduled or completed GO or GTO observations, the affected GTOs will be permitted to change their program to remove the duplication. Conflicts between GTO observations proposed in the same cycle will be resolved following the protocols outlined in NASA-SMD Policy 11.

Single Source and Areal Observations

Any *unjustified* duplications of previously executed or accepted observations that come to the attention of the peer reviewers and/or STScI could lead to rejection during or after the TAC deliberations. Without an explicit TAC recommendation to retain duplicating exposures, unjustified duplications discovered in an approved GO program can be disallowed. In such cases, no compensatory observing time will be allowed for GO programs and the associated observing time will be removed from the allocation.

NIRSpec MOS observations

The NIRSpec MOS mode is designed to obtain observations of multiple sources in a single pointing. Duplications are identified on a source by source basis. *Scientifically unjustified* duplications are not allowed for sources with previously scheduled observations. Any such sources may be removed from the source list and may lead to rejection of specific observations after the TAC deliberations. Without an explicit TAC recommendation to retain duplicating exposures of specific sources or fields, unjustified duplications discovered in a TAC-approved program can be disallowed. Proposers may have the option of re-planning their observations with alternate sources if scheduling constraints allow and such observations are justified in the context of the original science justification.

Duplication Checking and Review Procedures

The MAST Discovery Portal provides a standard interface for checking proposed observations against scheduled and completed JWST GTO, DD (including DD-ERS), and GO observations. The Principal Investigator is responsible for ensuring that duplications are identified and discussed in the proposal. Duplications in GO proposals will generally be subject to review by the TAC and require explicit approval by the STScI Director. Duplications of accepted, scheduled or completed GO and GTO observations in GTO proposals will be adjudicated by the STScI Director. Conflicts between GTO observations proposed in the same cycle will be resolved following the protocols outlined in NASA-SMD Policy 11. For further details see the JDox JWST Duplication Checking page.

Single Source Observations

Duplications with previous programs: Potential duplications with scheduled or completed GO or GTO observations should be identified by using the Duplication Checking interface to search for past observation of the same source with the same instrument configuration and an exposure time within a factor of 4; and spectral overlap by more than 50%. Any duplicate observations must be identified and justified in the proposal.

Same cycle GO duplications: Potential duplications between proposals submitted in the same cycle will be identified by STScI. That information will be communicated to the TAC.

Table 1: Areal Observations - default duplication search radii

Observing Mode	Δr (arcsec)	Observing Mode	Δr (arcsec)
NIRSpec MOS	180	NIRSpec IFU	4
MIRI Imaging	120	MIRI MRS	4
NIRISS WFSS	140		
NIRCam Imaging	280		

Duplications with previous programs: Duplicate areal observations are identified through a two-step process. Observations are flagged by the Duplication Checking interface as potential duplications if the target coordinates lie within a specific radial distance of a scheduled or previously executed observation. Table 1 lists the radial offsets adopted for each JWST instrument. Observations that are flagged as potential duplications should be checked and discussed in the proposal.

Same cycle GO duplications: Potential duplications between proposals submitted in the same cycle will be identified by STScI. That information will be communicated to the TAC.

NIRSpec MOS observations

Duplications in NIRSpec MOS observations are identified through a two-step process. Observations will be flagged as including potential duplications if the telescope pointing results in a field of view overlapping with a scheduled or completed observation made with the same instrument configuration and an exposure time within a factor of 4 of the proposed observation. Once identified, the individual slit positions should be checked to determine whether there are sources in common between the two observations.

JWST pre-imaging: Some programs will depend on imaging with JWST cameras to identify targets for follow-up spectroscopy. Those observations should be included in the proposal unless appropriate data will be available to the proposing team at the start date of the observing cycle. If multiple proposals require duplicate imaging data of the same field, the Director may consolidate the proposed imaging observations and make the appropriate data available to all parties for target selection, subject to the restrictions and priorities outlined below.

Duplications with previous programs: Proposers should check for potential duplications with scheduled or completed GO or GTO MOS observations by using the Duplication Checking interface to search for past telescope pointings that use the same instrument configuration, have exposure times within a factor of 4 and overlap the Field of View of the proposed observations. *Duplications are identified on a source by source basis.* A proposed MOS observation that covers the same field of view as a previous observation but includes no astronomical sources in common is not a duplication. Proposed observations of sources that are included as targets in scheduled or completed programs are duplications and must be identified and justified in the proposal.

Source lists for all accepted or scheduled NIRSpec MOS observations may not be available at the submission deadline, since some programs use JWST pre-imaging to identify their sources; those observations and the subsequent source selection may not have been completed. *This does not preclude observations of targets in the same field of view by other programs.* In such cases, the scheduled program should be identified and the potential for duplication described in the "Justify Duplications" section of the proposal. The TAC will review the scientific goals of the previously scheduled program, and will provide clear guidelines and priorities on source selection for any additional programs recommended for approval in the current cycle; those priorities will be communicated to the proposers as mandatory comments. Any such programs will not be approved for execution until final source lists are available for both programs; unjustified duplications with the previously-scheduled program will be disallowed.

***Exceptions*:** MOS observations provide the potential to expand observations beyond the core science program without additional overhead by adding observations of additional sources within the targeted field of view. In order to maximize the scientific return from JWST, duplicate observations of individual sources may be justified in some cases. Any such sources should be identified in the Justify Duplications section of the proposal and will be subject to review by the TAC for GO proposals and to final adjudication by the STScI Director for GO and GTO proposals.

Same cycle GO duplications: Potential duplications between NIRSpec MOS proposals submitted in the same GO cycle will be identified by STScI, who will flag proposals that use the same instrumental configuration, have exposure times within a factor of 4 and telescope pointings that result in Fields of View that overlap by more than 50%. The TAC will review those proposals and determine whether there is likely to be duplication in the source list. If two or more programs with overlapping Fields of View are recommended for acceptance, the TAC must provide a clear statement of the prime scientific goals for each and, if necessary, the relative priority of each proposal. The TAC will communicate those constraints to the Principal Investigators as mandatory comments concerning the implementation of the respective science programs. This feedback will be used as the basis for resolving any conflicts that might arise in scheduling the observations.

If two or more GO programs are accepted for observations of the same field in the same cycle, the Principal Investigators will be informed and will be encouraged to co-operate. If appropriate, they will share pre-imaging observations. They may also choose to pool their resources and share source lists to optimize the observations. In that case, both teams will have exclusive access to the data acquired for both programs.

If cooperation is not acceptable to either PI, the source lists from the programs will be matched to identify duplications. The STScI Director will take into account the scientific priorities set by the TAC in determining which observations will be disallowed.

Final target list: The list of accessible targets for MOS observations may be dependent on external circumstances, such as scheduling constraints. In all cases, the final target list for GO and GTO programs will be subject to approval by the STScI Director.

Embargoed observations

Under exceptional circumstances, duplicate observations may be held in embargo for a short period. Any such decisions will require formal approval by the STScI Director.

Appendix: Cross-instrument Comparisons

Imaging: NIRCam and NIRISS

The Imaging mode of NIRISS makes use of flight spare filters from NIRCam and is an integral part of observing in the Wide-Field Slitless Spectroscopy (WFSS) mode. In general, NIRCam is the camera of choice for near-infrared imaging with JWST, since it has twice the field of view of NIRISS and obtains short-wavelength and long-wavelength images simultaneously. If used in parallel with NIRCam during programs involving deep imaging, NIRISS would provide a third near-infrared imaging channel with matched filters.

- NIRISS has a field of view of 2.2' x 2.2', with a plate scale 0.065"/pixel.
- NIRCam has two modules, each with a field of view of 2.2' x 2.2'. The plate scale is 0.032"/pixel in the short wavelength channel (0.6–2.3 µm) and 0.065"/pixel in the long-wavelength channel (2.4–5.0 µm).

The filters in common are as follows:

- NIRISS/NIRCam short wavelength channel: F090W, F115W, F150W, F200W, F140M
- NIRISS/NIRCam long wavelength channel: F277W, F356W, F444W, F430M, F480M

Spectroscopy: NIRCam and NIRSpec

- The NIRCam grism installed in the long wavelength channel can be used to obtain slitless spectroscopy over the wavelength range 2.4 – 5 microns, with resolution R=2000.
- The NIRSpec G395M and G395H gratings cover the wavelength range 2.9 to 5 microns with resolution R=1000 and R=2700, respectively.

Related Links

NIRSpec Multi-Object Spectroscopy

NIRCam Imaging

NIRCam Wide Field Slitless Spectroscopy

NIRISS Imaging

On this page

JWST Opportunities and Policies

Expand all Collapse all