

JWST Moving Target Policies

This page contains the science requirements for moving targets as well as brief descriptions and links to appropriate pages about policies that affect moving target observing programs.

Science requirements for moving targets

JWST must be able to observe solar system targets when they move relative to the guide star at rates up to 0.030"/s (30 mas/s or 108"/hour). This will provide access to Mars and all of the more distant planets and their moons, asteroids, KBOs, and most comets over some part of their orbit (typically when a comet is more than two or three AU from the Sun; see [Kelley et al., 2016](#)). Precise trajectories are needed at the angular resolution of the observatory to avoid loss of angular resolution and to enable placing the moving targets on specific NIRSpec slits or the MIRI spectrometer field of view. It is recognized that the image quality requirements will have to be relaxed slightly while tracking moving objects, and that exposure times (or the track paths) will be limited by the path of the guide star. There are no requirements to track accelerating objects (curved trajectories), to track objects continuously as the guide stars cross sensor chip boundaries, to have special guide star availability, or to observe in any special orientations ([Science Requirements Document](#), pg. 7-8).

"When commanded, the Observatory shall compensate for the apparent motion of a moving target which exhibits an angular velocity between 0 and 30 mas/s with respect to a guide star that remains within a single Fine Guidance Sensor field of view." (SR-31, [Science Requirements Document](#), pg. 8-7)

Target of opportunity (ToO) policy

Main article: [JWST Target of Opportunity Observations](#)

The proposer should be aware that only a small number of disruptive (activation <14 days prior to observation) target of opportunity activations will be allowed during any particular cycle due to the effect on the schedule. See [JWST Target of Opportunity Observations](#) for a more thorough description of the ToO policy for JWST.

Duplication policy

Main article: [JWST Duplicate Observations Policy](#)

See also: [JWST Duplication Checking](#)

Observations of the same target with the same instrument and mode are considered duplicate observations. Duplicating an observation is typically discouraged unless the target shows intrinsic variability or a large-time baseline is needed to achieve the science goals.

Example of an *encouraged* duplication: Annual NIRSpec IFU observations of Jupiter's Great Red Spot.

Example of a *discouraged* duplication: Duplicate observations of a small asteroid with the NIRSpec IFU to increase the signal-to-noise ratio of a spectrum obtained with JWST in a previous cycle.

See [JWST Duplicate Observations Policy](#) for a general discussion on duplicate observations. Keep in mind that target/mode combinations in [Guaranteed Time Observation \(GTO\)](#) and [Early Release Science \(ERS\)](#) programs are subject to these policies in Cycle 1.

Moving target-specific overheads

Main article: [JWST Observing Overheads Summary](#)

See [Overheads for Moving Targets](#) article for a description of general overheads that apply to moving target observations.

References

[James Webb Space Telescope Project, Science Requirements Document \(July 10, 2012\)](#)