

Field of Regard Considerations for Moving Targets

The JWST field of regard will constrain the time of year a target can be observed. Because Solar System targets and the observatory are moving with respect to each other, the duration of the visibility windows could differ significantly from the standard durations.

Field of regard

Main article: [JWST Observatory Coordinate System and Field of Regard](#)

See [JWST Observatory Coordinate System and Field of Regard](#) for a more detailed look at the field of regard (FOR) and observatory pointing constraints.

Constraints on moving targets

The constraints on elongation angle define the time of year a target can be observed. The JWST field of regard can be thought of as a hemisphere with a hole in it. The hole is due to the need to avoid observing at or near the anti-solar point. This shape results in two observing windows each year for objects along the ecliptic, each ~50 days long. Again, due to the shape of the field of regard, the time between the end of the first window and the beginning of the second is ~90 days. The end of the second window is followed by ~170 days until the first window opens again. These numbers are rough estimates for slow-moving objects near the ecliptic; actual window lengths and spacings depend on the distance from the ecliptic and the magnitude of the apparent motion. Generally, objects further from the ecliptic will have larger observing windows and the slower the apparent motion of an object, the larger its observing window. We recommend that proposers determine the observing windows for their objects using [JPL Horizons](#) (option 23, "Sun-Observer-Target ELONG angle", on the "Table Settings" page can be used to specify a range of solar elongation angles).



The following Solar System bodies can never be observed by JWST: the Sun, Mercury, Venus, Earth, and the Moon. These constraints also mean that Mars is observable only every other year.

Instrument FOV orientations

