# Linkages in the Portal

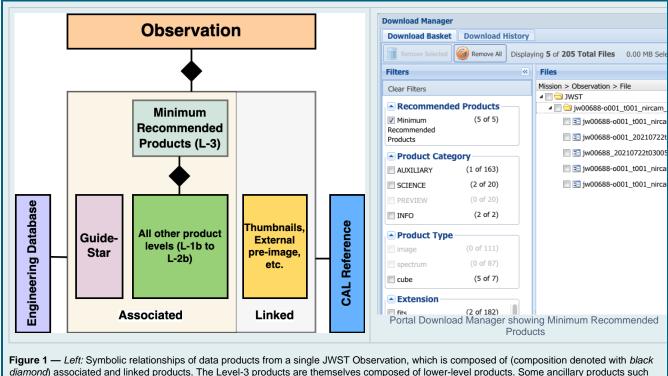
This article illustrates how various related JWST products are represented as an Observation. in the Portal.

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## Associations and Linkages in the Portal

The relationships between various categories of JWST data products are illustrated schematically in Figs. 1 and 2, including the way linked data products appear in the MAST Portal **Download Manager**. The comprehensive but abridged view in Fig. 1 represents a single JWST science Observation for the common case where **Level-3 (L-3) products are produced** for a single instrument. (See Processing Levels and Product Stages for more information.) Note that the only L-3 products will be displayed in the Download Manager if the *Minimum Recommended Products* (MRP) filter is applied.



*diamond*) associated and linked products. The Level-3 products are themselves composed of lower-level products. Some ancillary products such as previews and external pre-images (*gold box*) are linked by MAST but are not formally associated. Static calibration reference files (*blue box*) and contemporaneous engineering data (*purple box*) are neither linked nor associated to the Observation, but can be accessed separately. *Right*: Level-3 data product(s) are the only ones displayed in the Portal Download Manager file tree if the MRP checkbox is ticked.

It is important to understand that all data products for an **Observation** are accessible in the Portal; the visibility of a particular product in the Portal Dow nload Manager depends upon what filtering is applied. The relationships between associated data products (see *green box* in Fig. 1), where guide-star products have been de-selected for clarity, is shown in greater detail in Figure 2. The multiplicity of boxes at each level is intended to represent the various ways many exposures might originate for a given instrument configuration and operating mode: multiple detectors in an instrument, multiple dither positions, different orientations for coronography, etc.

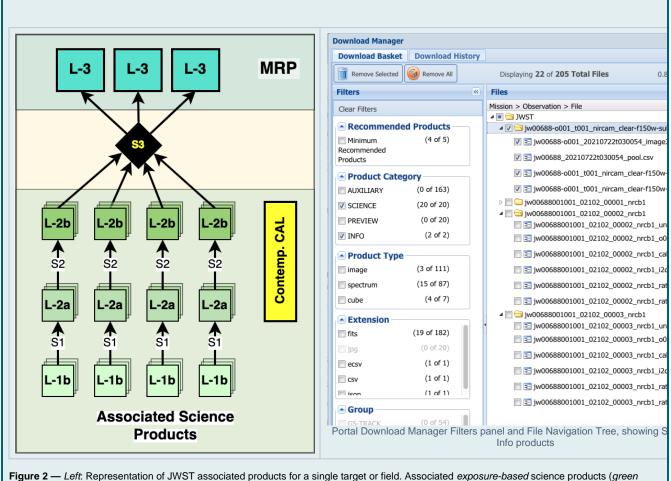


Figure 2 — Left: Representation of JWST associated products for a single target or field. Associated *exposure-based* science products (green boxes) are processed in parallel by early stages of the calibration pipeline (Stage-1 or Stage-2). Products are then combined by the Stage-3 pipeline to create the L-3 products. Calibration processing sometimes includes the processing and application of contemporaneous calibration exposures (e.g., arc-lamps; *yellow box*). *Right*: All products are represented in the Download Manager file tree when the MRP box is **not** checked, showing all levels of calibration processing: in this case for 3 dither positions.

#### What if L-3 Products are Absent?

There are some cases where L-3 products will not be present in MAST for a given Observation, including:

- Certain calibration programs (e.g., darks)
- Certain engineering programs
- Science programs where not all intended exposures have been executed on the spacecraft
- Failed observations within a planned sequence, where repeat visits or exposures have yet to be (or will never be) executed

In these cases, the Observations will correspond to the highest level data product, and be listed separately in the Portal search results. Their representation will be similar to that in Fig. 2, except that no L-3 products will be present.

### For Further Reading...

- Data Product Linkages
- MAST Portal Guide