Data Holdings

MAST contains science data from a large number of NASA missions and ground-based surveys. See the full collection under MAST Data Holdings.

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Data Collections by Mission

The subset of mission data that may be searched via the Portal is indicated with a *P* in the **Interface** column of the table below.

Data from a few missions hosted by MAST cannot be searched with the Portal. Most of them are smaller, early missions with incomplete metadata. For details, see MAST Data Collection Overview.

WFC3 and WFPC2 PSF Collections

A special collection of image cut-outs from the WFC3 and WFPC2 instruments on-board HST is available. These small images contain isolated, well-exposed stars that can be used as references for high precision photometry. See Observed PSF Search through MAST for details.

Data Collections by Catalog

MAST Catalogs

A variety of source catalogs are hosted at MAST, including mirror copies of other important astronomical catalogs. Some of them are available in the Portal; the rest can be searched with other MAST interfaces, such as CasJobs and Catalogs.MAST.

Catalog	Description
GAIA	All-sky catalog of sources as faint as R~21, with highly accurate positions, distances, and proper motions. Catalog versions DR-1, DR-2, and EDR-3.
TGAS	Tycho-GAIA Astrometric Solution, which helped to bootstrap measurements for the GAIA DR-1.
TIC	TESS Input Catalog
CTL	TESS Candidate Target List
Disk Detective	A catalog of stellar disk candidates

Hubble Source Catalog

Tens of thousands of sources in Hubble observations with all imaging instruments in many passbands have been used to create the Hubble Source Catalog (HSC). It also contains more than 84,000 sources that are known to be variables.

HSC Spectra

A subset of about 2000 sources in the HSC have associated, detailed spectroscopy. This collection, the Hubble Spectroscopic Legacy Archive, is a UV spectral atlas that includes a large variety of astrophysical sources.

Virtual Observatory Collections

The Virtual Observatory (VO) offers a variety of data products from repositories around the world. These include images, spectra, events, and catalogs. The initial search will only return metadata that describe the contents of the VO resources; a follow-on search is required to load selected data.

Data Product Types

MAST offers a variety of science data product sematic types, as described below. Usually, but not always, concomitant data (arrays of uncertainty, data quality, background level, etc.) are stored in the same file as the primary science array.

Product Type	Sub-Type	Description
Image	Direct	***Direct images*** record radiance from a field of astrophysical sources, and have two or more spatial axes corresponding to celestial coordinates, and possibly a time axis corresponding to sequential exposures.
	Coronagraphic	***Coronagraphic images*** are similar to direct images, except that the center of a bright source is greatly attenuated.
	Hyperspectral	***Hyperspectral images*** are conceptually a hybrid of an image and a spectrum, in that the product has two spectral axes and a wavelength axis. These images can be obtained from an Integral Field Unit.
Spectrum	Single-object	A ***Spectrum*** has a dispersion (usually, wavelength) axis and in MAST are often stored in tables. ***Long-slit spectra*** in addition have a spatial axis (corresponding to position along a slit).
	Long-slit	A ***Long-slit spectrum*** in addition has a spatial axis corresponding to position along a slit.
	Multi-object	***Multi-object*** spectra are obtained of multiple objects in a field, simultaneously. When obtained with a multi-aperture mask, they are called ***MOS spectra***; when obtained without a mask, they are called ***slitless spectra***. Sources in different parts of the field have different wavelength coverage (and often, somewhat different dispersion relations.
	Echelle	A ***echelle spectrogram*** consists of a 2-D array of adjacent spectral orders obtained of a single target with an echelle spectrograph.
	Spectropolarimetry	A spectrum of a source with a particular fixed plane of polarization, or a right- or left-circular polarization.
	Time series	Spectra of an unresolved target with a regular, repeated time sampling are ***spectral time-series***.
Photometry	Catalog	Single-epoch photometric data (or photometry from a non-regular time sequence) are stored in ***catalogs***, which often contain data from more than one passband,
	Light curve	Photometric data from a regular time sequence of an unresolved target are ***light curves***; these are normally stored in a table.

For Further Reading...

- MAST Data Holdings
- MAST Data Product Types