

Search Form Overview

This page provides an overview on how to use the MAST Mission Search to find [MAST](#) data collections. The description of each form component on this page is based on the [HST search](#).



Future Searches for other MAST mission data and collections will adopt the same or similar components. Any components that are only available for specific data collections will be documented.

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Major Components Of The Mission Search

This chapter summarizes the field guide to the major components of the Mission Search. There are three main areas: the search form, the search results table, and the download overlay. Each numbered box in these figures is described in a corresponding numbered subsection below.

Search Form

The screenshot shows the 'Search MAST for Hubble' web interface. It features a dark theme with white text and blue accents. At the top, there's a navigation bar with links for API, HELP, ABOUT, and MY ST. Below this is a welcome message and a filter instruction. The main search area is divided into several sections, each highlighted with a yellow box and a large yellow number:

- 1**: Object name(s) and/or RA and Dec pair(s). e.g. M1, M101, 279.2321 38.78232. Includes an 'UPLOAD LIST OF TARGETS' button and a search radius (max: 30 arcminutes) with a radius input (3) and unit (arcminutes) dropdown.
- 2**: Data Types (ALL, SPECTRUM, IMAGE), Observations (ALL, SCIENCE, CALIBRATION), Active Instruments (ACS, COS, FGS, STIS, WFC3), Legacy Instruments (FOC, FOS, GHRS, HSP, NICMOS, WFPC1, WFPC2), Dataset ID, Proposal ID, Principal Investigator, Exposure duration, Names of Filters/Gratings, and date ranges for observation and release.
- 3**: Add or remove additional columns to filter results. Includes a 'Column Name' dropdown, a 'Condition' input, and an 'ADD ANOTHER CONDITION' button.
- 4**: Choose output columns by name, header keywords, or description. Includes a 'SELECT RECOMMENDED' button and a list of output columns: Ang Sep, Apertures, Central Wavelength, Dataset, Dec (J2000), Exp Time, Filters/Gratings, High-Level Science Products, Instrument, Preview Name, Proposal ID, RA (J2000), Ref, Release Date, Scan Type, Start Time, Stop Time, and Target Name.
- 5**: A large orange 'SEARCH' button, with 'CLEAR FORM' and 'SHOW API QUERY' buttons on either side.

Figure 1 – The Search form window for Hubble, where numbered highlights correspond to areas where various search parameters and constraints are specified, and where searches are initiated.

The search form is where users specify the search parameters and constraints to create their search. The available search options include:

- Spatial cone search based on coordinates and/or object names,
- Direct search by dataset IDs,
- Advanced search with more specific constraints to narrow the search, and
- Search without specifying any filters. For example,
 - Users can search for all observations taken with a particular instrument after a certain date without specifying a specific target.
 - Or press '**SEARCH**' without entering anything into the form to return every observation taken.

Each field in this search form provides a tooltip as a quick guidance. Users can hover over each field with their mouse to see the tips. Specific functionality of each component is summarized below.

This close-up shows the top section of the search form. It includes the 'Object name(s) and/or RA and Dec pair(s)' input field with the example 'M1, M101, 279.2321 38.78232'. To the right is the 'UPLOAD LIST OF TARGETS' button. Further right is the 'Search radius (max: 30 arcminutes)' section, which has a 'Radius' input field with the value '3' and a 'Unit' dropdown menu set to 'arcminutes'.

1. Cone Search and Upload List Search

Perform a cone search by typing either an object name or the coordinates directly. Multiple object names, coordinates, or combinations of both are allowed by pressing 'return' or 'tab' keys after each object. Use the '**UPLOAD LIST OF TARGETS**' button to upload a comma-separated file containing the object names, coordinates, or specific dataset IDs. Users can set the size of their cone search in arcminutes or arcseconds. This section is not required to conduct a

search: users can leave it blank and search based only on other parameters. To start querying, click the Search bar at the bottom of the page.



Object names in this component are used only to resolve into coordinates using a name resolver.

Data Types

ALL

SPECTRUM

IMAGE

Observations

ALL

SCIENCE

CALIBRATION

Active Instruments

ACS

COS

FGS

STIS

WFC3

Legacy Instruments

FGC

FGS

Gaia

HSP

HRCMOS

WFC1

WFC2

Dataset ID, e.g. KDM79040

Proposal ID associated with observation, e.g. 14657

Principal Investigator

Dataset Name

Proposal ID

PI Surname

Exposure duration in seconds, e.g. 1200

Names of Filters/Gratings, e.g. G130M or POL60U/P1200L

Exposure Time

Filters / Gratings

Find data observed on or between these dates

Find observations released publicly on or between these dates

Obs Start D...

Time

to

Obs Start D...

Time

to

Release Da...

Time

to

Release Da...

Time

Add or remove additional columns to filter results

Column Name

Conditions

+ ADD ANOTHER CONDITION

Choose output columns by name, header keywords, or description

SELECT RECOMMENDED

Output columns

Ang Sep

Apertures

Central Wavelength

Dataset

Dec

Exp Time

Filters/Gratings

High-Level Science Products

Instrument

Preview Name

Proposal ID

RA

Ref

Release Date

Scan Type

Start Time

Stop Time

Target Name

CLEAR FORM

SEARCH

SHOW API QUERY

2. Search Parameter Overview

Use these fields to build advanced searches. Add search constraints based on the most commonly used observation parameters like instrument, proposal information, filter/grating, or start/end times. Each parameter accepts regular expressions, for example, greater than or less than for numerical fields or wildcard characters for string fields. If the default filters on the component do not include the specific parameter needed, see the 'Add Condition' section below for further search options.

3. Add Condition

Use 'Add Condition' to further constrain the search. Search for a column based on names and descriptions, or scroll through the complete list in the 'Column Name' text box. The search condition can include numerical constraints or wildcard characters for string fields. Use the 'ADD ANOTHER CONDITION' button to add multiple constraints and columns.

4. Choose Output Columns

Use 'Output Columns' to select which columns to include in the search results. The form is set by default to return a subset recommended by MAST. Use the shortcuts in the upper right to select 'Recommended' (

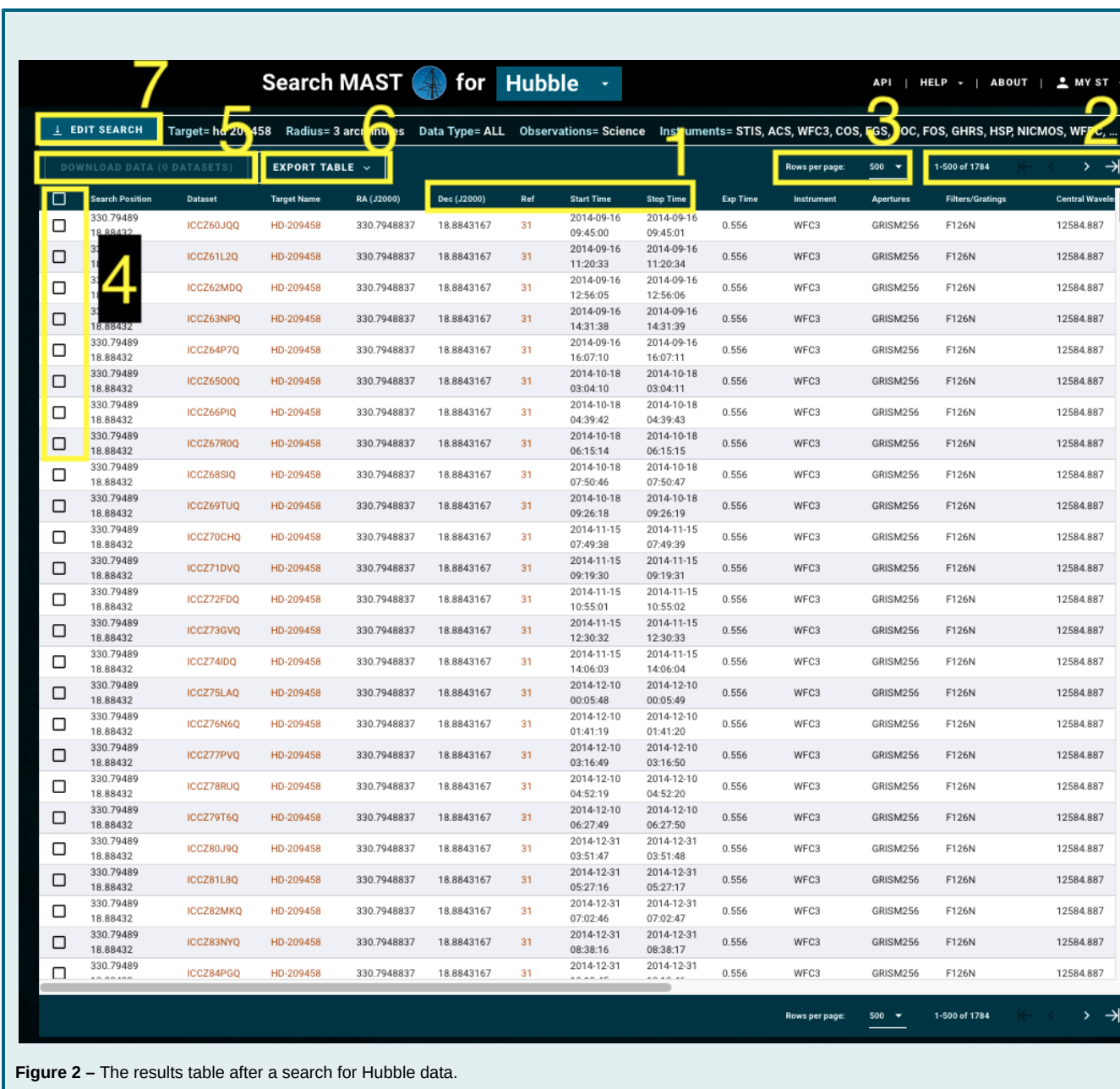
 SELECT RECOMMENDED), 'All' (), or 'None' ()

of the columns. Click in the 'Output Column' box and start typing to search for columns or click the check box in the pop-out menu to select based on its name or description. Remove individual columns from the selected ones by clicking the 'x' next to its name.

5. The Search Bar

The search bar is always located at the bottom of your screen. Clicking the 'SEARCH' button starts the search. Clicking the 'SHOW API QUERY' button generates a script using the [Application Programming Interface \(API\)](#) for MAST Mission Search, based on the search parameters entered into the form. This can be a great way to learn how to construct queries programmatically. Reset the form using the 'CLEAR FORM' button on the left.

Search Results Table



The search results table contains observations that match the search parameters. If a list of targets (object names, coordinates, or dataset names along with other information) is uploaded, all uploaded parameters will be included as additional columns in the results table. See the section [Cone Search And Upload List Search](#) for valid file formats.

Exp Time ↓ 2 Instrument ↑ 1 Aperture

1. Sorting Columns

The search results table can be sorted in ascending or descending order by clicking on the column name. The arrows indicate the sort direction. The table supports multi-column sorting, where the number next to each sorted column indicates the order. In the example on the left, the search results table is sorted first by **Instrument** name in ascending order, second by **Exposure Time** in descending order.

1-500 of 1784 ⏪ ⏩ ⏴ ⏵

2. Pagination

When there are more search results than the page size (default page size is 500 results per page), the table relies on pagination to display the records one page at a time. Iterate through previous or next pages, or jump to the first or last page, using the arrow buttons.

Rows per page: 500

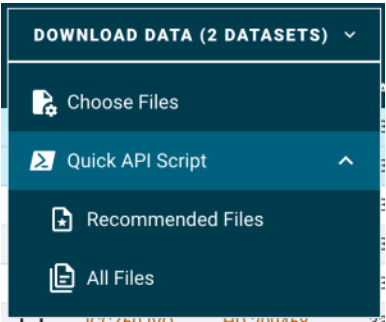
3. Table Rows Per Page

Updating the 'Rows Per Page' drop down changes the number of rows displayed on the table. For queries that return more than a few hundred results, displaying fewer rows per page will enable quicker loading. For queries that have less than a few hundred results, showing more rows per page can be convenient to see more on a single page.

☐	Search Position	Dataset
☐	330.79489	.187K020P0

4. Row Selection

Select one or more rows to download products associated with those datasets by clicking the checkboxes next to individual observations. The top checkbox in the header row selects all rows on the current page. Deselect individual rows using the checkboxes in those rows. Note that selecting or deselecting rows is limited to one page at a time. However, row selections on each page will be remembered between pages of the whole results table. To select rows across many table pages, try refining your search to be more selective, apply sorting of columns to group them together, or use the API (programmatic access to allow searches or downloads with scripts).



5. The Download Button

To download products associated with the observations in the search results table, select at least one row of observations. Then use the 'DOWNLOAD DATA' button to access the [Download Overlay](#) by selecting 'Choose Files' or generate an API script with one of the 'Quick API Script' options. When selecting more than 2000 observations, the 'Choose Files' button is disabled; instead, either reduce the number of selected rows or use the 'Quick API Script' option to programmatically retrieve the products from the selected observations. See '[Show API Button](#)' in the [Download Overlay](#) for more information about API queries.



6. The Export Button (Exporting Search Results Table)

Export the metadata of the search results table in a comma-separated (CSV), JSON, or VO Table format. To do this, select a subset of the table rows or the entire table of search results. Unlike downloading datasets, there is no limit to the number of rows that can be exported.



7. The Edit Search Button

Use the 'EDIT SEARCH' button to update the search parameters or start a new search. The search form will be overlaid and remember the previous query parameters, which can be modified. Press the 'CLEAR FORM' button at the bottom left of the screen to start a new search.

Download Overlay

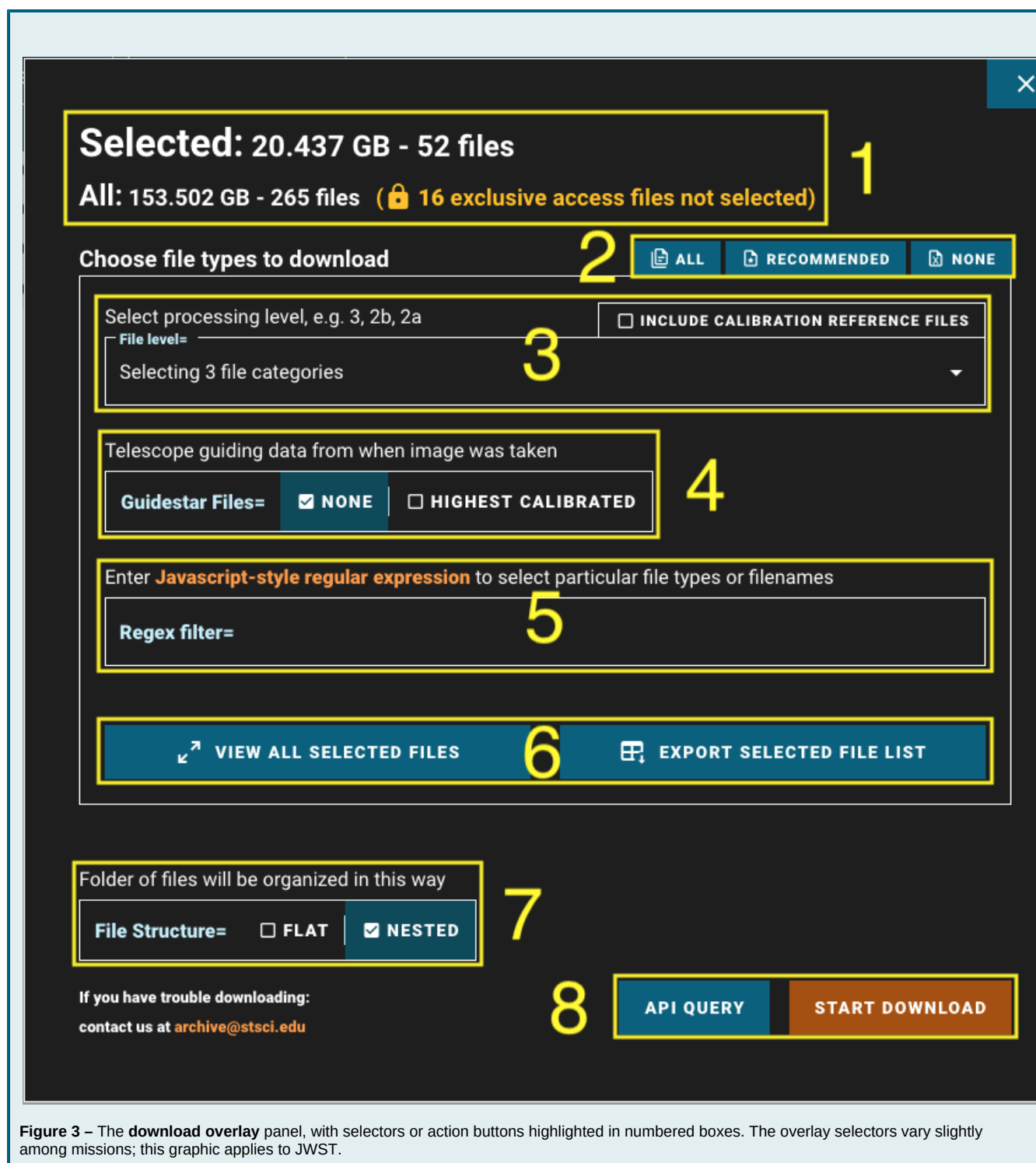


Figure 3 – The **download overlay** panel, with selectors or action buttons highlighted in numbered boxes. The overlay selectors vary slightly among missions; this graphic applies to JWST.

Each dataset contains one or more products (i.e., files), including calibration files, ancillary data, and calibrated files at various levels of processing. It is possible to download specific file types across the datasets or all the files that are available. The download overlay allows filtering by product types, and selection of specific files to download from each dataset. Files that are selected using the checkboxes remain selected to be downloaded even if additional filters are applied in the overlay to make them no longer visible in the overlay. The selectors and action elements are described in detail in the [Download Overlay](#) article.

For Further Reading...

- [Download Overlay](#)
- [Regular Expressions in the Download Overlay](#)
- [Mission Search Guide Home](#)

