



MAST
Users
Group
Meeting

Dec 2,
2014

MAST Data Discovery Portal

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Agenda

- Review Objectives
- Current status
- Work Completed Since Release
- Work in Progress
- Future Work

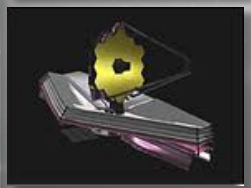


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Objectives

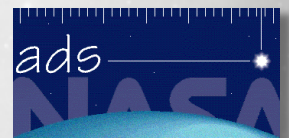
1. Unify MAST missions with a common discovery interface.
2. Provide instant access to Virtual Observatory collections.
3. Build a framework for astronomy data interchange.



Select Collection: All Virtual Observatory Collections
Example: M31: 14.03, 12.6, +54.20, 58.7, +0.25, 100k...

Preview	Instrument	Target Name	Observation ID	RA
1	LWP	NEAR S AND	1wv15819	00-42
2	LWP			00-42
3	LWP			00-42
4	LWP			00-42
5	ACS/ACS/WFC	M31-BH4	HST_10006_03_ACS_WFC_F435W	00-42

Summary for M31-BH4:
Publisher: STScI/MAST
Collection: HEA
Instrument: ACS/ACS/WFC
Obs ID: HST_10006_03_ACS_WFC_F435W



CHANDRA
X-RAY OBSERVATORY



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Current Status

- Originally released in Fall 2013
 - Replaced MAST cross-mission search
 - Supported JWST DMS Build 2 testing
- Usage is small but growing (up to a few thousand unique searches per month)
 - Should increase with additional query parameters
- Used for searching JWST SID archive.
- Also operational as VAO Data Discovery Tool
- Server supports gPhoton python client
 - <http://archive.stsci.edu/prepds/gphoton/>



Work Completed Since Release

- >100 tickets for software changes
 - Bug fixes and usability improvements
 - Press release data display and test bed
 - Upgraded core JavaScript library
 - Enhanced usage logging
 - Enhanced import/export
 - Performance enhancements
- >30 tickets for CAOM improvements
 - New data made available for several missions
 - Corrections to some metadata values

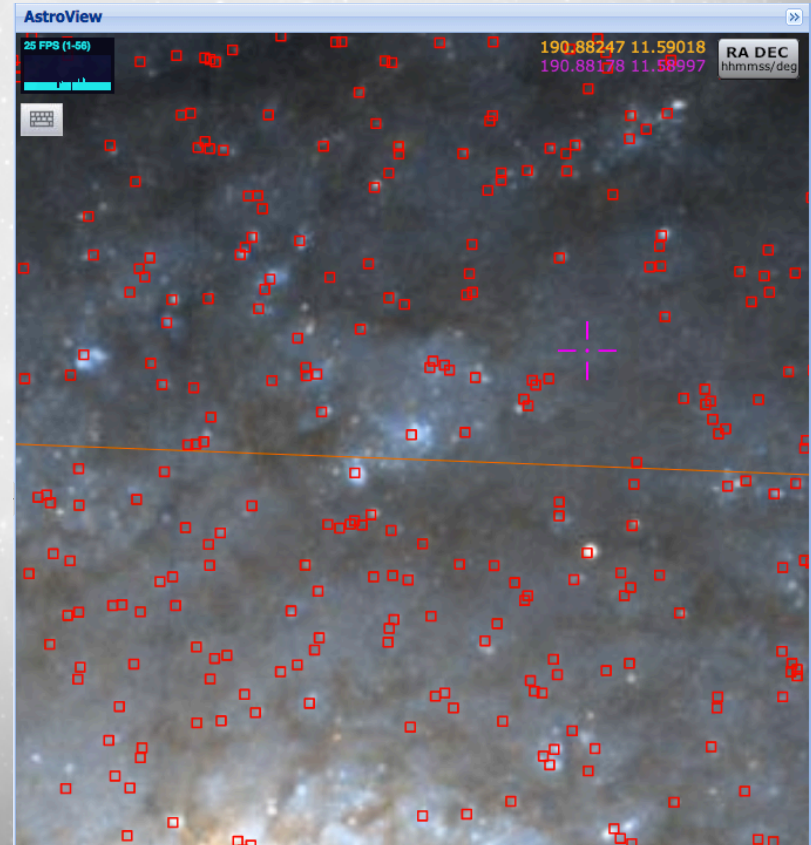
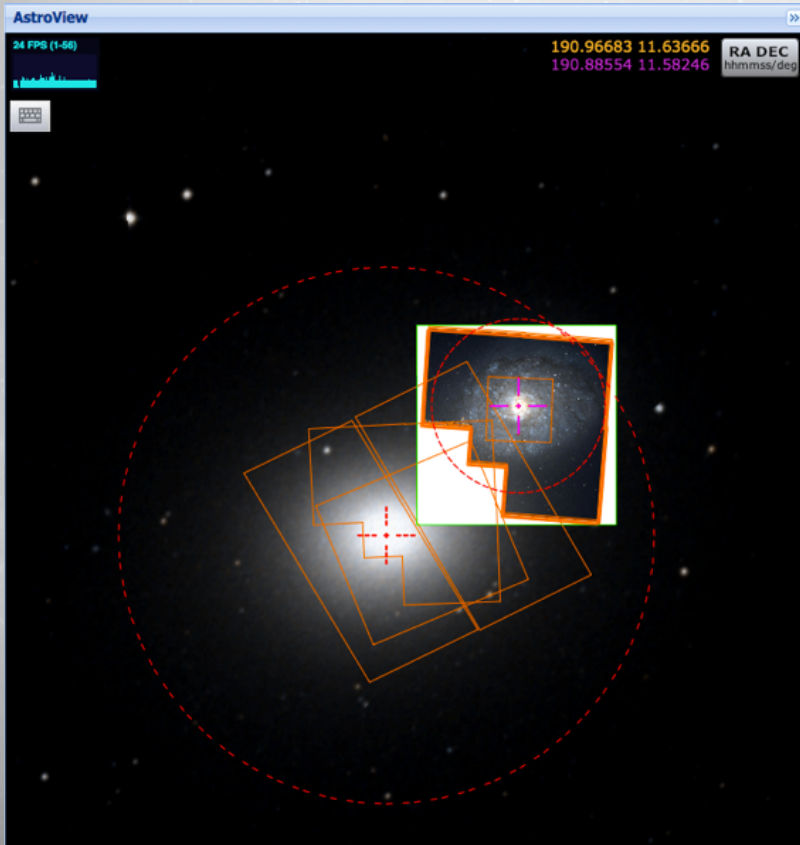


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Work In Progress

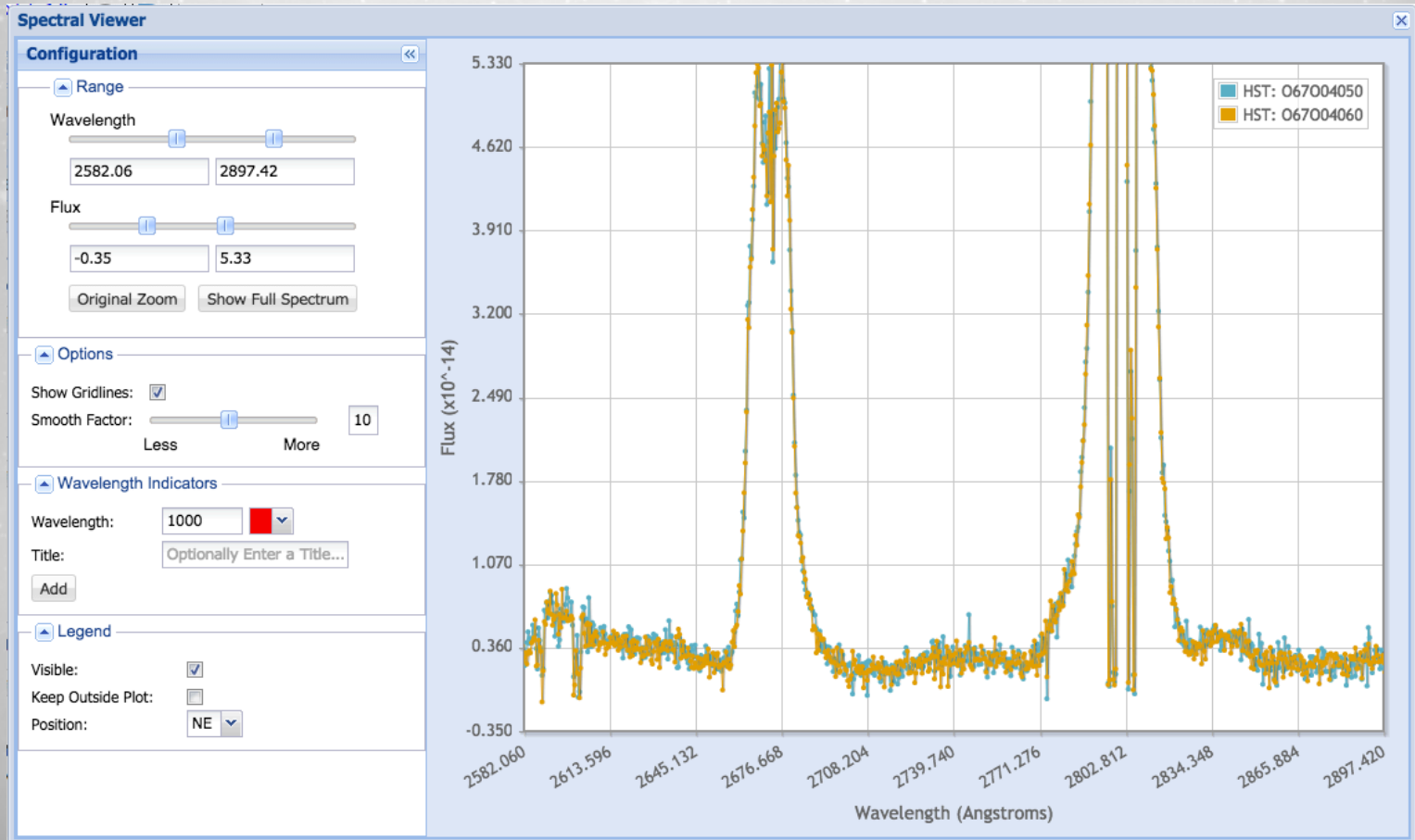
- Hubble Source Catalog support
 - Search, filter, overlay in AstroView, scatter plots, cross-match with other catalogs
 - Display image cutouts for each extraction
 - Create new columns
 - HST image display in AstroView





Work In Progress (2)

- Interactive Spectral Viewer





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Work In Progress (3)

- View previews as cutouts. Example at:
 - 03:32:42.290 -27:47:46.17 r=0

Full Previews

Actions	PREVIEW	CUTOUT	Mission	Instrument	Filters
			HST	WFPC2/WFC	detection
			HST	WFPC2/WFC	f300w
			HST	WFPC2/WFC	detection
			HST	ACS/WFC	f850lp
			HST	ACS/WFC	detection

Cutouts around position

Actions	PREVIEW	CUTOUT	Mission	Instrument	Filters
			HST	ACS/WFC	f850lp
			HST	ACS/WFC	detection
			HST	ACS/WFC	f435w
			HST	ACS/WFC	detection
			HST	ACS/WFC	f606w



Work In Progress (4)

- Parameterized query interface
 - Search by Instrument, Program ID, etc.

The screenshot displays the MAST SID Test Interface. At the top, it shows the MAST logo and the text "Records Found: 502". Below this is a search bar and a section for "Applied Filters" with one filter: "Optical Element: F090W".

The interface is divided into several sections:

- Columns:** A list of columns for display, categorized into "Primary Columns" and "Secondary Columns". Primary columns include Retrieval Type, Instrument, File Name (p), Test Campaign, Test Number, Date (p), Test Title (p), Test Goal, Optical Element, and Grating. Secondary columns include File ID, Package ID, and ASIC Part Number.
- Filters:** A section for applying filters to the search results. It contains four filter panels:
 - Instrument:** A search box with a dropdown menu showing "Order Values by Count". The list includes: FGS (6394 Total), NIRCAM (28948 Total), NIRCAM Optical Measurement Assembly (OMA) (21056 Total), NIRSPEC (57566 Total), and TFI (1234 Total).
 - Date (p):** A search box with a dropdown menu showing "Order Values by Count". It includes a date range selector with a bar chart and a range from 1999-12-31 to 2013-04-03.
 - Test Goal:** A search box with a dropdown menu showing "Order Values Alphabetically".
 - Optical Element:** A search box with a dropdown menu showing "Order Values by Count". The list includes: CLEAR (8268 Total), clear (238 Total), DHS2 (288 Total), F070W (1295 Total), F090W (502 Total), F115W (232 Total), and F140M (3858 Total).



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Work In Progress (5)

- Work with a designer to improve usability, look and feel.
- Integrate with STScI SSO infrastructure
- JWST Requirements Analysis



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Future Work

- Data Retrieval
 - Load remaining MAST observations into CAOM
 - Search and cross-match against all MAST catalogs
 - Mission-Specific query interface
 - Support referencing MAST datasets via DOIs (Digital Object Identifiers)
- Data Avalanche
 - Dealing with large result sets
 - Summary data views
- Data Visualization
 - Integrated FITS viewer
 - Generalized image services
 - AstroView: More Surveys



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Future Work (2)

- Single Sign On
 - Retain user preferences, search and download histories
 - Restrict access to proprietary data
- Virtual Observatory
 - New search engine
 - Study indexing to speed VO searches
 - Contribute to data discovery standards definition
- Other
 - Ongoing JWST Implementation
 - Manage UI Complexity
 - Mobile access