# The HST Cache - Metadata and Services

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## Abstract

We present new developments of the HST Cache that are related to the greatly improved metadata now available within the system. This work includes the interface to CAOM, new SSAP and SIAP VO services, the integration of HLA images produced at CADC and STScI into the HST Cache metadata tables as well as work on improved user interfaces.

## New Metadata

The HST Cache is an automatic system to reprocess and recalibrate all HST datasets on a 24/7 basis using the latest software and reference files. The products are then stored on spinning disks for immediate download or delivery through VO protocols.

One of the goals of the HST Cache project was to improve both the quantity and quality of metadata available for each dataset. This covers the physical description of the data on the spatial, spectral and temporal axes but also includes derived metadata such as the instrument footprint[1] or the data type (imaging, 1D spectroscopy, ...). The new metadata are conceived for maximum scientific exploitation of the archive. Users will need less knowledge of the HST internals.

The system was also upgraded to be able to cope with non-refreshed data products. As of now we have ingested the HLA WFPC2 images produced at CADC and STScI.

## CAOM

The Common Archive Observation Model[2] is a generic data model developed at CADC that captures quantities and relations of astrophysical observations. The metadata collected in the HST Cache is fully CAOM compliant and software has been developed to fill the CAOM as just one more step of the HST Cache pipeline. The Virtual Observatory is constructing an Observation Data Model that will be used for the Table Access Protocol (ObsTAP). Early discussions on this model show that the the metadata in the HST Cache is a superset of the data required.

## Previews

We compute previews for (nearly) all of the datasets in the HST Cache. After our own custom normalisation is applied, we use Aladin[3] to create JPG image files. These files are equipped with AVM/XMP[4] tags.
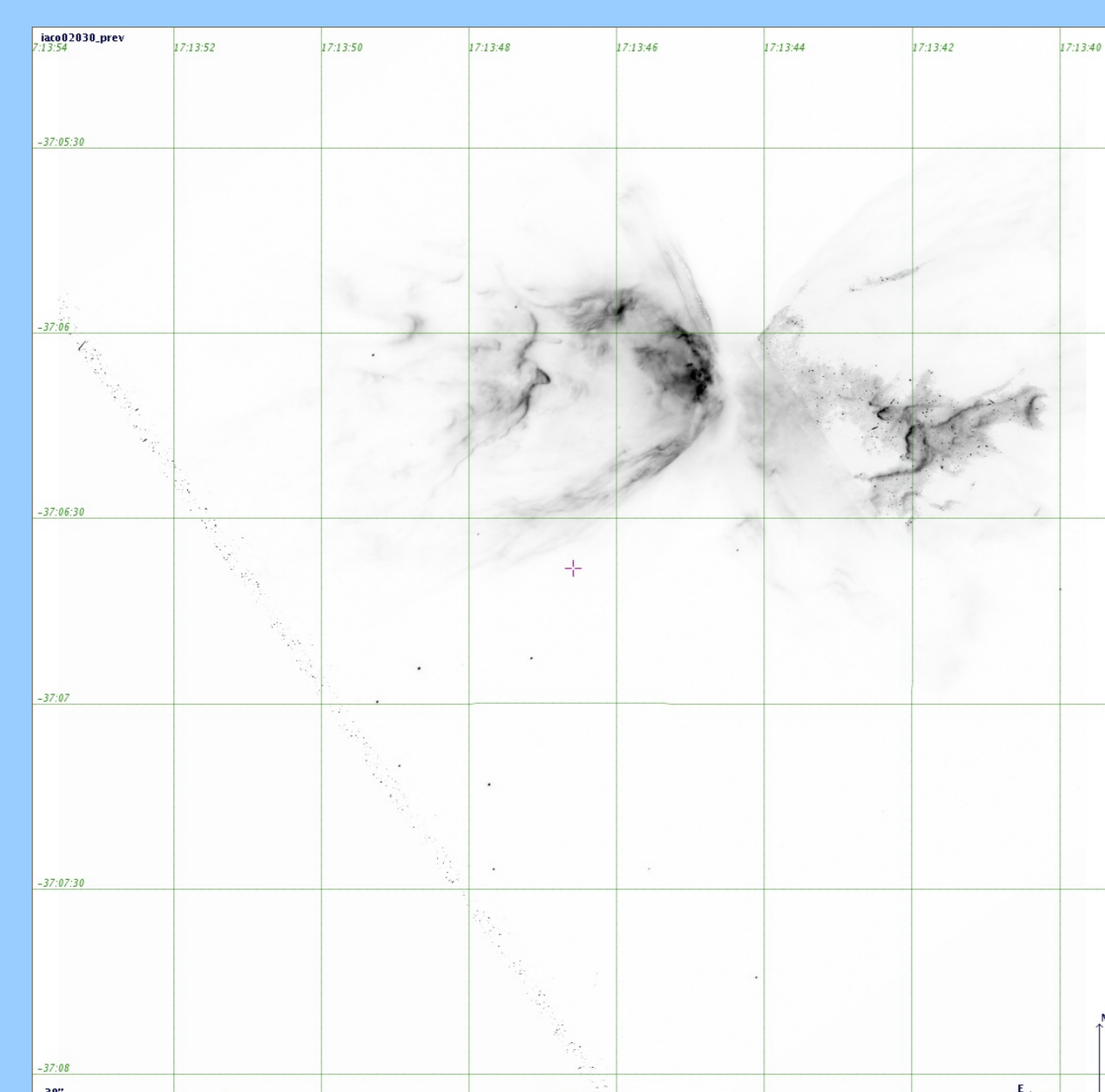


WFC3 preview of NGC 6302
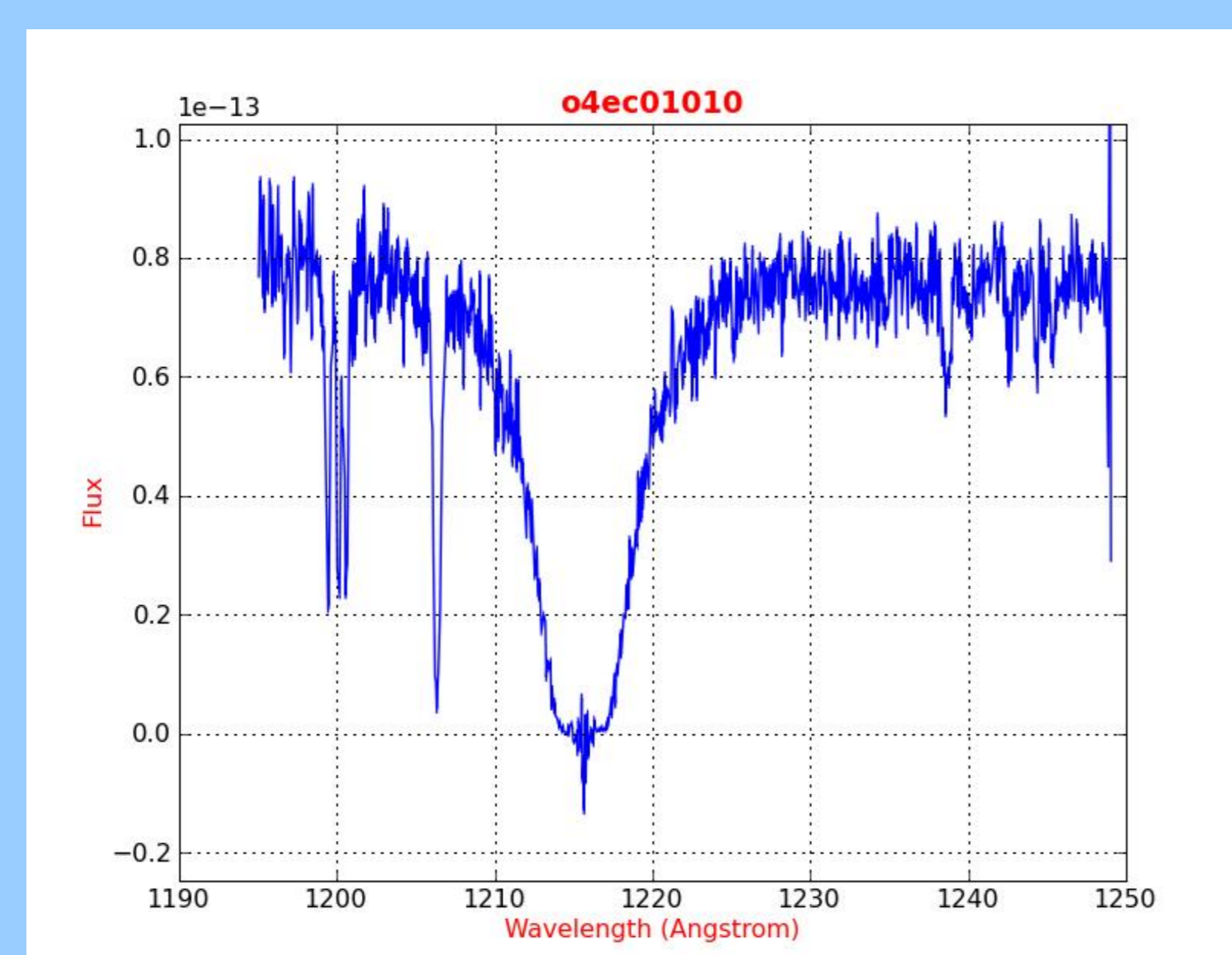


STIS preview of Markarian 1383

## Web Interface

Significant effort has been devoted to improving the main archive search interface. A more concise user interface was achieved by using theme-grouped keywords, tooltip help panels, and tooltip previews. The goal was to provide information to the user only where needed and to reduce the need for scrolling the pages. Programmatic access to the VOTables for the full archive is available[5]. The results of the queries are presented using code from STScI (Rick White) repackaged by Tom McGlynn[6] and features sortable and drag-droppable columns. Two choices for download are available: either anonymous direct download of the products over the web or the submission of a request for data delivery on DVD, Blu-Ray or hard-disk.

We also developed a one-line command interface that can understand simple queries such as "ACS F775W within 20 arcmin from NGC 220" or complex ones involving keywords, operators, and parentheses. The interface, that also offers auto-completion, will be integrated into the web search page soon.



**archive.eso.org/hst/science**

## VO Services

The HST Cache is now fully equipped with VO services (SSAP and SIAP) both for the classical HST collection as well as the imaging HLA products (WFPC2) and the spectral HLA products, produced at ST-ECF. These services return VOTables with footprints where available.



**stecf.org/hst-vo/hst_sia**
**stecf.org/hst-vo/hst_ssa**
**stecf.org/hst-vo/hla_sia**
**stecf.org/hst-vo/hla_ssa**
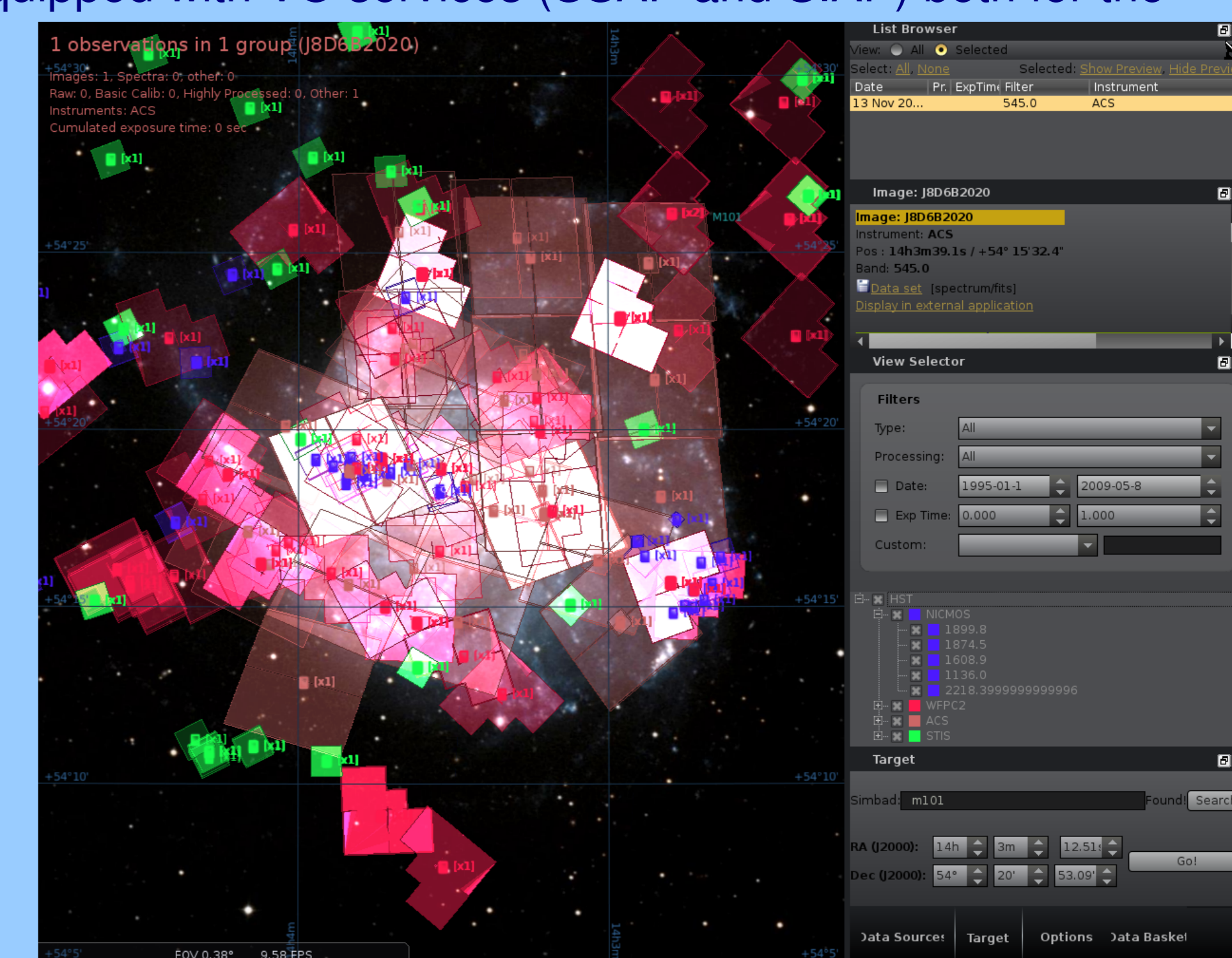
M101 in VirGO[7] using the HST/HLA SIAP services

## Outlook

Several improvements are foreseen in the near future: adding a file-upload query capability, improving metadata quality and integrating the one-line command interface.

## References

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[5] archive.eso.org/wdb/html/wdb.html
[6] ivoa.net/internal/IVOA/InterOpOct2008Applications/XSLT-JavaScript.pdf
[7] archive.eso.org/cms/virgo

**ADASS 2009, Sapporo**