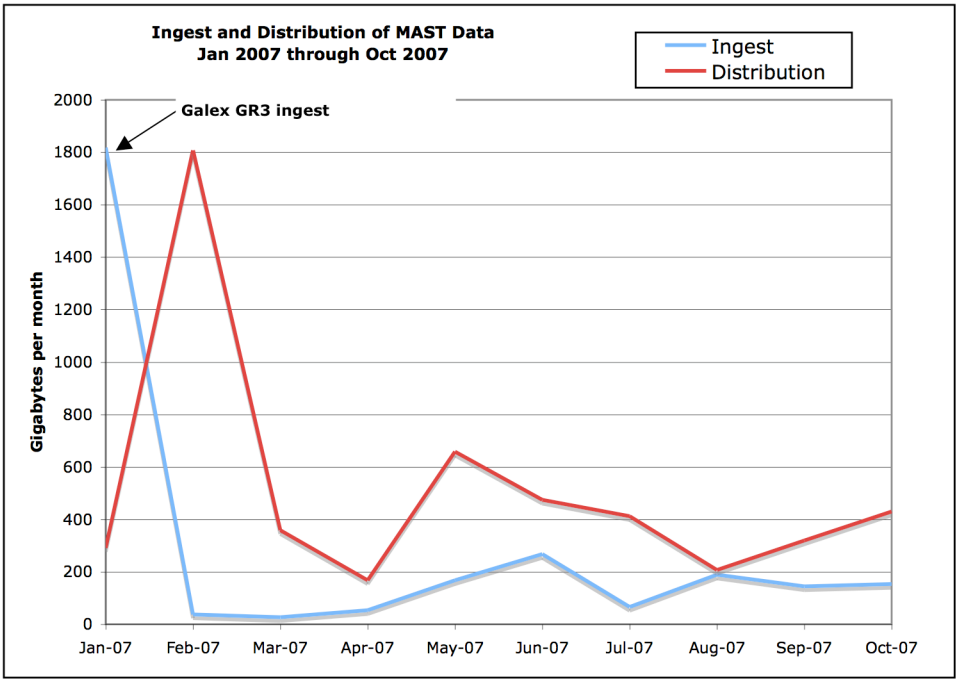
NASA Data Center Annual Program Plan
NASA Grant Number NNG05-GF75G / STScI Grant J1160
January 2007 through October 2007
Multi-mission Archive at Space Telescope (MAST)
(Optical/UV Science Archive Research Center)
Space Telescope Science Institute
3700 San Martin Drive
Baltimore, MD 21218

Overall Mission: MAST supports active and legacy mission datasets and related catalogs and surveys, focusing primarily on data in the ultraviolet, optical, and near-IR spectral regions. Support includes curation of the data, providing expert support to users of the data, providing access to data-specific calibration and analysis software, providing user support for this software, and maintaining public access interfaces to the data. This report covers data financially supported under the "MAST" contract. Archive and distribution activities for HST data are supported under the HST contract.

Holdings and distribution

As of November 1, 2007 MAST holdings total 6.68 TB, dominated by 4.7 TB of GALEX data. MAST has distributed over 5 TB of mission data between January 2007 and October 2007. MAST also holds nearly 400 GB of community-contributed high-level science products that are "science ready".



Mission report

Galaxy Explorer (GALEX)
The GALEX archive was augmented with the GR3, GR3.1, and GR3.2 releases containing 3,427 GB during the reporting period. This delivery included reprocessed, now public Guest Investigator (GI) data. In addition, there were 10 GI data deliveries, serving 60 GI programs. The GI data volume is now 1TB. Two additional GI deliveries and some deliveries for GR4 are expected in the last two months of 2007. Many improvements were made to make the data download process more convenient for archival users and to support downloads for a variety of browsers and computer platforms.

Far Ultraviolet Spectroscopic Explorer (FUSE)

The FUSE project began the final reprocessing effort in April 2007 processing nearly 54% of their data by November. After the spacecraft ceased operations in July 2007, the FUSE project met with MAST staff to identify the project documentation and web pages that should be archived in MAST.

X-ray Multi-Mirror (XMM) Optical Monitor (OM)

MAST began to archive mosaics of XMM-OM observations in collaboration with HEASARC, the US archive for all XMM-OM data. MAST received two augmentations of the data in this reporting period and anticipates that more regular distribution of these data from HEASARC is near.

Outreach

Google-Sky

MAST-funded staff contributed to the Google/STScI sponsored project “Sky in Google Earth”, released in August 2007.

Community interaction

Survey

In May 2007 MAST administered what has become a yearly survey to gather feedback about our service and to gauge priorities for future work. There were 366 respondents to the survey. The results and many of the comments were posted on the MAST website.
(http://archive.stsci.edu/surveyresults/2007/index.html)

MAST Users Group

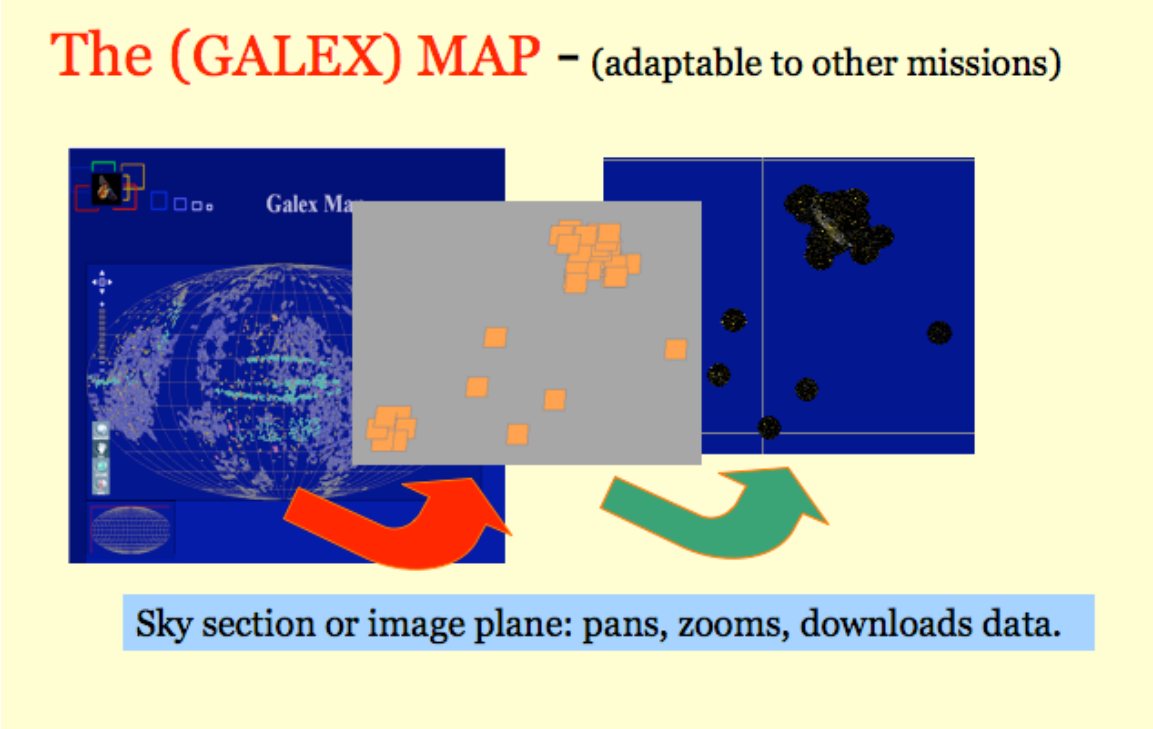
The MAST Users Group (MUG) met in June 2007. The MUG provides essential user perspective on archive operations and development. All the presentations have been posted on the MAST website. The MUG report will be posted upon receipt. (http://archive.stsci.edu/mug/mug_2007/index.html)

Major work efforts

MAST staff worked on many projects during the past 10 months that introduced new capabilities to the website. We describe a few highlights below.

GALEX Map

MAST/GALEX developed and deployed a major browsing/download tool called the GALEX Map (see picture). This tool was developed in the MS Mapserver environment. The tool works by invoking either of two planes, a tile plane in Mollweide projection and a true image plane in Mercator. The Map allows one to select one of any of the GALEX surveys, depicted by colorized tiles on the sky, and permits the user to quickly pan and zoom across the sky in the tile plane and finally to inspect the images. Data may then be downloaded on a tile of interest. Future plans call for accessing data from other mission surveys and to permit one to overlay translucent images from GALEX and other such surveys.



Spectra in the Virtual Observatory (VO)

MAST staff members were active participants in the effort to define the VO Spectral Data Model develop the VO Simple Spectral Access Protocol (SSAP). As MAST has one of the largest and most diverse holdings of NASA spectral data, participation by MAST staff members provided important insights for development of these two VO products. MAST has defined an SSAP compatible "spectral container" so that the inhomogeneous MAST spectral holdings can be written in a uniform format that meets the VO standards. The spectral container effort includes defining and documenting the sources of hitherto undefined metadata. In addition to the extracted spectra, MAST developed a retrieval process to access GALEX grism data for particular targets and to embed them into the "spectral container" file.

Web Server Upgrade

MAST shares the Hubble Space Telescope (HST) development and operational web servers for all missions except GALEX, which is hosted on a dedicated server. The shared web server was upgraded this August. MAST staff members made a major contribution to the upgrade effort, copying data, making the software transitions required to run under a different operating system with upgraded software packages.