

Browsing the HST Archive with Java-enriched Database Access

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Abstract. Our Web interface to the HST archive (WDB) was substantially augmented during the past few months: A seamless integration of Java applets and CGI interfaces to the database now allows basic manipulation and visualization of data.

WDB can now delegate subtasks to Java applets. We use this ability to visualize quick-look (Preview) data with two applets: JIPA and Spectral for direct FITS images and spectra visualization respectively. They both allow basic data manipulation such as contrast enhancement, zooming or X/Y plots.

Another utility, the Skymap applet, can display the location of HST observations on a sky projection.

These applets only require a common Web browser and offer very helpful features to facilitate archive data selection.

1. Browsing the HST Archive

There are already a number of ESO and ECF archive services¹ and projects that make use of the new Java technology. We will briefly discuss some applets used for the following purposes:

Jplot	Plot Contents of HST Observation Log Files
Spectral	Plot Spectra - Preview of HST Observations
JIPA	Display FITS Images of HST Observations
Skymap	Present Maps of Parallel HST Observations

1.1. JPlot

ECF's HST archive uses WDB to implement query forms for its Web interface. A few months ago the only way to retrieve data was to invoke a CGI script. Now we also use WDB to fire up applets. In this way it is possible to replace component by component on demand, without changing the whole archive system at once. Jplot is an example of this strategy. It allows visualization of ASCII tables and the production of basic X/Y plots (Figure 1). The same is true for the Spectrali applet.

¹<http://archive.eso.org/>

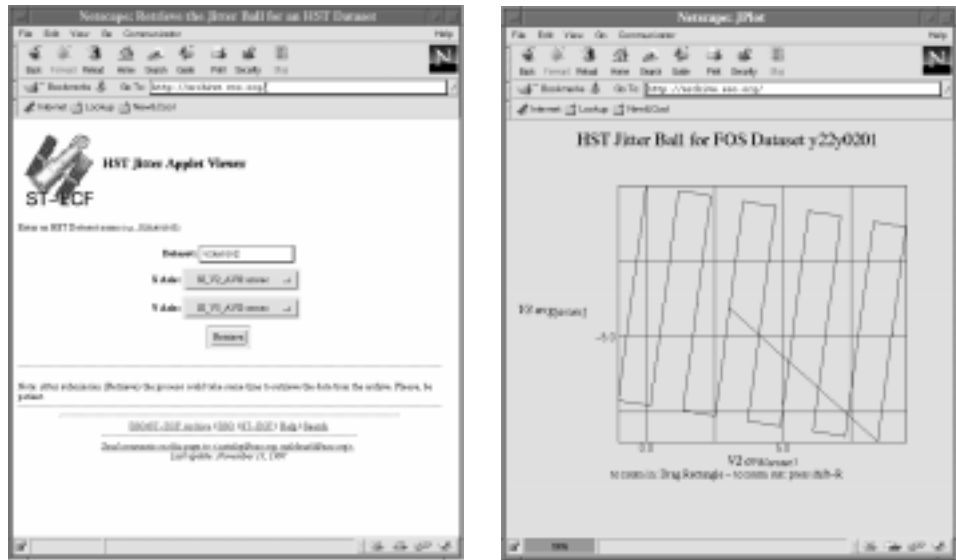


Figure 1. Requesting and Displaying Pointing Information using Jplot

1.2. Spectral

This applet is a previewer for HST spectra. It is quite similar to Jplot and is integrated into the WDB Web interface (Figure 3). The user has various options for inspecting plots with the mouse and by means of hotkeys. As the screenshots in this paper show, a standard Web browser supporting either JDK 1.0 or JDK 1.1 is sufficient to run this applet. No special software is required, in particular no appletviewer or plug-ins for the Web browser have to be installed on the client side. Micol et al. (1996) discussed this issue in more detail.

1.3. Java Image Preview Application (JIPA)

While Spectral presents plots of spectra, JIPA's task is to visualize images of HST and to allow basic image processing. The input data format is compressed FITS which makes JIPA the ideal previewer for the HST archive. There are several options for contrast enhancement, zooming and displaying header keywords (Figure 2). Another feature is the conversion of the mouse position from pixel space into the World Coordinate System (WCS). JIPA is written in pure Java like the other applets presented here and hence is platform independent.

1.4. Skymap

Figure 3 shows the Skymap applet. It graphically displays locations on the sky, where observations took place. It is possible to select observations taken with one or more specific instruments and to transform the mouse position into right ascension and declination.

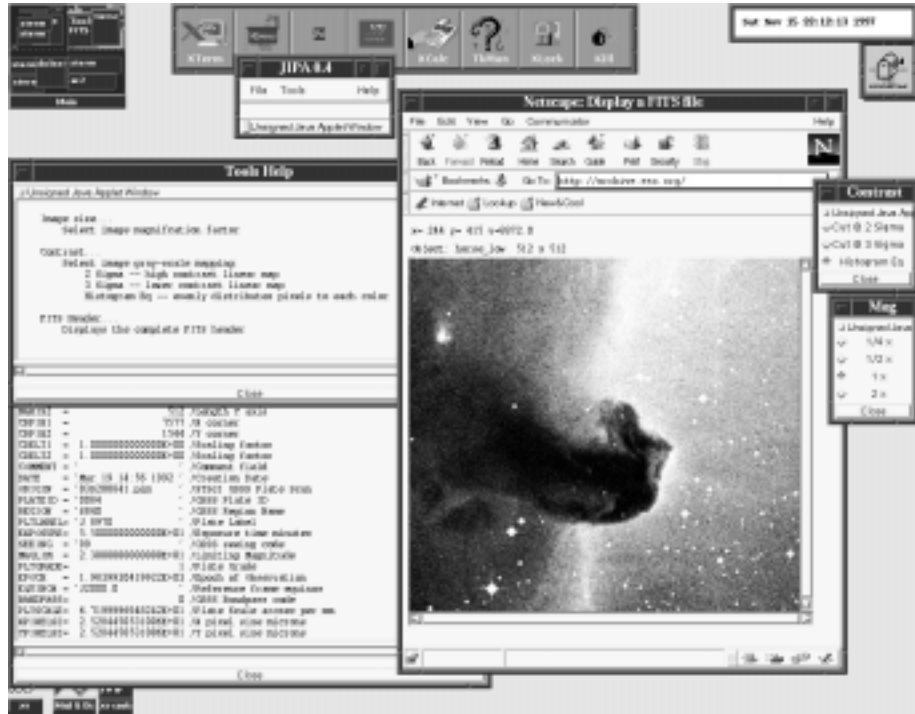


Figure 2. Inspecting FITS Image with the Java Applet JIPA

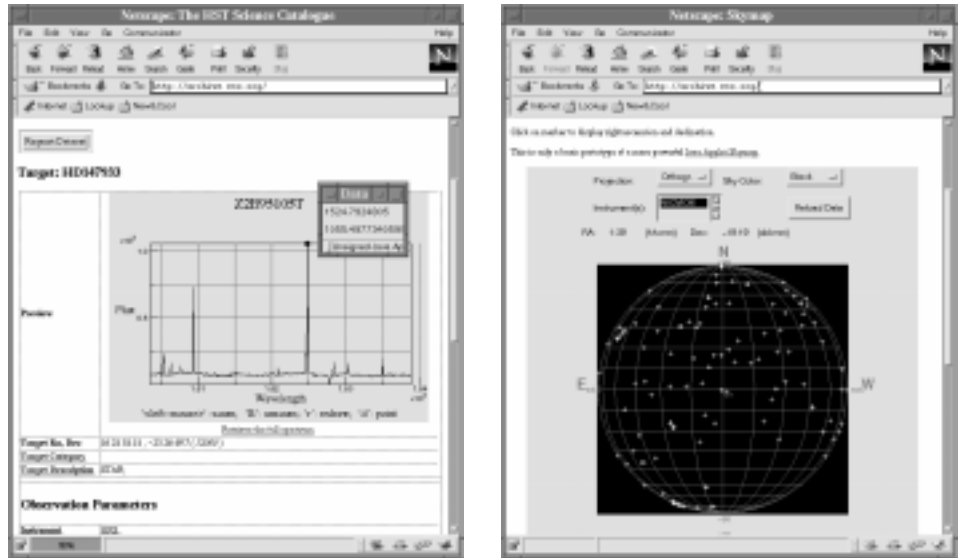


Figure 3. Applets Spectral (left) and Skymap (right)

2. Outlook

In the future more and more components of the archive user interface will be replaced by Java applets. In this way not only data, but also programs are

provided to the user. It also means that the CPU on the client side will become more and more busy manipulating data instead of running idle while waiting for the response from some archive server.

References

Micol, A., Albrecht, R., & Pirenne, B. 1997, in ASP Conf. Ser., Vol. 125, Astronomical Data Analysis Software and Systems VI, ed. Gareth Hunt & H. E. Payne (San Francisco: ASP), 104