

SIRTF Web Based Tools for QA and Instrument Performance Monitoring

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Abstract. The SIRTF Science Center is developing two Web-based tools that will be used during operations. One tool is for Quality Analysis. It will allow the analysts to display images and plots of new data and then to record status and comments in the central database. The other tool is for display of Instrument Performance Monitoring data. It provides an easy-to-use way for the science staff to create plots and ASCII files of this data. Both tools use Java applets to display images and plots and Perl for everything else. The standard Perl DBI interface is used to access the database.

1. Introduction

SIRTF launch is scheduled for January 2003. Two Web based tools have been developed for SIRTF operations in anticipation of launch in January 2003. After launch, these tools will be used during routine operations to perform QA on the data products and to analyze satellite engineering data.

2. Quality Analysis (“QA”)

The basic design requirements for the QA tool are (1) that it provide an easy way of looking at all the data, observation by observation, and (2) that it provide an easy way to specify status and comments for each observation. Advanced visualization capabilities are not provided by this tool. To perform more sophisticated analysis, users may download the data into their own favorite analysis package.

2.1. The QA Data

The data accessed by this tool consists of meta-data in the central database as well as the actual data files in the archive. The central database contains an accounting of all files associated with each observation along with status information and QA statistical profiles for each data file. The archive contains both raw and processed data such as image files and extracted spectra files.

2.2. The QA Interactive Tool

A session with the QA Tool starts with the selection of a set of observations of interest. This selection may be made on the basis of such things as status, time,

and which analyst is assigned. The observations may then be inspected one by one. For each observation, the inspection starts with the composite products and allows “drilling down” to the individual products used in the production of the composite products.

For visualization of image products a few basic functions are provided. These include display with contrast enhancement, histogram calculation, zoom, and plots of horizontal and vertical “cuts”, There is also a “movie” display provided for multi-plane images. Visualization of spectra is a multi-color plot of flux vs. wavelength.

After inspecting the elements of an observation, the observation status may be set and important comments may be recorded.

3. Instrument Performance Monitoring (“IPM”)

The design requirement for the IPM tool is easy access and visualization of the IPM data.

3.1. The IPM Data

When the IPM data arrives, it is resampled to standard intervals and stored in the central database. For each interval values are saved for mean, standard deviation, minimum, and maximum of all samples in the interval. The data is organized by time tag and “channel” number. Each channel number corresponds to one sampled value, such as baffle temperature. The amount of such data received is expected to be between 50GB and 500GB per day (between about 20TB and 200TB per year), depending on how much data is deemed important enough to save.

3.2. The IPM Interactive Tool

The IPM interactive tool allows selection of data by channel number and time range. It allows the user to select either (1) value vs. time plot, (2) two channel value vs. value scatter plot, or (3) ASCII table output.

4. Software Architecture

Both of the tools described above are Web based tools running on an Apache server. They use CGI and are coded Perl. For the visualization functions, Java applets are used. The data files used for visualization are accessed on the client machine where the browser is running rather than being served up by the server. Access to the Informix database is via the Perl DBI interface. As of this writing, these tools will be running within the operations firewall and will therefore not be available for use to the outside world.

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