Science Tools Update, October 12, 2006

Science Tools Working Group

We did not meet this week. The tentative plan is to meet during our usual time slot **next** Wednesday. Jean has offered to push back the Catalog VRVS meeting by one hour.

The current version of ScienceTools remains **v7r4p1**. The next release will be at the end of the current 6-week build cycle, Oct. 13 - this Friday. Barring surprises, this release will be what the GLAST Users Committee will use in mid-November to 'beta test' the science tools. Two members of the GUC, Reshmi Mukherjee and Greg Stacy, will be trying to install and run the tools ahead of the GUC beta test.

Data products: No news. I've queried Jim and Toby for advice about the issue that David raised regarding the date strings in DATE-OBS and DATE-END keywords in FT1 and FT2 files. As David points out, the time system is supposed to be TT, but the strings claim to be in UTC. From looking at the code, I am not sure that the time system can be UTC; at least it does not seem to be aware of leap seconds.

Databases and related utilities

No news. Dan's Data Handling report will have any relevant news from SLAC.

Likelihood analysis

From Analia: "Analia Cillis wrote a python script to produce TS contour (confidence levels) plots in the parameter space. A first fit is generated using python likelihood, and the values of the model parameters are obtained along with the log likelihood value. Afterwards, the procedure to obtain the boundaries of the TS contour map in the parameter space consists in the following:

- One parameter is stepped (to the right and left side of the value obtained with the first fit). For each of these new values, which now are fixed, python likelihood is run again to produce a new fit until (eventually) a new maximum of log likelihood is found.
- From this new maximum and assuming a Chi2 distribution the value of this parameter is obtained until a given of confidence level. The same procedure is done for the second parameter.
- After the boundaries in both parameters are obtained, python likelihood runs several times in a nxn grid (with the boundaries obtained in the previous step) with the first and second parameter fixed.
- Finally the contour plot is produced with parameter 1 in x-axis, parameter 2 in y-axis and confidence levels in z-axis. This procedure may be repeated for each pair of parameter."

GRB tools

No news

Pulsar tools

From Masa: "In the pulsar tools development area, we finished revising the Workbook tutorials for the latest versions of the pulsar analysis tools. Then, we started detailed design and implementation of A4 tool [blind periodicity search] last week. My hope is to make it work soon and run it with DC2 data (or something equivalent) to see how realistic the tool is with typical GLAST observations."

Observation simulation

Max has implemented the correct specification of MJDREF (expressing it as the TT version of midnight Jan. 1, 2001) in **PulsarSpectrum** (v2r1p2). I do not know yet for sure whether this has been cross checked for consistency with the current versions of the pulsar tools.

Max's plans for further development for PulsarSpectrum may be inferred from the page on Service Challenge plans for the PSR/SNR group.

User interface and infrastructure

No news

Source Catalog

The catalog group did not meet this week. Last week's meeting included presentations by Jean on source detection in the DC2 test images and by Olaf and Juergen on catalogs for source identification. Regarding source detection in the DC2 'test pattern' images, Jean has run a likelihood analysis and finds the fluxes to be systematically underestimated relative to the model (typically by about 20-25%). In possibly-related news, a recent long run of **gtobssim** by Richard (DC2 sky model for 1-year period) produced about 30% fewer gamma rays than expected from a simple extrapolation of the number of class A+B gamma rays in DC2. These need diagnosing.