Status of the GLAST Science Support Center

David Band – Science Lead, SSC

Jay Norris – SSC Manager

Members of the SSC

The following are present full and part-time SSC members

- Jay Norris—manager
- David Band—science lead
- Dave Davis—databases
- Yasushi Ikebe—calibrations
- Masaharu Hirayama—LAT scientist
- Dirk Petry—user services
- Jim Chiang—ambassador to LIOC
- Valerie Connaughton—GBM scientist, ambassador to GIOC
- Jerry Bonnell—GRBs/PR
- Bob Schaefer—databases
- Cathie Meetre (part time)—operations
- Robin Corbet (part time)—operations
- Sandhia Bansal—programmer
- Chunhui Pan—programmer
- Sandy Barnes—administrator
- JD Myers (part time)—webmaster

Accomplishments

- PDMP is nearly complete. This document will be the primary statement of data policy.
- SSC Functional Requirements Document is nearly baselined.
- LAT-SSC software working group formed; meets weekly
  - LAT: Seth Digel (co-chair), Richard Dubois, Toby Burnett
  - SSC: David Band (co-chair), Jay Norris, Bob Schaefer
- Suite of science tools defined
  - Meeting at SLAC in June to discuss tools
  - Discussions about development environment, software tools, database architecture, etc.
  - Review of standard analysis environment about to begin. Document can be found at

http://www-glast.slac.stanford.edu/ScienceTools/slwg/review/

The LAT Science Tools

- Definition by LAT team and SSC, development managed by LAT team (with participation of SSC).
- The standard analysis environment consists of databases (e.g., events), tools to extract data from the databases, tools for analysis (likelihood for analyzing point and diffuse sources, pulsar verification and search, GRBs), and utilities (e.g., visualization).
- Tools will be able to read and write FITS files. Some will run on a central server (e.g., to extract data) and others on user's computer (Windows or Linux).
- LAT development environment: object-oriented C++ and various development tools.
- Issues considered: user interface, graphical tools, run-time environments, configuration management, testing methodology.

Software Review

- Convened by Peter with concurrence of Jonathan.
- Major issue is whether the suite of tools is sufficient and will support analysis by the LAT and general communities.
- Reviewers from GSFC, SU/SLAC, and community. Chair is Frank Marshall.
- Format is:
  - Reviewers review posted document. Auxiliary documents (e.g., database requirements) will also be posted. Website will be ready 9/16.
  - Telecon for reviewers to ask questions.
  - Reviewers respond to ~10 questions.
- There may be a followup review in a few months.

More Accomplishments

- Trade studies of event database show that Beowulf system is ~2_ faster than “flat” database, but both architectures will be more than sufficient.
- Requirement documents for many of our databases have been drafted.
- The LIOC-SSC ICD is being drafted.
- The HEASARC-SSC MOU is being drafted; Swift’s is the model.
- Considering the DTS file transfer protocol for transferring data from the MOC and IOCs to the SSC, and from the SSC to the ASDC. DTS was developed for XMM and will be used for Swift.
- Created demo of CALDB system (HEASARC file structure for response functions) for GLAST with IDL access procedures.

Some More Accomplishments

- Jay Norris' GRB simulation program translated from IDL to C++, and is being tied into GLEAM.
- DLB estimated the distribution of the number of detected LAT photons per burst by extrapolating BATSE spectra to LAT energies
- Jim Chiang used an orbit simulator to study different methods to detect periodic sources (P~3 hr).
- DLB proposed a formulation of the likelihood for LAT data and the associated "exposure" quantities.
- Developing GRB event binning tool as example of working in object-oriented C++ environment. This tool will have multimission capabilities, and will tested on Swift data (helping Swift in the process).

Plans for the Immediate Future

- Pass science tools review and begin designing science tools
  - Object-oriented class diagrams constructed for tools, algorithms inserted into resulting structure.
  - Identification of common classes
  - Basic GRB tools are well-understood.
  - Formulation of likelihood for major analysis tool.
- Define/identify tools for SSC operations (e.g., timeline scheduling, command passing)
- Documents
  - PDMP and SSC Functional Requirements Documents
  - IRD, ICDs, MOUs between SSC and IOCs, MOC
  - Software requirement documents