GLAST Mission Update

GUC August 2004

S. Ritz
Project Scientist

Some news since the previous meeting…

- ***Personnel***
  - *S. Ritz named Project Scientist*
    - *Jonathan Ormes will consult and will continue on the SWG*
    - *Neil Gehrels will continue as Deputy Project Scientist*
  - *Julie McEnery named Mission Scientist*
- ***Successful Confirmation Review in December!***
- ***LAT Data Challenge 1 (DC1):***
  - *"alpha-testing" (messy)*
  - *see following slides*
  - *closeout Feb 2003*
  - *activity during much of 2003, most intense between Sept03-Feb04.* ***Strong participation by GSSC.***

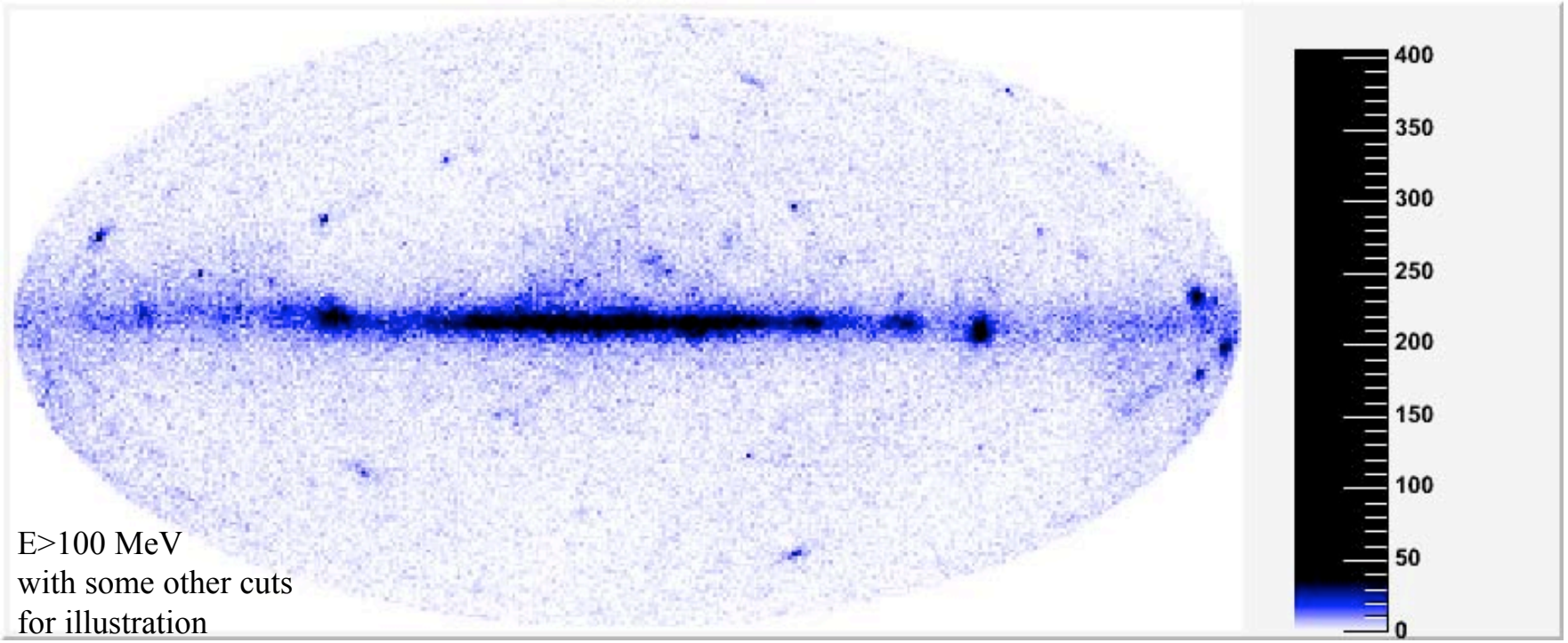
see http://www-glast.slac.stanford.edu/software/Workshops/Feb04DC1CloseOut/coverpage.htm

Purposes of the Data Challenges

- ***"End-to-end" testing of analysis software.***
- ***Familiarize team with data content, formats, tools and realistic details of analysis issues (both instrumental and astrophysical).***
- ***If needed, develop additional methods for analyzing LAT data, encouraging alternatives that fit within the existing framework.***
- ***Provide feedback to the SAS group on what works and what is missing from the data formats and tools.***
- ***Uncover systematic effects in reconstruction and analysis.***
- ***Walk before running: design a progression of studies.***
- ***DC1. Modest goals. Contains most essential features of a data challenge.***
  - *1 simulated day all-sky survey simulation*
  - *find the sources, including GRBs*
  - *a few physics surprises*
  - *exercise:*
    - *exposure, orbit/attitude handling, data processing pipeline components, analysis tools*
- ***DC2 in 2005. More ambitious goals. ~One simulated month.***
  - *based on DC1 lessons*
  - *best efforts to avoid conflicts with flight I&T*
- ***DC3 in 2006. Support for flight science production.***

The DC1 Sky

One day all-sky survey. Generated E>20 MeV.

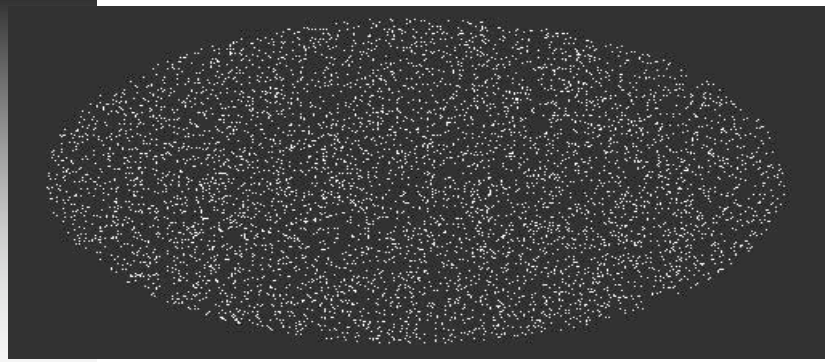


E>100 MeV
with some other cuts
for illustration

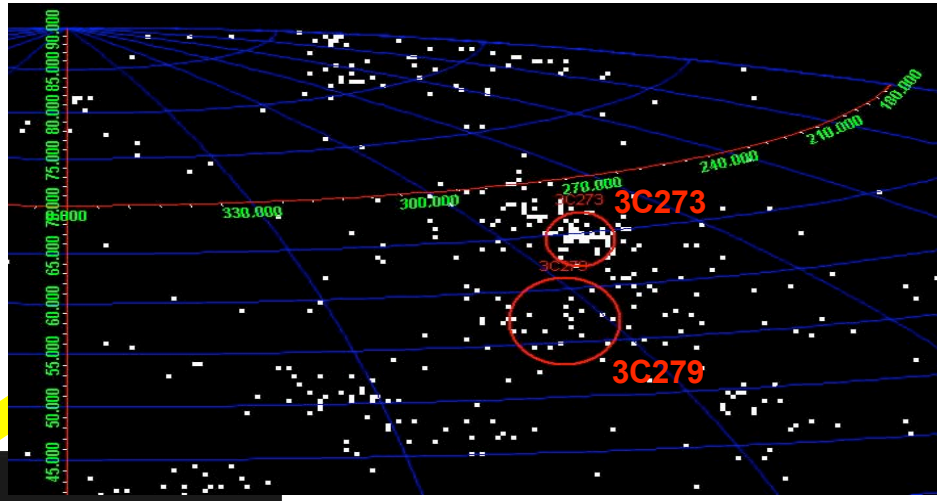
Lots to analyze!

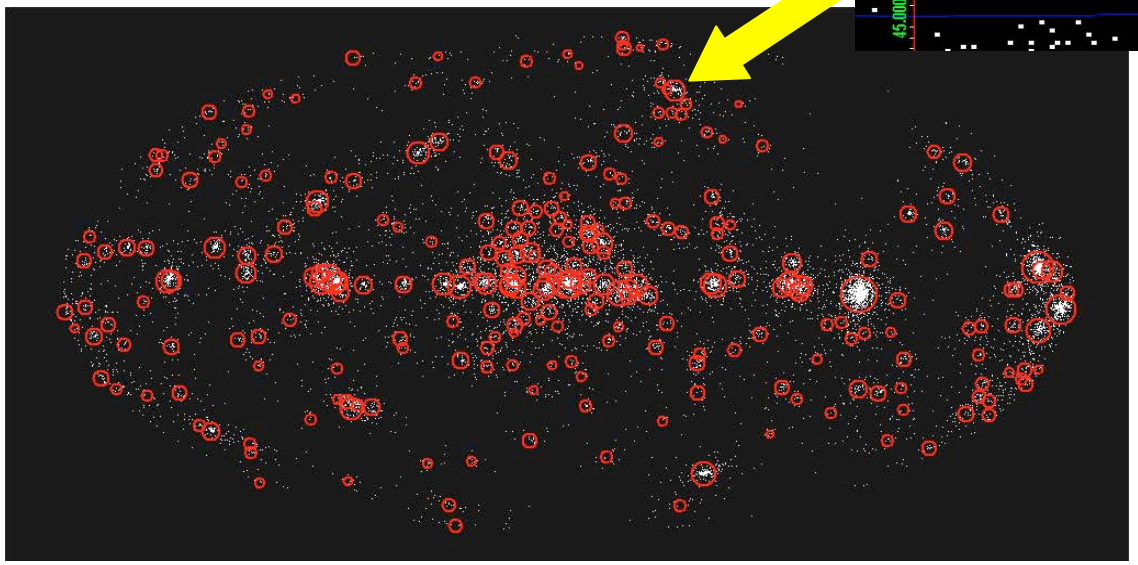
A few surprises to find…

Data Challenge 1 Sky



isotropic diffuse





Sources – 3EG and more, with a twist

a number of physics surprises in the DC1 data, including:

- 110 GeV gamma-ray line source at the galactic center
- new source populations
- and…

Nominal Plan for DC2

DC2, based on lessons from DC1

- *1 simulated month of all-sky survey gammas (backgrounds handled differently)*
- *key sky addition: source variability*
  - *AGN variability, including bright flares, quiescent periods*
  - *expand burst variety. Include GBM.*
  - *pulsars, including Gemingas, w/ orbit position effects.*
- *more realistic all-sky attitude profile*
- *background rate varies with orbit position*
- *more physics surprises, and add nominal hardware problems (and misalignments?), add deadtime effects and corrections*

- *Analysis Goals:*
  - *produce toy 1-month catalog and transient releases*
  - *detailed point source sensitivity and localization studies*
  - *first systematic pulsar searches (timing!); detailed diffuse analyses*
  - *recognize simple hardware problems*
- *benchmark:*
  - *processing times, data volume, data transfers.*

This afternoon, should discuss schedule for GUC test-drive of tools!

Upcoming Events

- ***See A. Vernacchio talk for major Mission events.***
- ***GBM trigger, response matrix and calibration algorithm development review in the Burst Working Group (plus two friends) 16 August. Results will be reported to SWG and GUC.***
- ***Special GLAST session at HEAD meeting 9 September (Thursday) 4-6PM***
  - *Mission Overview*
  - *X-ray Astronomy and GLAST (R. Mushotzky)*
  - *The IR to Gamma-ray Connection for AGN: Spitzer to GLAST (A. Wehrle)*
  - *Blazars, Pulsars, and UNID Sources in the GLAST Sky (R. Romani) (Radio emphasis)*
- ***Last week of September at SLAC/Stanford:***
  - *LAT Team meeting Mon-Wed*
  - *Joint LAT-SWG Science Symposium Thursday (see next slide)*
  - *SWG business meeting Friday*

Symposium on GeV-TeV Connections in the GLAST Era

- ***30 September at SLAC***
- ***Part of joint SWG-LAT series. Julie is the lead organizer for this one.***
- ***Outline of program:***
  - *Observatory Status and Plans (GLAST, MAGIC, HESS, VERITAS, CANGAROO, AS Arrays, Neutrinos)*
  - *IR background issues (Vassiliev)*
  - *Galactic Sources (TBA)*
  - *Galactic Center (TBA)*
  - *AGN (Krennrich)*
  - *Dark Matter and Tests of Fundamental Physics (Bergstrom* – to be confirmed*)*
  - *GRBs (Meszaros)*
  - *Particle Acceleration (Blandford)*
  - *Pulsars (Harding)*
  - *Discussion of plans, organization, working together (led by Ong, Thompson)*