DC2 Planning

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Data Challenge Planning Approach

- Walk before running: design a progression of studies.
  - DC1. Modest goals. Contained most essential features of a data challenge. Great success (lots of problems!)
  - DC2. More ambitious science goals. Encourage further development, based on lessons from DC1.
  - DC3. Support for flight science production.
LAT Data Challenges: Updated Plan for DC2

DC2, based on lessons from DC1

- 1 simulated month of all-sky survey gammas (backgrounds: see next slide)
- 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
- update geometry (including s/c); add nominal hardware problems (and misalignments?); add deadtime effects and corrections
- Analysis Goals:
  - produce toy 1-month catalog
  - try out transient releases and quicklook analyses, monitor sources
  - point source sensitivity and localization studies
  - try first systematic pulsar searches (timing!)
  - diffuse analyses
  - recognize simple hardware problems (connect with ISOC)
  - benchmark processing times, data volume, data transfers.
Backgrounds in DC2

- Reference numbers: per 1kHz of orbit average rate over one month amounts to 2.5B triggers, or $O(10^B)$ generated events. Nope.

- Let the science drive it!
  - the main need is presumably high-latitude diffuse spectral analysis
  - requirement is <10% of high-latitude diffuse in each energy decade.
  - In one day, this is $\sim 10^3$ residual events (so must generate $\sim 10^8$ events, which we can do). For single distributions without detailed features, e.g., a simple spectrum plot, this could be sufficient statistics.

- Proposal: generate 1 (few?) day of background ($\sim 500M$ events)
  - include onboard filter and full background rejection analysis for all generated events (gammas+backgrounds)
  - Replay those few thousand residual background events randomly throughout the full one-month gamma set.
  - Most analyses should not notice. If it turns out to be very significant, we may have a few spiky distributions!
  - Think this through: will it work for the high-latitude diffuse analysis? Any other issues?
DC2: When?

• This is the year we build!
  – All of us must help as needed
  – SAS must support the integration and test. Try to minimize interference. Avoid conflicts with integration ramp-up and subsystem completion.

• Plan: be ready to release DC2 data July 2005
  – but stay flexible to minimize clashes with instrument testing

• Proposed duration: 2 full months.
  – DC1 lasted 2 months, but included the holidays
From Lowell’s Talk This Morning

Key LAT events

- First tower modules ready for installation November 2004
- Two towers installed and tested in the grid January 2005
- Two tower Comprehensive Perf. Test Complete February 2005
- Sixteen towers installed and tested May 2005
- LAT completely assembled June 2005
- LAT system test complete August 2005
- LAT environmental test complete December 2005
- GLAST observatory integration and test begins January 2006
- Launch February 2007
DC2 Coordinating Committee

- Coordinates efforts across the team, ensures work is done on schedule. When necessary: triage! Does not set policy.

Ballet
Burnett
Cameron
Connaughton
Digel
Dubois
Longo
Ritz
Usher