



Purposes of the Data Challenges

- “End-to-end” testing of analysis software.
 - define the ends
 - define the tests (what is success?)
- Familiarize team with data content, formats, tools and realistic details of analysis issues (both instrumental and astrophysical).
- Develop additional methods for analyzing GLAST 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.
- Re-evaluate sensitivities
 - Uncover systematic effects in reconstruction and analysis.
- Grow the team. Learn how we work together.

Support readiness by launch time to do all first-year science.



Data Challenge Planning

- **Discussions thus far with Richard, Seth, and Bill. What is shown is a DRAFT.**
- **Develop proposal, take to Peter and SSAC within the next two weeks.**
- **=> Need Analysis Group input.**



Realities

- **Still much to do on GLEAM to be ready:**
 - geometry review
 - underlying physics review
 - embed onboard filters
 - other infrastructure (move to .NET, etc. don't dismiss this!)
 - finish implementing gamma source fluxes
- **Still much work to do on analysis to be ready:**
 - background rejection
 - performance evaluation and parameterization
 - analysis platform recommendation and validation
- **Lots of other work demanding attention:**
 - CDR and fallout. Other reviews.
 - EM support
 - Other calibration planning and development
 - Integration!



Draft Top-level Schedule **[UNOFFICIAL!]**

- Use the September collaboration meeting as a major milestone. We need deadline pressure.
- Walk before running: design a progression of studies.
 - Preparation complete by September collaboration meeting:
 - complete geometry review: June 15
 - recon meeting: late June/early July?
 - complete embedding, verification of filter, evaluate: July 1
 - .NET cutover date? Simulation hard freeze date?
 - first new background rejection/performance analysis July & August
 - sky model fluxes implementation complete September 1
 - At Collaboration meeting:
 - first instrument response functions presented
 - DC1 kickoff (see following slide)
 - workshop on using tools



Data Challenge Progression

- **DC1**

- **modest goals:**

- 1 simulated day all-sky survey simulation (3M bkgd+gamma events to ground, => 400M generated events)
 - find flaring AGN, a GRB
 - demonstrate single-day point source sensitivity
 - recognize simple hardware problem(s)
 - a few physics surprises
 - exercise:
 - exposure, data processing pipeline, analysis tools, daily quicklook analysis
 - use existing recon, bkgd rejection and instrument response to show the problem areas that need improvement. secondary goal (not required) is to prototype improvements

- **schedule:**

- Sept-Oct startup problems resolution.
 - Nov-Dec high-level tools beta testing. Finalize irfs.
 - Dec 15 high-level tools release, workshop.
 - mid-January: interim reports
 - Feb 2004 closeout, and plan for DC2 (see following slide).
 - Then, break for I&T prep. Use the time for fixing problems learned in DC1, software advances, etc.



DC Progression

- **DC2**
 - **more sophisticated goals:**
 - 1 simulated month all-sky survey simulation (100M bkgd+gamma events post-filter. Method TBD) PLUS 1 simulated year of gammas
 - find flaring AGN, pulsars (geminga's)
 - produce a 1-month catalog
 - demonstrate point source sensitivity and localization
 - recognize more subtle hardware problem(s)
 - a few more physics surprises
 - exercise:
 - exposure, data processing pipeline, analysis tools. benchmark processing times, data volume, etc. connect to SSC?
 - use updated recon, bkgd rejection and instrument response to show the problem areas that need improvement. encourage improvements
 - **schedule:**
 - freeze software version July 04. start generation in September
 - start DC2 October 2004 (beam test analysis ~complete)
 - Dec 15 2004 midterm reports milestone
 - Feb 2005 closeout, and plan for DC3 (see following slide).



DC Progression

- **“DC3” – Flight Data Challenge!**
 - **main goal is realism to support running experiment analysis:**
 - **1 full simulated year of data (methods TBD)**
 - **exercise everything: format data as it comes into the IOC. also confirm data storage, backup, processing speed. will be the reference sample for 1st year data analysis.**
 - **connect to SSC**
 - **demonstrate point source sensitivity and localization**
 - **recognize a few very subtle hardware problems. recognize a few realistic daily hardware problems -> feed to IOC and FSW.**
 - **physics surprises**
 - **use updated recon, bkgd rejection and instrument response. this will be our initial science performance. by this time, physics analysis groups should be up and running.**
 - **schedule (start after completion of beam test and MC tuning):**
 - **freeze software version Feb 06. This is the first year flight version! start generation in May.**
 - **physics groups working**
 - **launch.**