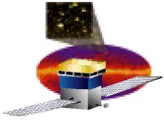**Gamma-ray Large Area Space Telescope**

Discussion: To Where From Here?
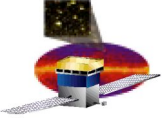
DC2 Closeout Meeting

2 June, 2006

S. Ritz

Outline

- **Data challenge progression – original ideas**
- **Work to be done**
- **How best to do it**
- **Discussion**

Original Data Challenge Planning Approach

- **Walk before running: design a progression of studies.**

  - **DC1. Modest goals. Contains most essential features of a data challenge.**

  - **DC2. More ambitious science goals. Encourage further development, based on lessons from DC1.**

  - **DC3. Support for flight science production.**
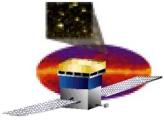
"DC3"-related Work to be Done

Systematic & Sensitivity Studies

- pt sources, extended sources, transients; upper limits
- diffuse analyses
- variability (incl. pulsars)
- neighboring sources
- flaring & diffuse effects
- **focus on 1st papers analyses**

Other Studies

- PSR ("handoff review") performance
- analysis tuning (signal/bkgd, quality knobs by topic)
- update simulation (s/c model, tune from beam test and IA data…)
- first light observations (simulate point, then scan); early ops analyses
- effects of burst repoints
- sky survey strategy checks
- background fluxes evaluation early ops

Readiness

- digital data problems
- instrument problems (bad channels, wrong rates, recognizing a few wrong constants, …)
- ASP (aka quicklook running and burst handling)
- receiving data dumps, running the pipeline, benchmarking resources and times, reliability
- idiosyncrasies vs. problems
- day(s) in the life
- performance monitoring
- documentation
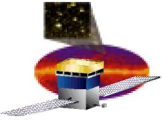
How to Organize?

- **Standard notion of a data challenge doesn't match our needs**
  - systematic studies are in some sense the opposite of a data challenge (study effects with many, known versions of "truth" instead of one, unknown "truth")
  - we don't need an artificial deadline. We have the best deadline there is: LAUNCH!
  - work is ongoing, not focused in a limited few-month period

- **Therefore, propose something different for "DC3"**
  - <u>no DC3</u>, in the sense of DC1, DC2
 - better supports the original and emerging (based on DC1, DC2 lessons) goals for DC3
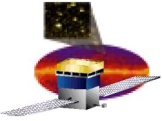
Coordination, Schedule

- **Coordinate simulation studies**
  - will likely need a common set of simulations plus a near-constant stream of simulations to support special studies. Develop capabilities outside SLAC as needed using collaboration resources.

- **Readiness work coordinated with the six mission-level end-to-end tests.**
  - leverage off these internal to LAT
  - a sequence of "service challenges" for readiness testing serves these needs better than what is needed for systematic studies by science topic.

- **Organize by area**
  - Science groups, led by Analysis Coordinator
  - ISOC, led by ISOC managers
  - Areas of overlap done jointly (as we will need for flight!)
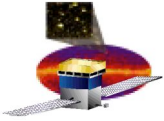
Work to be Done: Responsibilities

Systematic & Sensitivity Studies

- pt sources, extended sources, transients; upper limits
- diffuse analyses
- variability (incl. pulsars)
- neighboring sources
- flaring & diffuse effects
- **focus on 1st papers analyses**

Analysis Coordinator and Science groups

Other Studies
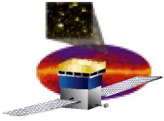
C&A group and ISOC jointly

- PSR ("handoff review") performance
- analysis tuning (signal/bkgd, quality knobs by topic)
- update simulation (s/c model, tune from beam test and IA data…)
- first light observations (simulate point, then scan); early ops analyses
- effects of burst repoints
- sky survey strategy checks
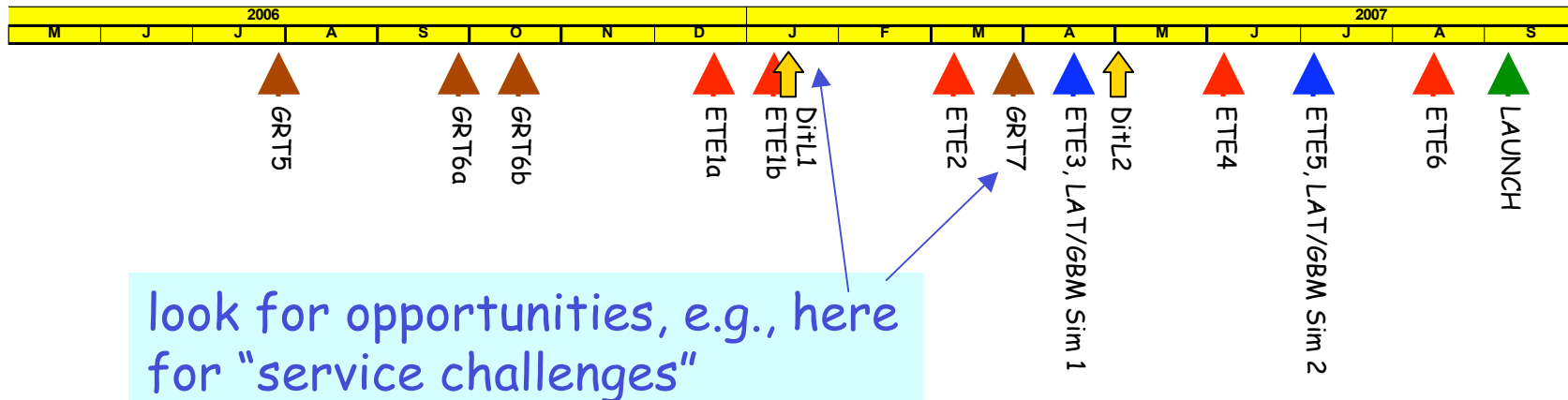- background fluxes evaluation early ops

Readiness

ISOC

- digital data problems
- instrument problems (bad channels, wrong rates, recognizing a few wrong constants, …)
- ASP (aka quicklook running and burst handling)
- receiving data dumps, running the pipeline, benchmarking resources and times, reliability
- idiosyncrasies vs. problems
- day(s) in the life
- performance monitoring
- documentation

Collaboration participation needed for each of these!

Operations Test & Rehearsal Schedule

[from Rob Cameron]

2006								2007	
M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S

GRT5   GRT6a   GRT6b   ETE1a   ETE1b / DitL1   ETE2   GRT7   ETE3, LAT/GBM Sim 1   DitL2   ETE4   ETE5, LAT/GBM Sim 2   ETE6   LAUNCH

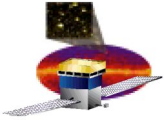*look for opportunities, e.g., here for "service challenges"*

ETE Tests
- ETE1: LAT commanding; SSR playbacks; L0 data processing; LAT diag data
- ETE2: delivery of LAT RT HK to ISOC; LAT FSW file management (load, dump, list)
- ETE3: ATS switchover; ToO; ARR; Burst alert processing in BAP; SSR playbacks; LAT calibration; LRS diag PROC; TCS control; LAT reconfig
- ETE4: GLAST safemode & recovery; LAT reboot
- ETE5: LAT T&C DB update; PROC updates
- ETE6: Launch site data path checks; regression testing

"Day in the Life"
- DitL1 (7 days): sky survey nominal mission planning; ARR; RT PROC execution
- DitL2 (10 days): pointed observation miss. plan.; ToO; PROC execution

Plus other major ongoing efforts!

- **Beam test**
  - now is a great time to jump from DC2 work to beam test studies
  - biweekly meetings
  - http://www-glast.slac.stanford.edu/IntegrationTest/SVAC/Instrument_Analysis/testbeam/default.htm

- **Instrument Test Data Analysis (IA)**
  - "first-light" LAT data are already available. More to come now. Get to know your instrument!
  - weekly Friday meetings
  - http://www-glast.slac.stanford.edu/IntegrationTest/SVAC/Instrument_Analysis/Instrument_Analysis.html
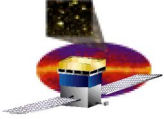
Discussion
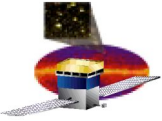
Finally…

Congratulations, again, to everyone for a very successful DC2!!

and THANKS, Sandy!!!