



GLAST

**Gamma-ray Large
Area Space
Telescope**



GLAST

The Gamma-ray Large Area Space Telescope

**Mission Status
February 2007**

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Topics

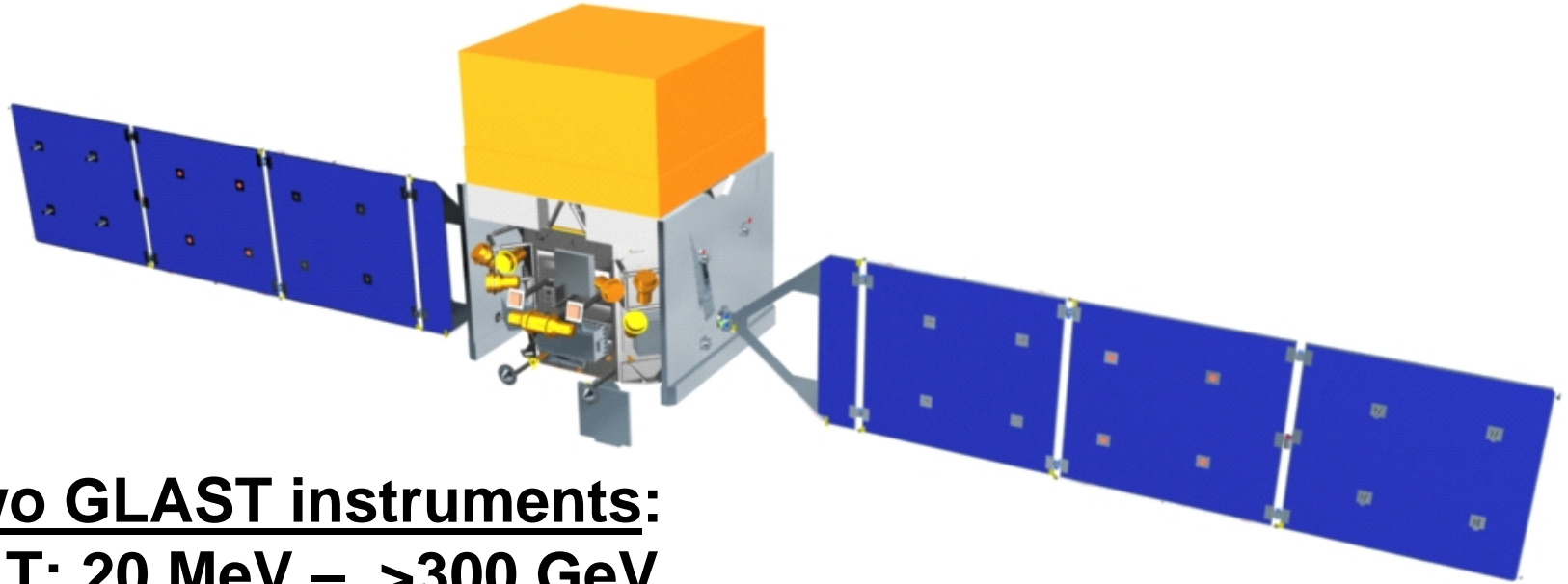
- Context**

- LAT (covered in separate talks)**
- GBM**
- Spacecraft**
- Launch vehicle**
- Ground system/Flight Operations**

- GLAST Symposium**
- GLAST Science Working Group (SWG) and Users Committee (GUC) activities**
- Launch invitations**



Context: GLAST Observatory



Two GLAST instruments:

LAT: 20 MeV – >300 GeV

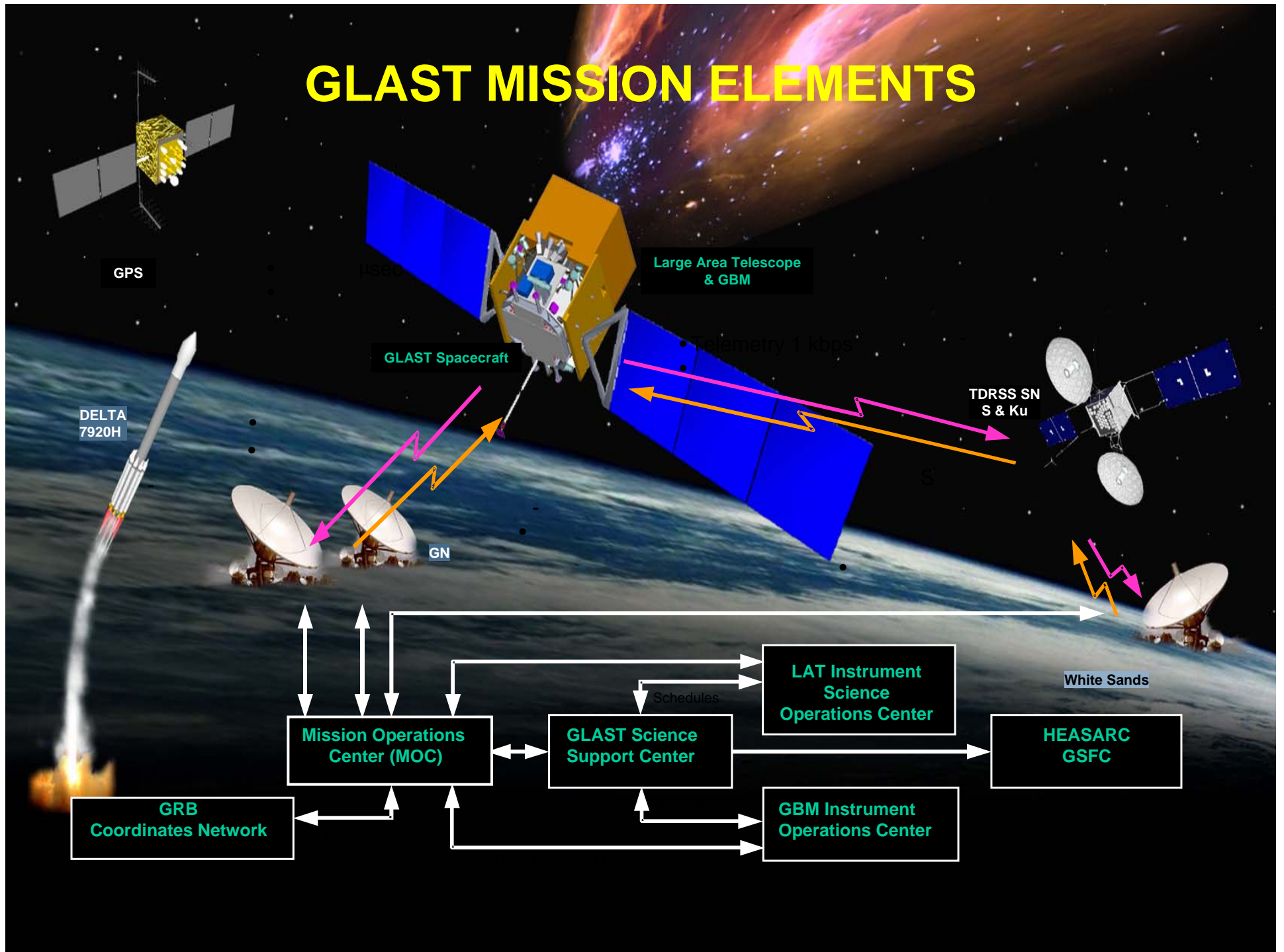
GBM: 10 keV – 25 MeV

Spacecraft

**General Dynamics Advanced
Information Systems (AIS)**



GLAST MISSION ELEMENTS





LAT

- **LAT has been integrated onto the Observatory and is fully functional.**
 - **Flight IEM to LAT signal characterization to be performed following integration of the LAT.**
 - **Demonstrated ability to operate the LAT on the observatory and install new flight software.**
 - **Science data compression installed on the instrument. Limited run time to date due to spacecraft integration activities.**
 - **Continue to eliminate potential causes of SIU and EPU resets.**



GBM

- **Fully integrated and functional!**
- **Final component (cross-strap interface Junction Box) to be installed next week.**



Spacecraft

- **Observatory integration almost complete.**
 - **All hardware (except flight battery and Antenna Pointing Assembly) at GD.**
- **Solar array**
 - **panels complete, tested, and delivered to GD.**
 - **Both arrays assembled, dynamics tested, post-test deployment and capacitance tested and ready for TVAC testing.**
- **RF compatibility tests last month successful.**
- **Some issues:**
 - **Integrated Electronics Module (IEM) completion. Impacts to critical path being mitigated through use of the engineering model, but starting to threaten launch date.**
 - **Antenna pointing array position readback noise understood. Unit de-integrated and returned to the manufacturer for rework.**
- **FSW and scripts to support the first observatory Comprehensive Performance Tests.**
- **Environmental testing to commence in March.**




Launch Vehicle

- **Delta II transonic issue resolved.**
 - **no loads impacts on GLAST requiring structural modifications**
 - **hold on Delta II launches lifted**
- **Preparations for prep/operations at the Cape in full swing.**



Ground System/Fight Operations

- **Mission Operations Center (MOC) development largely completed.**
- **Most recent mission operations meeting (TIM) 30-31 January in Phoenix.**
- **Tests!!** 

Mission Level Testing

Test	Goals	
<p><i>ETE #1A and B</i> Basic Observatory T&C (2/26/07 & 3/2/07)</p>	<ul style="list-style-type: none"> •Configure Observatory to produce each downlink rate •Verify proper receipt of HK telemetry at each downlink rate •Command Observatory at all uplink rates •Generate S/C C&DH diagnostic telemetry •Playback data from SSR and perform SSR management activities •Configure Observatory to write HK telemetry to S/C CPU RAM •Command dump of HK telemetry from S/C CPU RAM and verify receipt and format of data. 	<ul style="list-style-type: none"> •Issue No-op commands to instruments •Load and execute simple stored command loads (ATS & RTS) •Dump science data from SSR •Generate diagnostic data from the S/C and instruments. •Verify proper receipt of diagnostic data •Provide Level-0 files to the IOC's (post-test)
<p><i>ETE #2</i> Advanced Commanding / Memory Management (5/21/07 – 5/23/07)</p>	<ul style="list-style-type: none"> •Initialize the SSR •Generate S/C C&DH and GNC diagnostic telemetry •Load and execute advanced stored command loads (ATS & RTSs) •Perform Memory/FSW table uploads (S/C and instruments) •Dump Memory/FSW tables (S/C and instruments) •Power on Instruments 	<ul style="list-style-type: none"> •Flow Real-Time Instrument HK TLM packets to LISOC •Power on components required during L&EO (i.e. Star Trackers, SADAs, and APA) •Execute instrument nominal operations procedures
<p><i>ETE #3</i> Advanced Operations (7/10/07 – 7/12/07)</p>	<ul style="list-style-type: none"> •Initiate an Autonomous Re-point •Perform ToO exercise to verify system interfaces •Perform ATS buffer handover/switch •Initiate a Burst Alert and flow data to GIOC BAP •Perform orbit determination exercise •Exercise clock management •Perform FSW patches (S/C and instruments) 	<ul style="list-style-type: none"> •Exercise SSR re-dump operations and frame accounting •Exercise instrument diagnostic/calibration procedures •Perform Observatory checkout & activation sequences •Perform instrument side switching/alternate configurations
<p><i>ETE #4</i> Advanced & Contingency Ops (8/11/07 & 8/12/07)</p>	<ul style="list-style-type: none"> •Perform component failover/side switching/alternate configurations (S/C and Instruments) •Perform Safe Mode recovery •Perform more advanced/complex FSW patches/updates 	
<p><i>ETE #5</i> Advanced Operations & Clean-up (8/20/07 & 8/21/07)</p>	<ul style="list-style-type: none"> •Perform leap second adjustment •Test requirements and goals not verified in previous ETE tests •Verify system updates (i.e. software updates, proc updates, and T&C database updates) 	
<p><i>ETE #6</i> Launch Site Test at Astrotech</p>	<ul style="list-style-type: none"> •Check-out of Launch Site specific data paths •Perform a selected set of regression tests 	



GLAST Users Committee Members

→ new members

- Josh Grindlay (Chair)
- • Matthew Baring
- Roger Brissenden
- Wim Hermsen
- • Buell Januzzi
- Don Kniffen
- • Henric Krawczynski
- Reshmi Mukherjee
- • Luigi Piro
- • Jim Ulvestad
- Ann Wehrle

Plus

- David Band
- Neil Gehrels
- Rick Harnden
- Julie McEney
- Chip Meegan
- Peter Michelson
- Steve Ritz
- Rita Sambruna
- Chris Shrader
- Kathy Turner
- Lynn Cominsky

• Most recent F2F meeting at Goddard in November, featuring a beta-test of the science tools.

<http://glast.gsfc.nasa.gov/ssc/resources/guc/>



Agenda for GLAST User's Group (GUG)
Stanford/Physics & Astrophys. Bldg., Conf. Room 102/103 (see map)
Feb. 4, 2007

Sunday, Feb. 4:

- 1:05 Welcome and Introductions (Josh, Steve)
- 1:10 **Welcome to New Members** (Rick, Steve, Josh)
- 1:15 Review Nov '06 meeting Minutes (Josh)
- 1:17 The view from HQ and other News (incl. GLAST Fellows program) (Rick)
- 1:25 Mission update and issues (Steve and Julie)
- 1:50 LAT status and schedule, upcoming milestones (Peter)
- 2:00 GBM status and schedule, upcoming milestones (Chip)
- 2:10 GSSC status and issues (Chris)
- 2:15 GLAST Symp. Planning and SWG activities (Steve)
- 2:30 Cycle 1 GI program & demo of RPS proposal submission tools (Chris, David)
- 3:00 Break
- 3:30 GLAST-NRAO Draft MOU (Steve, Jim U.)
- 3:45 Review open Action Items (see GUC webpage for current AI's due) (all as named)
- 4:45 VOEventNet issue (Dave T.)
- 5:00 New business (all)
- 5:15 Next meeting (all)
- 5:20 **THANK YOU** to GUG Members rotating off the Committee (Rick, Josh, Steve)
- 5:30 Adjourn



SWG Activities

- **Membership includes international representatives from LAT and GBM, along with four Interdisciplinary Scientists (IDS)**
 - **Chuck Dermer, Brenda Dingus, Martin Pohl, Steve Thorsett**
- **Advises mission and NASA, primarily now on Science Requirements**
- **SWG scientific review of the expected performance (LAT, GBM, Observatory) relative to the Science Requirements on 2 February.**



Symposium

Also started
monthly GLAST
news email

The First GLAST Symposium

5-8 February 2007
Stanford University

GLAST
Exploring the High Energy Universe

- [Symposium Announcements](#)
- [Symposium Program](#)
- [Campus Map](#)
- **Special Note:** the maximum poster dimensions for this meeting are 32" wide by 48" tall.
- [Registrant List](#)
- [Registration](#)
- [Hotel Information](#)
- **Public Lecture by Andrei Linde:** "The Origin and Fate of the Universe", 5 February
- **Planetarium Show:** "Black Holes: The Other Side of Infinity", 7 February
- Meeting Banquet: Tuesday, February 6th
- **Abstract Submission** - Deadline: Friday, December 15th (Late abstracts will be accepted until Friday, 22 December)
- **Please Note: Important Dates**
- [Proceedings Information for Authors](#)
- [Satellite Meeting Information](#)
- [Download the Symposium Poster \(PDF\), High-Res \(13 MB\)](#)
- [Signup for Announcements and Information](#)
- [Organization](#)
- [Contact](#)



Launch Invitation Coordination

- **Please contact Peter (LAT-related), Chip (GBM-related), or Steve (mission-related) with names of individuals who are not team members who should be invited to the launch.**