

National Aeronautics and Space Administration



# Fermi

Gamma-ray Space Telescope

[www.nasa.gov/fermi](http://www.nasa.gov/fermi)

## Fermi

Gamma-ray Space Telescope

**Users Group Meeting  
14 Jan, 2013**

**Mission Status Update**

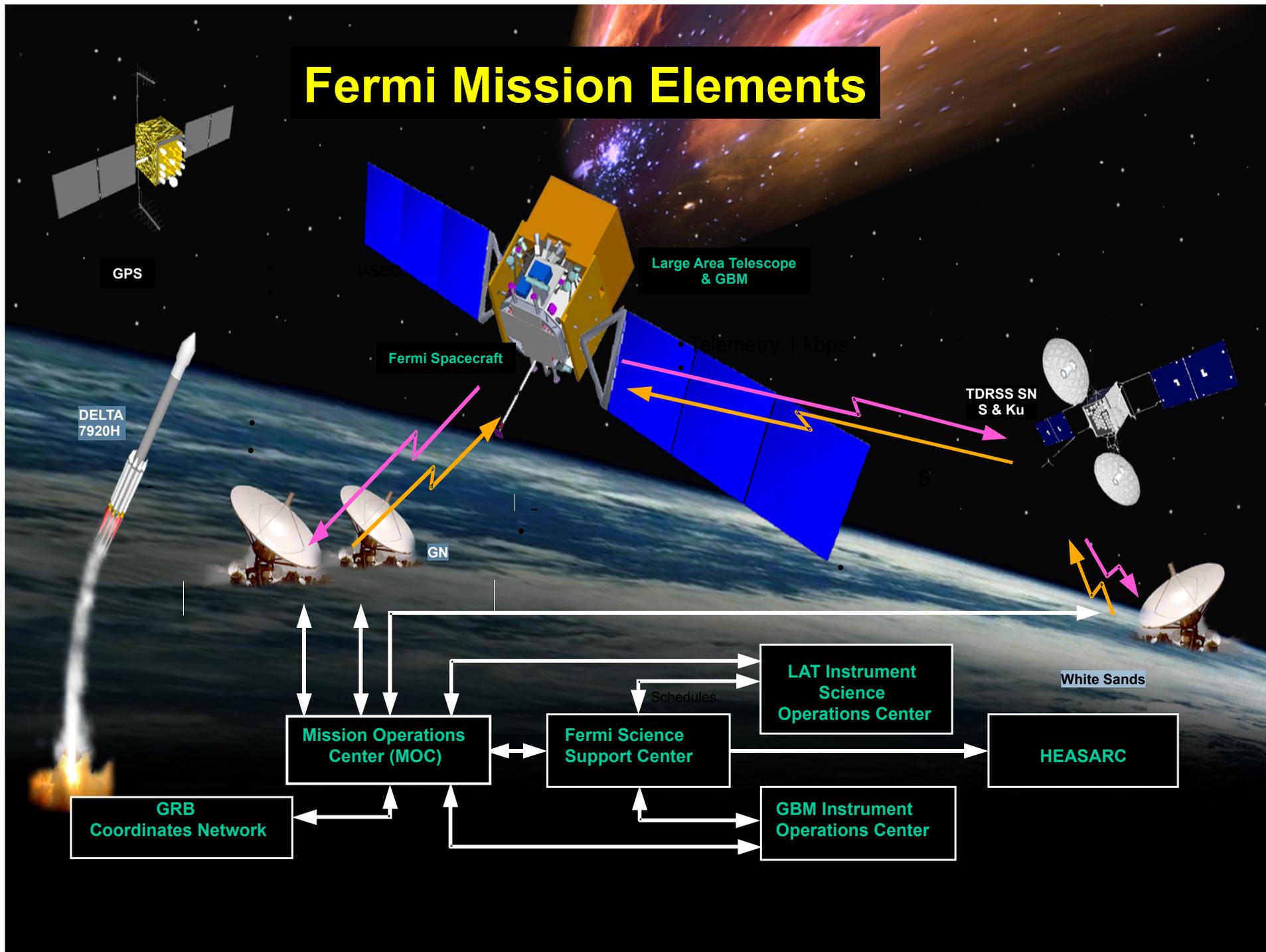
**J. McEnery**

## Some goals for this meeting

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- **Comments and feedback from the users group on:**
  - **Observation strategies in extended phase of the mission – providing an opportunity for people to make ambitious suggestions**
  - **Senior review – suggestions on how to improve the process, comments on proposed plan/timeline**
  - **Evaluating the performance/effectiveness of the GI program**
    - **How can we better handle 2-year awards?**
  - **Transition to trunc64**
    - **What is the right balance between handholding users and a prompt transition?**
- **Of course, comments on suggestions on any aspect of the mission are welcomed!**

# Fermi Mission Elements



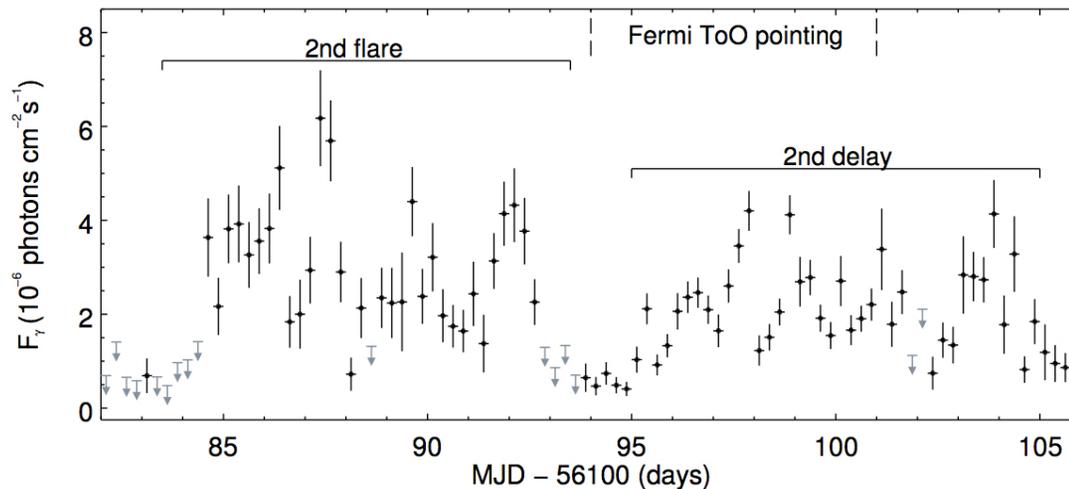
# Mission Status Highlights

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- **Observatory is operating smoothly**
- **Reaction wheels**
  - **Recent failures of same type of wheels in Kepler and Dawn**
  - **Updated spacecraft FSW to handle reduced wheel observation modes - code complete, tested and accepted, working on needed operations changes to run in those modes**
- **July/Aug outage of Demand Access Service (DAS) - used to send real-time GRB notices to ground**
  - **FOT scheduled a sequence of s-band contacts to mitigate this, but required 4 min gaps between scheduled contacts meant that we missed real time alerts for a few bursts.**
- **Changed 10 min weekly “stare” to a two orbit pole observation in September**
  - **Provides regular sampling of Earth limb for calibration/monitoring**
- **Transition to continuous GBM TTE data in November**

# Observations summary (since last meeting)

- **Almost exclusively in nominal data taking in survey mode**
- **ARRs (2.5 hour autonomous observation in response to GRB)**
  - **Last Autonomous Repoint Request was 12 weeks ago**
- **1 Target of Opportunity (ToO) observation**
  - **S3 0218+35, 1 week observation**
- **Nadir observations stopped in October (end of season)**
- **LAT Calibrations/engineering tests (see Steve's talk for details)**
  - **<24 hours for calibrations (see Steve's talk for details)**
  - **1.82 hr downtime on October 19 (LAT FSW update)**
  - **10.97 hr downtime on December 19 (ATS commanding issue)**



ToO on S3 0218+35 Sept 2012  
From Teddy Cheung

# High Level Data Releases

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- **Aperture photometry lightcurves (released July 2012)**
  - **30 day time binning intended to provide a quick way to inspect gross features in the data**
- **LAT Low Energy data (LLE) (released Aug 2012)**
  - **Very loose event selection (i.e. high background) for time interval around bright GRB and solar flares**
- **Earth Limb residual template (needed to reproduce 2FGL)**
- **GBM continuous TTE data (released Nov 16 2012)**
- **Reduced diffuse model**
  
- **In the works (within a month or two)**
  - **Revamping LAT GRB summary table**
  - **Updated Galactic diffuse model (for P7reprocessed data)**
  - **P7 reprocessed data (updated calorimeter calibrations)**
  - **GBM localization contours for GRB**

# User Contributed Software

Package	Purpose	author
GeoTOA	This python tool computes the pulse times of arrival (TOAs) at an observatory (or spacecraft) from unbinned Fermi LAT data using the maximum likelihood methods described in Ray et al. (2011, ApJS, 194, 17).	M. Kerr, P. Ray
LATAnalysis Scripts	The LATAnalysisScripts module is a set of python modules to facilitate the analysis of LAT data (see <a href="#">Upper Limit Calculation</a> for a usage example).	J. Perkins
gtapps	Muliti-processor GTApps	J. Perkins
do_gbm.py	This Python tool performs a semi-automatic analysis of the GBM data (this is particularly useful for transient events, such as GRBs). Included is a <a href="#">document</a> that describes the comparison between running this tool and using the values from the Fermi GBM burst catalog	S. Holland
Moonpos	This program adds RA_MOON and DEC_MOON to an spacecraft (FT2) file indicating the position of the moon.	P. Ray

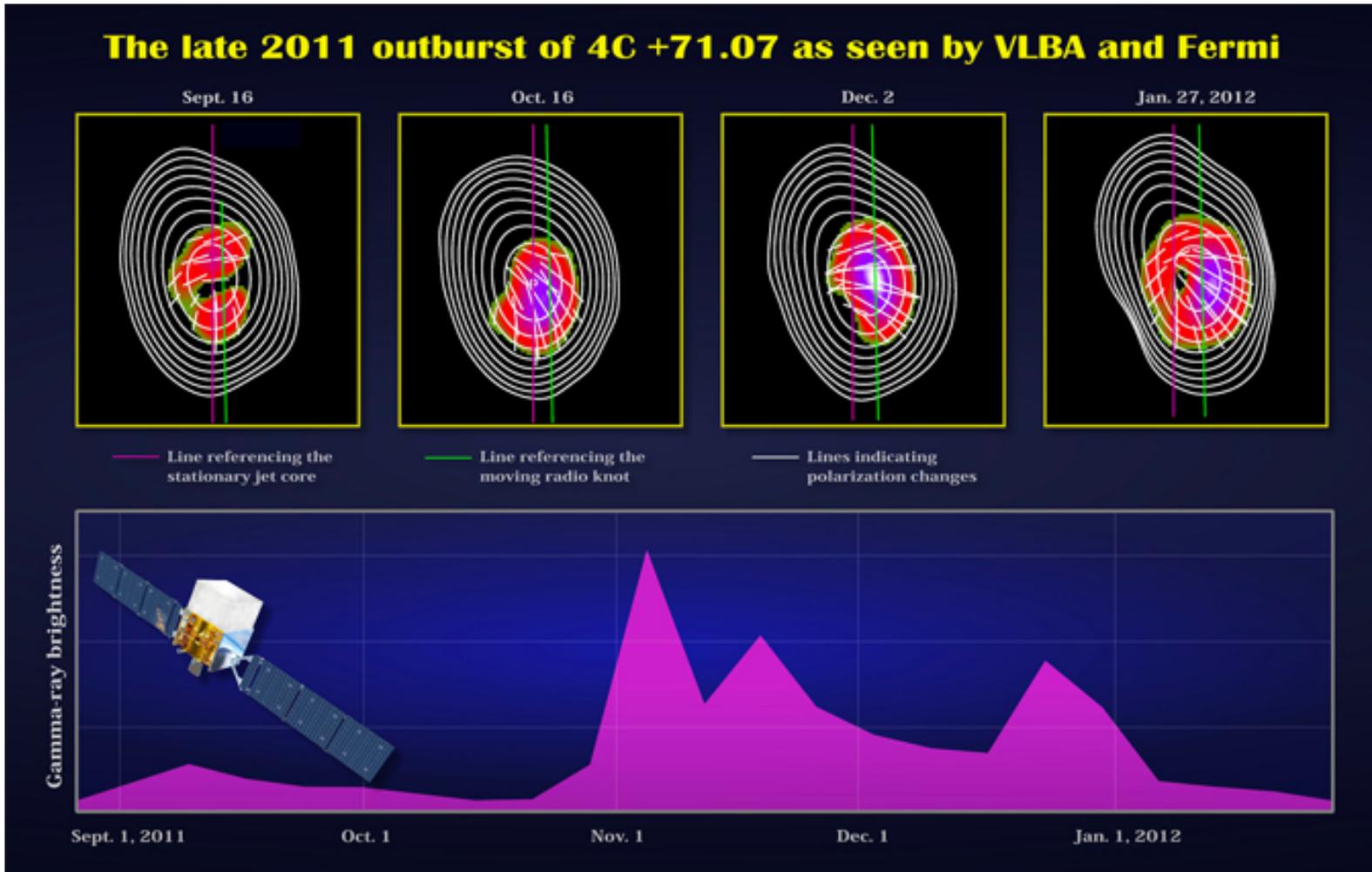


## Some outreach items

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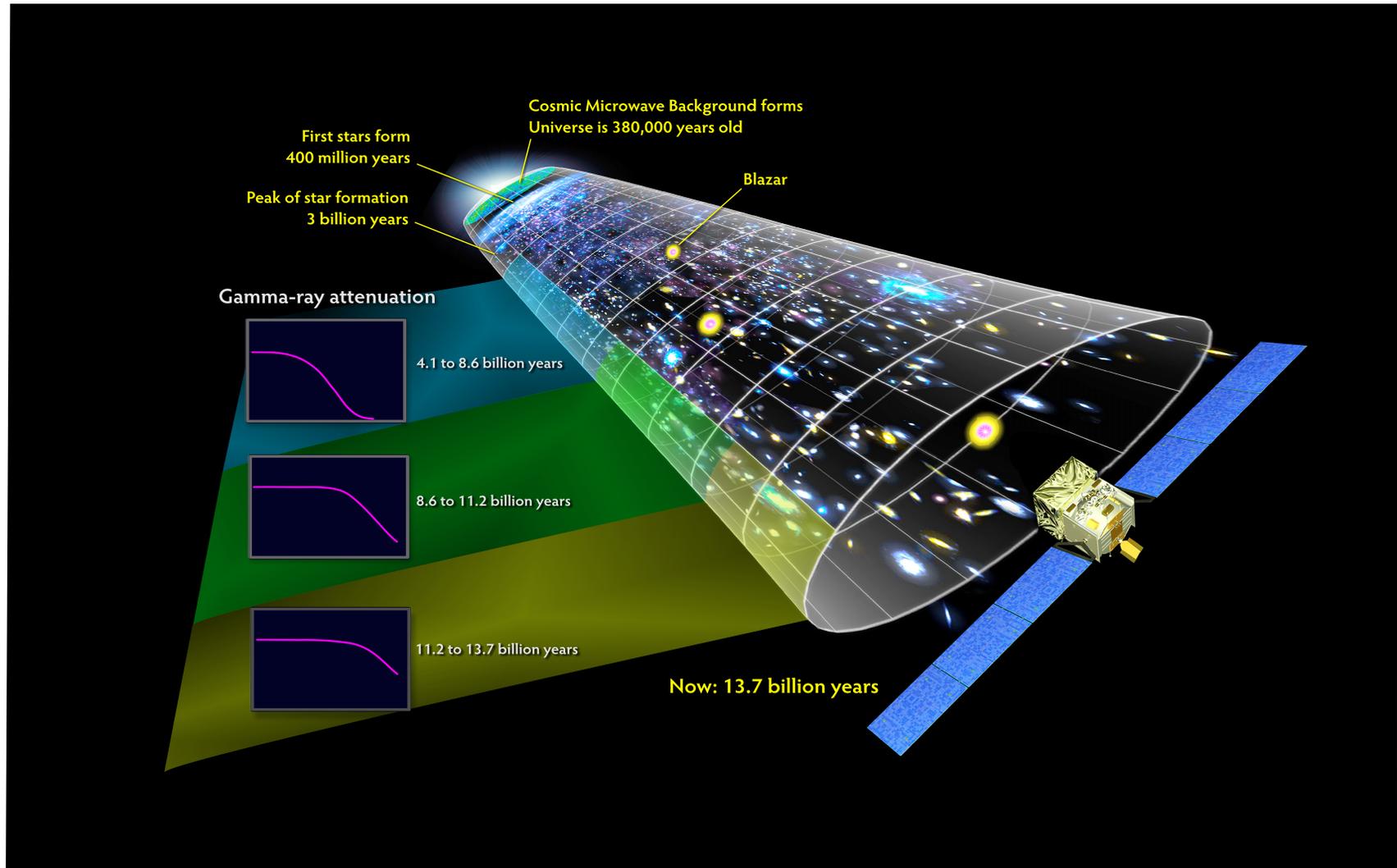
- **HQ iPad group working on Fermi with input from Dave Thompson and Toni Venters**
- **Developing Fermi exhibit for GSFC visitors center**
- **Revamped Fermi/Swift booth at AAS**
  - **Includes set of science pamphlets**
- **Upcoming press activity**
  - **Pulsar feature/podcast**
  - **Collision avoidance**
- **Fermi 5-year launch anniversary**
  - **Starting to think about a celebration, ideas/suggestions are welcome!**
- **Lots happening in EPO – see Lynn’s talk for details**

# Press Releases



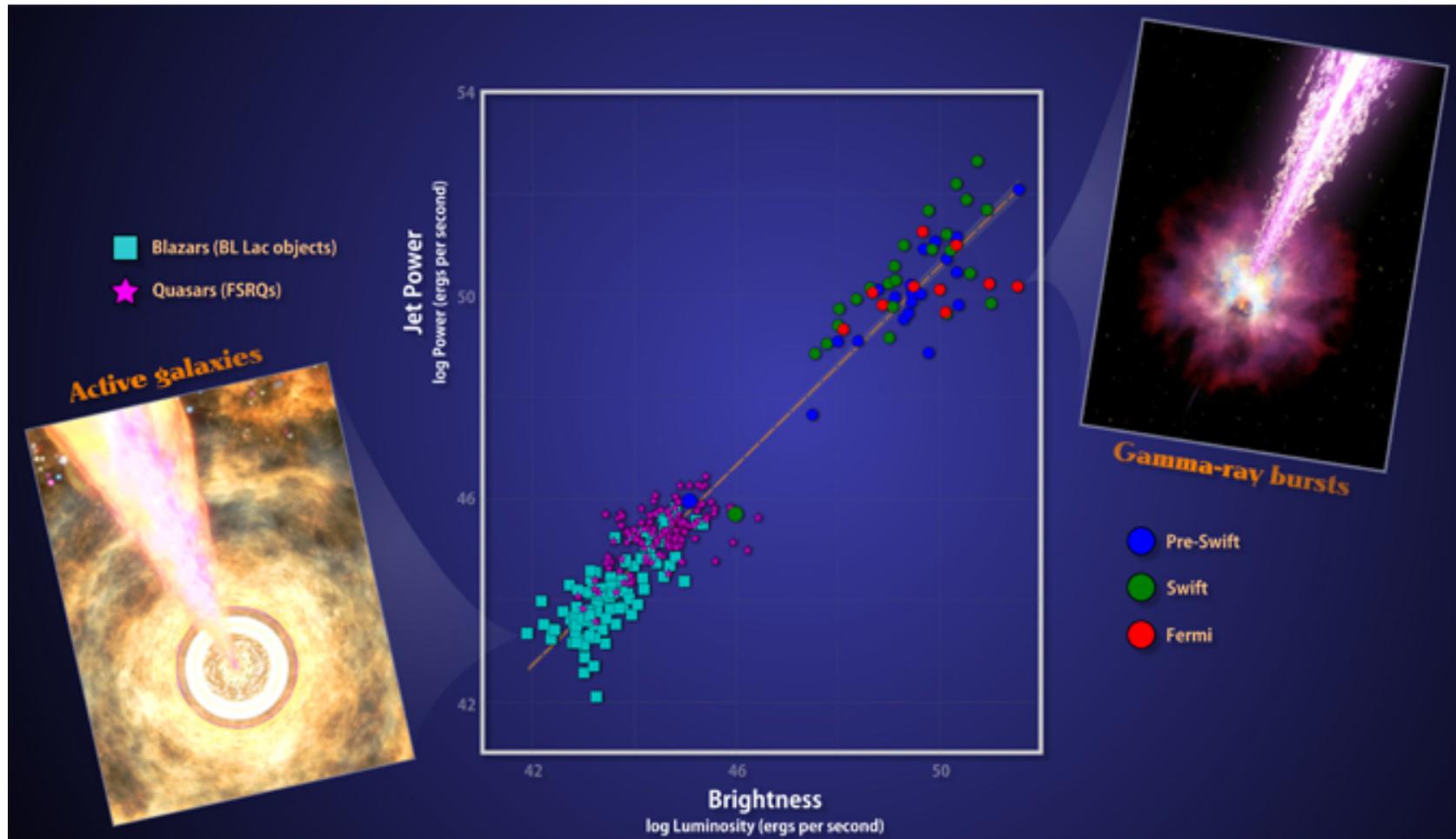
- Galaxies gamma-ray flares erupted far from its black hole

# Press Release



- **Fermi measures ancient starlight's cosmic fog**

# Press release



- **Symmetry in black hole jets**



## Press releases

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- **[Fermi's Vision for Thunderstorm Gamma-Rays Improves](#)**
- **601 TGFs from August 2008 to August 2011, with most of the events, 409 in all, discovered through untriggered TTE data.**
- **Study of correlations between TGFs and strong VLF (Very Low Frequency) radio pulses suggests that the VLF pulse is produced by the TGF and not by lightning as previously thought.**
- **For a video podcast, see:**  
**[http://www.nasa.gov/mission\\_pages/GLAST/news/vision-improve.html](http://www.nasa.gov/mission_pages/GLAST/news/vision-improve.html)**

**Questions?**

# APS meeting

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- **Invited sessions with Fermi speakers**
  - *Gamma-Rays and Active Galaxies (Coppi, Gilmore, Ajello)*
  - *Nature's Particle Accelerators (Caprioli, Harding, Markoff)*
  - **Dark Matter (Shutt, Drlica-Wagner, Kumar)**
  - **Multimessengers from Space (Hays, Seo, Thorpe)**
- **Additional DAP invited sessions include:**
  - **Tidal disruption events, Dark energy, Neutron stars and core collapse supernovae, Galaxy clusters, gravitational wave astrophysics, origin of elements, cosmic particle probes of fundamental physics, Energetic neighbors**

# HEAD meeting

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- **Two special sessions**
  - **Understanding Gamma-Ray Bursts Emission Mechanism in the Fermi Era**
  - **On the Detection of the Extragalactic Background Light**
- **Discussion on Fermi/Swift splinter session on transients (proposal not yet submitted)**
  - **Might be focused as a planning session for people interested in follow up**
- **Likely to send Fermi booth – distribute updated science pamphlets**

## Some other relevant meetings

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- **Huntsville in Nashville: the 7th Huntsville Symposium on Gamma-Ray Bursts (14-18 April 2013)**
  - <http://huntsvilleinnashville.uah.edu/>.
- **The Fermi Bubbles: Theory and Observations (April 11-12,, 2013)**
  - <http://kipac.stanford.edu/kipac/events/fermi-bubbles-theory-and-observations>
- **5<sup>th</sup> Fermi Symposium (Oct 20-25, 2014), Nagoya, Japan**