

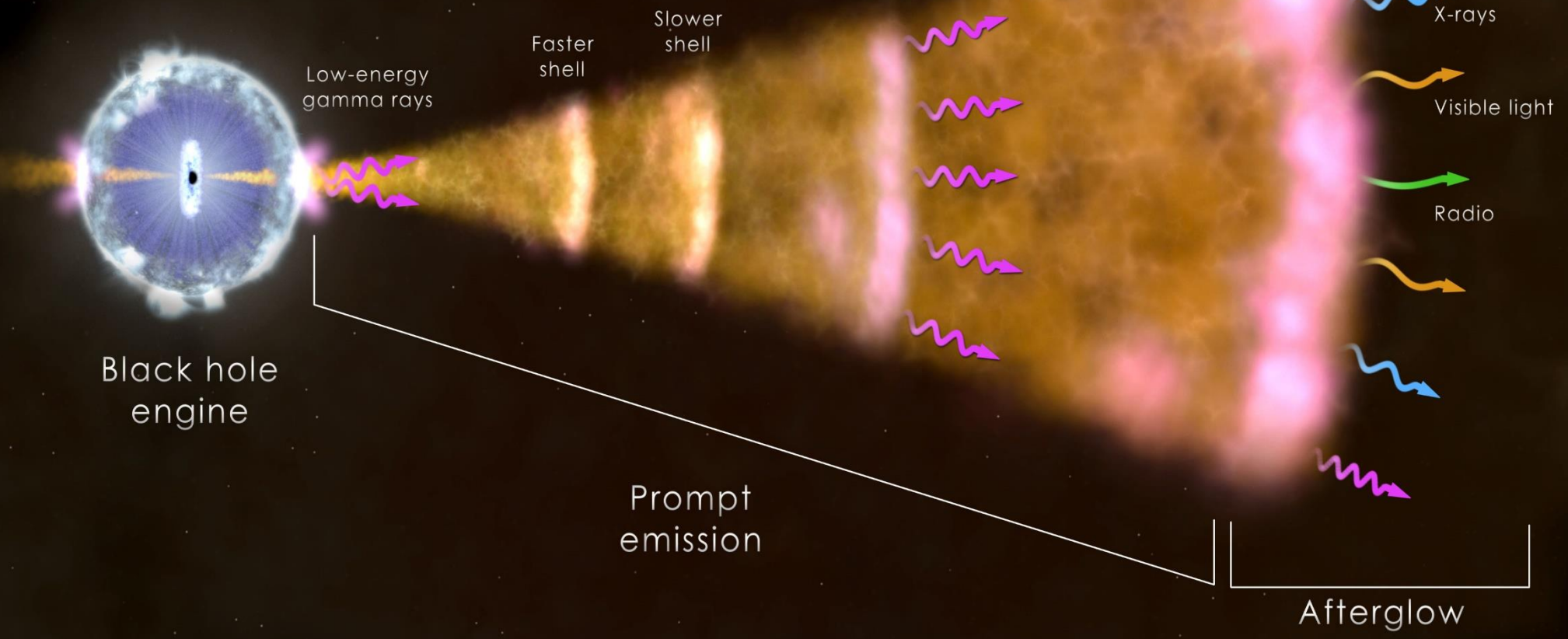
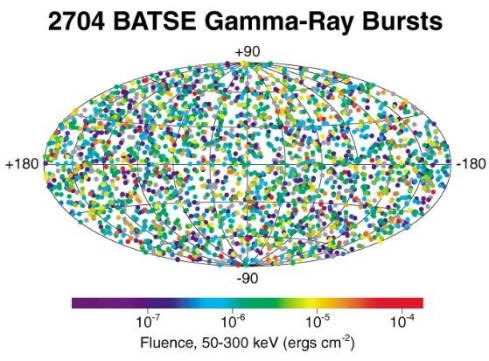
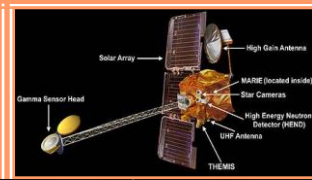
## HEND (Mars-Odyssey) and BTN-M1 (ISS) GRB observations

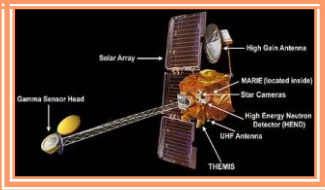
**D. Golovin<sup>1</sup>, I. Mitrofanov<sup>1</sup>, M. Litvak<sup>1</sup>, A. Sanin<sup>1</sup> on behave of HEND and BTN team**

<sup>1</sup> Space Research Institute (IKI), Moscow, Russia

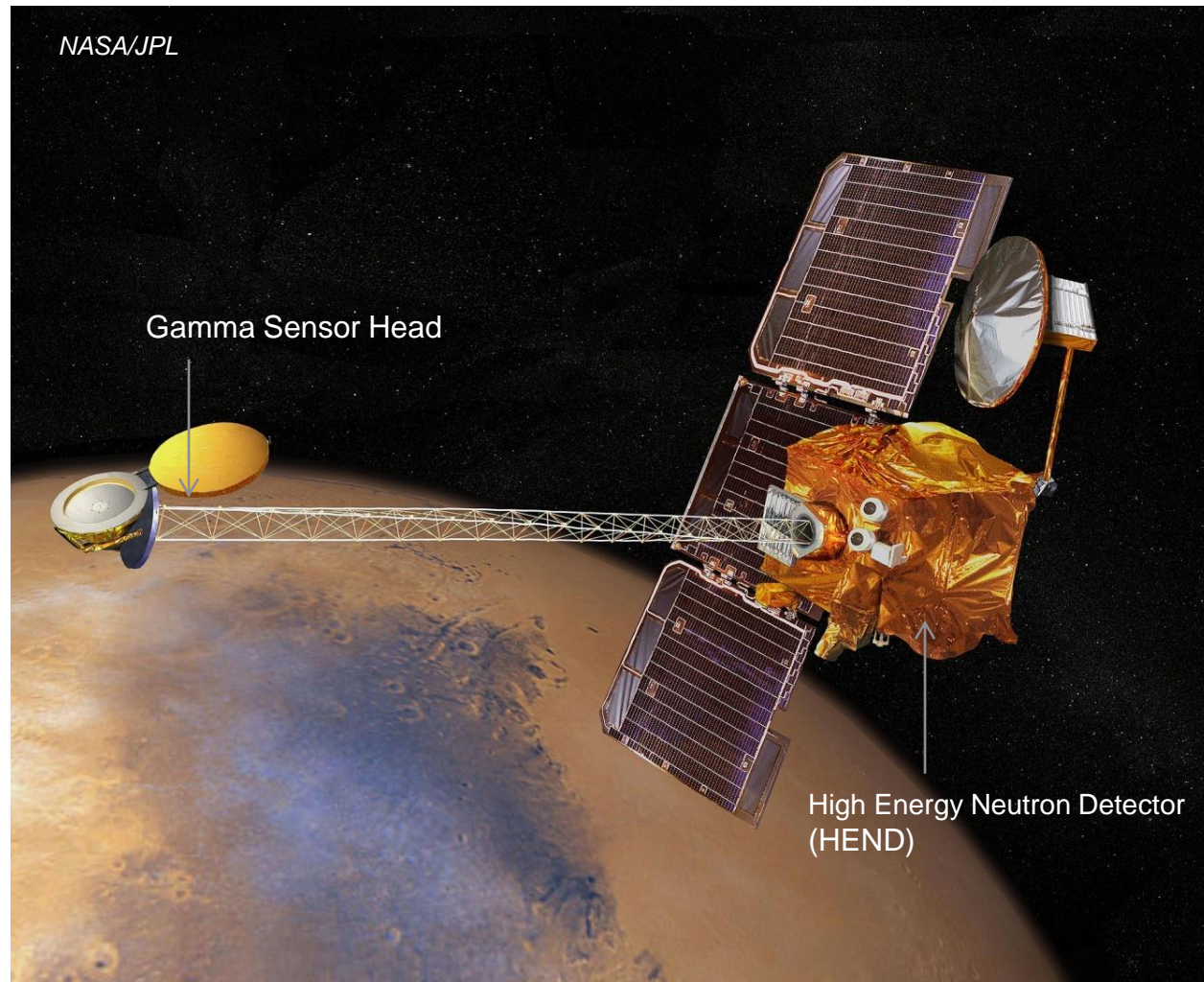


# Ioffe Workshop on GRBs and other transient sources: 25 Years of Konus-Wind Experiment HEND (Mars-Odyssey) and BTN-M1 (ISS) GRB observations

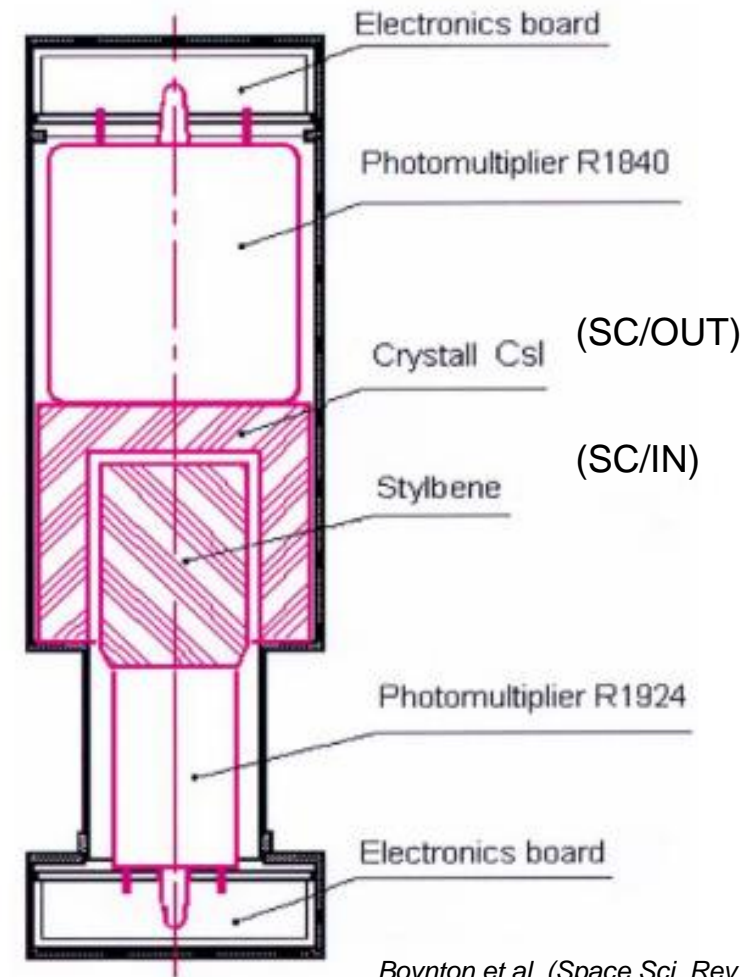
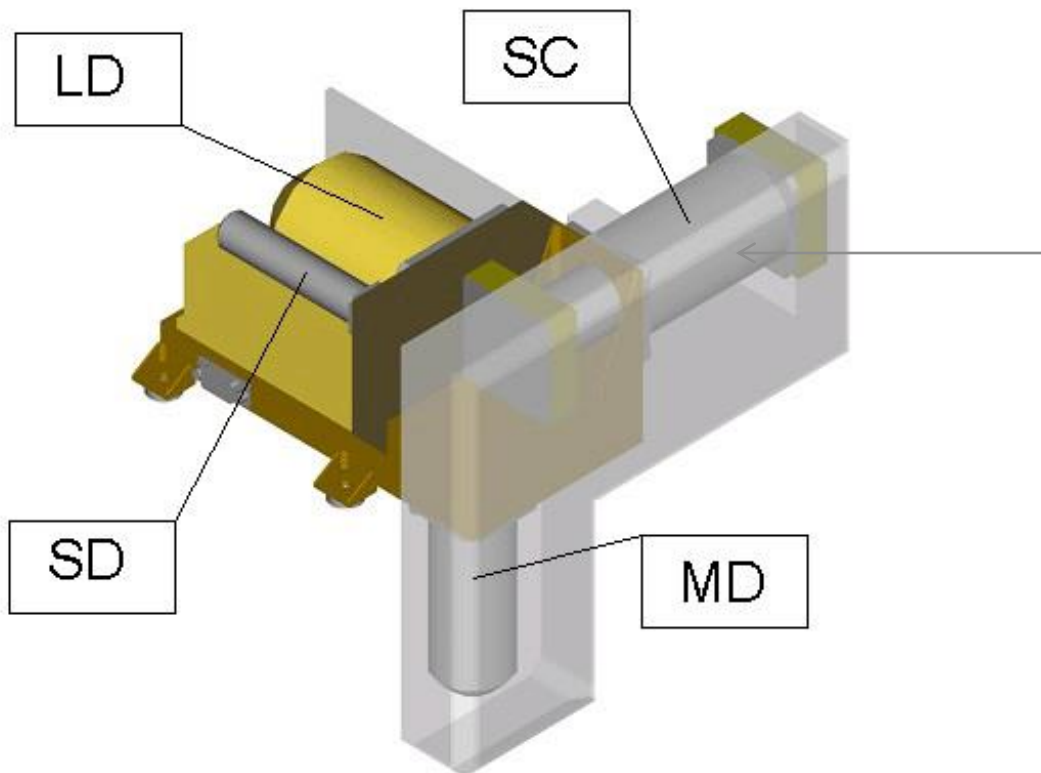




Mission Parameters	
Operator	NASA/JPL
Manufacturer	Lockheed Martin
Launch date	7 April 2001
Semi-major axis	3785 km
Orbit height	400 km
Eccentricity	0.0115
Inclination	93.2 deg
Period	117.84 min
Orbital insertion	24 October 2001

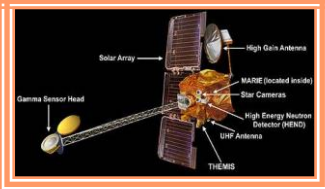


## HEND Scintillation Detector description

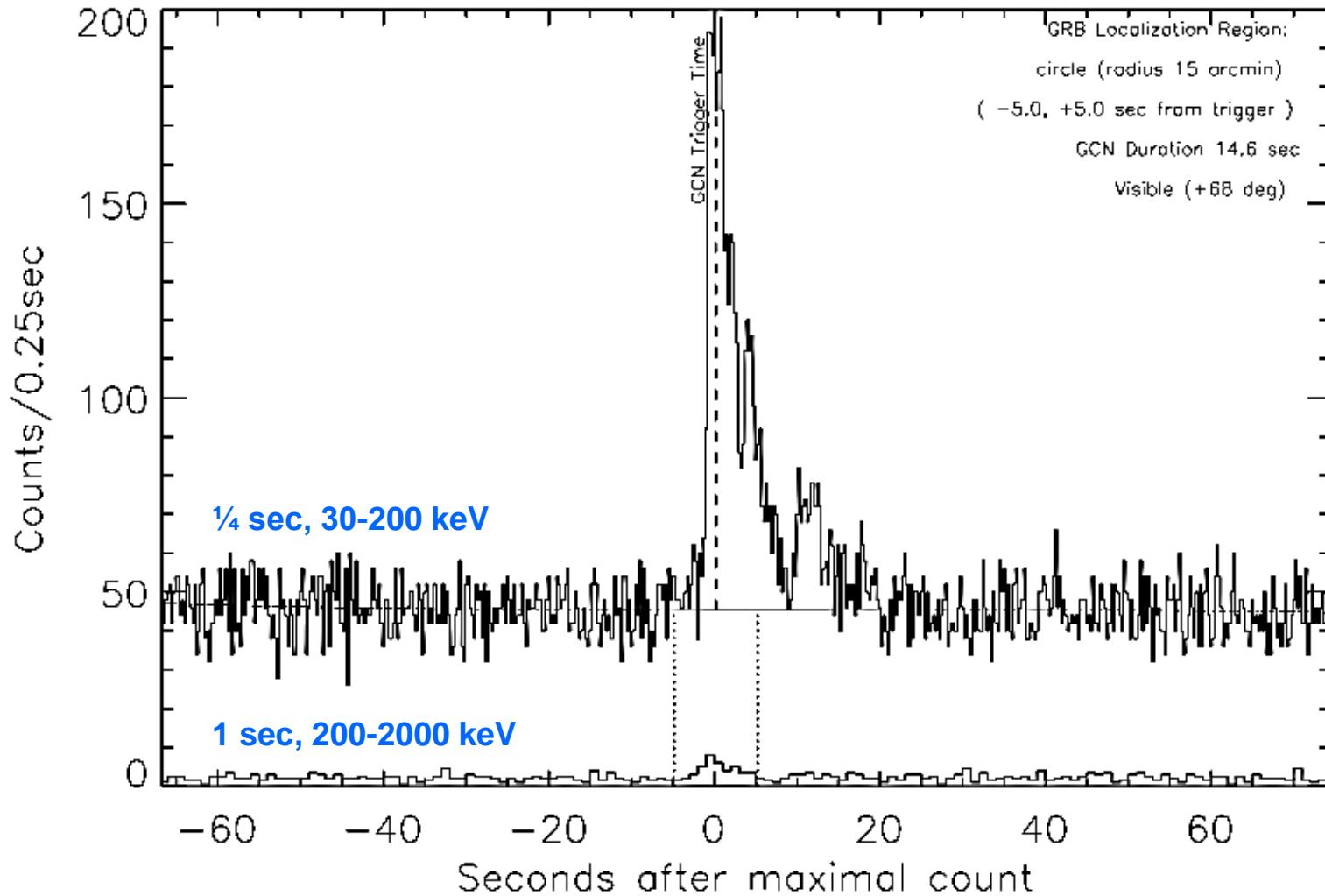


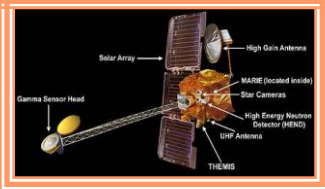
Boynton et al. (Space Sci. Rev., 2004)





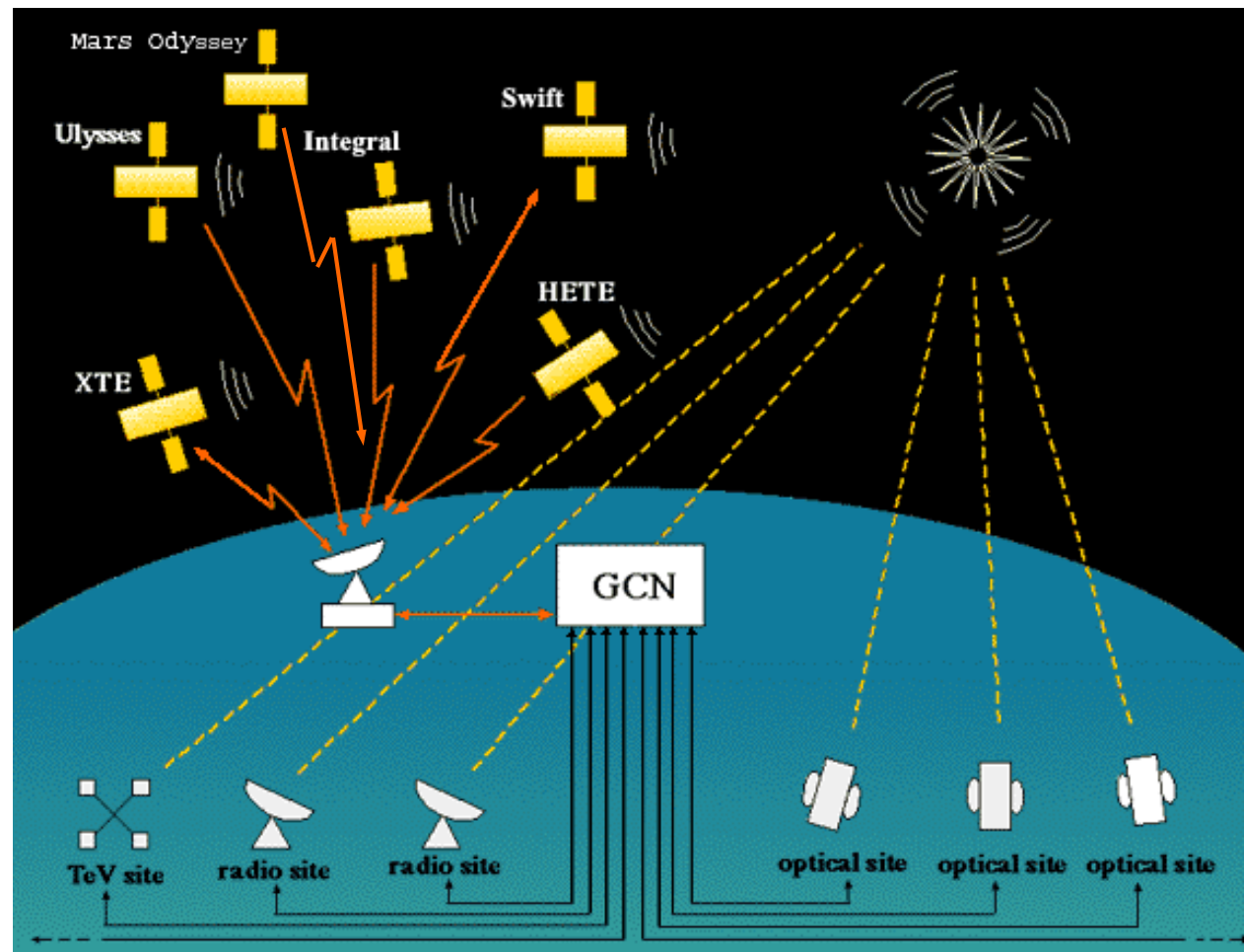
### GRB190731A (UT 22:38:24)





## HEND participation in GRB science

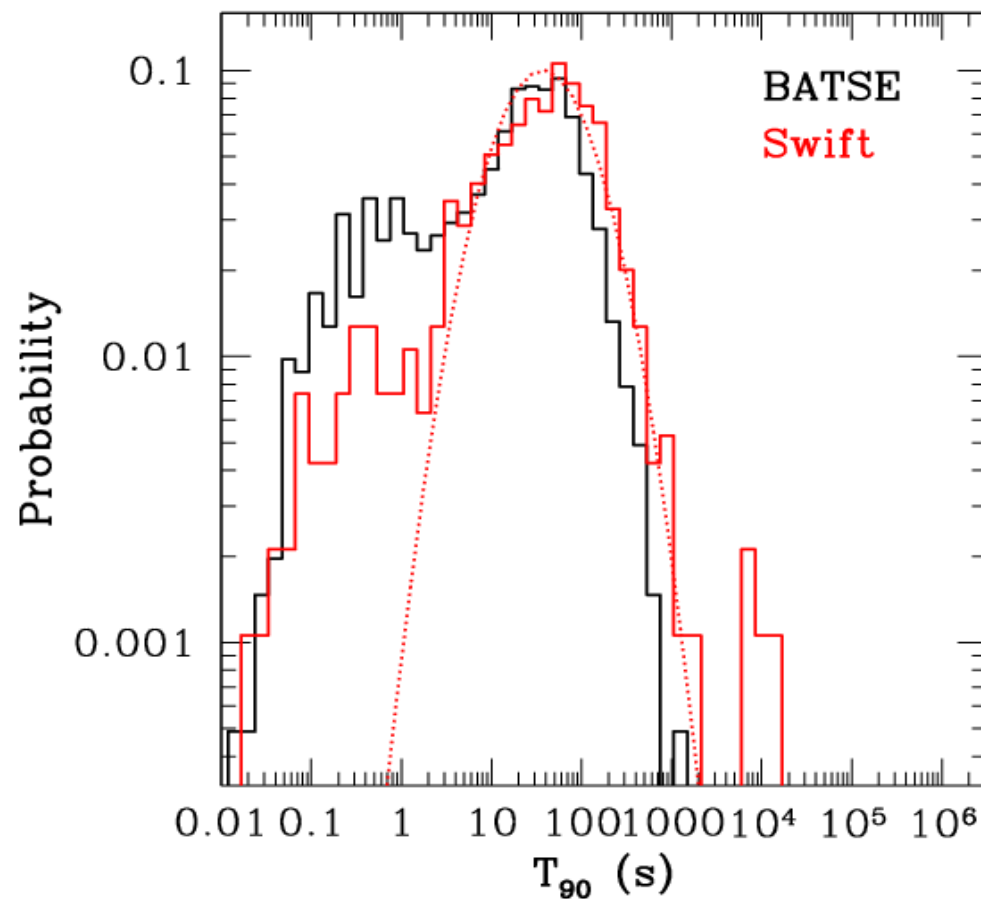
- May 2, 2001: first HEND data
- May 8, 2001: first GRB detected by HEND
- April 5, 2002: first IPN localization with HEND participation (GCN#1325)
- June, 2007: first BTN data
- **18 years of successful operation!**



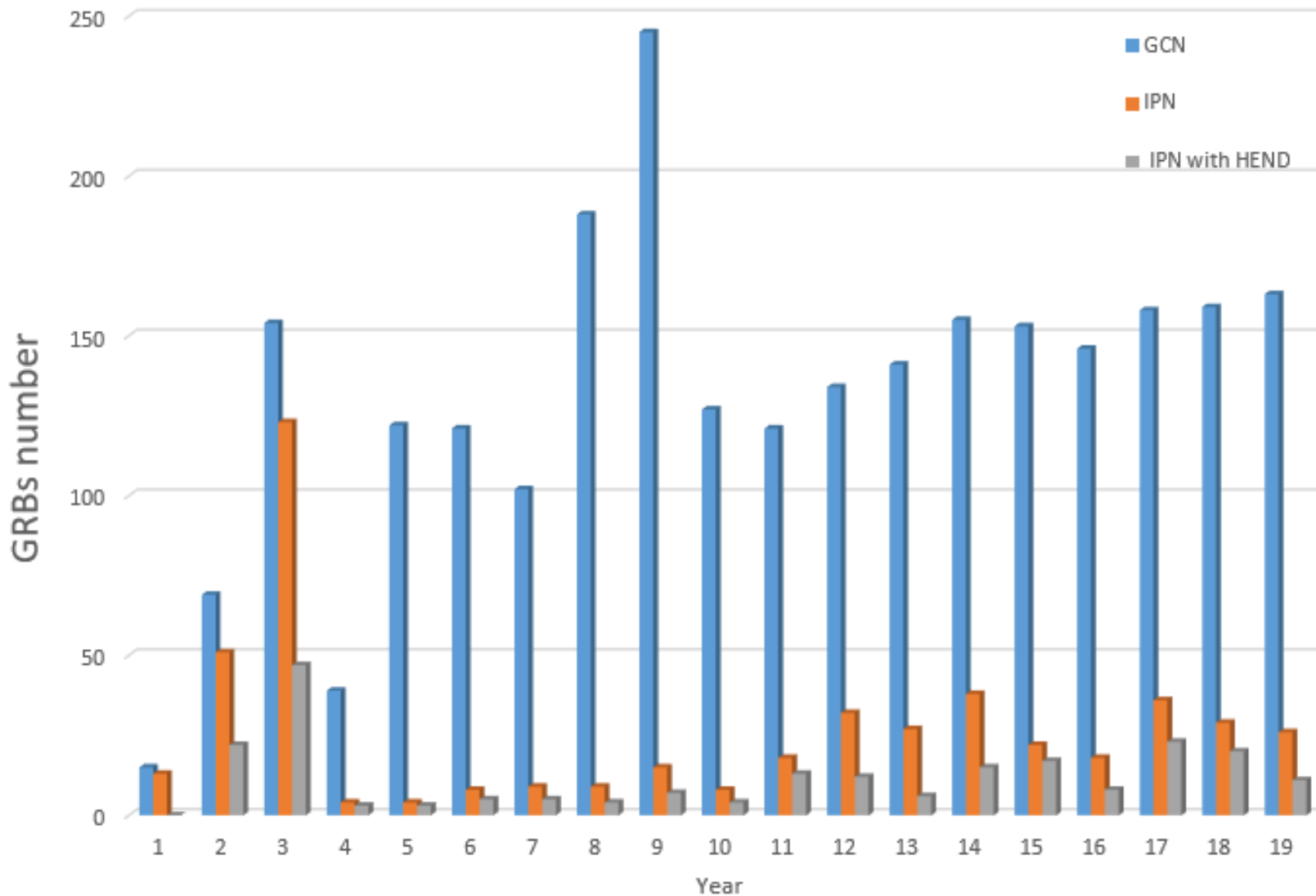
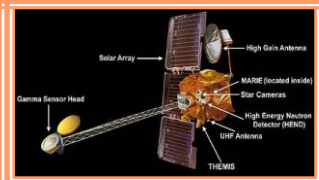


## Statistics of HEND GRBs

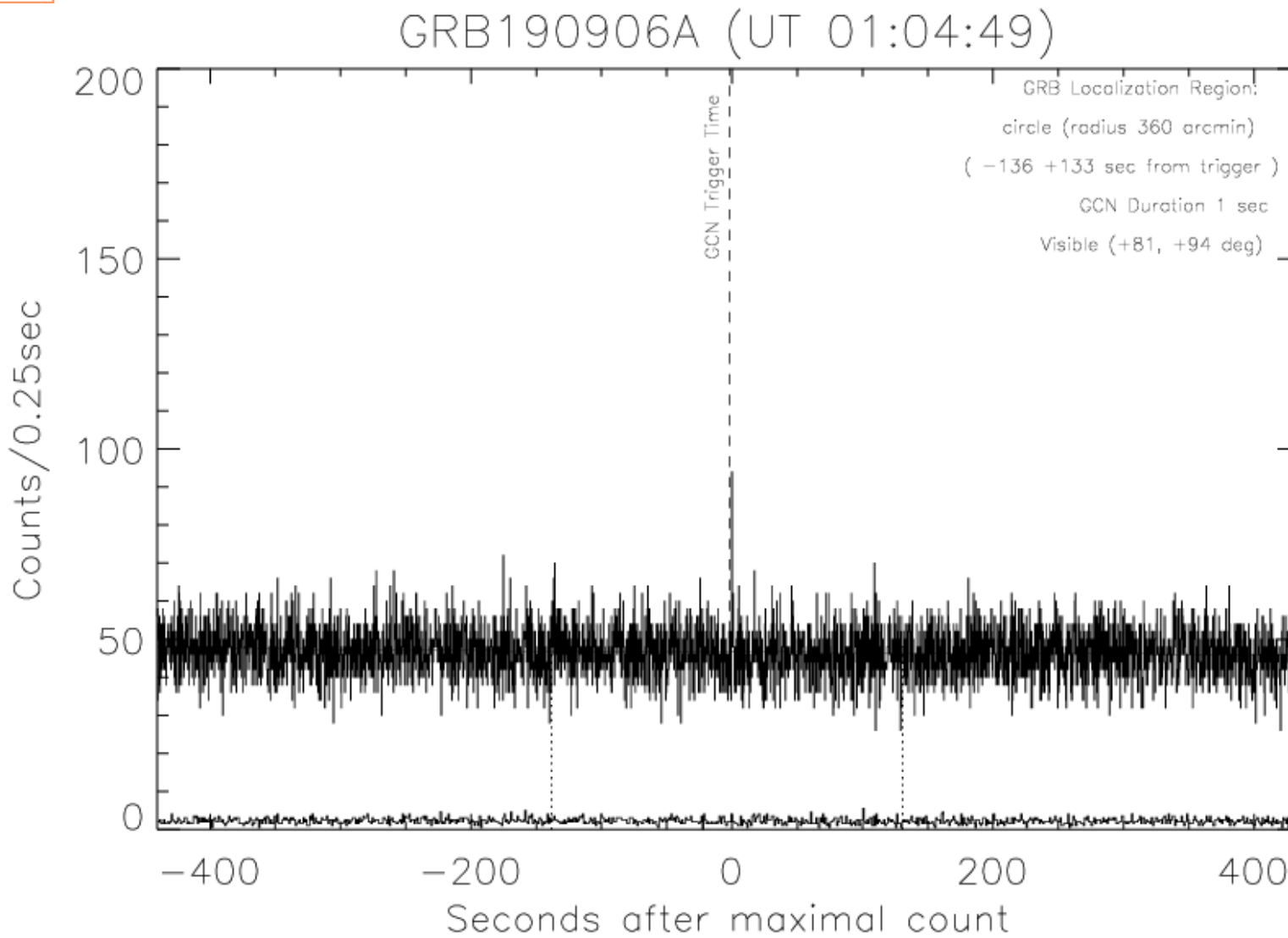
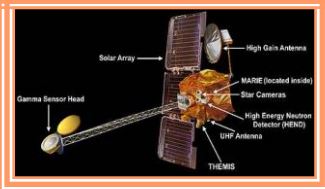
- 522 GRBs (81 short, 441 long)
- 227 localizations with HEND
- 2.5 bursts per month
- 20 % of GCN GRBs

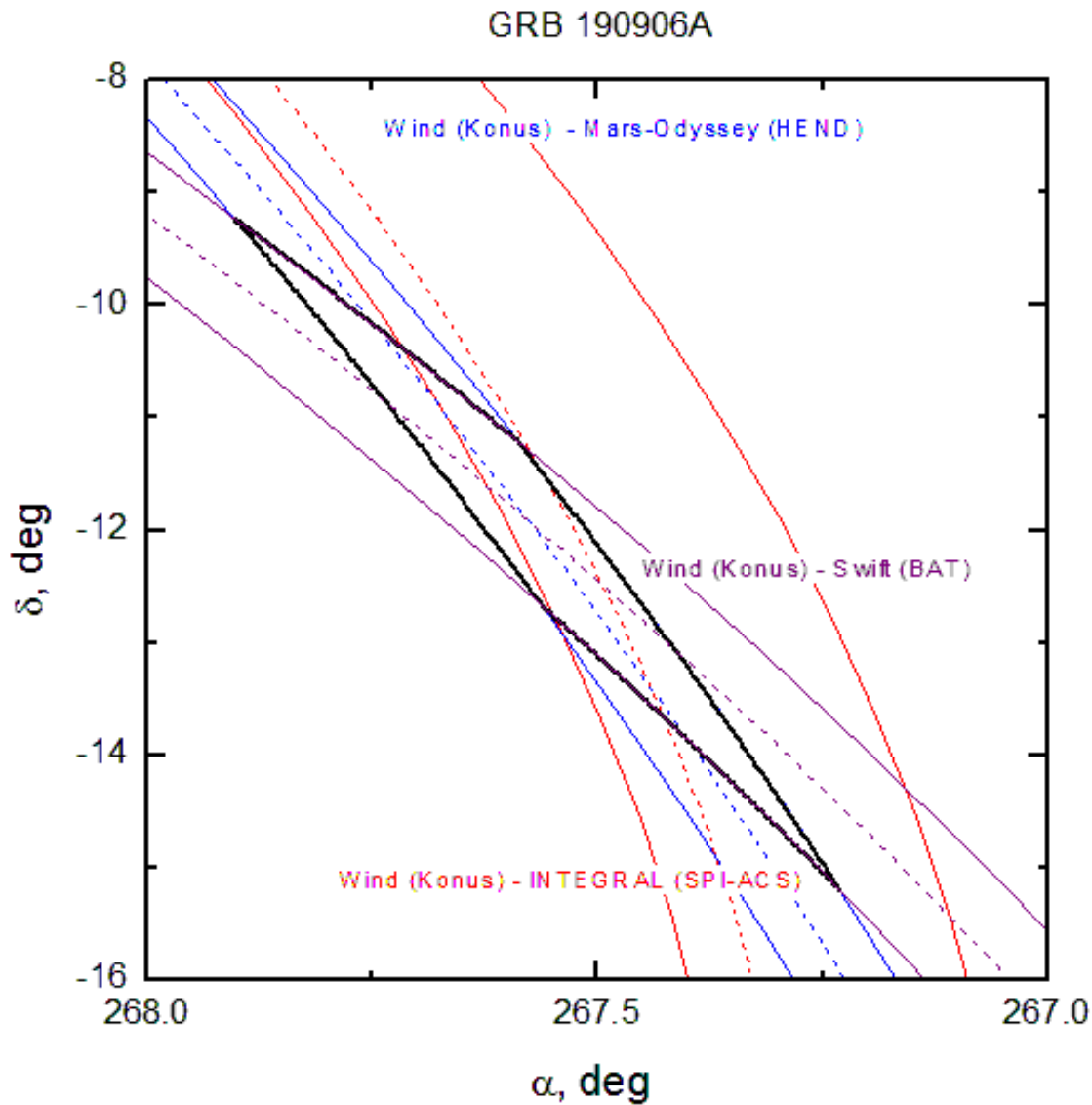
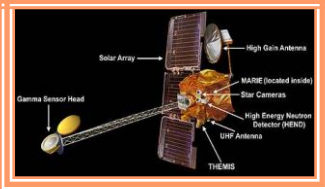


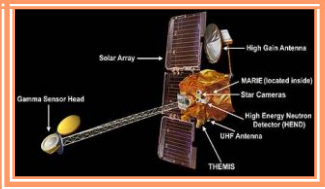
# Ioffe Workshop on GRBs and other transient sources: 25 Years of Konus-Wind Experiment HEND (Mars-Odyssey) and BTM-M1 (ISS) GRB observations





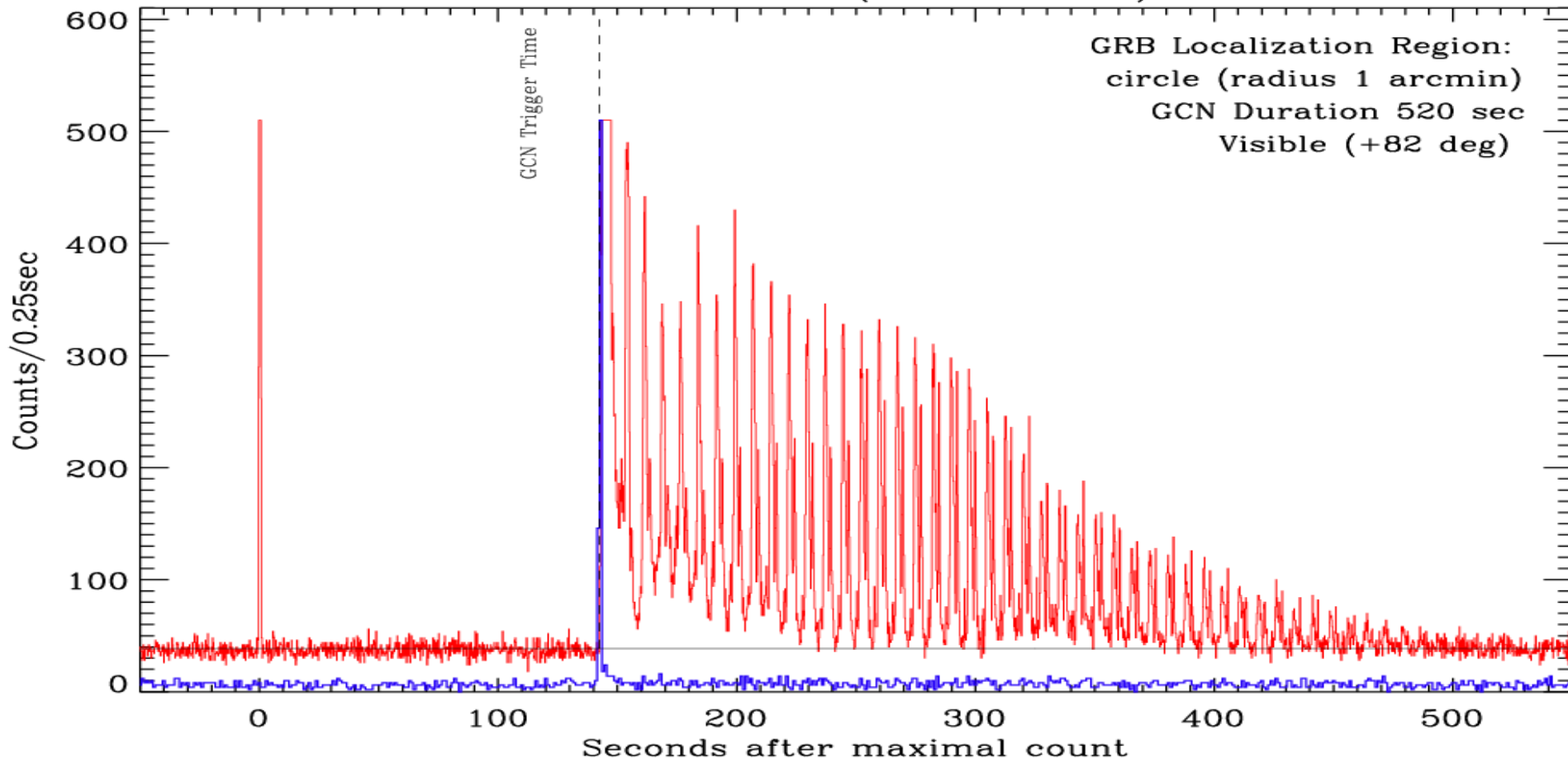






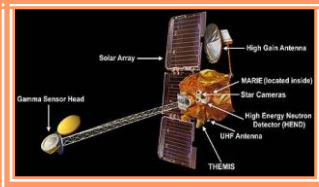
SGR 1806-20 light curves detected by HEND outer and inner scintillators.

SGR041227B (UT 21:30:26)

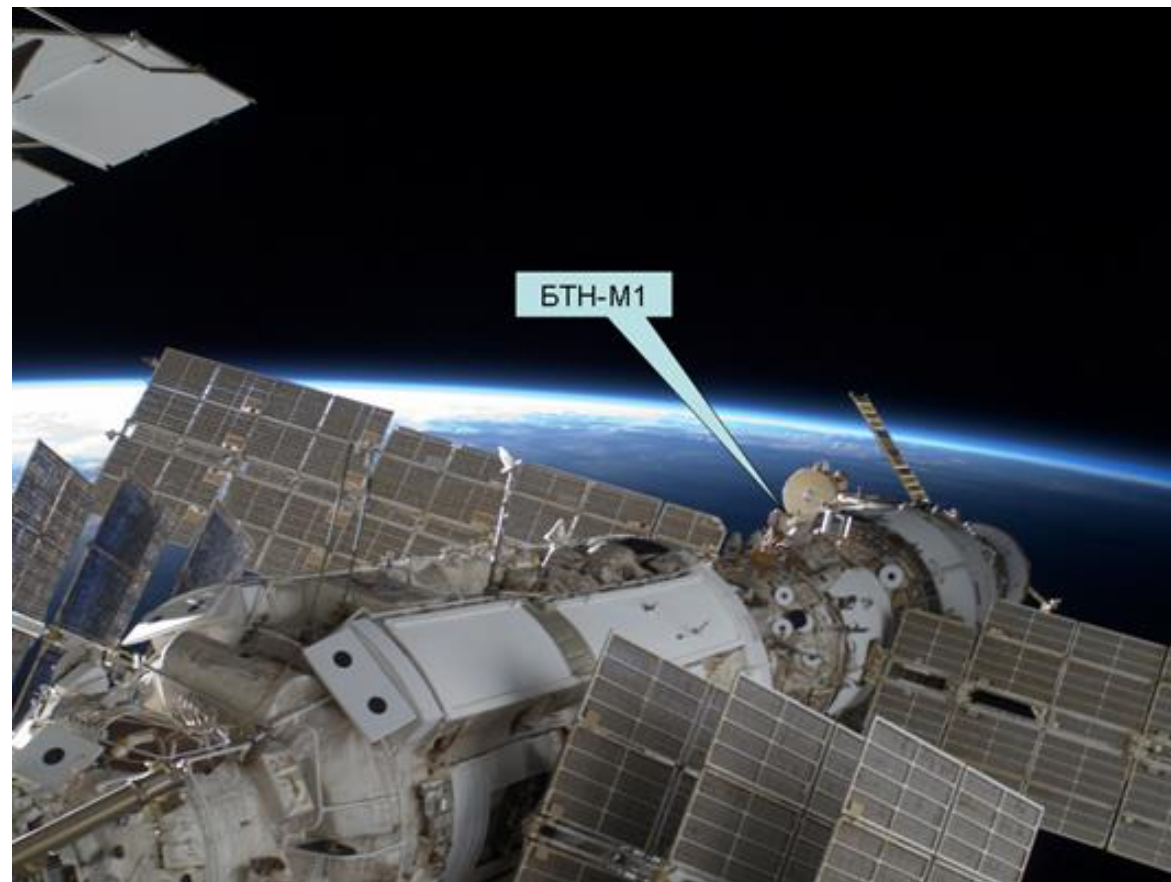
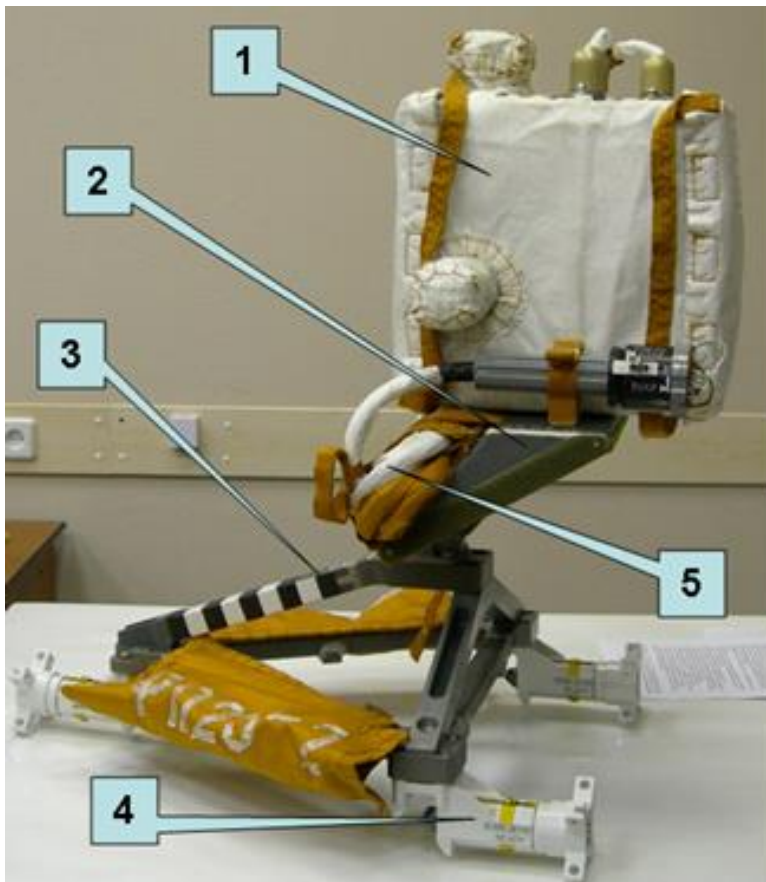


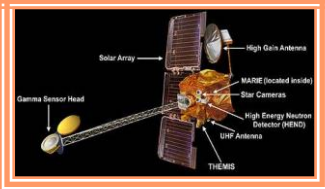
Hurley et al, 2005, An exceptionally bright flare from SGR 1806-20 and the origins of short-duration  $\gamma$ -ray bursts.  
Palmer et al., 2005, A giant  $\gamma$ -ray flare from the magnetar SGR 1806 – 20.



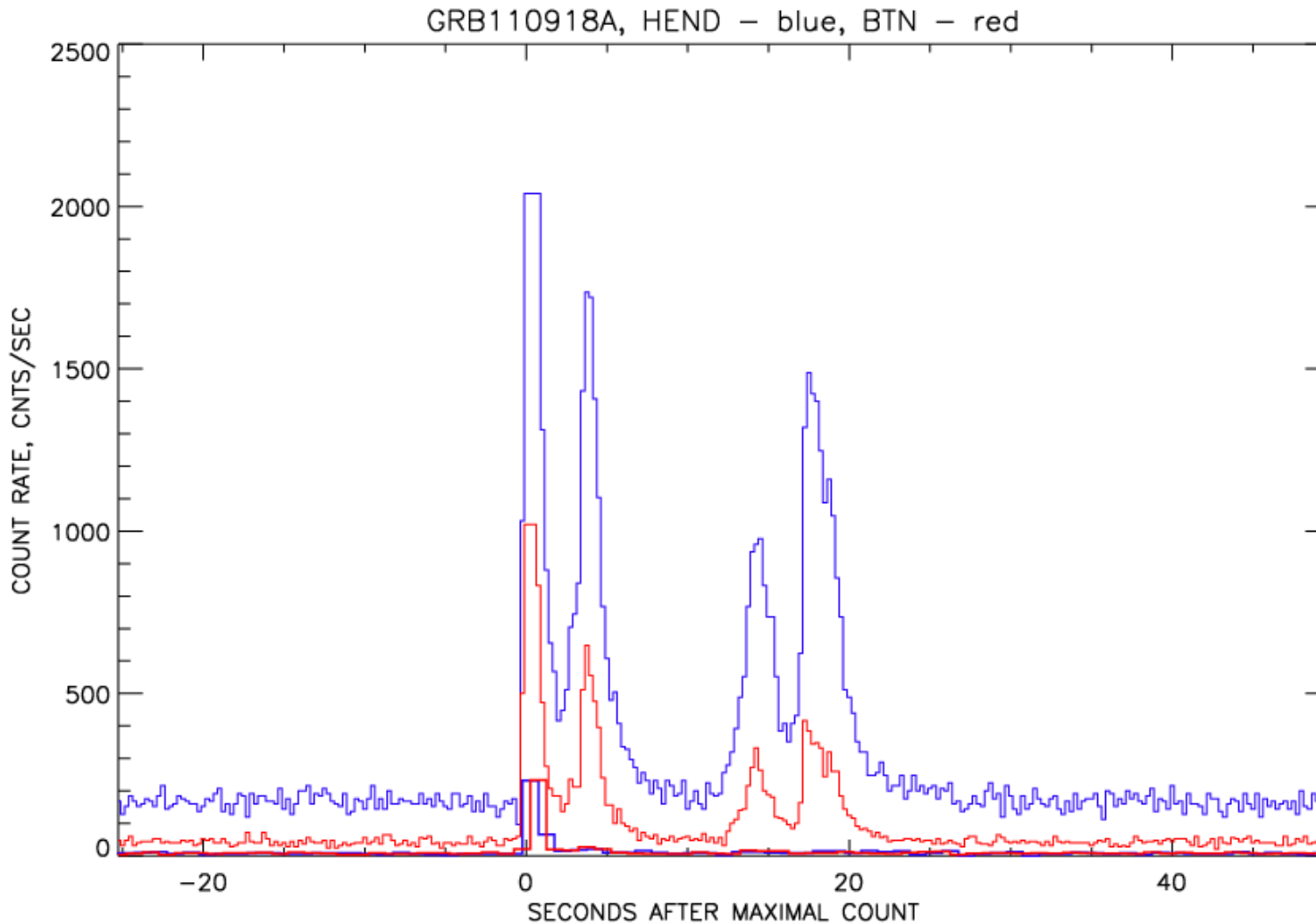


## BTN onboard ISS





## HEND and BTN light curve





## Conclusions

- **HEND registered about 522 GRBs**
- **HEND participated in 227 localizations of GRBs**
- **We plan to publish joint HEND/BTN catalog of GRBs**

Thank you!

