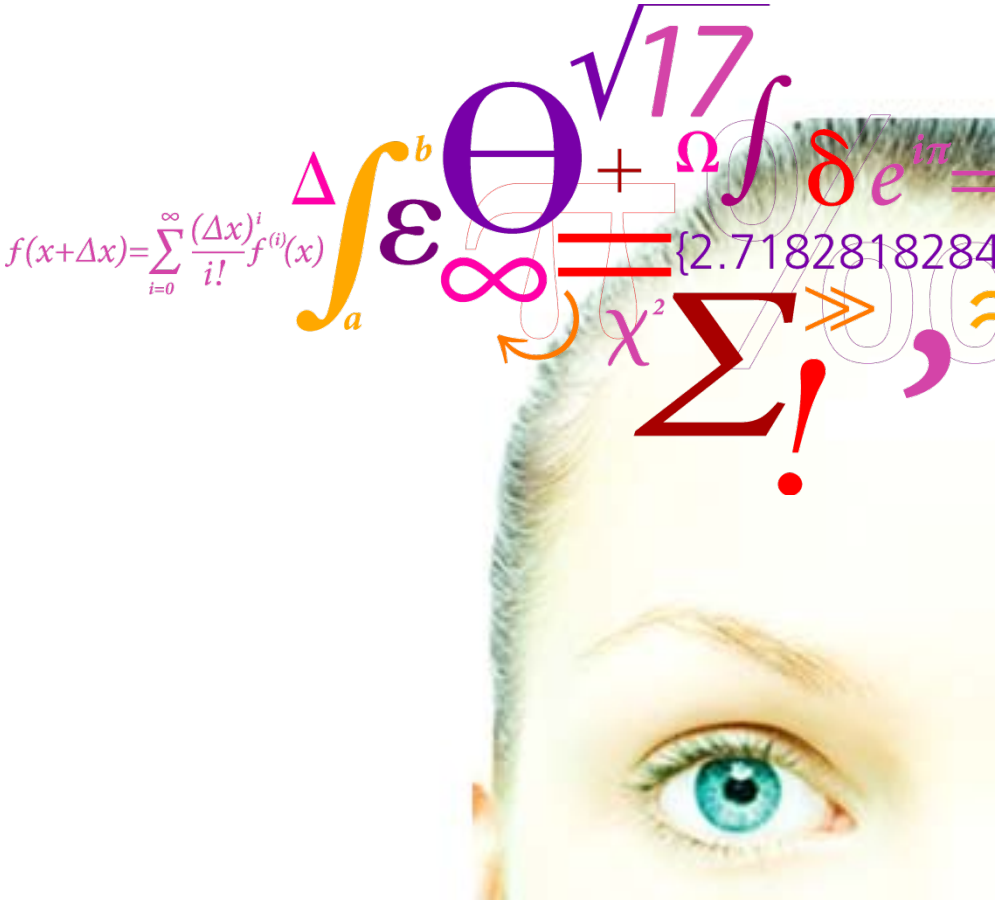
When a standard candle flickers ..



Niels Lund

DTU Space

Data from the Fermi Gamma Burst Monitor suggested Crab variability between 12 and 500 keV

Data points are 50-day averages

Observed decline in Crab flux:

5.4 ± 0.4% 12-50 keV

6.6 ± 1.0% 50-100 keV

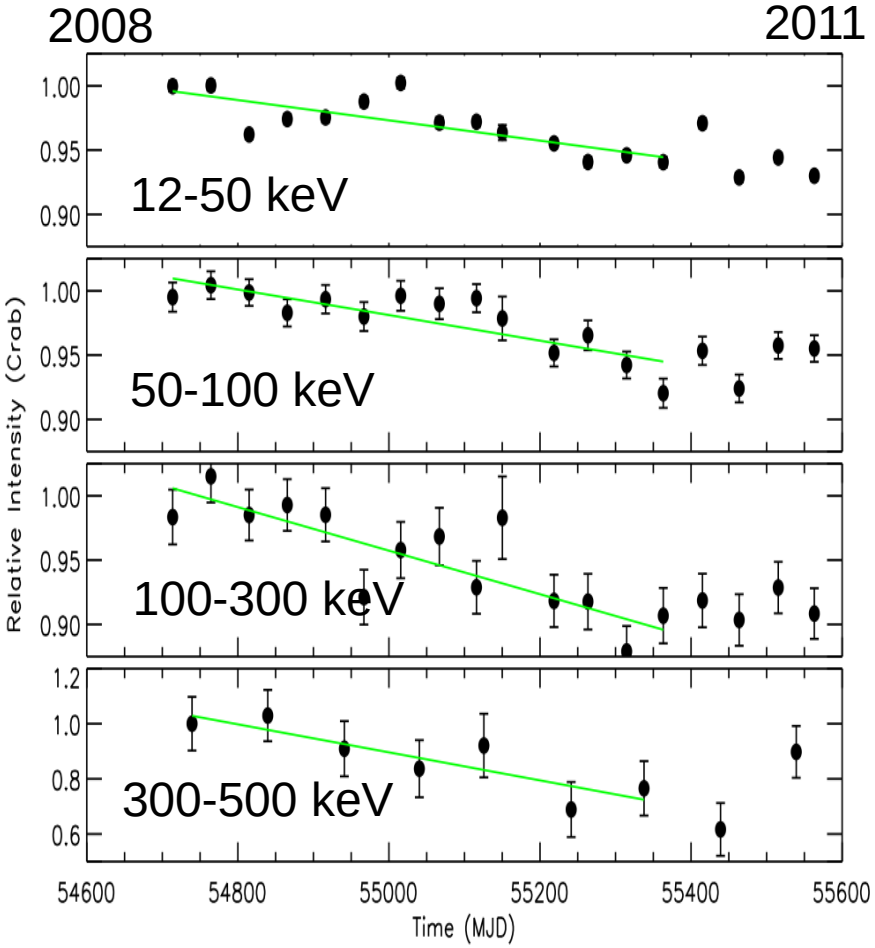
12 ± 2% 100-300 keV

39 ± 12% 300-500 keV

Decline may steepen as energy increases

Flattening since summer 2010 ?

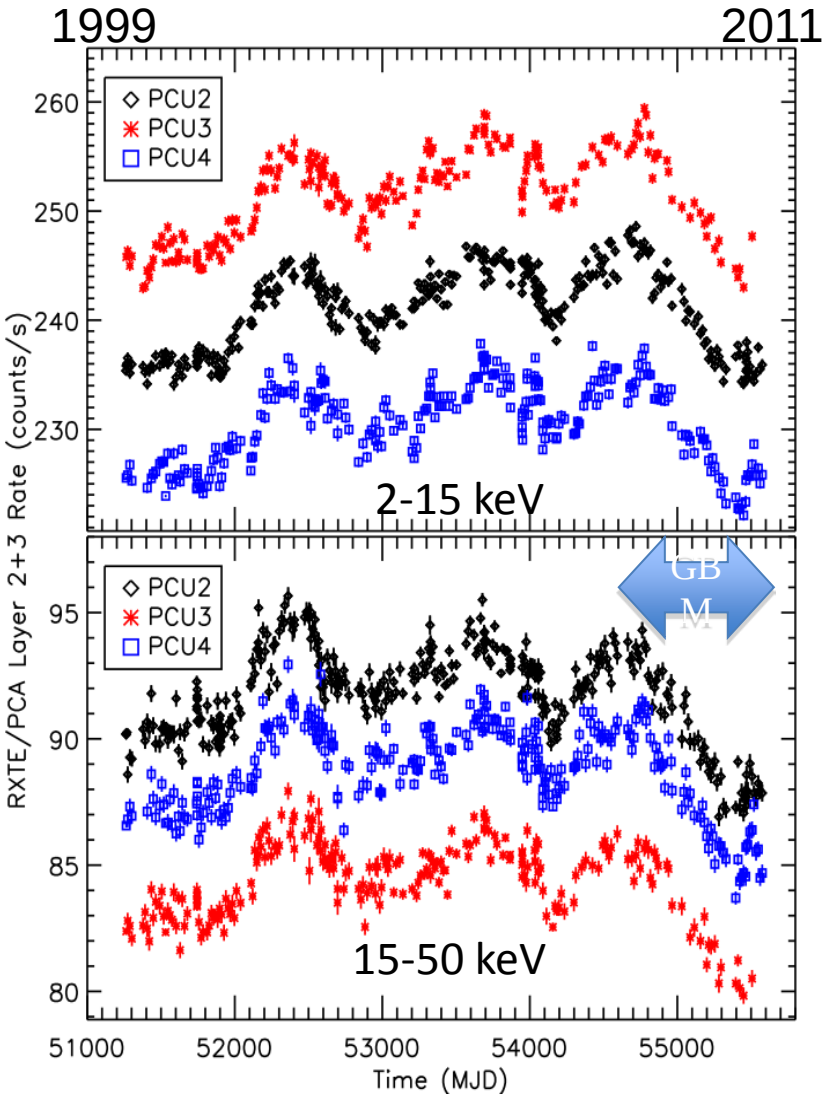
Instrument response and calibration is stable over the observation period



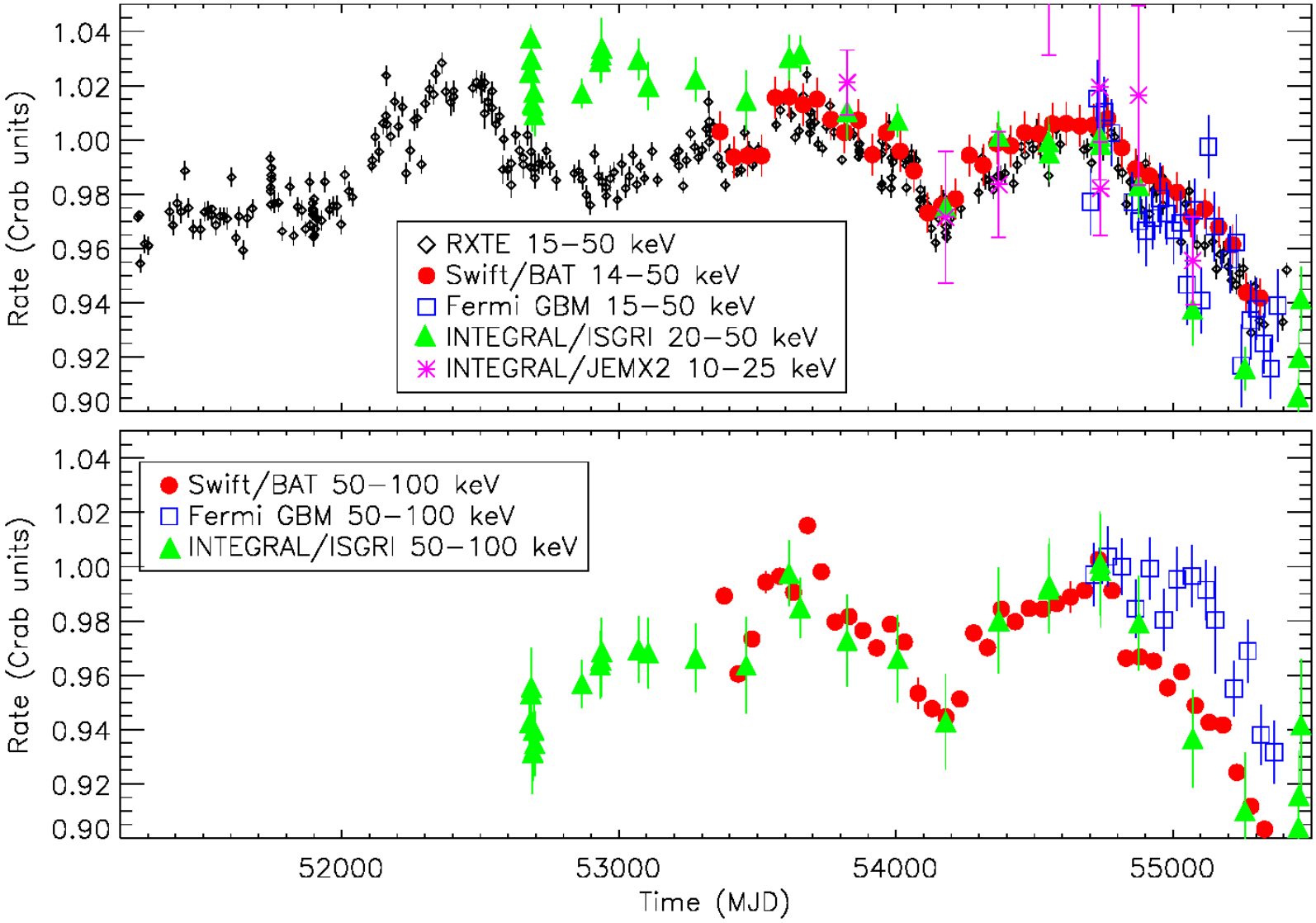
Wilson-Hodge et al., 2011, ApJ, 727 L40

Confirmation from RXTE PCA

- Light curves extracted using PCA std 2 data
- Background subtracted and deadtime corrected
- Corrected for known time dependence of response
- Selected layers 2+3
- Variations of 5.1±0.2% (2-15 keV) and 6.8±0.3% (15-50 keV) visible from MJD 54690-55435 in all 3 PCUs
- Flattening/increase since summer 2010



Confirmation from Swift and INTEGRAL



JEM-X contribution

JEM-X is not well suited to this type of long term monitoring due the significant time drift of severa detector parameters.

Despite these shortcomings the main features of the Crab variabi-lity are visible also in the JEM-X data when the ad-hoc time slope correction in j_ima_iros is disabled.

The knowledge of the time dependent Crab flux will be a valuable input to the future calibration of the JEM-X sensitivity.