INTEGRAL

IBIS TEAM

IUG meeting

ESTEC – 2010 Dicember 16th

The overall status of IBIS is nominal

The team duties include:

- **Implement the Change Request for Instrument Operation and Configuration**
- **Procedure**
- **TLM packets**
- **Scientific Mode**
- **Parameters set-up an d monitoring**
- **Anomalies**
- **Special case Instrument configuration**
- **Data base maintenance inputs**
- **Redundant Unit**
- **Simulated test before implementing on-board changes at Roma clean room**
- **ISGRI Context table**

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Latest news:

129 packets/cycle from 2010-10-25 onwards because of the new TLM allocation for Jem-X, 2 packets less than before for IBIS

Anomaly on MCE5 high counting rate fix via ISGRI Context Table

Veto shows a low background radiation

Crab: new claims for variability at high energies

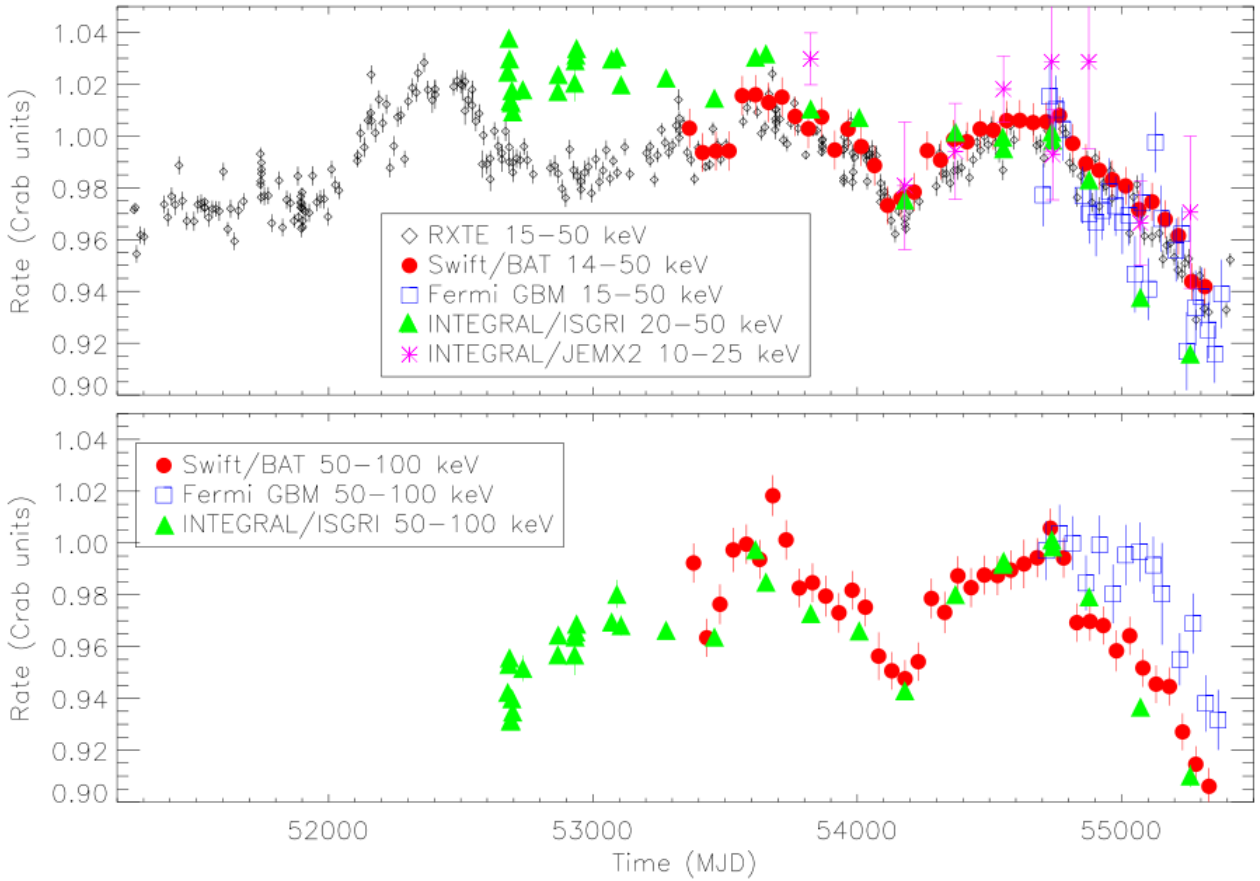
Agile and *Fermi* detect > 100 MeV **transient emission** from the Crab in mid September. No positive detection in the TeV range (VERITAS, MAGIC).

Optical (HST) and X-ray (Chandra) observations reported brightening from a region east of the pulsar and close to the inner ring of the Nebula (ATELs 2903, 2994).
No report of enhanced emission in the hard X-rays

On a **long time scale**, *Fermi*-GBM detects ~7% variability in the hard X-rays (12-500 keV) in ~2 years since mid 2008
Modular variations on a 3 years timescale are observed by Swift/BAT, RXTE/PCA and INTEGRAL/IBIS
Conversely, the pulsed flux decrease is constant and consistent with spin down rate, showing that **the origin is nebular**
(*Wilson-Hodge et al, presented at the recent INTEGRAL Conference*)

X-ray variability from the Crab Nebula

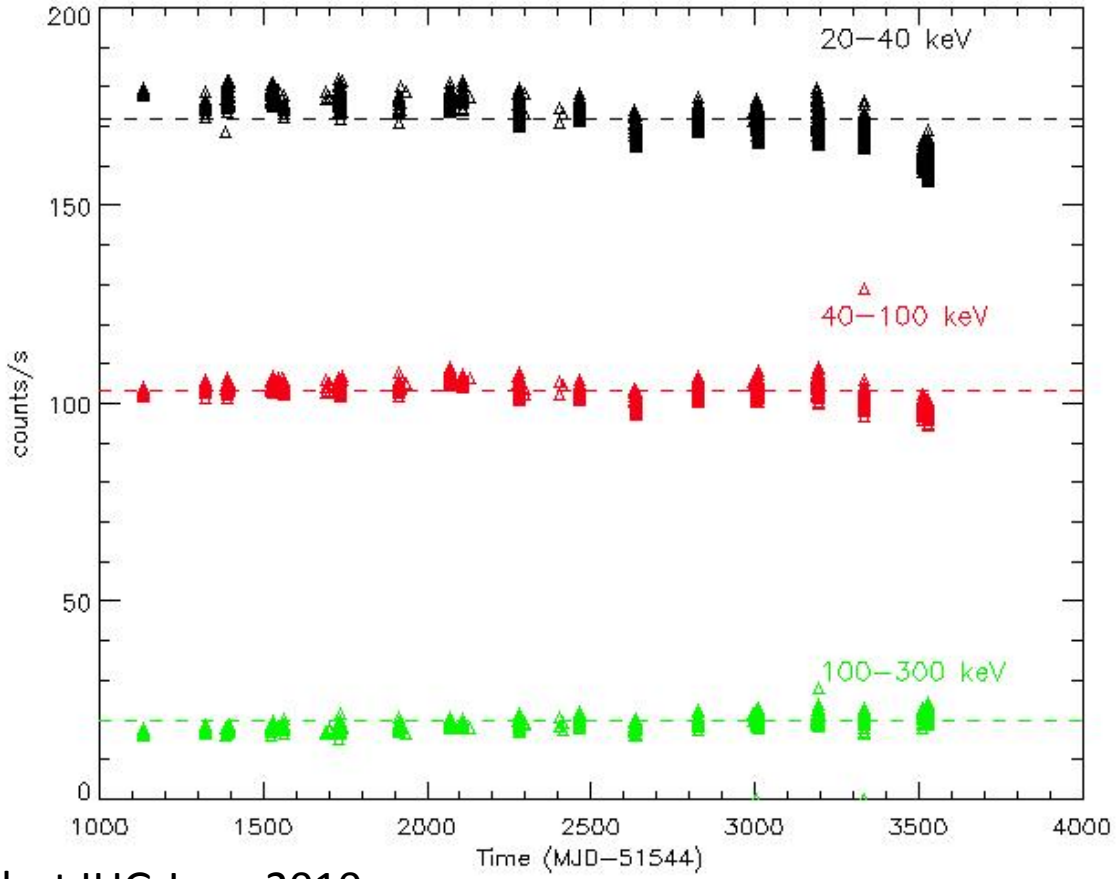
A decade of observations from various instruments



Wilson-Hodge et al., ApJL in press

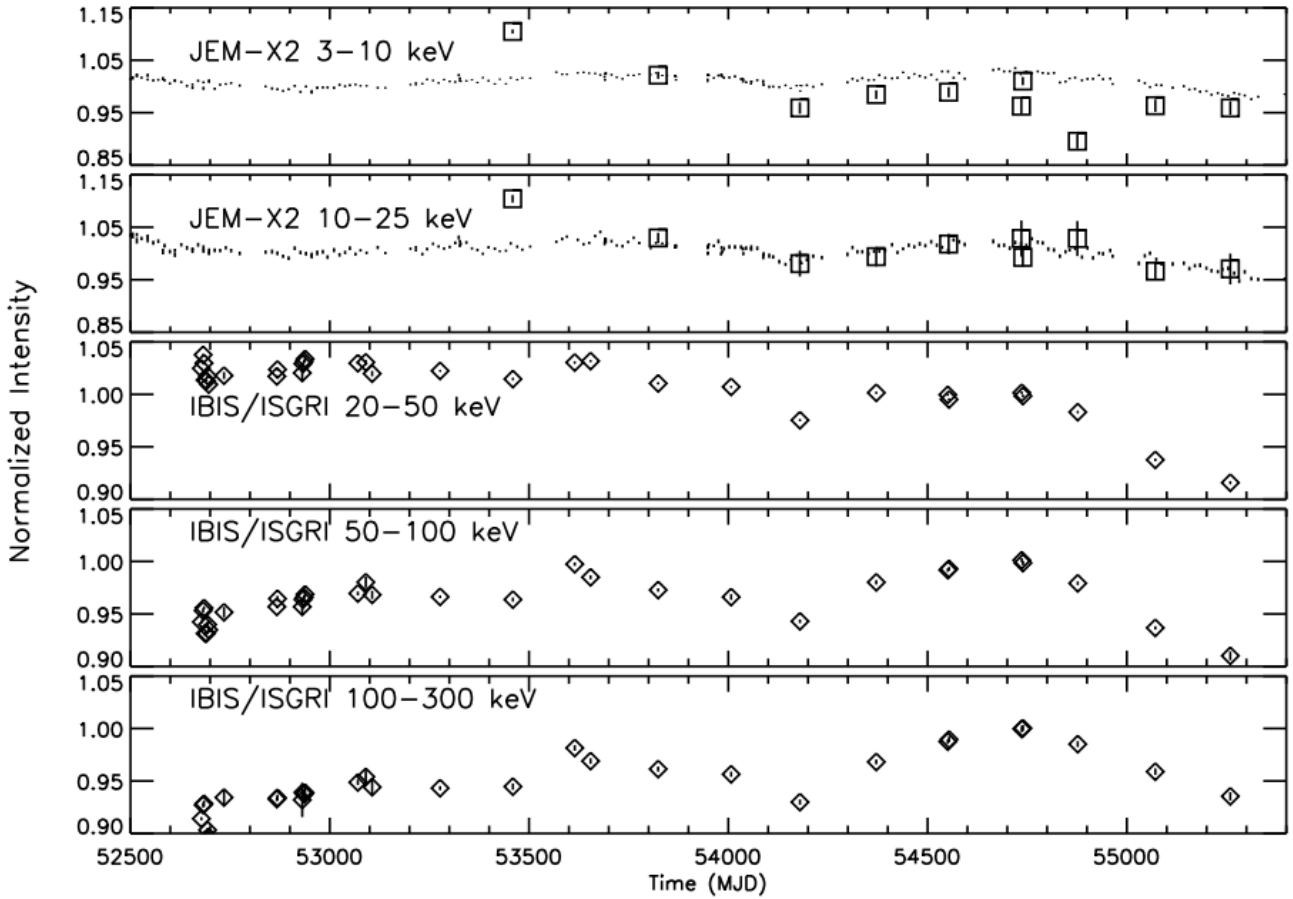
"Old" IBIS Light curves

Previously shown IBIS LC are consistent with the modular variations, and were wrongly ascribed to changes in the instrument effective area



P. Ubertini, last IUG June 2010

Correlated variability IBIS & Jem-X

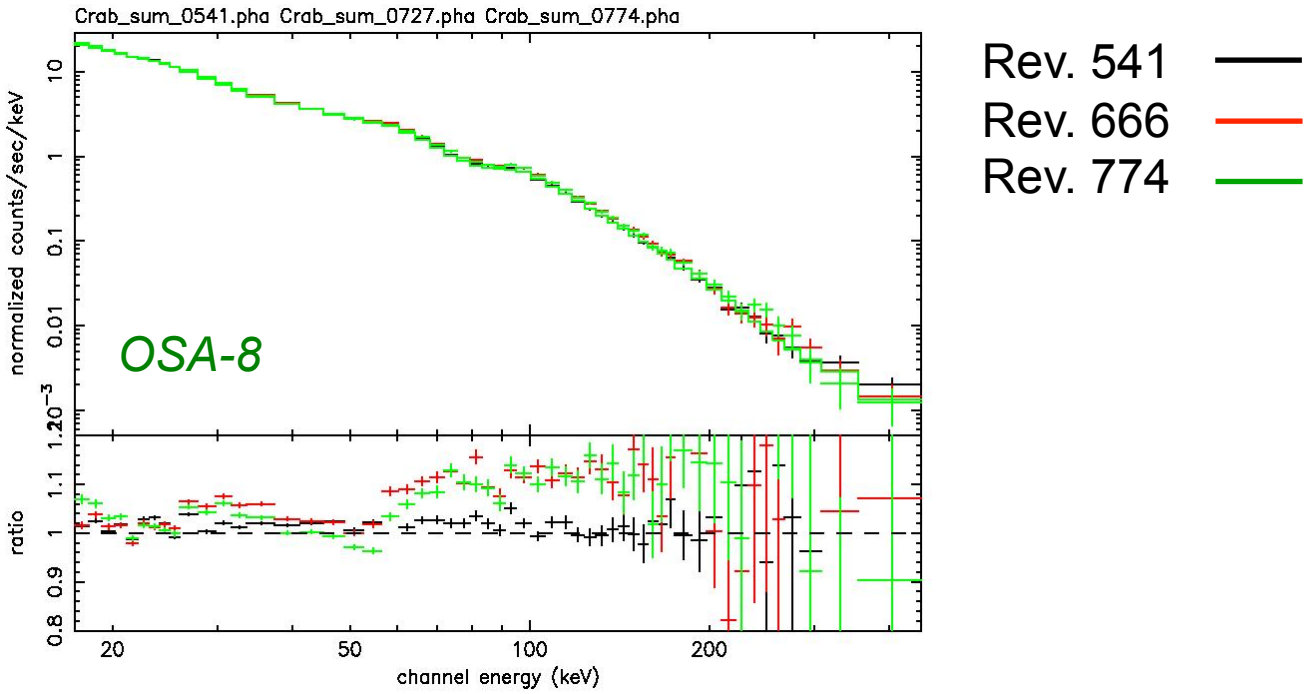


Wilson-Hodge et al., ApJL in press

ISGRI: a "big" change after March 2007 in count rate spectra

The OSA-8 analysis already showed a big change in spectra after rev. 541. Real or instrumental?

Noticeably the rev.541 corresponds to the dip in the hard X-ray LC!



Prospects and Future Work

After the latest results it came clear that the Crab Nebula cannot be further considered as a *standard candle*

We need to reconsider our approach to response calibration

The spectral changes observed in the count rate spectra after Feb 2007 have to be resolved into either systematic or real (see below)

In OSA-9 there are still uncorrected gain residuals with a remarkable change of trend at IJD ~2600 (Feb 2007). The max amplitude of these variations is ~3% in 2.5 years

Comparison with other instrument's results will probably help. A possible theatre is the annual meeting of the IACHEC group, planned in April 2011