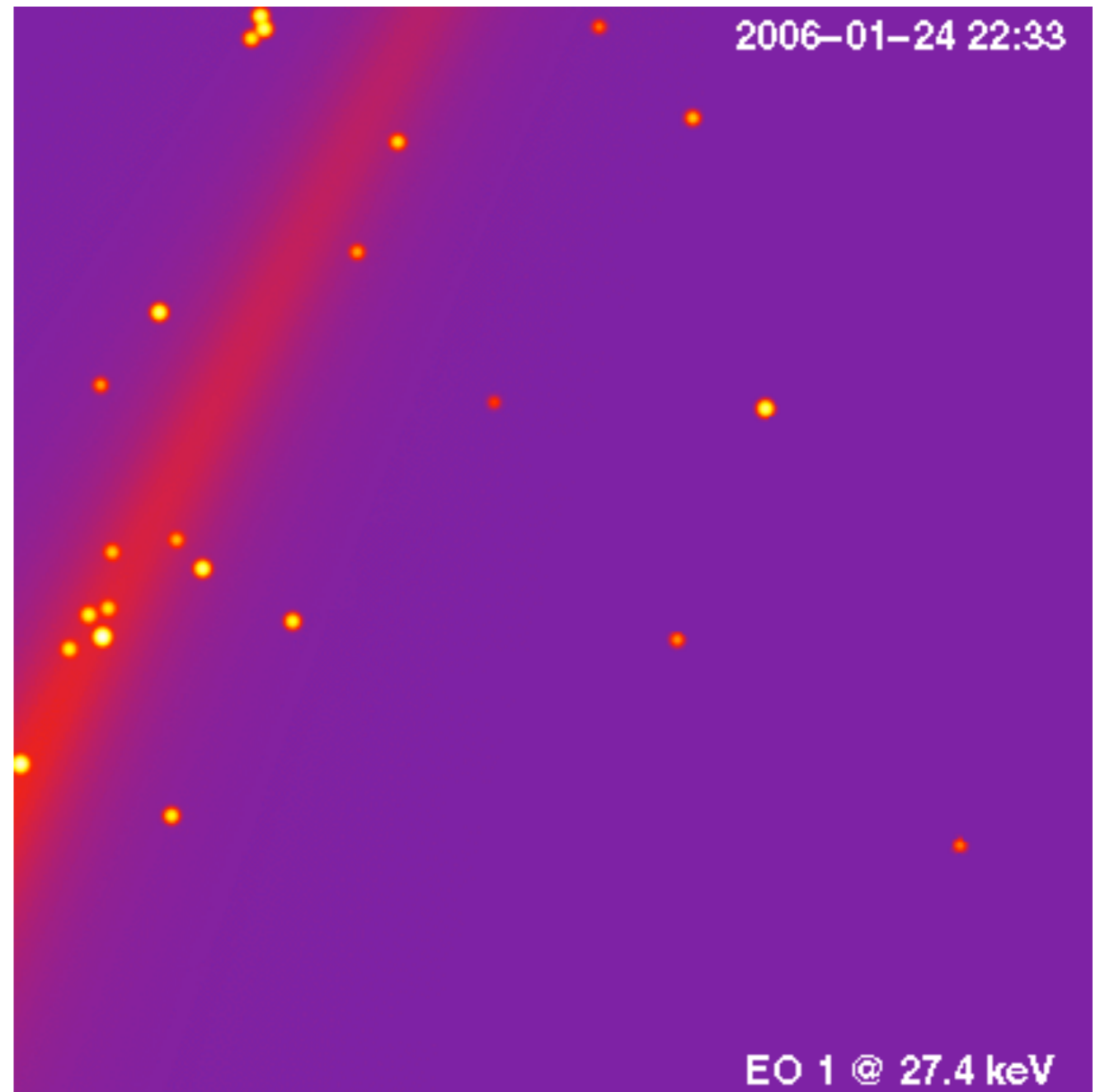
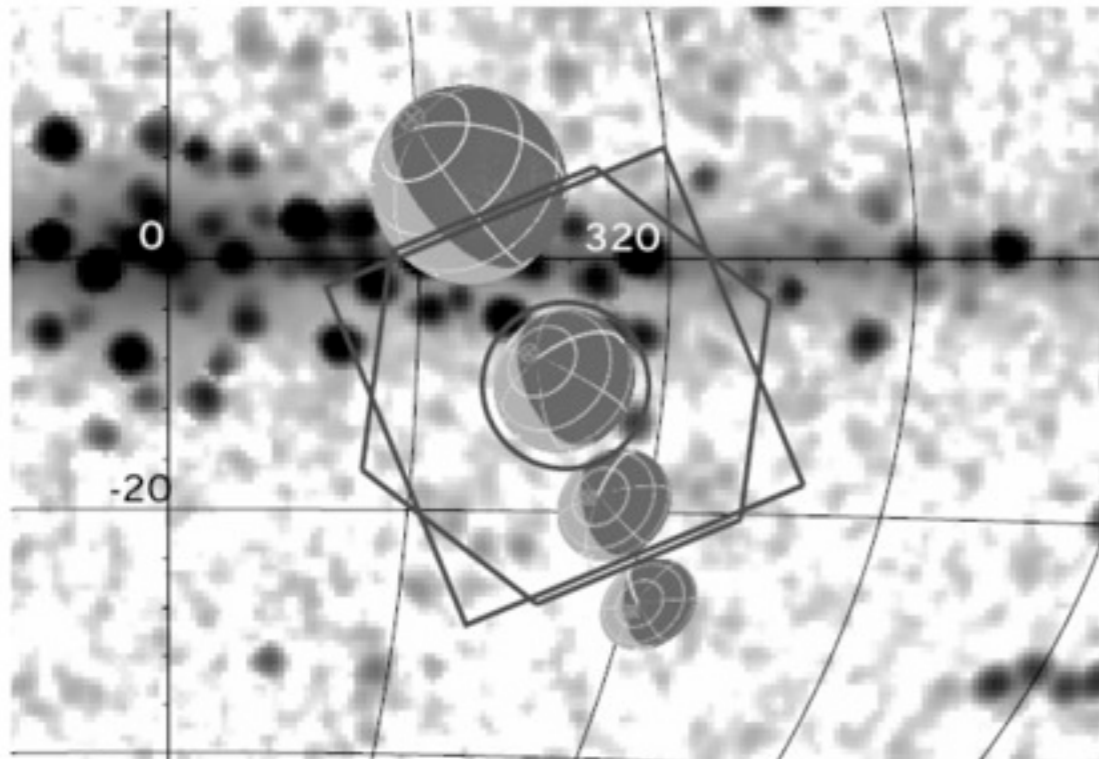


INTEGRAL's Earth Observations

4 similar CXB occultation observations in Jan-Feb 2006

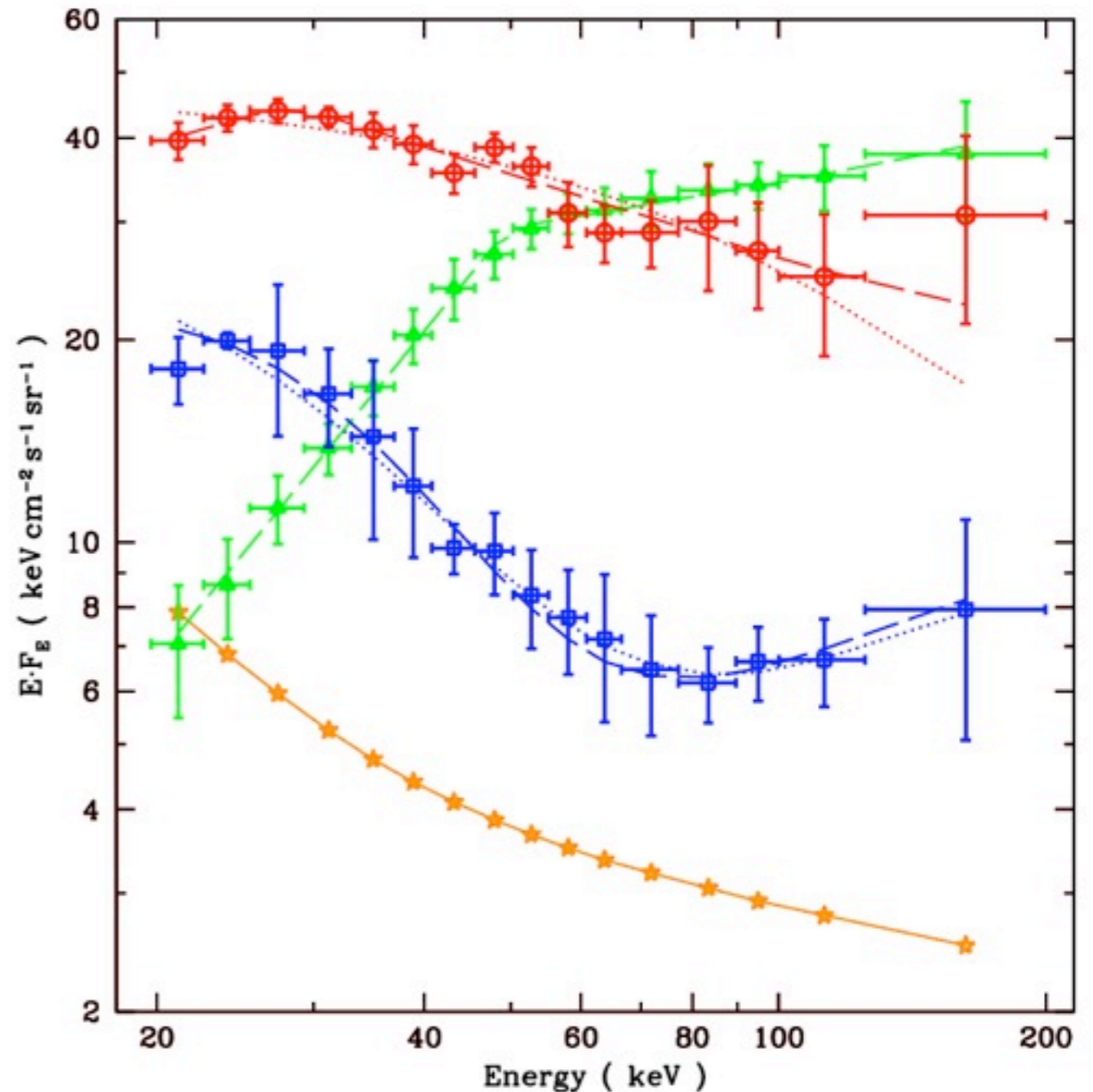


INTEGRAL Earth observation

Spectral shapes could be independently derived for

- Cosmic X-ray background
- Earth emission
- Galactic X-ray background
- Point sources

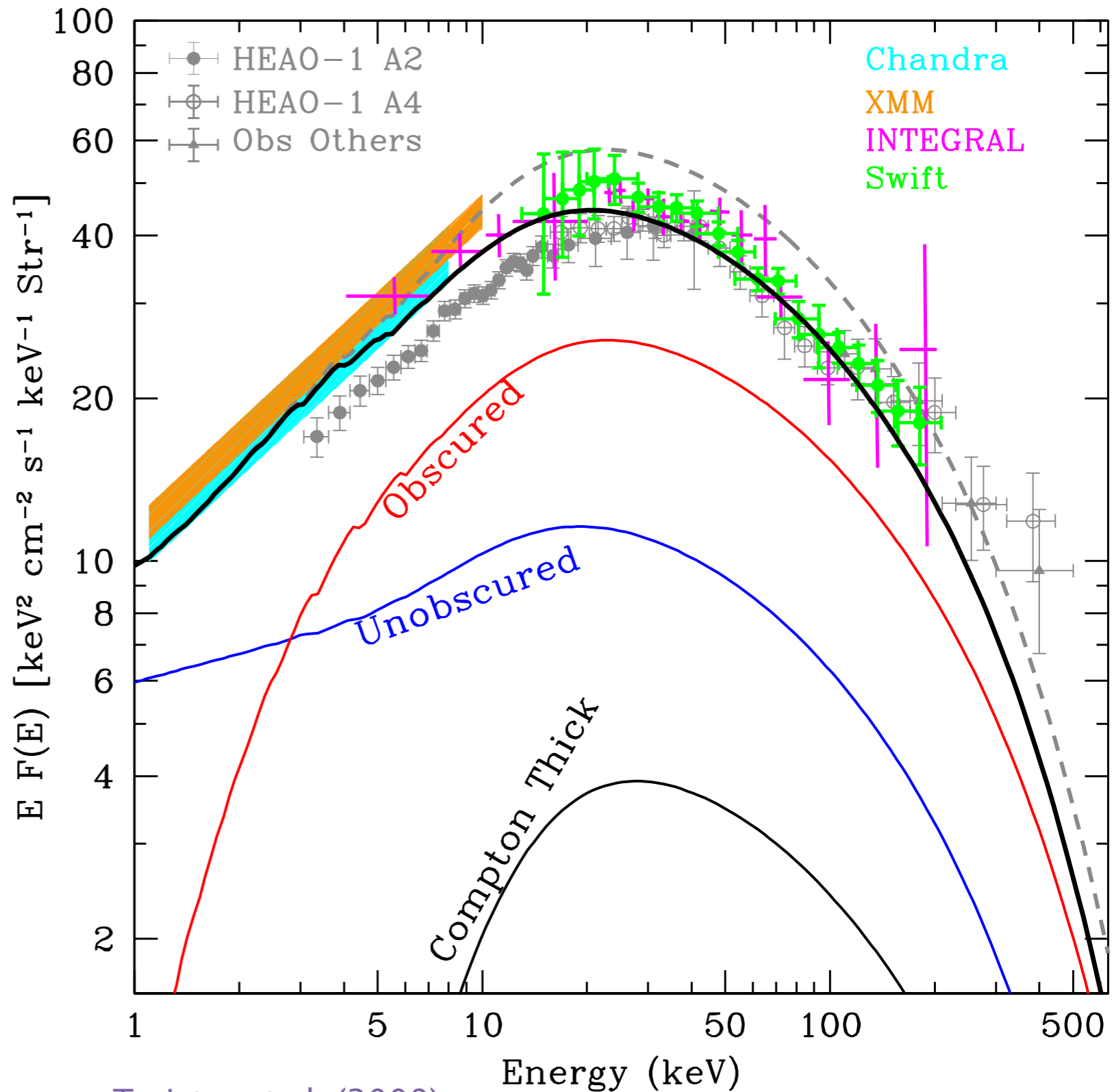
This is the result of 1 day of observation (rev 401-406)



Turler et al 2010

Why do we care about the CXB ?

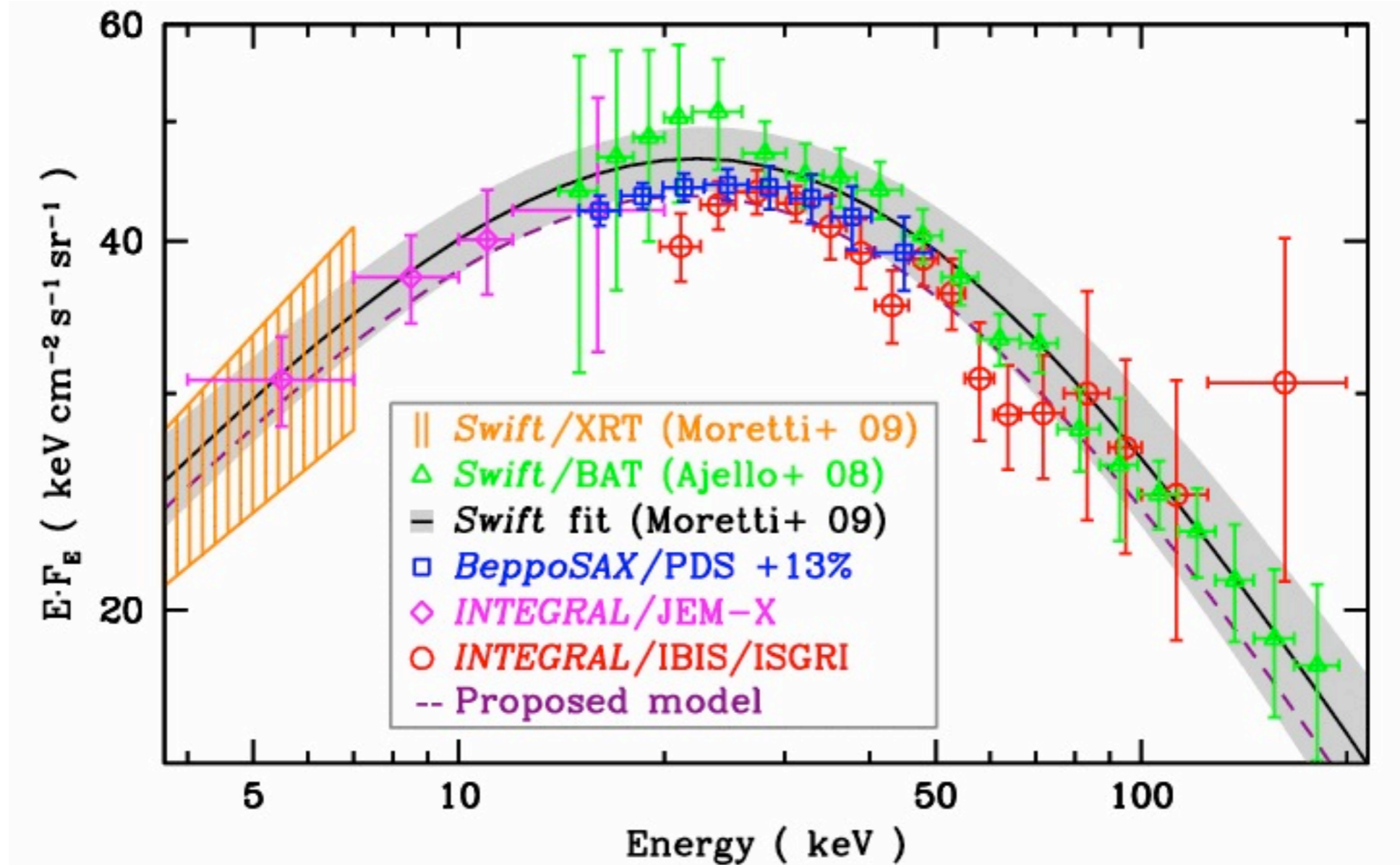
- The CXB is emitted by a population of unresolved AGN
 - ▶ fraction of obscured, unobscured, and Compton-thick AGN
 - ▶ evolution with redshift
- There is a controversy with the CXB normalisation at the level of 10%



Treister et al. (2009)

Cosmic X-ray background

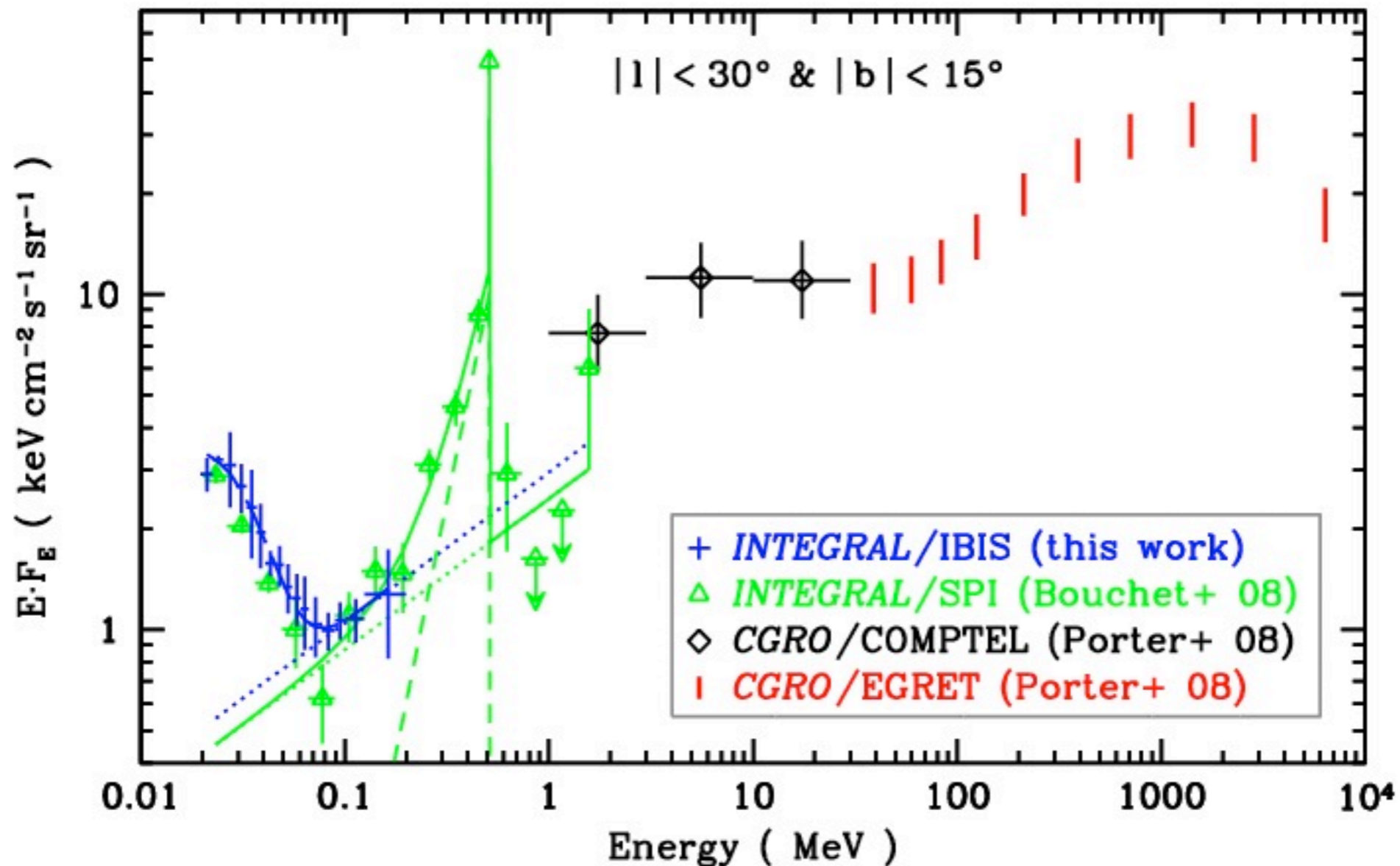
Comparison with other recent CXB measurements



INTEGRAL results are in agreement with HEAO-1,
i.e. we do not confirm a 10% higher intensity.
Error bars can be decreased with more exposure

Galactic ridge emission

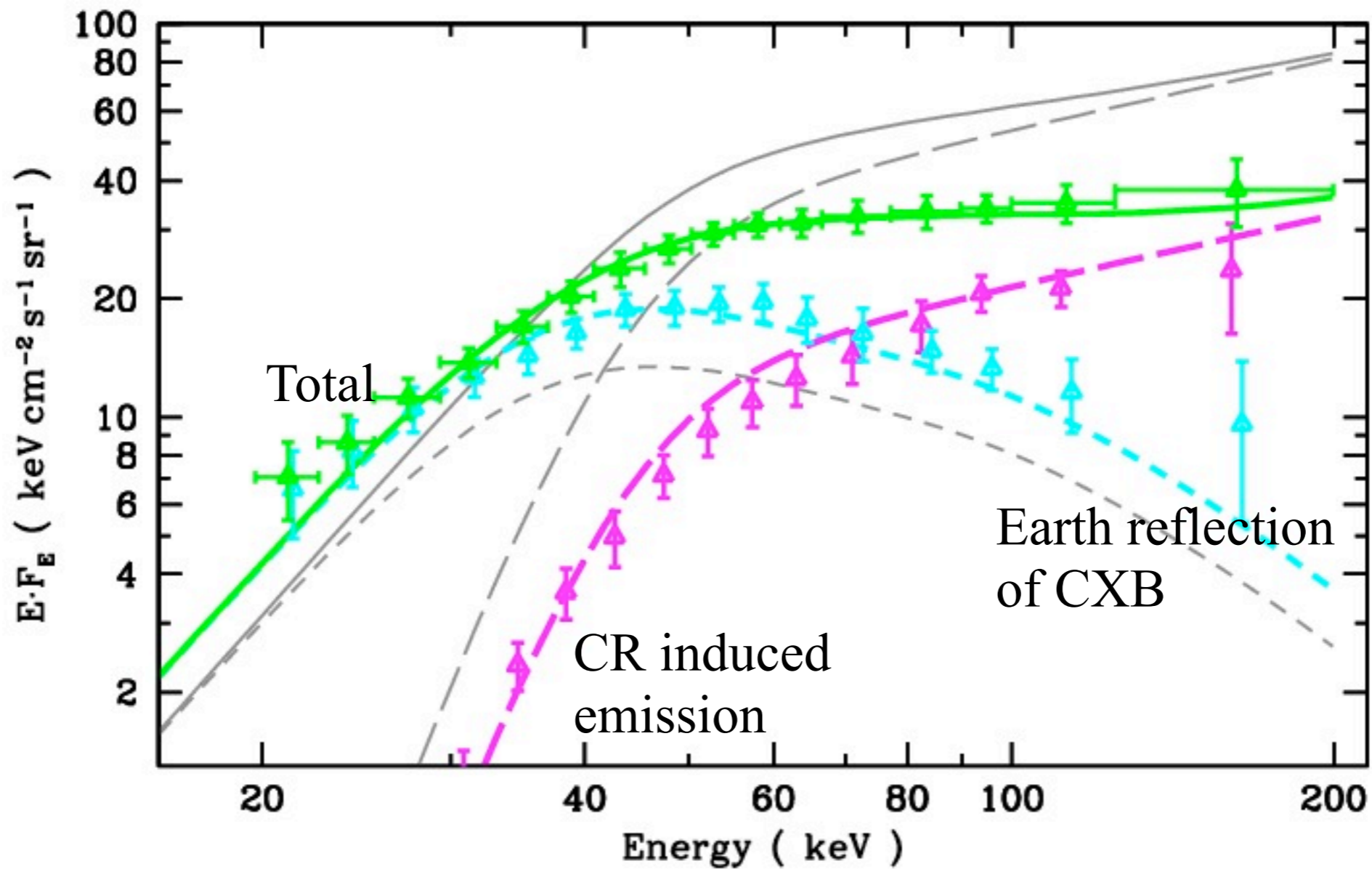
The broad-band view



Average mass of white dwarfs in the Galaxy : $0.6 M_\odot$.
INTEGRAL provides the best galactic ridge spectrum.
We can make it even better -> INTEGRAL legacy

Earth emission

Disentangling CXB reflection & cosmic-ray emission



👉 Important difference in normalization

Status

We derived state-of-the-art hard X-ray spectra of 3 fundamental components:

The Cosmic X-ray Background

The Galactic Ridge emission

The Earth reflection & emission

All this with only ~1 day of INTEGRAL observing time!

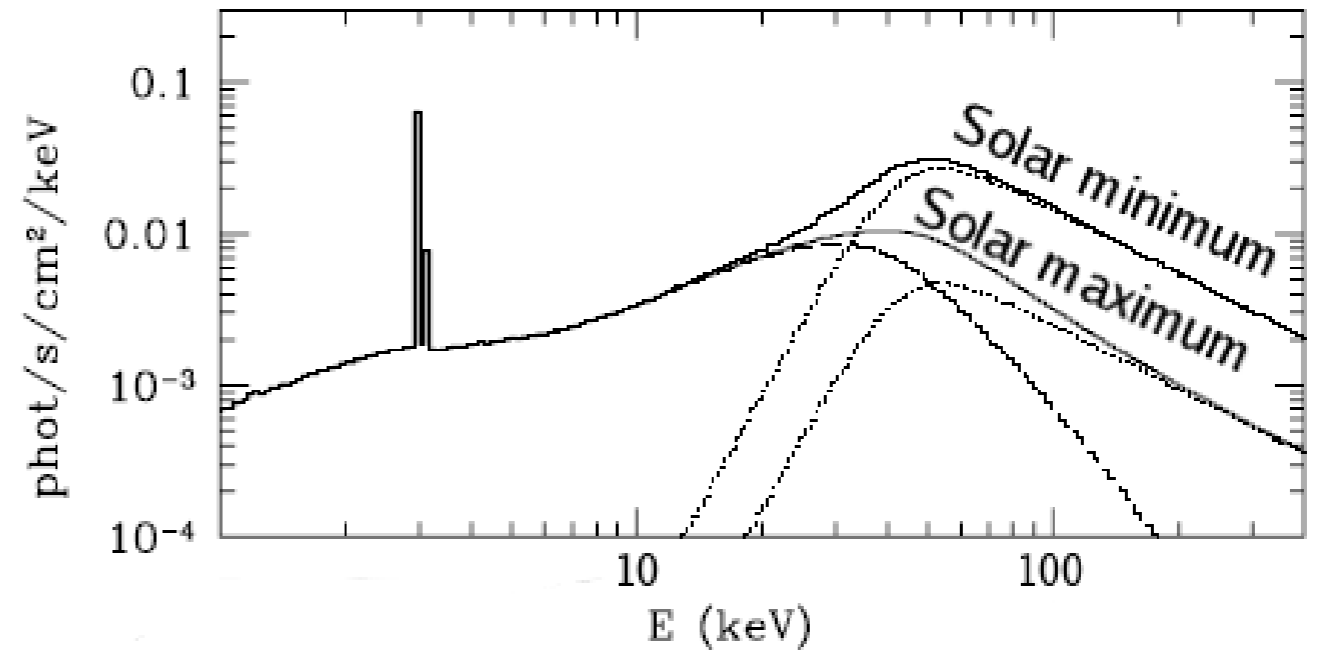
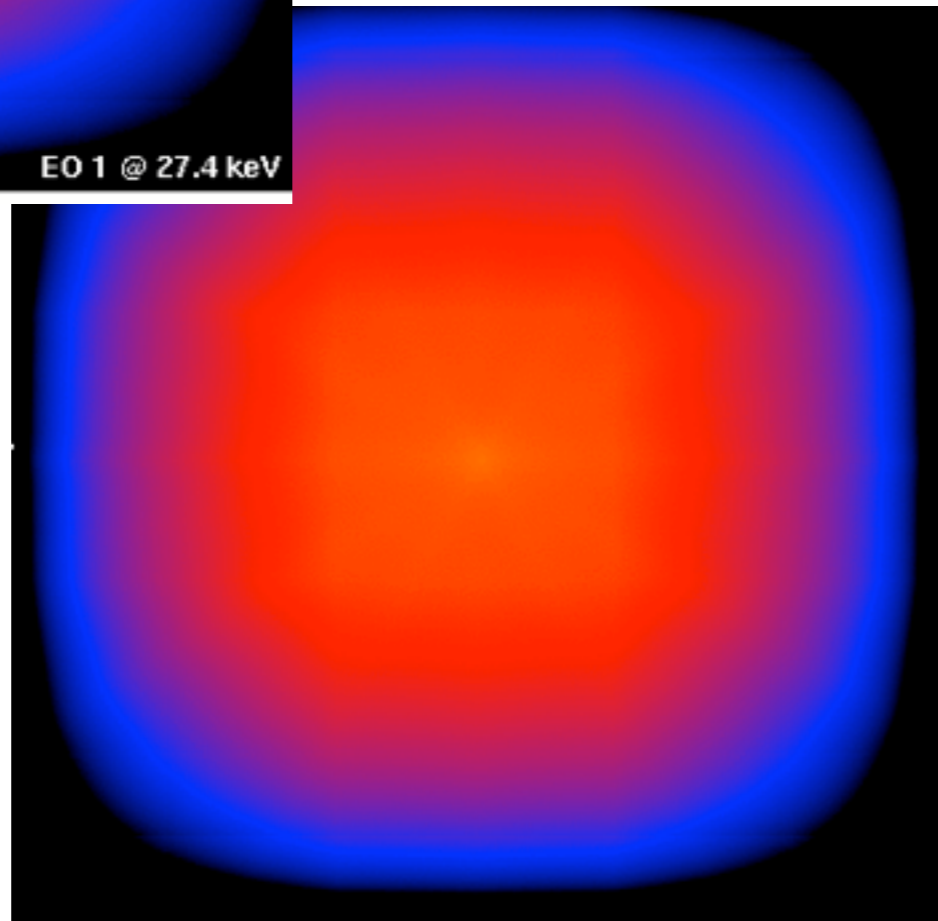
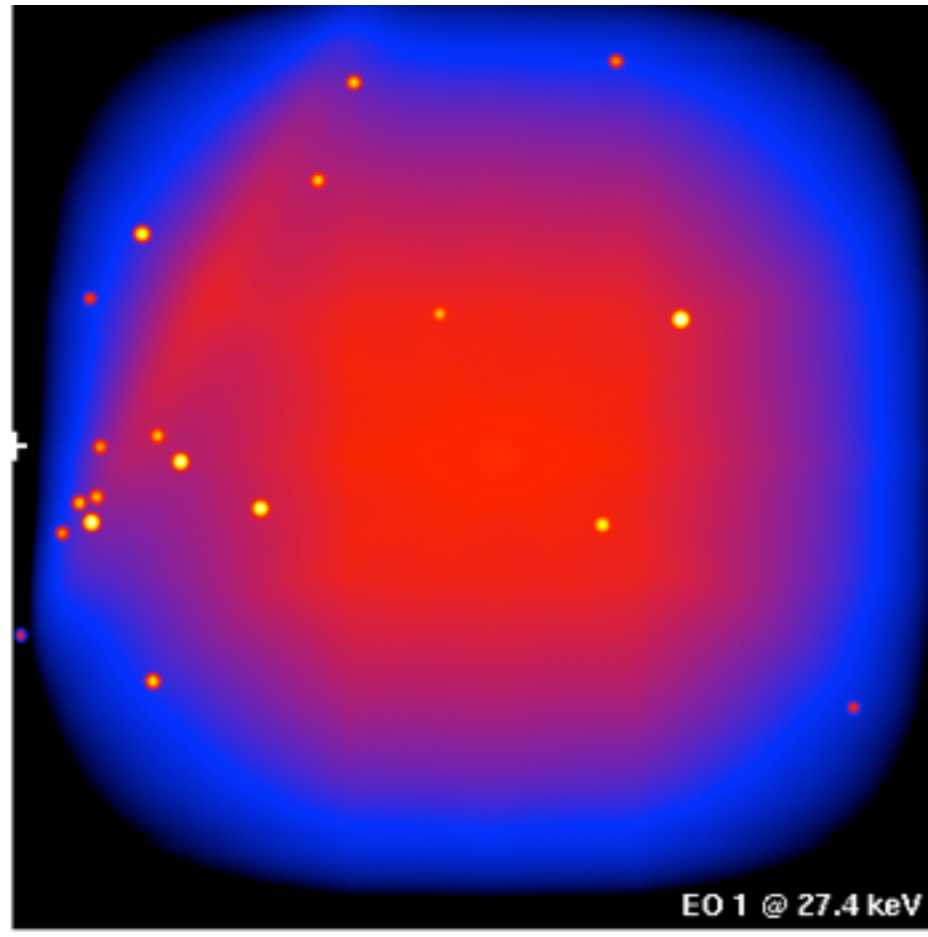
➡ **INTEGRAL CAN DO BETTER**

An AO proposal has been submitted by a large group lead by Roman Krivonos...

...but no decision yet to perform more Earth observations.

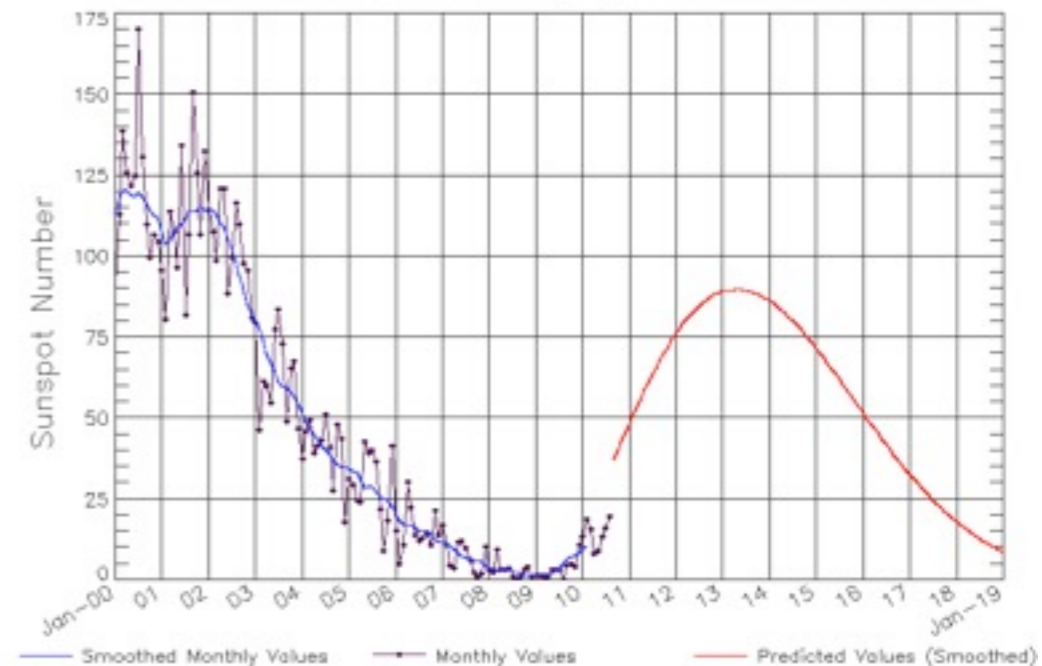
Gain on systematics

by looking away from the Galaxy with less cosmic-rays



Sazonov et al. (2007)

ISES Solar Cycle Sunspot Number Progression
Observed data through Aug 2010



Updated 2010 Sep 7

NOAA/SWPC Boulder, CO USA

Gain on statistics

by a factor 2 with 4x4 new Earth-occultation observations

(i.e. 4 days)

2011

