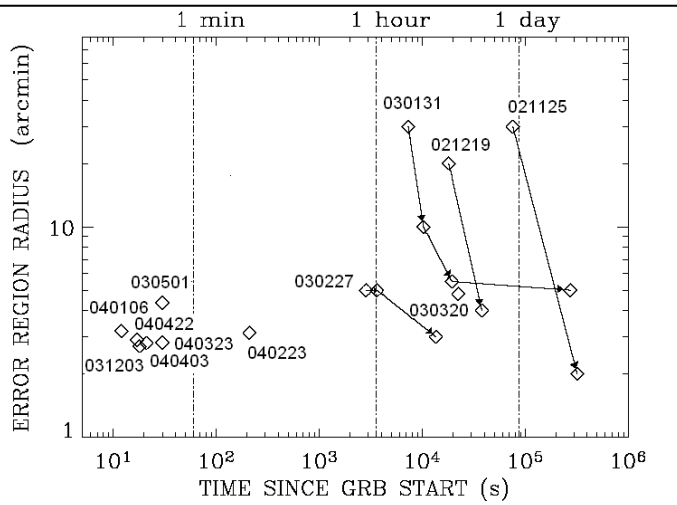
GRBs observed in the FoV of *INTEGRAL*

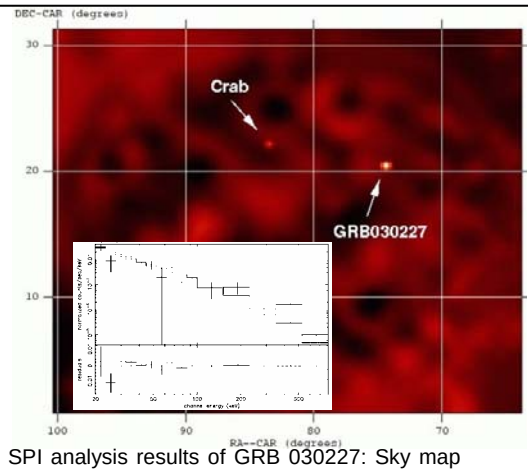
Since the launch of ESA's gamma-ray mission *INTEGRAL* in October 2002, 16 gamma-ray bursts (GRBs) were detected in the field of view (FoV) of both main instruments, the imager IBIS and the spectrometer SPI by Sept. 15, 2004. In all cases the primary location was obtained by IBIS and an alert was distributed to the scientific community by the *INTEGRAL* burst alert system for rapid follow-up observations. The localizations, peak fluxes, fluences and spectral shapes obtained with SPI confirmed the IBIS results. One of the last GRBs, the X-ray rich GRB040812, was for the first time also detected in the FoV of *INTEGRAL*'s X-ray monitor JEM-X. In 6 cases an X-ray and/or optical/radio afterglow was detected by ground-based telescopes or X-ray satellites.



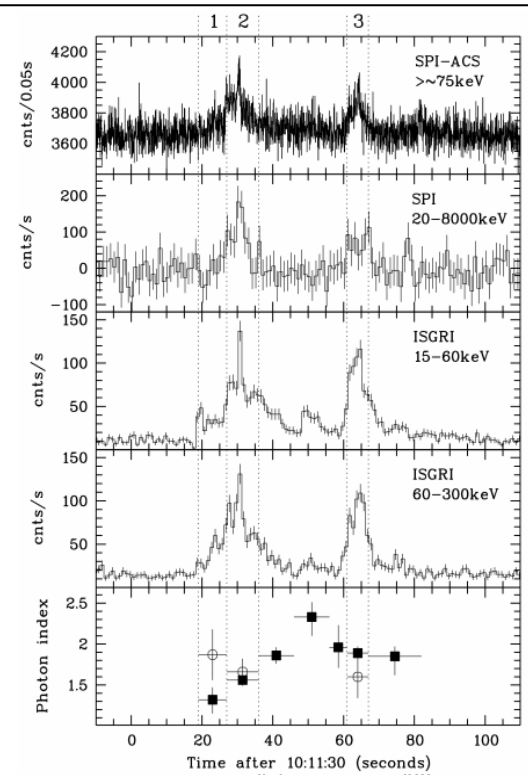
Accuracy versus time delay for the first 12 GRBs localized by IBAS. The arrows indicate the improvement of the burst location with time for the first four GRBs.

IBAS is able to provide error regions with radii as small as 3 arcminutes (90% c.l.) within a few tens of seconds of the GRB start. With this capability it is possible to catch the afterglow like for GRB 031203, which turned out to be a GRB with unusually low luminosity. This discovery suggests that an entire population of sub-energetic gamma-ray bursts, intermediate between normal gamma-ray bursts and supernovae, has so far gone unnoticed. GRB 031203 was also the first GRB for which a time-dependent dust-scattered X-ray halo was observed with XMM.

In most cases it was possible to deduce spectra and lightcurves with both main instruments as shown for GRB 030227 and GRB 030320 in the Figures on the right side. Both GRBs show evidence for a hard-to-soft spectral evolution.



SPI analysis results of GRB 030227: Sky map and spectrum



GRB 030320: *INTEGRAL* light curves at diffferent enrgies and evolution of photon index

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