

The Palermo Swift-BAT Hard X-ray Catalogue: results after 54 months of sky survey

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The software

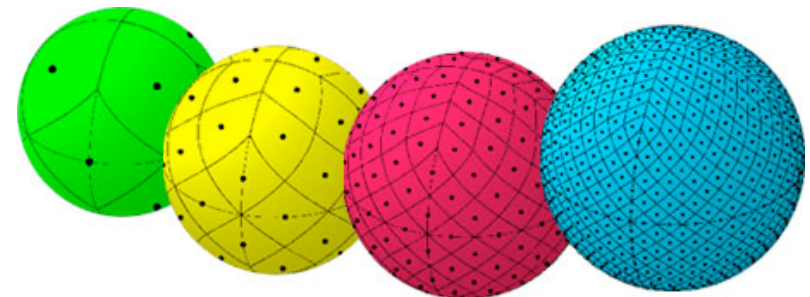
The Swift team at the IASF-Palermo has developed a software for the analysis of data from coded mask telescopes (**BAT and ISGRI**), based on balanced cross-correlation via FFT between shadowgram and the mask pattern and iterative removal of sources. *(54 BAT survey data in 4 days with 8 CPUs)*

Provides on-flight calibration products

e.g. Equalization of the detector pixel array, modelling of the coded mask pattern, boresight correction.

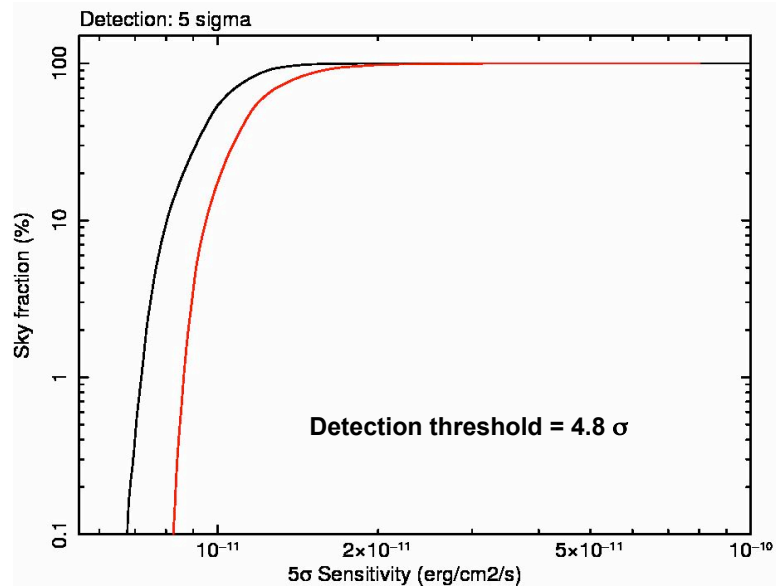
Produces an all-sky mosaic

The mosaic is projected on a sphere using the **HEALPIX** (Hierarchical Equal Area isoLatitude Pixelization) spherical grid.

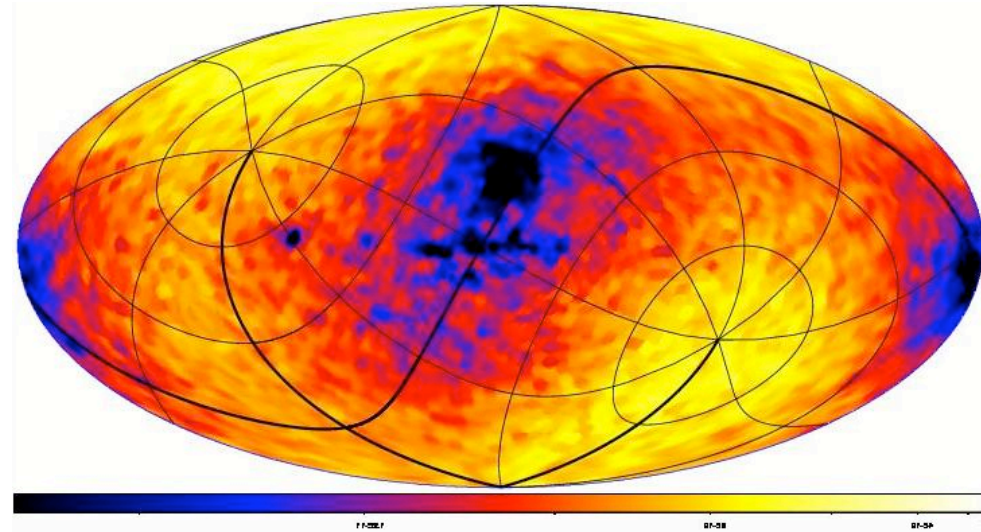


Analysis of 54 months of Swift-BAT survey data

Sky coverage



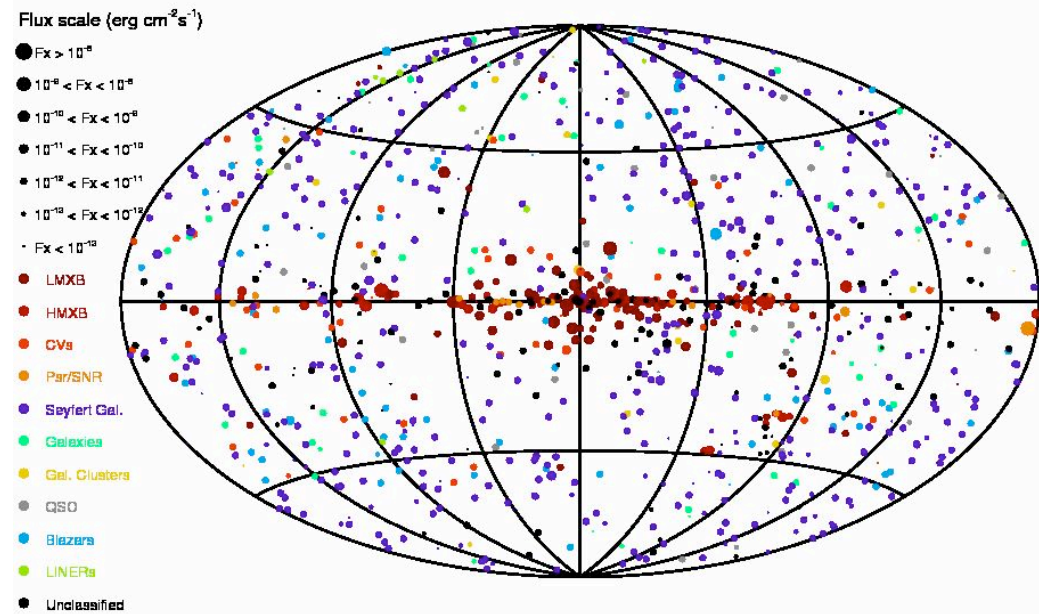
Fraction of the sky covered by the Swift-BAT surveys vs. detection limiting flux.



The coverage is not fully uniform on the sky: the ecliptic plane is characterized by a worse sensitivity because of observing constraints, the galactic center suffers for an additional high contamination from intense galactic sources.

Analysis of 54 months of Swift-BAT survey data

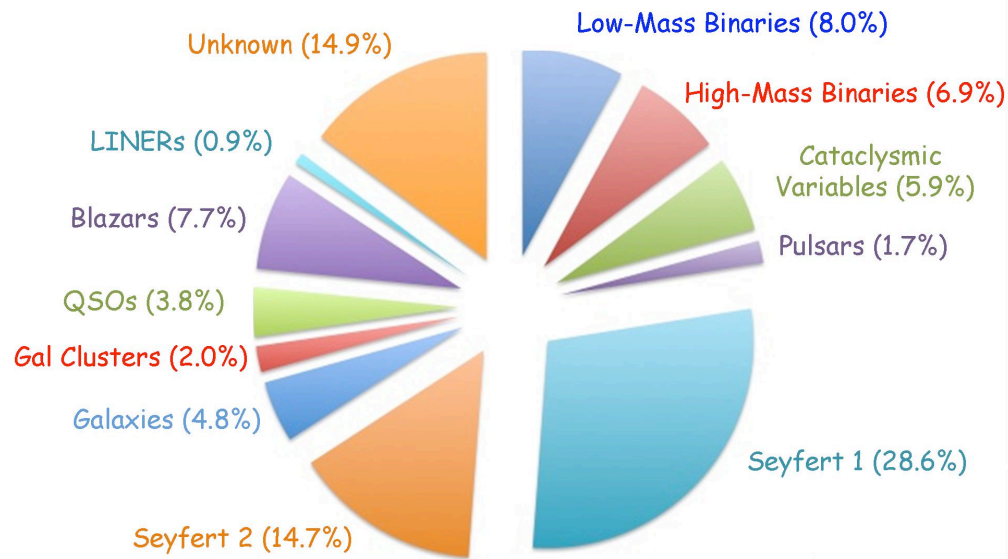
We searched in the 54 months all-sky significance mosaic for excesses above a detection threshold of 4.8σ .



We found ~ 1300 source candidates.

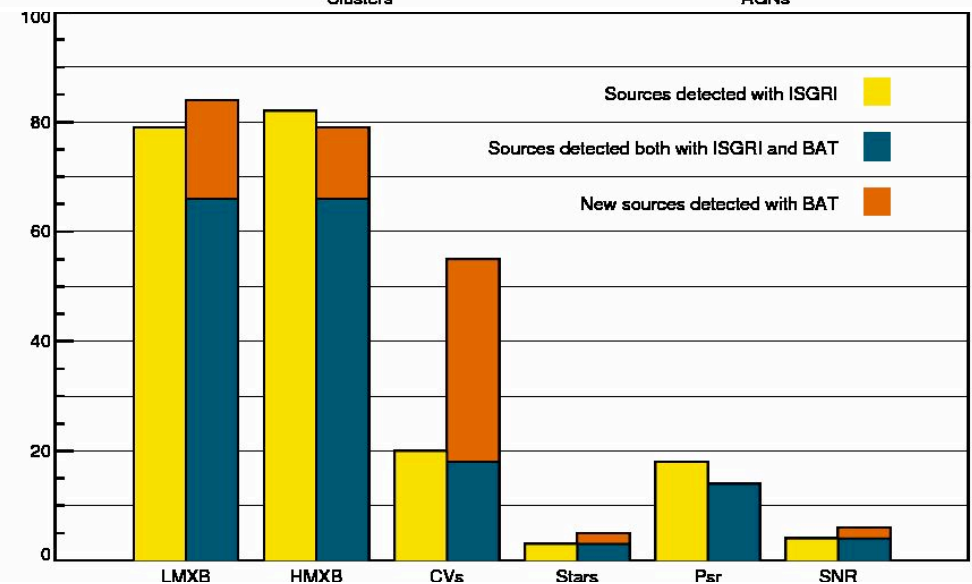
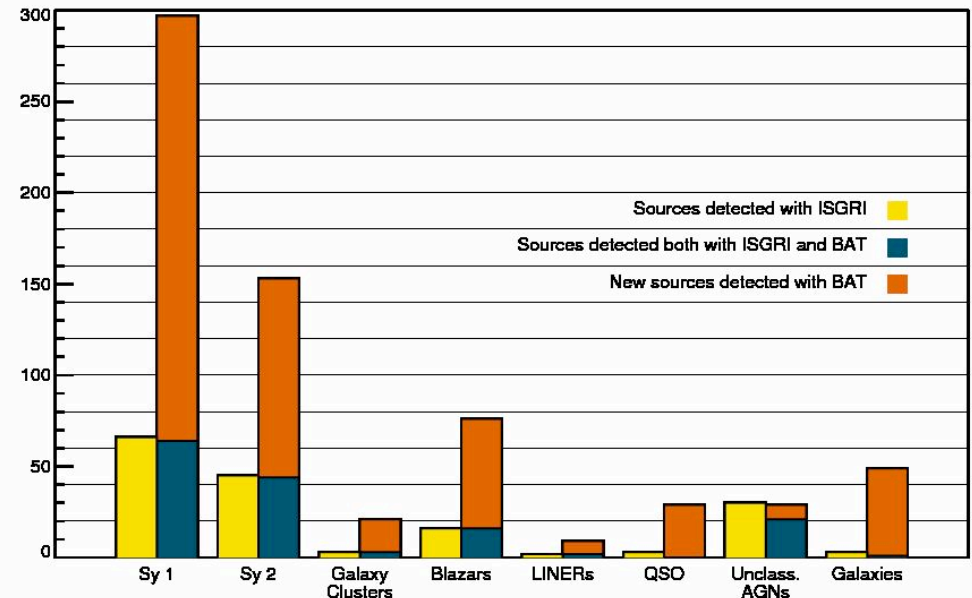
We identified a total of ~ 1100 hard-X-ray emitters

Analysis of 54 months of Swift-BAT survey data



The distribution of the 1050 sources associated with a counterpart, among the different classes

BAT catalogue versus the 3 ISGRI-INTEGRAL catalogue



More Details

<http://bat.ifc.inaf.it> : Software description, catalogue and products.

Papers:

“The Palermo Swift-BAT Hard X-ray Catalogue. I. Methodology.”

Segreto et al. 2009 A&A in publication

“The Palermo Swift-BAT Hard X-ray Catalogue. II. Results after 39 months of sky survey.”

Cusumano et al. 2009 A&A, in publication (arXiv:0906.4788)

See Poster (Cusumano et al.):

“The Palermo Swift-BAT Hard X-ray Catalogue: Results after 54 months of sky survey”