The updated mean fluxes of a list of known AGILE-GRID catalog sources on 2.3 years

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- AGILE Catalogs: past and present
- AGILE catalogs: work in progress
- AGL-ALL source list: processing results

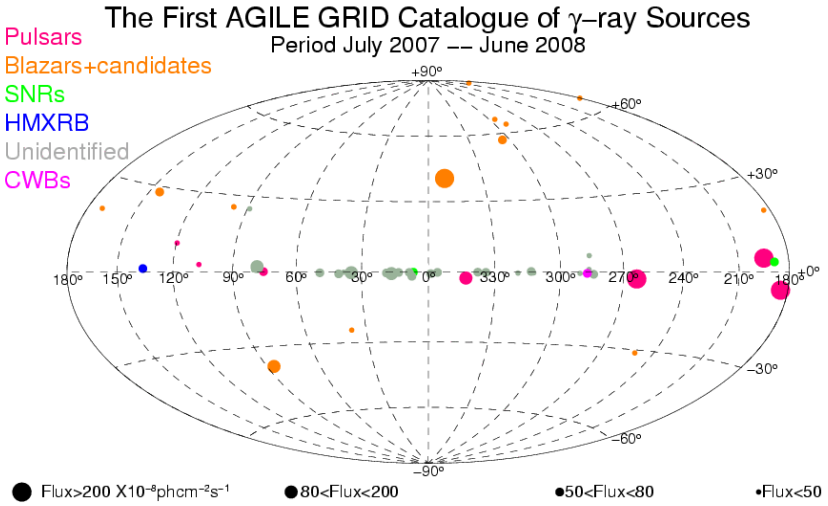
Previous AGILE-GRID CATALOGUES:

- **First AGILE Catalog of High Confidence Gamma-Ray Sources**

(C. Pittori et al., 2009, A&A, 506, 1563)

First year of scientific operations: observations from July 9, 2007 to June 30, 2008: 47 high confidence sources

E> 100 MeV =>**1AGL**



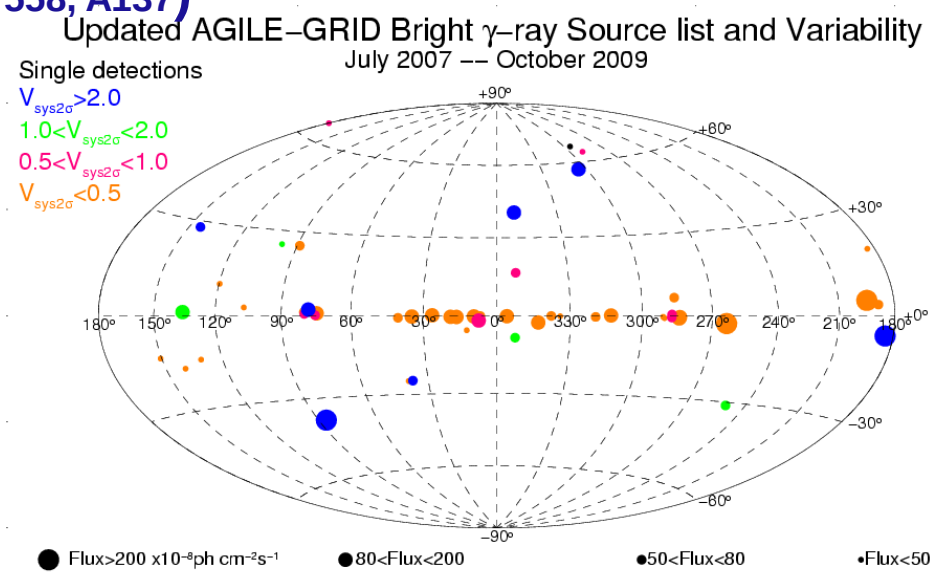
Previous AGILE-GRID CATALOGUES:

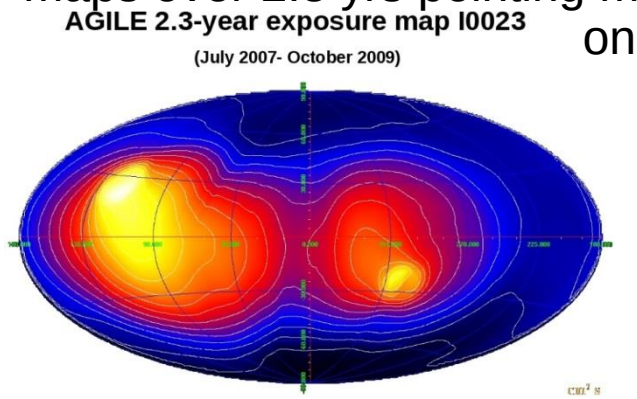
• An updated list of AGILE bright γ-ray sources and their variability in pointing mode (F. Verrecchia et al., 2013, A&A, 558, A137)

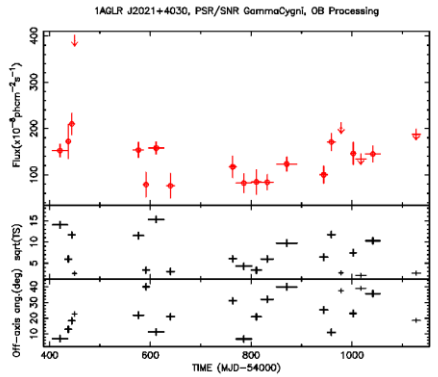
Variability study of an improved source list (54 sources, 15 new) compared to 1AGL on the timescale of the AGILE pointed Observation Blocks (OB) in E > 100 MeV band.
+ 2 new sources in Carina and 1 published in Cygnus regions not detected on OB timescale =>**1AGLR + AGL**

NO updated MEAN Fluxes published!

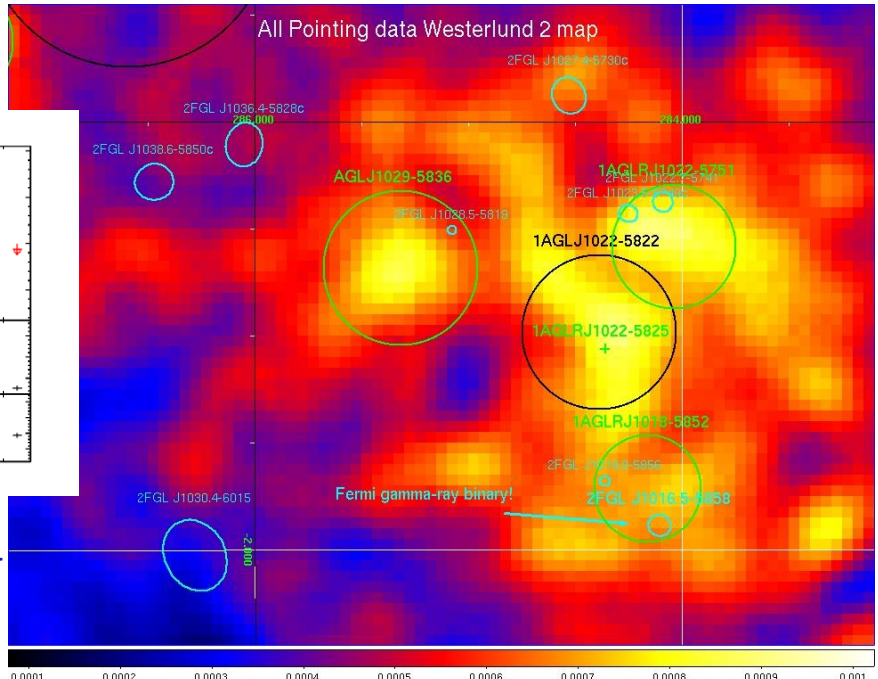
Improvement of the list based on "deep" maps over 2.3 yrs pointing mode data set,and on results after 1AGL







OB time scale light curves →



Refined positioning of some 1AGL sources: complex galactic plane regions, many possible association even with Fermi source for 1AGL/1AGLR

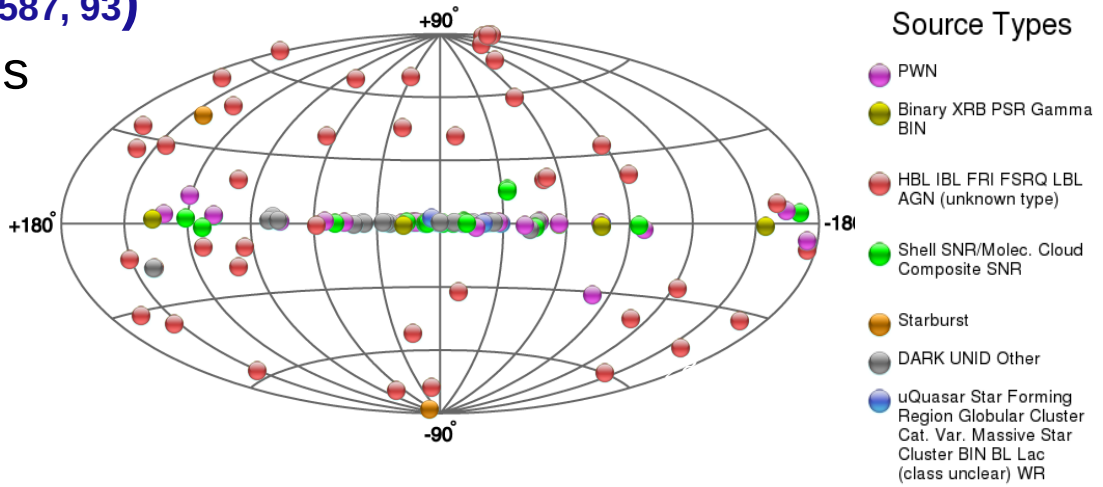
Carina region

Recent Catalogue:

• Search for GeV counterparts of TeV sources with AGILE in pointing mode (A. Rappoldi, et al., 2016, A&A, 587, 93)

Input: 147 Tev source positions taken from the **TeVCat** web based catalog

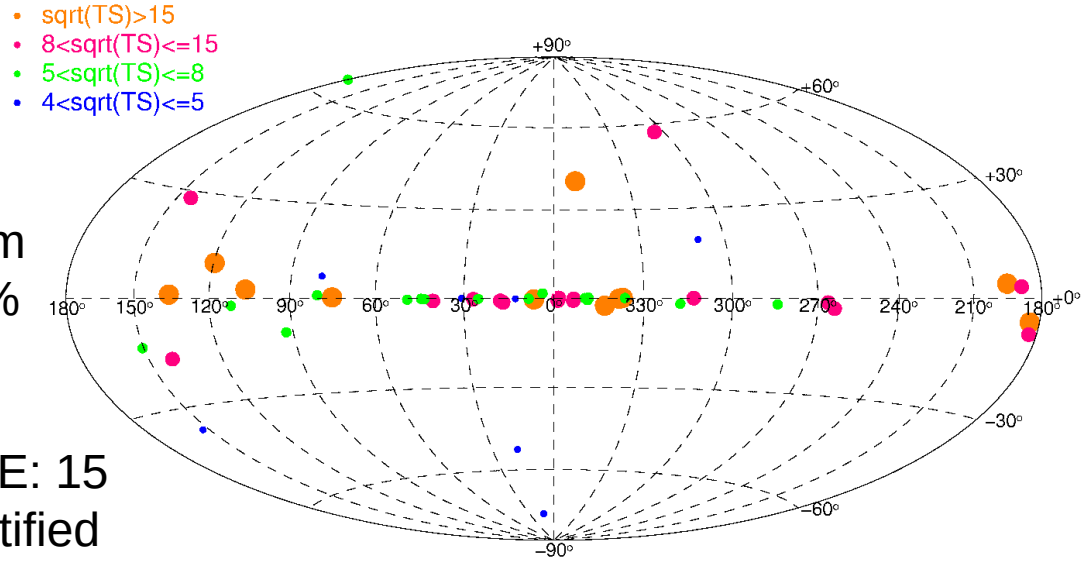
- updated AGILE sw
- updated calibration I0023



Results: known and new sources

In total, **52** TeV sources show a significant *count excess* in the AGILE pointed observation data, about 35% of the original sample, where:

- **26** have a spatial association with already known AGILE sources from 1AGL/1AGLR catalogs (within 95% C.L. *error radius*): 15 galactic, 6 extra-galactic, 5 unassociated
- **26** detections represent new AGILE: 15 galactic, 7 extra-galactic, 4 unidentified =>9 with optimized positions



Future new Catalogue: 2AGL work in progress

• the 2AGL next catalogue in preparation (A. Bulgarelli, et al., to be submitted) on 2.3yrs pointing mode data: long work still in a revision phase

Taking into account the maximum likelihood (ML) paper (Bulgarelli et al. 2012), development of a new complete detection & analysis procedure at IASF-Bologna AGILE group, with ML iterative analysis, and a careful revision of detections in each single HEAlpix centered maps.

ADC: duty for each new catalogue to verify candidate sources=> developed a verification ML iterative procedure to estimate each source ML parameter, including diffuse gamma-ray background, for each candidate

Catalogue procedure:

- AGILE Bologna Team: detection – localization & analysis +revision =>preliminary/partial source list
- AGILE Data Center (ADC @ ASDC):input preliminary list =>ML iterative verification procedure

Preliminary results: various (re)processing runs with increasing number of sources detected, started on the galactic plane only, now almost all sky, ->new calibration released, ->further reanalysis on-going. Currently 236 source (>4σ) but lacking B < 10

The known –ray AGILE sources list: the AGL-ALL

Known AGILE-GRID sources:

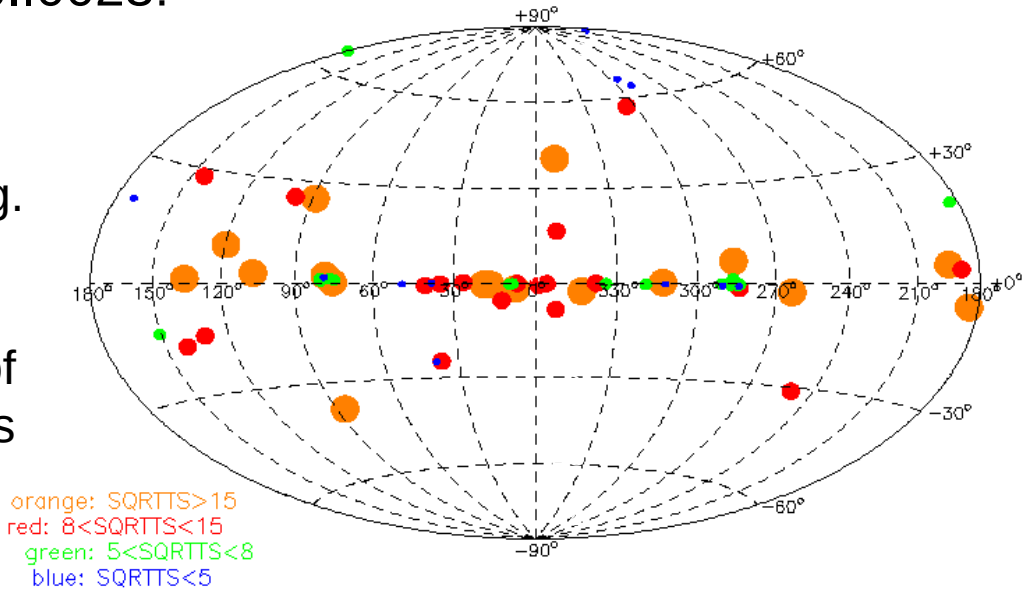
- 54 1AGLR + 8 undetected 1AGL + 2 new AGL (1AGLR paper) +1 in Cyg **=65**
- **9** AGL-TeV sources having a detection with repositioning

=> 74 sources, in the "AGL-ALL" named source list

ADC duty: help and verify catalogs creation, update sources parameters on new SW & Calibration

=>Apply new source detection procedure on AGL-ALL source list to get HOMOGENEOUS results with calib.I0023!

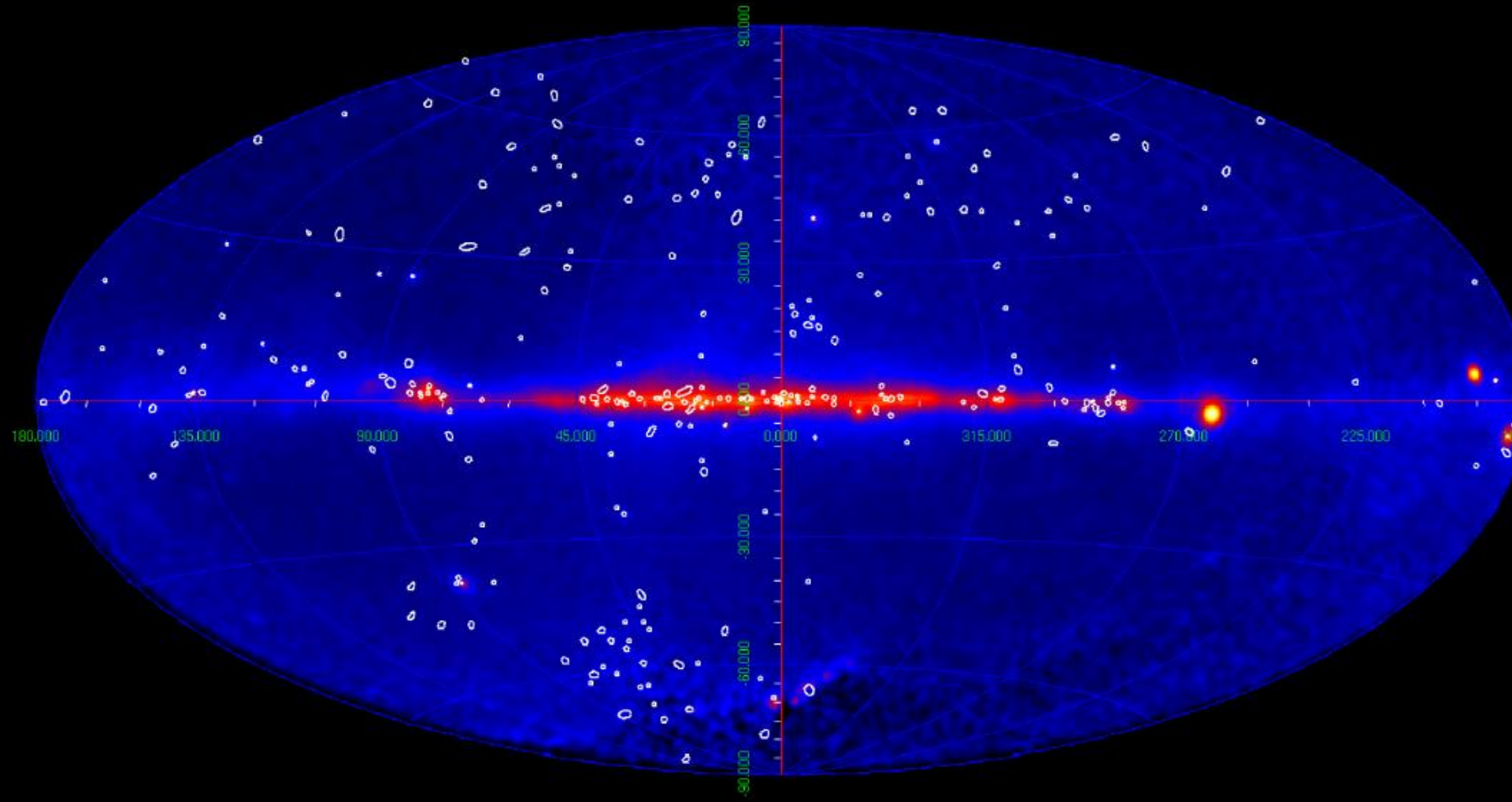
Results: The processing of the 1st 65 known ɣ-ray source sample allowed to obtained 61/65 significant sources (in Fig. we show the Aitoff plot of the complete sample) where 4 sources detected by AGILE-GRID during flares of timescale of weeks, were not significant on the 2.3 yrs maps. Sources not detected are:



1AGL J1222+2851/WComae, observed with a dedicated ToO; sqrt(TS)=2.5, Flux_UL(E>100MeV)=1.6e-07 ph/cm^2/s;

1AGL J1238+0406, transient source of Pacciani et al. 2011, detected in flare during 3C 273 observation; sqrt(TS)=2.2, Flux_UL(E>100MeV)=1.6e-07 ph/cm^2/s; 1AGL J1412-6149, near PSRJ1410-6132/G312.4-0.4; sqrt(TS)=2.4, Flux_UL(E>100MeV)=1.6e-07 ph/cm^2/s; 1AGLJ1815-1732, near PSRJ1815-1738/HESSJ1813-178; sqrt(TS)=2.0, Flux_UL (E > 100 MeV)=1.8e-07 ph/cm^2/s.

asdc
ASI Science Data Center



Thank you