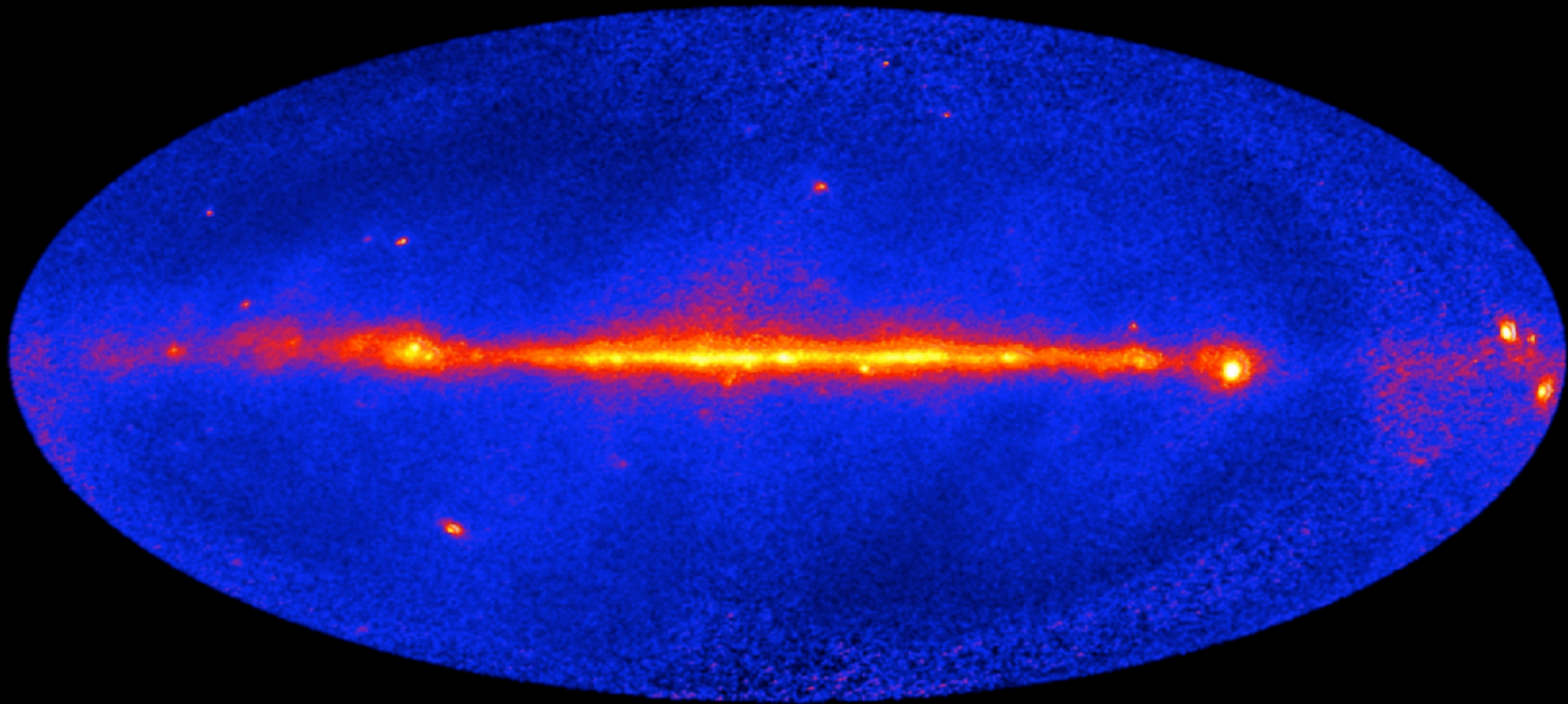# The AGILE Data Center and the First AGILE Catalog

**Carlotta Pittori,** *on behalf of the AGILE Collaboration*
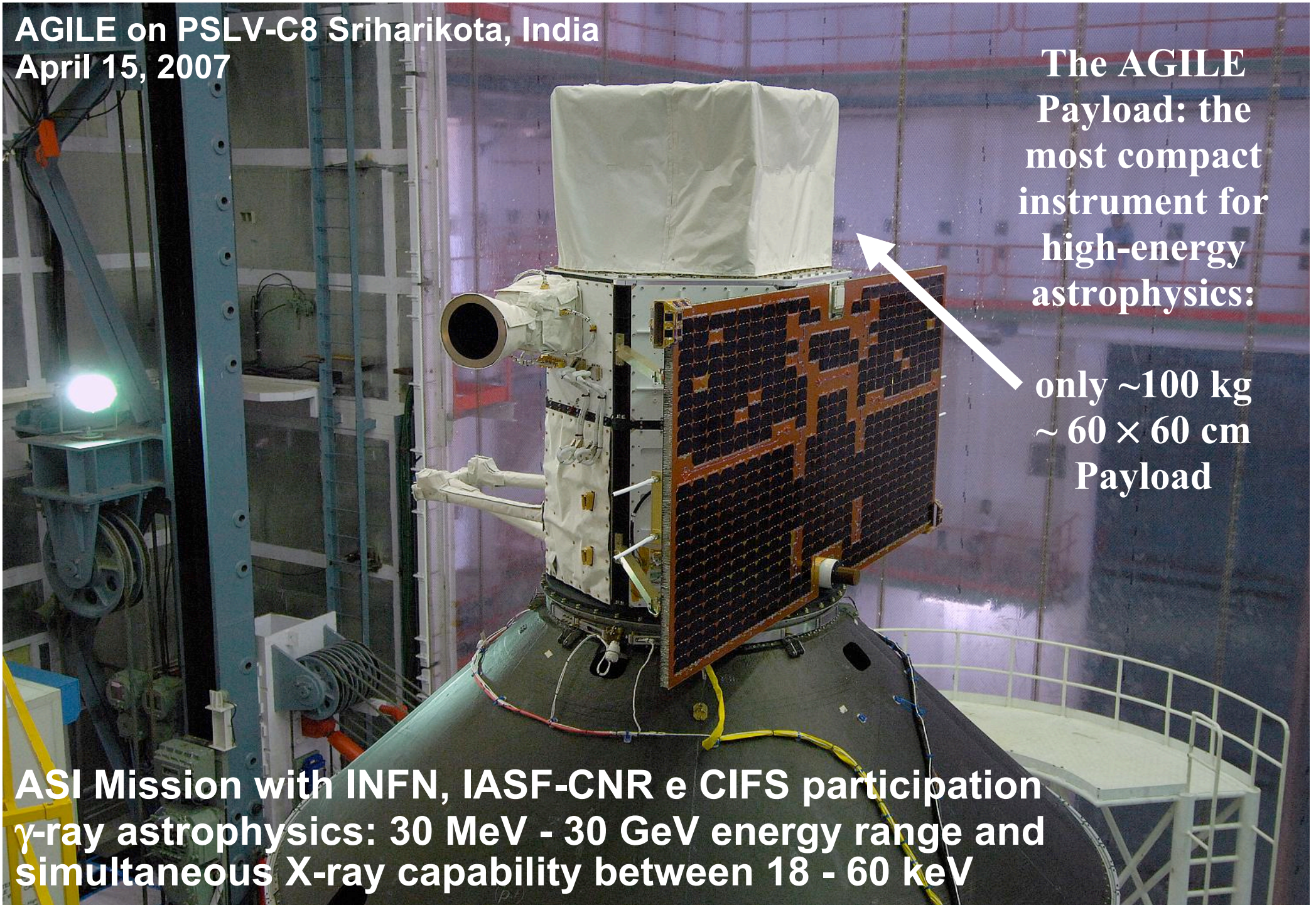
2009 Fermi Symposium
2 - 5 November 2009, Washington

AGILE on PSLV-C8 Sriharikota, India
April 15, 2007

The AGILE Payload: the most compact instrument for high-energy astrophysics:

only ~100 kg
~ $60 \times 60$ cm
Payload

ASI Mission with INFN, IASF-CNR e CIFS participation
$\gamma$-ray astrophysics: 30 MeV - 30 GeV energy range and simultaneous X-ray capability between 18 - 60 keV
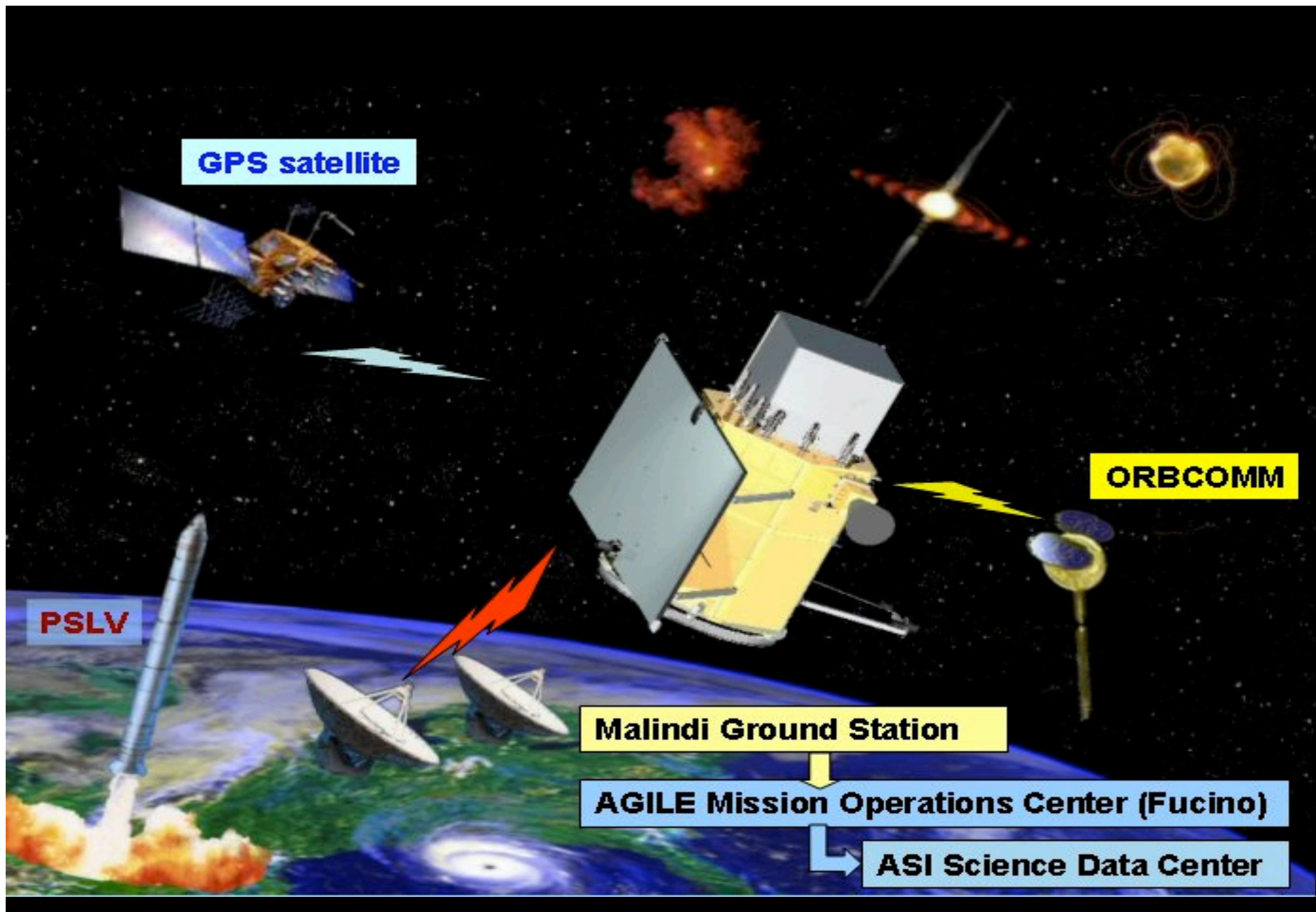
**April 23, 2007: Launch!**

**Equatorial orbit: 550 Km, < 3° inclination angle**

GPS satellite

PSLV
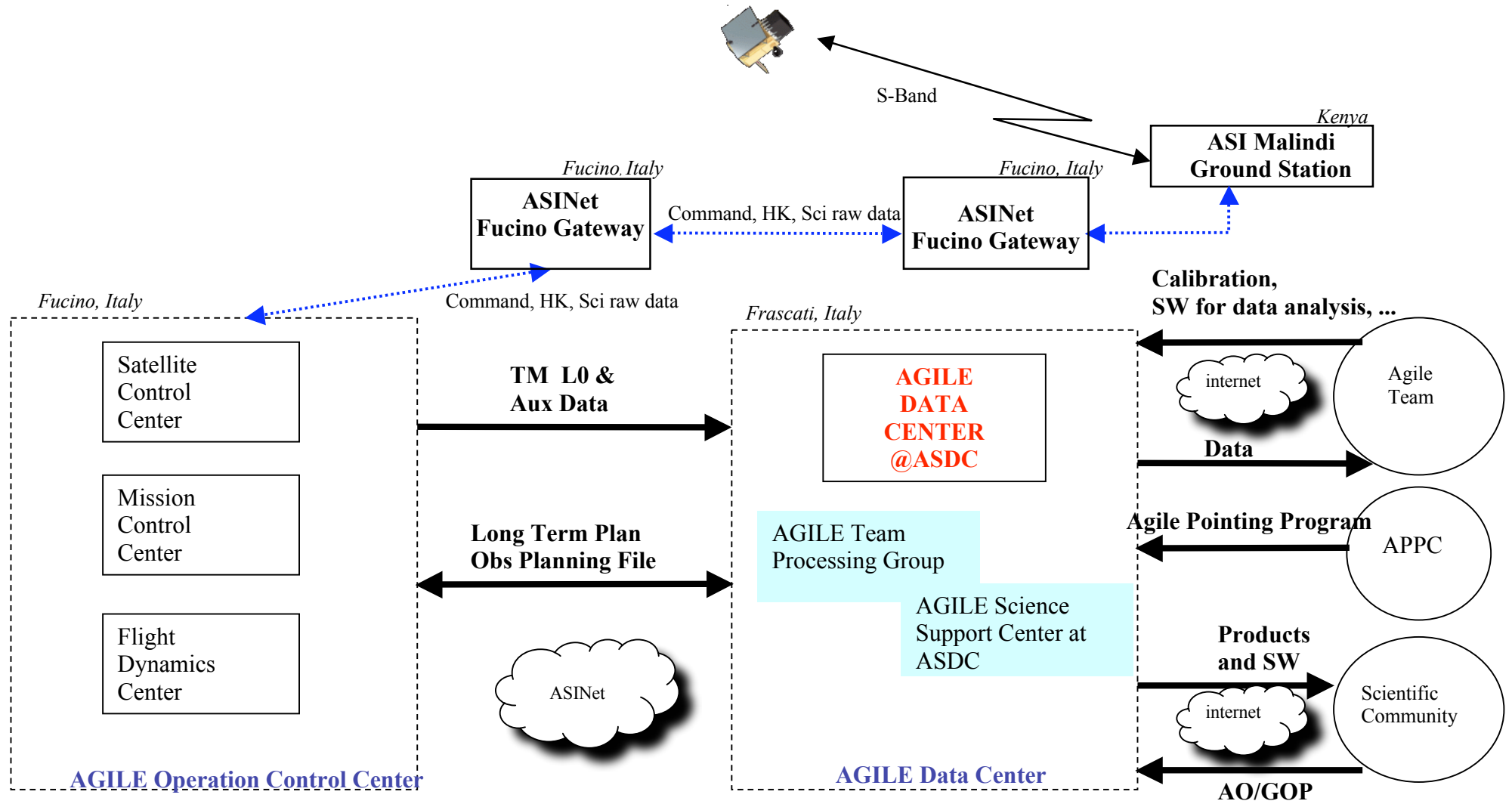
ORBCOMM

Malindi Ground Station

AGILE Mission Operations Center (Fucino)

ASI Science Data Center

# AGILE GS Architecture

S-Band

*Kenya*
**ASI Malindi Ground Station**

*Fucino, Italy*
**ASINet Fucino Gateway**

Command, HK, Sci raw data

*Fucino, Italy*
**ASINet Fucino Gateway**

Calibration,
SW for data analysis, ...

Command, HK, Sci raw data

*Fucino, Italy*

*Frascati, Italy*

Satellite Control Center

internet

Agile Team

**TM L0 & Aux Data**

**AGILE DATA CENTER @ASDC**

**Data**

Mission Control Center

AGILE Team Processing Group

**Long Term Plan Obs Planning File**

**Agile Pointing Program**

APPC

AGILE Science Support Center at ASDC

Flight Dynamics Center

**Products and SW**

ASINet

internet

Scientific Community

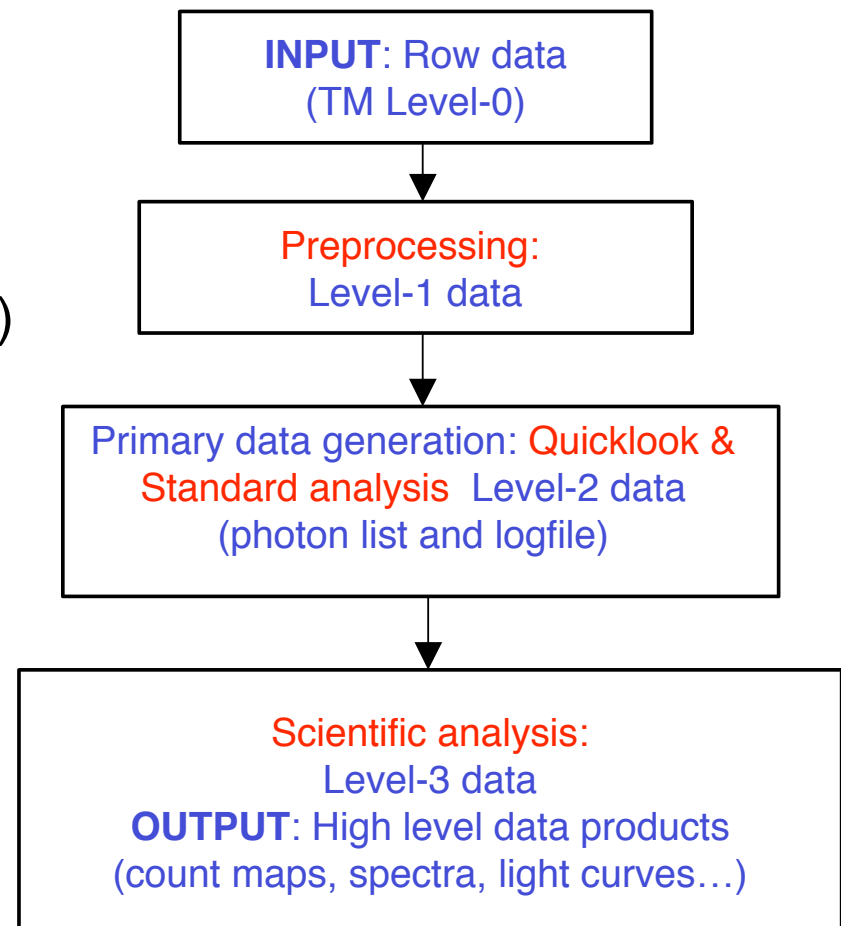**AGILE Operation Control Center**

**AGILE Data Center**

**AO/GOP**

# The AGILE Data Center at ASDC – ESRIN

- The ADC, based at ASDC-ESRIN, is in charge of all the scientific oriented activities related to the analysis and archiving of AGILE data:

From scientific telemetry (TM) Level–0:

- ✓ Preprocessing → Level-1 data

- ✓ Quick-Look Analysis (transient detection)

- ✓ Standard analysis → Level-2 data (photon list)

- ✓ Scientific analysis (source detection, diffuse gamma-ray background)

- ✓ Archiving and distributing all scientific AGILE data

```
┌─────────────────────────────┐
│ INPUT: Row data             │
│ (TM Level-0)                │
└─────────────────────────────┘
              │
              ▼
┌─────────────────────────────┐
│ Preprocessing:              │
│ Level-1 data                │
└─────────────────────────────┘
              │
              ▼
┌─────────────────────────────────────┐
│ Primary data generation: Quicklook &│
│ Standard analysis  Level-2 data     │
│ (photon list and logfile)           │
└─────────────────────────────────────┘
              │
              ▼
┌─────────────────────────────────────┐
│ Scientific analysis:                │
│ Level-3 data                        │
│ OUTPUT: High level data products    │
│ (count maps, spectra, light curves…)│
└─────────────────────────────────────┘
```

# Summary of ASDC activities for AGILE:
### (from Agile Science Management Plan)

- Running the Quick Look Analysis

- Running the standard data reduction Analysis

- Performing, when necessary, the Interactive data Analysis

- Managing Announcement of Opportunities

- Contributing to the management of the AGILE Pointing Program

- Archiving all the data (raw, cleaned and calibrated, scientific)

- Distributing the data to the scientific community

- Providing scientific support to the users community

- Officially interface the project for both data and proposals via dedicated web pages

- Providing the standard software support for the data analysis

# First AGILE GRID light
## ADC 24/5/2007

Commissioning Phase:
**AGILE Vela PSR Count Map**

(~ 20000 s)
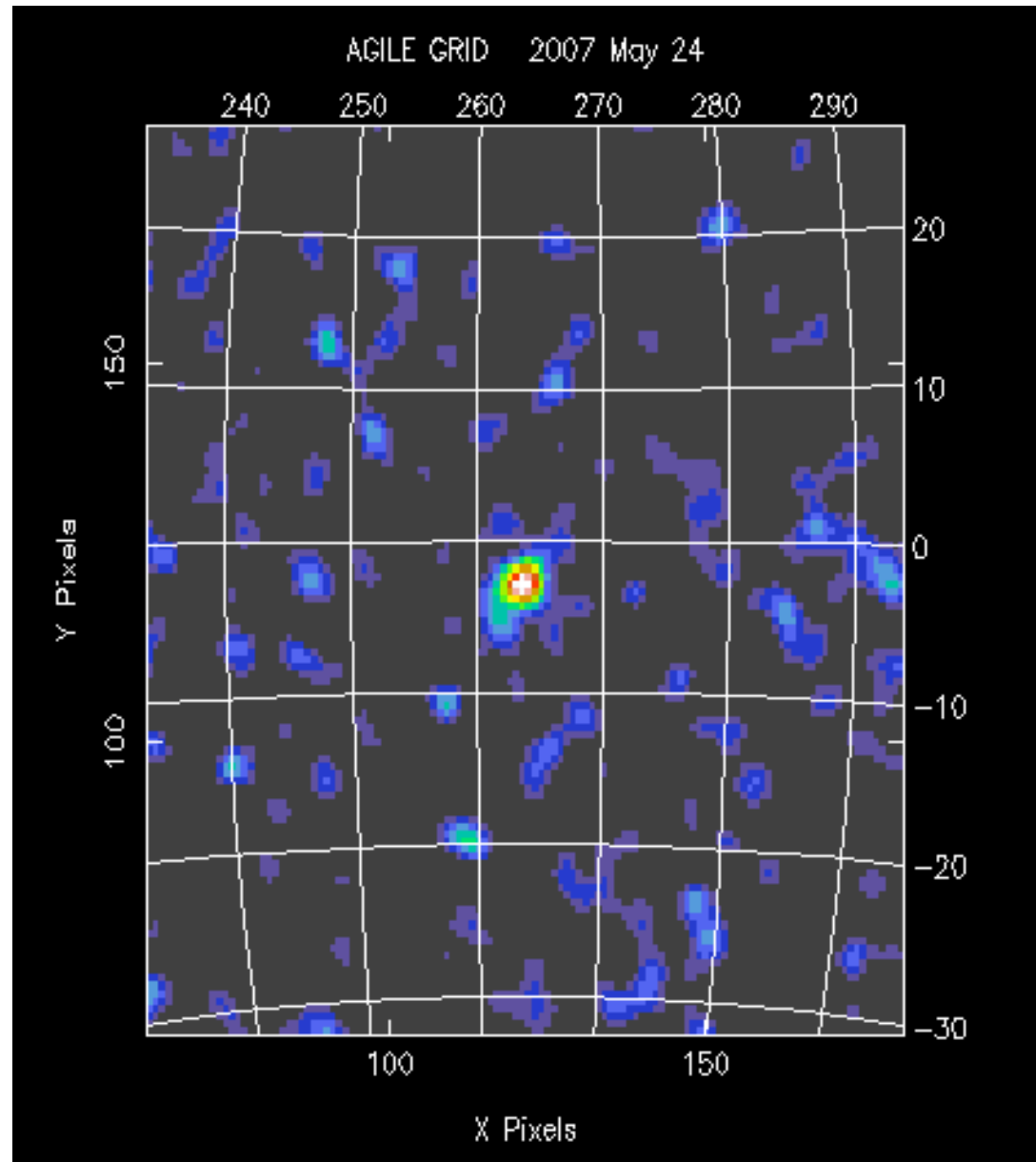
# AGILE: ~ 2.4 years in orbit

• AGILE demonstrates for the first time the covering of ~ 1/5 of the entire gamma-ray sky (FoV ~ 2.5 sr) with excellent angular resolution and competitive sensitivity.

• AGILE shows an optimal performance of its gamma-ray and hard X-ray imagers.

• > 13000 orbits, November 2009 (~ 94% Fine Pointings)
(Science operations restarted today, Nov 4th, after ~ 2-week interruption)

• Very good scientific performance, in particular at ~ 100 MeV

• Guest Observer Program open to the scientific community:
Cycle-1 completed, Dec. 1, 2007 – Nov. 30, 2008
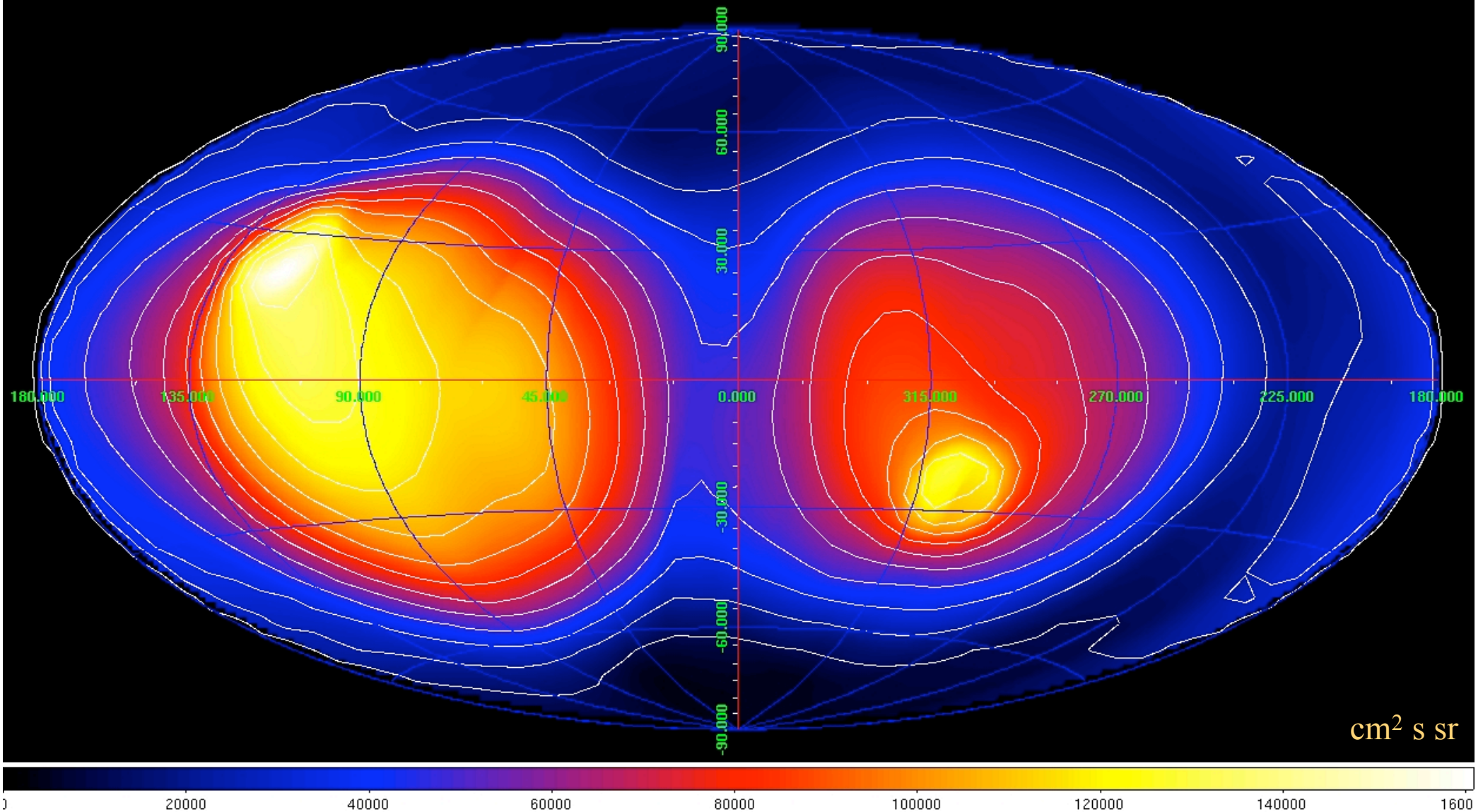Cycle-2: on-going, Dec. 1, 2008 – Nov 30, 2009

AGILE 1-year COUNT MAP (E>100 MeV)
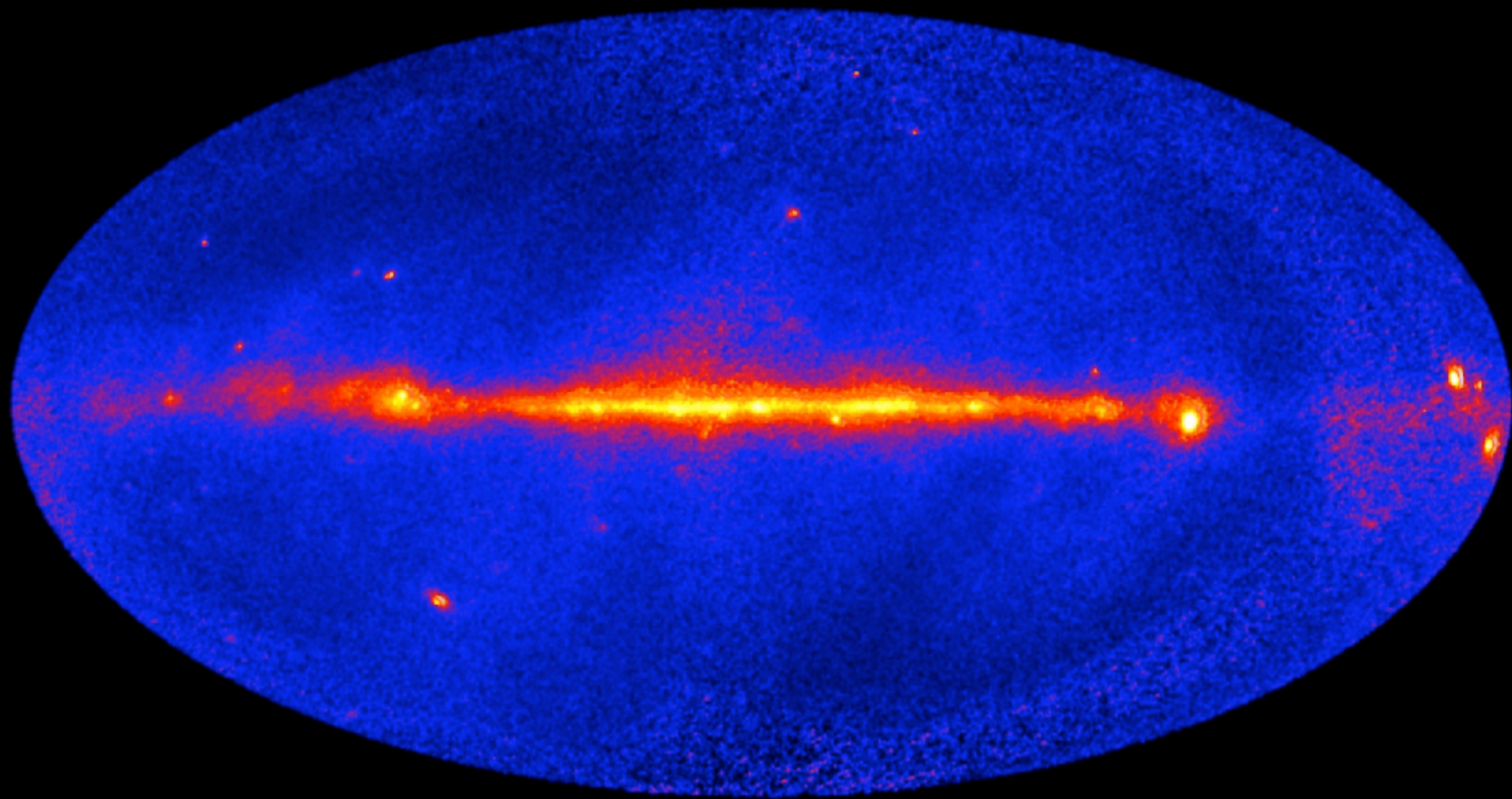(July 2007- June 2008)
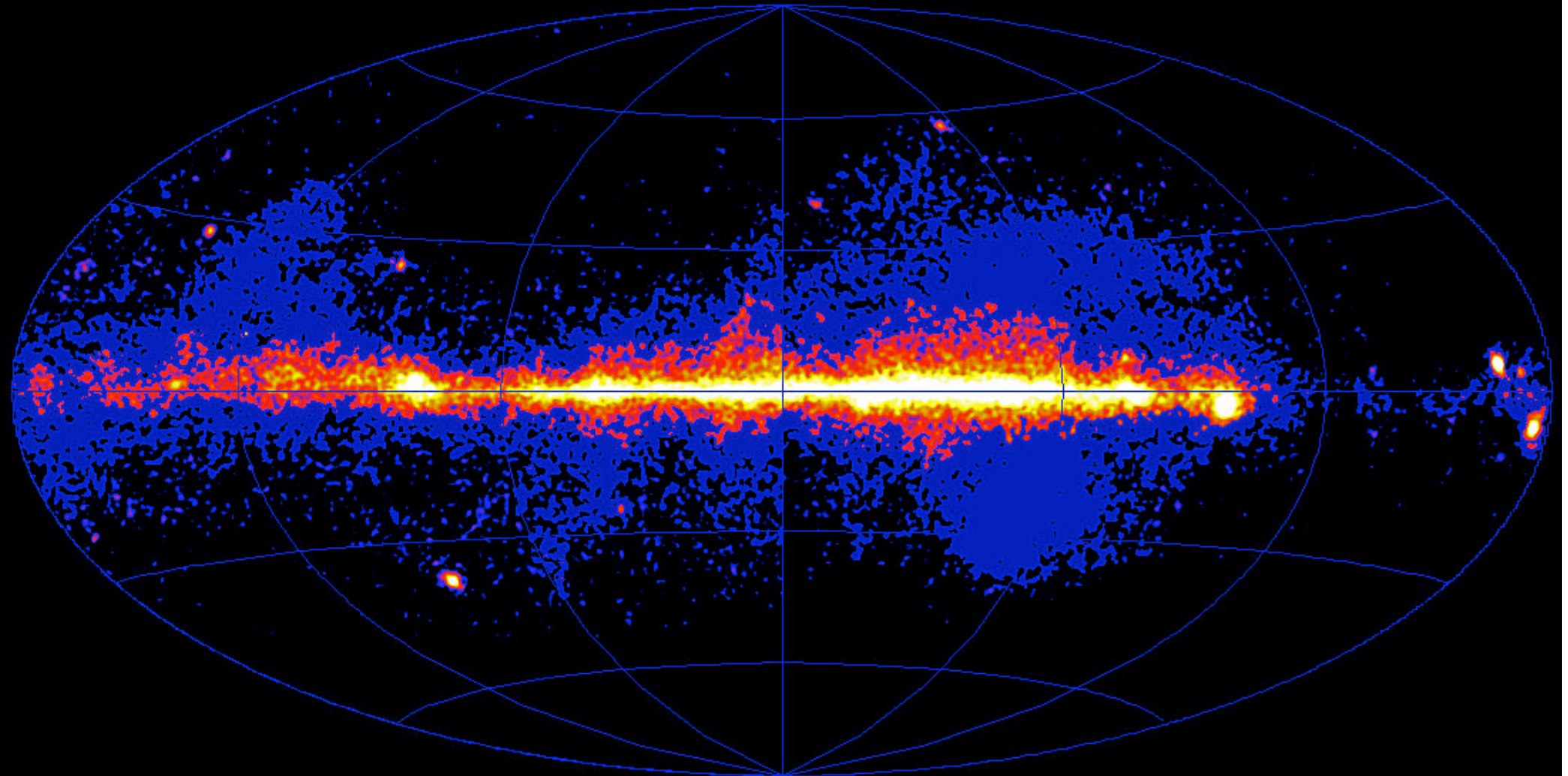
# AGILE 2-year EXPOSURE MAP

## (July 2007- March 2009)

cm$^2$ s sr

**AGILE 2.4 year INTENSITY MAP**

# First AGILE Catalog: data analysis

AGILE pointings (Observation Blocks): **predefined long exposures** (10 - 30 days) drifting of about 1 degree per day with respect to the starting boresight direction to match solar panels constraints.

For the first AGILE catalog we adopted a **conservative analysis,** with a high-quality gamma event filter (filter F4 with relatively low effective area), optimized to select gamma-ray events within the central zone of the Field of View (radius of 30 degrees).

Merge of the entire "cleaned" dataset with healpix sky pixellisation.

AGILE source detection methods use a **Maximum Likelihood** (ML) analysis to derive the best parameters estimate for candidate sources, such as source significance, flux, and location.

High confidence detection:
• two independent automatic source detection strategies in cross-correlation
• statistical significance above 4 sigma
• manual refined analysis performed with a multi source likelihood analysis task

$\Rightarrow$ 47 validated, high confidence AGILE sources

# First AGILE Catalog of High Confidence Gamma-Ray Sources

- **First year of scientific operations:** observations from July 9, 2007 to June 30, 2008

**47 high confidence sources E> 100 MeV:**
- 21 confirmed and candidate **Pulsars**,
- 13 **Blazars** (7FSRQ, 4BL Lacs, 2 unknown type),
- 2 possible **HMXRB**s,
- 2 possible **SNR**s,
- 1 **Colliding-wind Binary System** (Eta-Car)
- 8 **Unidentified** sources.

Interactive on-line version of the the First AGILE-GRID Catalog from ADC web page **http://agile.asdc.asi.it**

The First AGILE GRID Catalogue of γ-ray Sources

Period July 2007 –– June 2008

Pulsars
Blazars+candidates
SNRs
HMXRB
Unidentified
CWBs

Flux>200 X10⁻⁸phcm⁻²s⁻¹   80<Flux<200   50<Flux<80   Flux<50
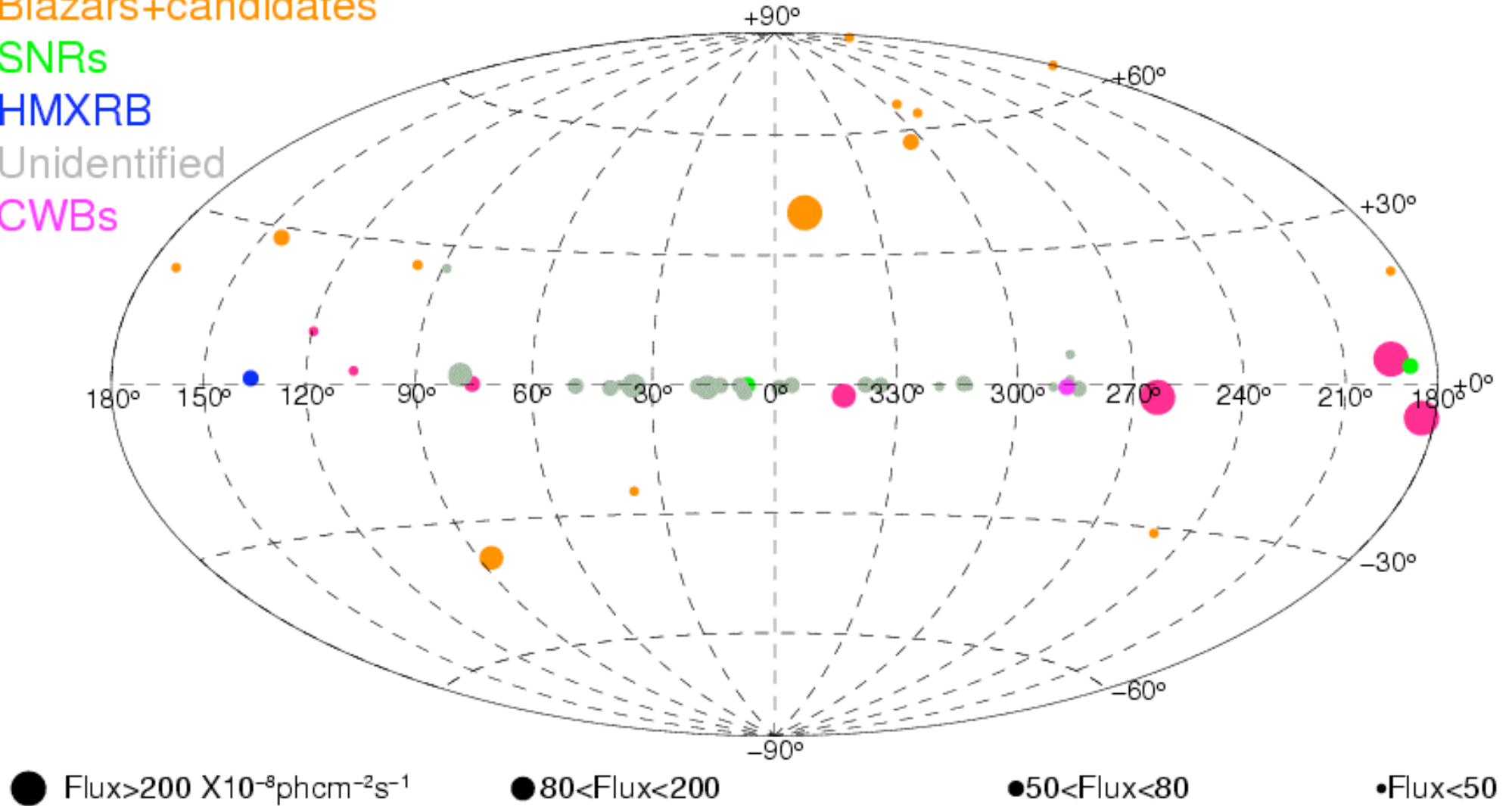
C. Pittori et al., 2009, to appear in A&A  -  arXiv:0902.2959

| Entry number | | AGILE Name | RA (J2000) hh mm ss.d ▼ | Dec (J2000) dd mm ss.d ▼ | Position Error 95% (deg) | sqrt(TS) | Mean Flux E>100MeV (10^-8 ph/cm2/s) | Mean Ring Exposure (cm2 day) | Classification | Confirmed Counterpart |
|---|---|---|---|---|---|---|---|---|---|---|
| Subset selection mode: inclusive | | ⬆⬇ | ⬆⬇ | ⬆⬇ | ⬆⬇ Stat | ⬆⬇ Stat | ⬆⬇ | ⬆⬇ Stat | ⬆⬇ | ⬆⬇ |
| 1 Select | ASDC Data Explorer | 1AGL J0006+7311 | 00 06 34.2 | +73 11 06.6 | 0.63 | 5.1 | 23 +/- 5 | 3486 | GammaPulsar* | CTA1 |
| 2 Select | ASDC Data Explorer | 1AGL J0242+6111 | 02 42 13.6 | +61 11 06.7 | 0.64 | 5.3 | 54 +/- 12 | 1356 | HMXRB | LSI+61303 |
| 3 Select | ASDC Data Explorer | 1AGL J0535+2205 | 05 35 05.9 | +22 05 41.7 | 0.09 | 47.2 | 220 +/- 15 | 3229 | Pulsar | Crab |
| 4 Select | ASDC Data Explorer | 1AGL J0538-4424 | 05 38 29.6 | -44 24 17.8 | 0.5 | 5.9 | 43 +/- 10 | 934 | Blazar-BLLac | PKS0537-44 |
| 5 Select | ASDC Data Explorer | 1AGL J0617+2236 | 06 17 21.7 | +22 36 14.2 | 0.27 | 9.9 | 69 +/- 9 | 3229 | Unclassified | --- |
| 6 Select | ASDC Data Explorer | 1AGL J0634+1748 | 06 34 15.8 | +17 48 27.7 | 0.05 | 63 | 320 +/- 10 | 3229 | Pulsar | GEMINGA |
| 7 Select | ASDC Data Explorer | 1AGL J0657+4554 | 06 57 29.2 | +45 54 14.5 | 0.55 | 5.8 | 31 +/- 6 | 2288 | Blazar* | --- |
| 8 Select | ASDC Data Explorer | 1AGL J0714+3340 | 07 14 29.4 | +33 40 37.3 | 0.85 | 4.2 | 18 +/- 5 | 2978 | Blazar* | --- |
| 9 Select | ASDC Data Explorer | 1AGL J0722+7125 | 07 22 22.9 | +71 25 31.1 | 0.37 | 10.9 | 68 +/- 9 | 1614 | Blazar-BLLac | S50716+71 |
| 10 Select | ASDC Data Explorer | 1AGL J0835-4509 | 08 35 13.3 | -45 09 09.0 | 0.09 | 41.7 | 780 +/- 32 | 933 | Pulsar | VelaPSR |
| 11 Select | ASDC Data Explorer | 1AGL J1022-5822 | 10 22 08.8 | -58 22 17.0 | 0.36 | 10.1 | 59 +/- 7 | 5616 | Unclassified | --- |

AGILE, Astro-rivelatore Gamma a Immagini Leggero - Netscape

The ASDC AGILE FOV viewer of EGRET sources agilefov_20080410_20080430_286_20 - Netscape

Move mouse on a source and click

+90°
+60°
180° 150° 120° 90° 60° 30° 0° 330° 300° 270° 240°
-60°
-90°

Marker size prop to EGRET Flux
Units of e-8 ph/cm2/s (E>100 MeV)

flux <
40< flux <
flux >

ASDC
ASI Science Data Center

The ASDC Multi-frequency Data Explorer: Web and VO data access and tools - Netscape

File  Edit  View  Go  Bookmarks  Tools  Window  Help

ASDC + VO Catalogs | Interactive Data Access at ASDC | Spectral Energy Distribution | Error circle EXPLORER | Full Entry Details

ASDC
ASI Science Data Center

Entry ---
with sky coordinates Ra= 20 21 00.0 Dec=+40 17 59.9, L=78.05 b=2.08

arcmin

50

0

-50

-50        0        50
arcmin
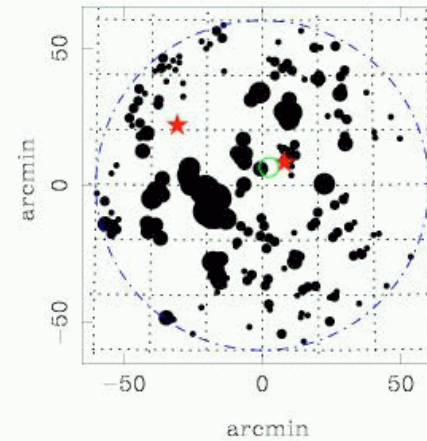
Zoom

30 ▼

Current position R.A.=20 21 00.0 Dec.=+40 17 59.9, L=78.05 b=2

Multi-λ measurements via ASDC Browse     Multi-λ measurements via VO interface

Opt-DSS from eso     NVSS
Image size 3 ▼ arcmin     Image
                         Image

Search radius 0.2 ▼ arcmin

STSCI MAST | GSC2 | 2MASS | NED | SIMBAD
HEASARC(X-R-G) | VIZIER(X-R-G) | ASDC-R | ASDC-X | SDSS
USNO

SDSS DR6 Navigate tool     NVO
                          0.000

| | | | | | | |
|---|---|---|---|---|---|---|
| Gal. Center II | 359.978 | 0.627 | 265.781 | -2 | | |
| Anti-Center I | 192.637 | 8.109 | 100.944 | 21 | | |
| SA Crab (8,24) | 188.961 | 16.996 | 108.283 | 28 | | |
| SA Crab (15,26) | 183.008 | 22.203 | 111.762 | 35 | | |
| Anti-Center II | 197.296 | 15.717 | 110.404 | 20.758 | 2008-04-08 12:00 | 2008-04-10 12:00 |
| **Vulpecula Field** | **53.039** | **6.474** | **286.259** | **20.819** | **2008-04-10 12:00** | **2008-04-30 12:00** |
| North Gal Pole | 104.852 | 35.439 | 250.075 | 72.497 | 2008-04-30 12:00 | 2008-05-10 12:00 |

# Remarks on AGILE First Catalog :

• The AGILE First Catalog includes only high-significance sources characterized by a prominent mean gamma-ray flux above 100 MeV when integrated over the total exposure period 2007 July - 2008 June and it is not a complete sample due to the non-uniform first year sky coverage.

• The AGILE-GRID spatial resolution reached with long exposures is substantially better than that of EGRET, and the total exposure accumulated by AGILE in several sky regions during the first year, particularly near the Galactic plane, is comparable with that obtained by EGRET in 6-year effective time.

• Cat-1 exposure mostly in the Carina-Crux and in the Cygnus regions, with relatively low exposure at the Galactic center. This explains the relatively small number of sources in the Galactic center region included in this First Catalog.

• With the one-year long integration time scale only sources with "steady" flux values above ~ 20 $10^{-8}$ ph $cm^{-2}$ $s^{-1}$ are detected over 4 sigma. Source detections during flaring state and determination of peak fluxes are not included in this Catalog and will be the subject of a forthcoming publication.

• This should be taken into account when comparing with the results of the Third EGRET Catalog which includes detections over 4 sigma in each of the EGRET viewing periods during its effective 6-year lifetime.

• A variability study of the sources of the First AGILE Catalog over different timescales is in progress (F. Verrecchia et al. 2009).

# The X-ray imager SuperAGILE: public source list from interactive pages at ADC:
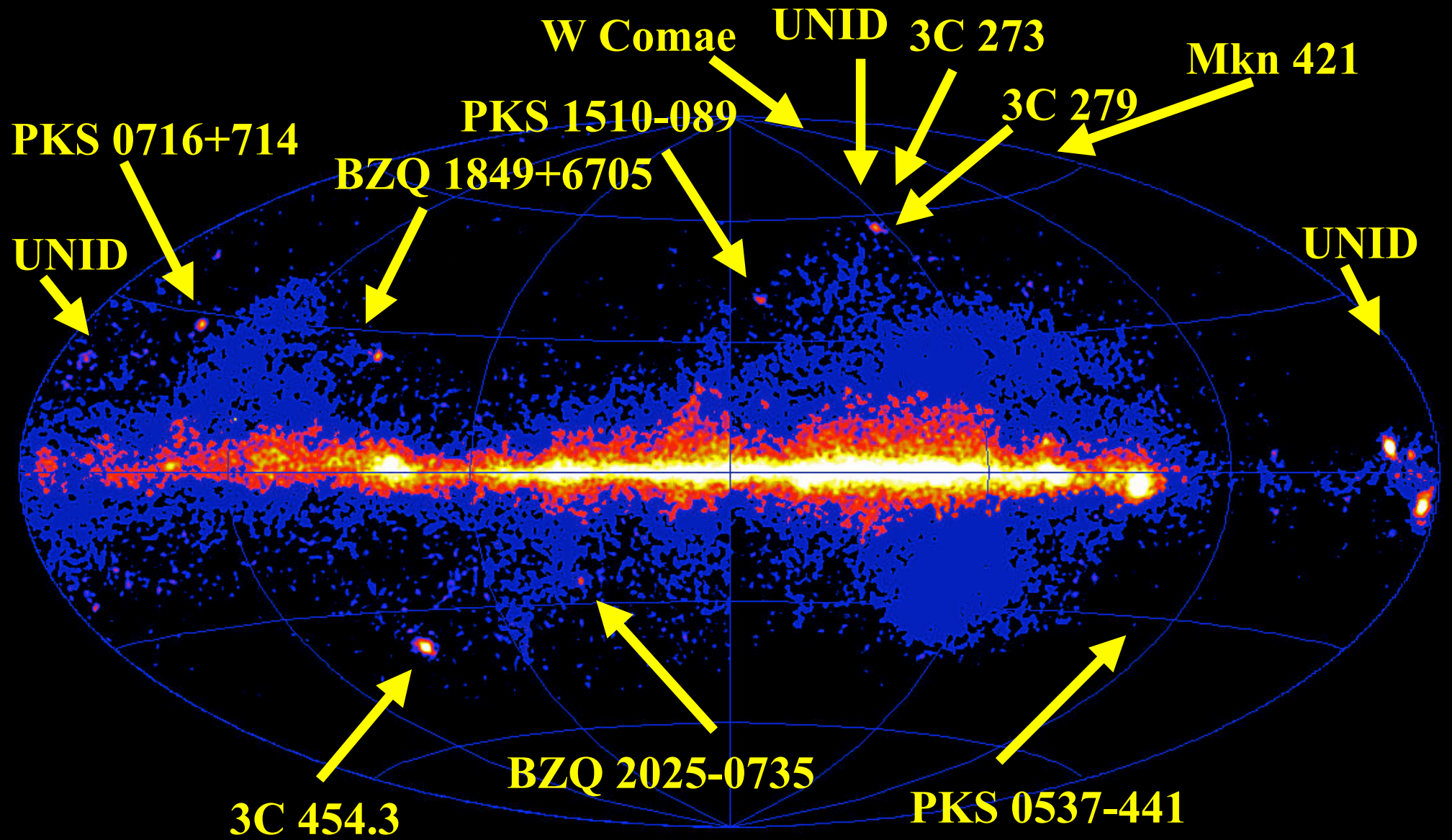## http://agile.asdc.asi.it/



60 X-ray validated sources in 2-years (18-60 keV)
Feroci et al. 2009, submitted to A&A

# SuperAGILE detected sources and public light curves (webpage updated twice a day)
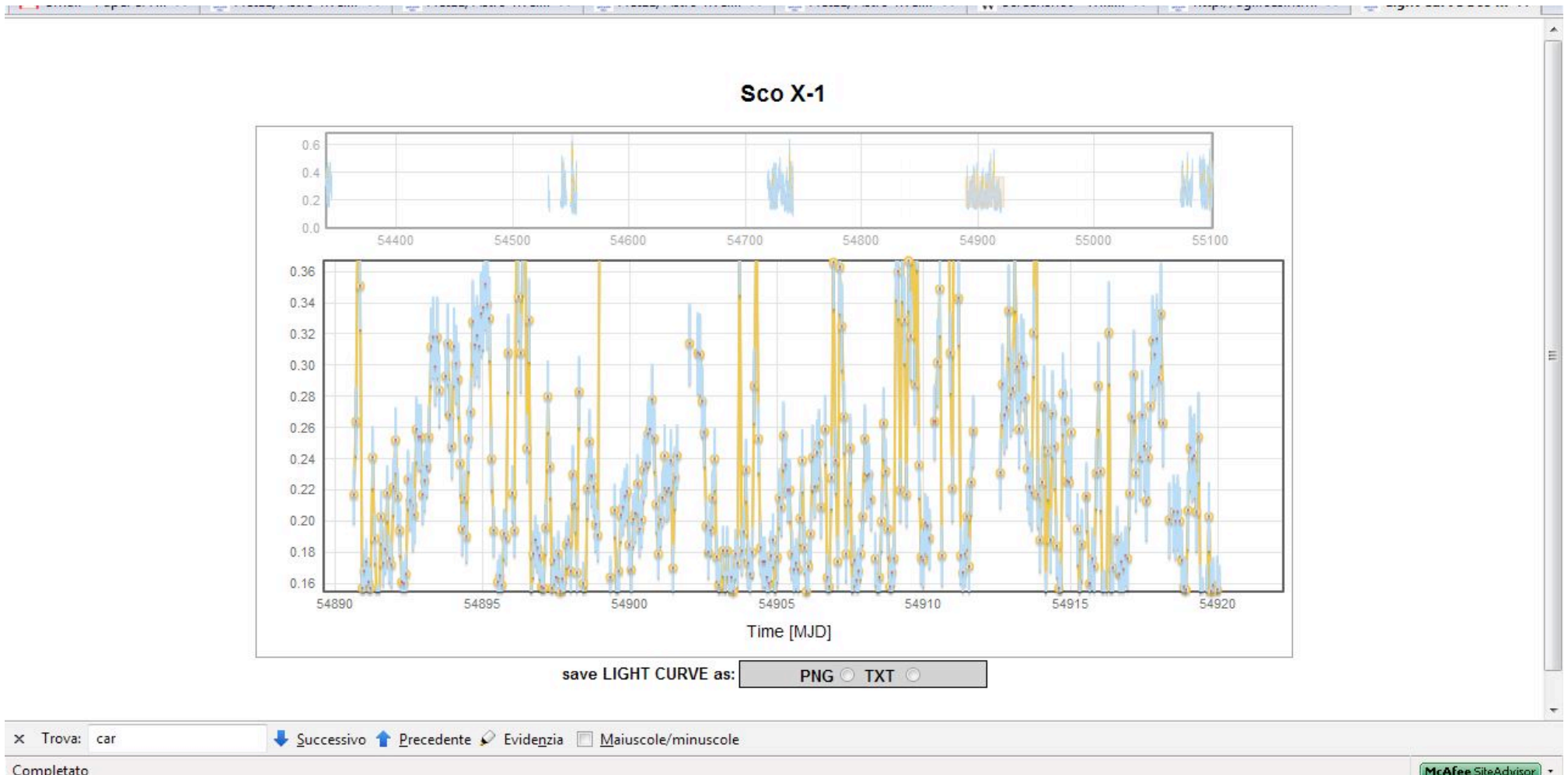
# SOME AGILE HIGHLIGHTS

Gamma-ray brighter blazars detected by AGILE during first year

# AGILE first-year blazar studies summary:

• AGILE (as EGRET and now Fermi) detected only few objects with flux greater than $100 \times 10^{-8}$ ph cm$^{-2}$ s$^{-1}$. Selection effects or there is a <span style="color:red">subclass of blazar with peculiar characteristics?</span>

• AGILE observations has brought to light a <span style="color:red">more complex behaviour of blazars with respect to the standard models:</span>

- the presence of two emission components in any BL Lacs

- the possible contributions of an hot corona as source of seed photons for the EC in FSRQs

• The study of <span style="color:red">multi-wavelength</span> correlations is the key to understanding the structure of the inner jet and the origin of the seed photons for the IC process
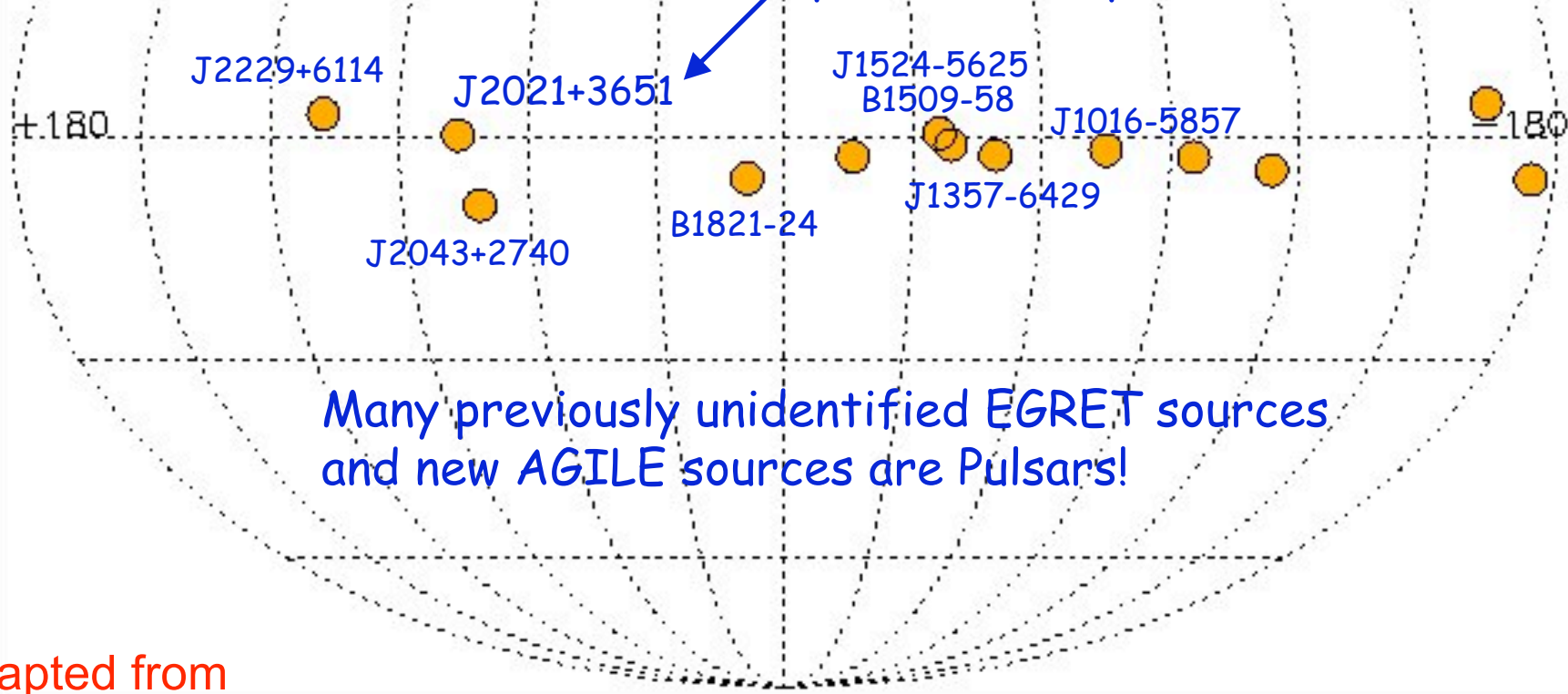
# AGILE Pulsars… two years after…

**"Discovery of New Gamma-ray Pulsars with AGILE"**

(Pellizzoni et al., ApJ, 695, L115, 2009)

First year: July 2007 – June 2008

(GO source: Halpern et al., ApJ, 688, L33, 2008)

J2229+6114   J2021+3651   J1524-5625
                          B1509-58        J1016-5857
+180                                                        180

                    B1821-24        J1357-6429
J2043+2740

Many previously unidentified EGRET sources
and new AGILE sources are Pulsars!

# AGILE Pulsar main results:

(from AGILE Pulsar working group)

Among the newcomers from timing analysis:

• the remarkable PSR B1509-58 with very high rotational energy losses, with a magnetic field in excess of $10^{13}$ Gauss

• PSR J2229+6114 providing a reliable identification for the previously unidentified EGRET source 3EG 2227+6122.

• Moreover, the powerful **millisecond** pulsar B1821-24, in the globular cluster M28, is detected

• Structured **energy-dependent peaks** (more than two) are evident in pulsar light curves.

• Full exploitation of <100 MeV band in progress (exposure competitive with Fermi)

# Galactic gamma-ray transients

(hear M. Tavani talk "Galactic Gamma Ray Sources: Microquasars and New Transients" on Thursday, Nov 5)

- **Carina region:** γ-ray detection of the colliding wind massive binary system η-Car with AGILE

  Tavani et al. 2009 ApJ, 698, L142, 2009 (arXiv:0904.2736 )

- **Cygnus region:** AGILE detects several gamma-ray flares from Cygnus X-3, and also weak persistent emission above 100 MeV

  Tavani et al. 2009, accepted by Nature (arXiv:0910.5344 )

# Impulsive events: GRBs and TGFs

**- SuperAGILE** detects several GRBs in its energy band (18-60 keV) at a rate of about **1 per month** while the AGILE **Minicalorimeter** (MCAL) observes about **1 GRB per week** in the energy range 0.7-1.4 MeV on several time scales (Marisaldi et al.). **GRID energies: only three confirmed GRBs up to now with HE component E > 50 MeV.**

**-** The AGILE Minicalorimeter also detects very interesting events on timescales < 5 ms, which are currently under study as **Terrestrial gamma-ray flash candidates** (Marisaldi et al., 2009, accepted by JGR, **available online from ADC webpage**)
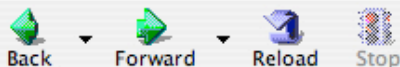
http://agile.asdc.asi.it/ao.html
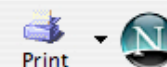
Gmail: Email from Google | AGILE, Astro-rivelatore Gam...

# AGILE

**ASI agenzia spaziale italiana**

**ASDC ASI Science Data Center**

Astro-rivelatore Gamma a Immagini Leggero *Back to Home Page*

| Agile News | Agile Pointings | Mission Overview | Selected Results | Restricted Area | Guest Observer Program | Agile Team Home Page | Agile Helpdesk |

## Agile AO-1

The official list of all AGILE AO-1 approved targets is now available here

The Italian Space Agency (ASI) announces the release of the first Announcement of Opportunity to solicit proposals for the Guest Observer Program (GOP) of the AGILE mission.

This announcement solicits proposals for observations to be carried out during the observing time beginning on December 1st, 2007, and lasting twelve months.

**Proposals may be submitted at any time during the period starting 1 October 2007 and ending 31 October 2007.**

Top level documentation regarding this AO can be found here.

Proposals may be prepared and submitted using a set of dedicated ASDC GOP on-line services (Proposal Preparation) .

Please remember that users must register in order to access the "proposal submission tool" and to prepare and update their proposals before final submission.

## AGILE BASELINE POINTING PLAN (ABPP) - Cycle 1 :

Done

**AGILE AO1: completed**

**Submitted proposals: 29**

**Approved/P. Approved: 24**

**Requested Targets: 122**

**Approved Targets: 100**

**Pulsars: 39**

**AGN: 31**

**3EG sources: 30**

## Cycle-1 GOP Schedule

• SW build GO 1.0 + test dataset: *released on May 22, 2008*

• Cycle-1 data distribution:

• *first delivery (17 OBs) on June 5, 2008*

• *second delivery (3 OB) on July 17, 2008*

• *complete data release on Dec 23, 2008*

**AGILE AO2:**

**Submitted/Approved proposals: 15**

**14 PI, 74 co-PI**

**Requested/Approved Targets: 93**

**Pulsars: 21**

**AGN: 62**

**3EG sources: 10**

AGILE SW & AO2 Data Distribution Schedule

- **First public SW build + test dataset:** *delivered on May 22, 2009*

- **New SW release (4.0) available from ADC webpage: delivered** on October 13, 2009

- **AO2 (+ AO1 reprocessed) GO data packets: delivered** on October 6, 2009

## Agile AO2 Approved Targets

Legenda

Jump to page bottom

Approved Targets   Show as PDF in a new window

| Target Name | RA (J2000) | Dec (J2000) | RA (J2000) | Dec (J2000) | l | b | PI Name | Proposal ID | TargetClass | Title |
|---|---|---|---|---|---|---|---|---|---|---|
| 3EG J0010+7309 | 0h 9m 36.72s | 73 10' 58.80" | 2.403 | 73.183 | 119.870 | 10.560 | Diego Torres | 57 | 3EG Sources | AGILE GRID observations of Unidentied EGRET sources likely related to supernova |
| JVAS J0010+1724 | 0h 10m 34.7s | 17 24' 18.00" | 2.642 | 17.405 | 109.233 | -44.377 | Stefano Vercellone | 49 | Active Galactic Nuclei | Study of the gamma-ray properties of a sample of high-energy blazar candidates |
| J0030+0451 | 0h 30m 27.35s | 4 51' 39.59" | 7.614 | 4.861 | 113.141 | -57.611 | Andrea Possenti | 52 | Pulsars | Investigating the gamma-ray properties of a sample of northern radio pulsars |
| GC 0109+224 | 1h 12m 5.76s | 22 44' 38.39" | 18.024 | 22.744 | 129.142 | -39.879 | Alessandro Paggi | 55 | Active Galactic Nuclei | SSC: the end of the tether? |
| J0205+6449 | 2h 5m 37.92s | 64 49' 44.39" | 31.408 | 64.829 | 130.719 | 3.085 | Andrea Possenti | 52 | Pulsars | Investigating the gamma-ray properties of a sample of northern radio pulsars |
| PKS 0208-512 | 2h 10m 46.31s | -51 1' 1.20" | 32.693 | -51.017 | 276.101 | -61.778 | Elena Pian | 45 | Active Galactic Nuclei | Multiwavelength Variability of Gamma-Ray-Loud Blazars |
| HB89 0212+735 | 2h 17m 30.72s | 73 49' 33.59" | 34.378 | 73.826 | 128.927 | 11.964 | Filippo D'Ammando | 56 | Active Galactic Nuclei | AGILE observation of 4 high-redshift MeV blazars |
| J0218+4232 | 2h 18m 6.24s | 42 32' 16.79" | 34.526 | 42.538 | 139.508 | -17.527 | Andrea Possenti | 52 | Pulsars | Investigating the gamma-ray properties of a sample of northern radio pulsars |
| 3C 66A | 2h 22m 40.8s | 43 2' 9.60" | 35.667 | 43.036 | 140.144 | -16.766 | Elena Pian | 45 | Active Galactic Nuclei | Multiwavelength Variability of Gamma-Ray-Loud Blazars |
| RBS 0315 | 2h 25m 4.55s | 18 46' 48.00" | 36.269 | 18.780 | 151.786 | -38.789 | Filippo D'Ammando | 56 | Active Galactic Nuclei | AGILE observation of 4 high-redshift MeV blazars |
| 1ES 0229+200 | 2h 32m 48.72s | 20 17' 16.80" | 38.203 | 20.288 | 152.942 | -36.607 | Alessandro Paggi | 55 | Active Galactic Nuclei | SSC: the end of the tether? |
| AO 0235+164 | 2h 38m 38.87s | 16 36' 57.59" | 39.662 | 16.616 | 156.771 | -39.110 | Alessandro Paggi | 55 | Active Galactic Nuclei | SSC: the end of the tether? |
| NGC 1358 | 3h 33m 38.39s | -5 5' 23.99" | 53.410 | -5.090 | 190.589 | -45.564 | Francesco Longo | 54 | Active Galactic Nuclei | Search for gamma-ray emission from UHECR candidate sources |
| 3EG J0348+3510 (Per OB2) | 3h 48m 0.0s | 35 12' 0.00" | 57.000 | 35.200 | 159.031 | -15.014 | Elena Orlando | 58 | 3EG Sources | Search for gamma-ray emission from star-forming regions |
| PSR J0358+5413 | 3h 58m 53.75s | 54 13' 11.99" | 59.724 | 54.220 | 148.190 | 0.811 | Teresa Mineo | 48 | Pulsars | AGILE-GRID observation of Radio Pulsars |
| WMAP3 J0403-3604 | 4h 3m 52.79s | -36 4' 47.99" | 60.970 | -36.080 | 237.737 | -48.486 | Carlotta Pittori | 59 | Active Galactic Nuclei | Blazar duty cycle from the microwave to gamma-ray slope |
| WMAP3 J0423-0120 | 4h 23m 14.40s | -1 20' 24.00" | 65.810 | -1.340 | 195.284 | -33.144 | Carlotta Pittori | 59 | Active Galactic Nuclei | Blazar duty cycle from the microwave to gamma-ray slope |
| PKS 0422+004 | 4h 24m 46.79s | 0 36' 7.19" | 66.195 | 0.602 | 193.586 | -31.777 | Alessandro Paggi | 55 | Active Galactic Nuclei | SSC: the end of the tether? |
| PKS 0521-365 | 5h 22m 58.8s | -36 27' 32.40" | 80.742 | -36.459 | 240.608 | -32.716 | Elena Pian | 45 | Active Galactic Nuclei | Multiwavelength Variability of Gamma-Ray-Loud Blazars |
| J0538+2817 | 5h 38m 24.95s | 28 17' 9.60" | 84.604 | 28.286 | 179.718 | -1.686 | Andrea Possenti | 52 | Pulsars | Investigating the gamma-ray properties of a sample of northern radio pulsars |
| PKS 0537-441 | 5h 38m 49.91s | -44 5' 9.59" | 84.708 | -44.086 | 250.083 | -31.091 | Elena Pian | 45 | Active Galactic Nuclei | Multiwavelength Variability of Gamma-Ray-Loud Blazars |
| PKS 0537-286 | 5h 39m 54.23s | -28 39' 57.60" | 84.976 | -28.666 | 232.940 | -27.293 | Filippo D'Ammando | 56 | Active Galactic Nuclei | AGILE observation of 4 high-redshift MeV blazars |
| 3EG J0542+2610 | 5h 42m 0.0s | 26 0' 0.00" | 85.500 | 26.000 | 182.081 | -2.222 | Diego Torres | 57 | 3EG Sources | AGILE GRID observations of Unidentied EGRET sources likely related to supernova |
| PKS 0548-322 | 5h 50m 40.80s | -32 16' 19.19" | 87.670 | -32.272 | 237.566 | -26.144 | Alessandro Paggi | 55 | Active Galactic Nuclei | SSC: the end of the tether? |
| PSR J0614+2229 | 6h 14m 17.28s | 22 30' 36.00" | 93.572 | 22.510 | 188.786 | 2.400 | Teresa Mineo | 48 | Pulsars | AGILE-GRID observation of Radio Pulsars |
| 3EG J0631+0642 | 6h 31m 39.36s | 6 41' 42.00" | 97.914 | 6.695 | 204.720 | -1.320 | Diego Torres | 57 | 3EG Sources | AGILE GRID observations of Unidentied EGRET sources likely related to supernova |

# AGILE Public Data Distribution

## Cycle-1 data: 20 OB already public:

• **First public delivery** *(17 OBs): June 5, 2009*

• **Second public delivery** *(3 OBs):  July 17, 2009*

• *Publication of reprocessed Cycle-1 (20 OB) dataset: 13 October, 2009*

• *Complete Cycle-1 public data release: Dec 23, 2009*

**THE END**

# Backup slides

## Table 3: AGILE Scientific Performance

| Gamma-ray Imaging Detector (GRID) | | |
|---|---|---|
| Energy Range | 30 MeV – 50 GeV | |
| Field of view | $\sim 3$ sr | |
| Sensitivity at 100 MeV (ph cm$^{-2}$ s$^{-1}$ MeV$^{-1}$) | $6 \times 10^{-9}$ | ($5\sigma$ in $10^6$ s) |
| Sensitivity at 1 GeV (ph cm$^{-2}$ s$^{-1}$ MeV$^{-1}$) | $4 \times 10^{-11}$ | ($5\sigma$ in $10^6$ s) |
| Angular Resolution at 1 GeV | 36 arcmin | (68% cont. radius) |
| Source Location Accuracy | $\sim 5$–$20$ arcmin | $S/N \sim 10$ |
| Energy Resolution | $\Delta E/E \sim 1$ | at 300 MeV |
| Absolute Time Resolution | $\sim 1\,\mu$s | |
| Deadtime | $\sim 200\,\mu$s | |
| **Hard X–ray Imaging Detector (Super-AGILE)** | | |
| Energy Range | $10 - 40$ keV | |
| Field of view | $107^\circ \times 68^\circ$ | FW at Zero Sens. |
| Sensitivity (at 15 keV) | $\sim 5$ mCrab | ($5\sigma$ in 1 day) |
| Angular Resolution (pixel size) | $\sim 6$ arcmin | |
| Source Location Accuracy | $\sim 2$-$3$ arcmin | $S/N \sim 10$ |
| Energy Resolution | $\Delta E < 4$ keV | |
| Absolute Time Resolution | $\sim 4\,\mu$s | |
| Deadtime (for each of the 16 readout units) | $\sim 4\,\mu$s | |
| **Mini-Calorimeter** | | |
| Energy Range | $0.3 - 200$ MeV | |
| Energy Resolution | $\sim 1$ MeV | above 1 MeV |
| Absolute Time Resolution | $\sim 3\,\mu$s | |
| Deadtime (for each of the 30 CsI bars) | $\sim 20\,\mu$s | |

# The X-ray imager SuperAGILE:



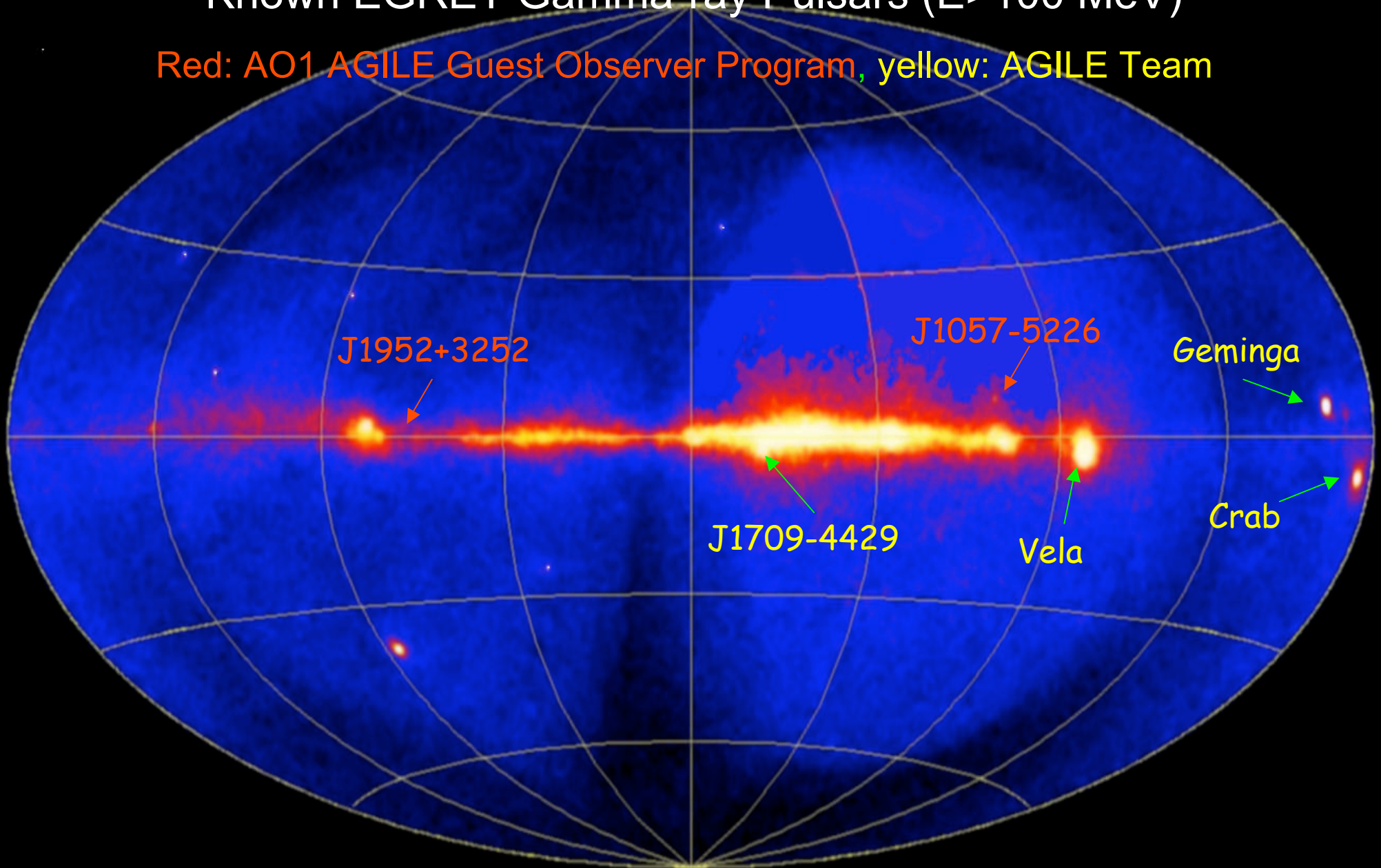A SuperAGILE View of the Galactic Center
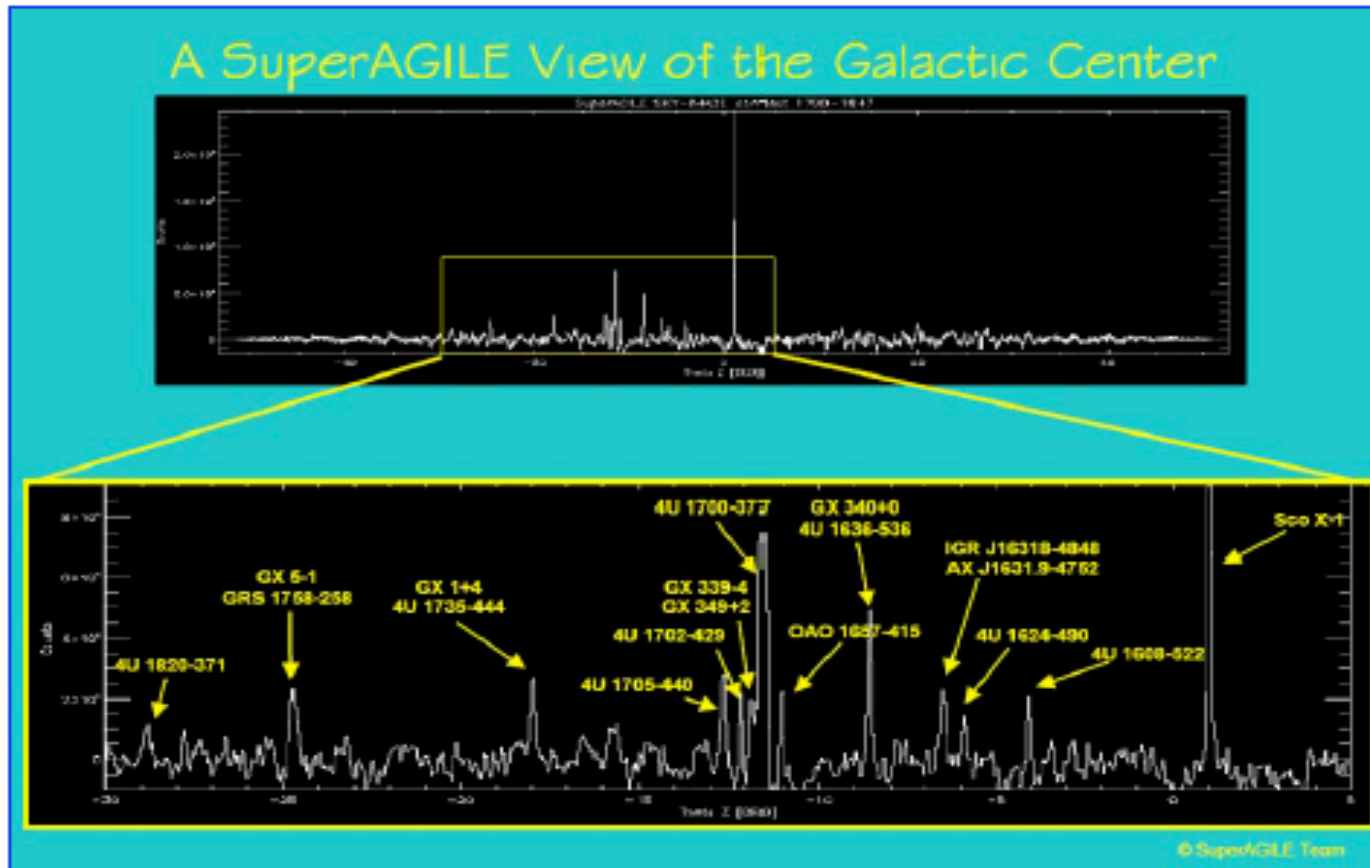
Credit: ASI/ASDC

## Grand Central Scan

Mysterious beasts lurk at the center of the Milky Way. They require new and varied methods to be monitored - no one knows when they will act up. A new observatory run by the Agenzia Spaziale Italiana called AGILE is one new tool in the astronomer's toolbox. AGILE (*Astro-rivelatore Gamma a Immagini LEggero*, which roughly translates as "Star imaging detector in Gamma-Ray Light") was launched on April 23, 2007 and is already returning important science during its check-out phase. The image above is a scan by the X-ray monitor on AGILE, called Super-AGILE (which roughly translates as "Above-AGILE"), dedicated to monitoring hard X-ray sources with high sensitivity. This scan, performed shortly after the launch of AGILE, identifies more than a dozen high energy sources (in the range 20-60 keV) in the Galactic center.
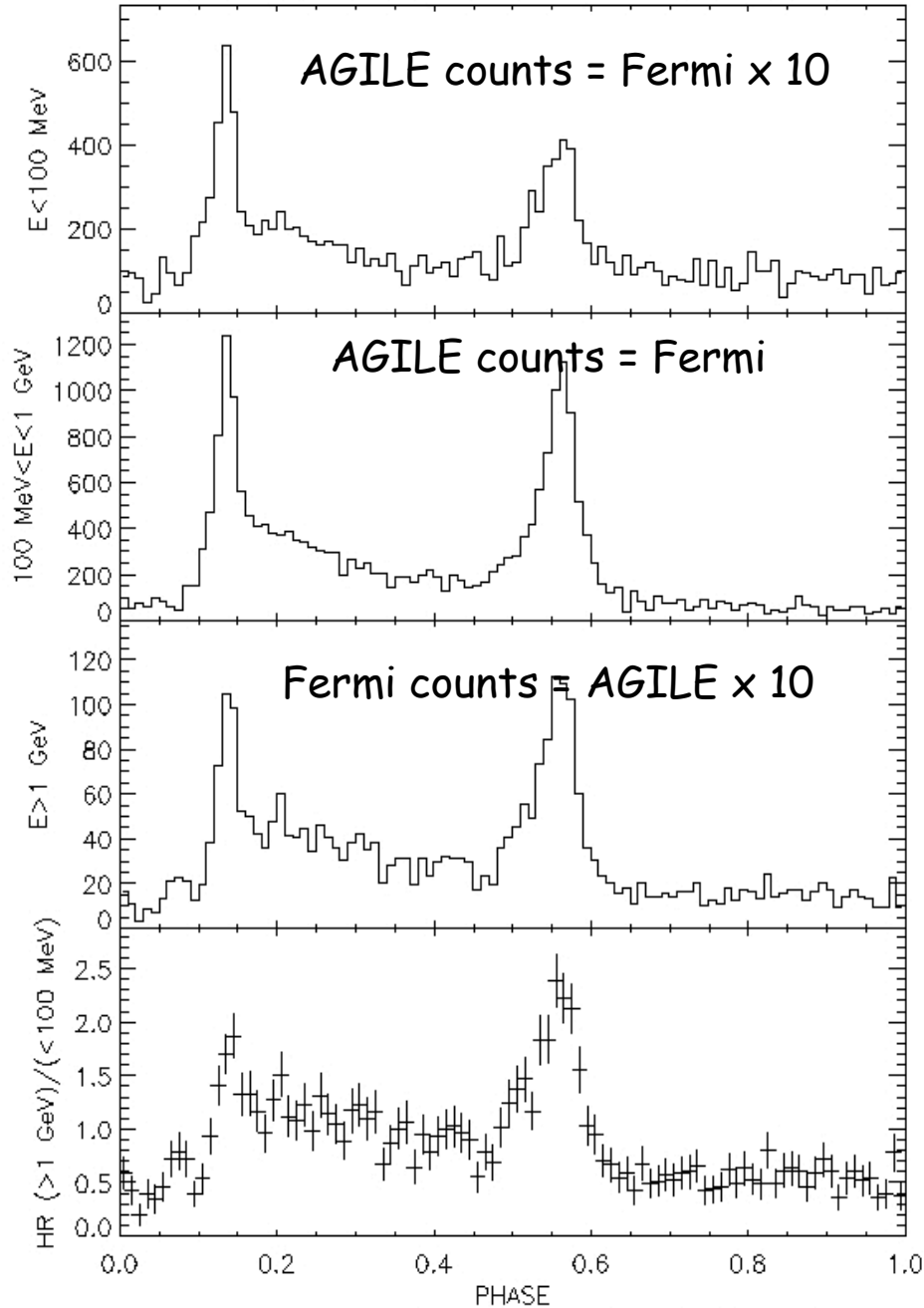
AGILE Vela PSR 7/2007–6/2009 (^100 days exp.)

AGILE counts = Fermi x 10

AGILE counts = Fermi

Fermi counts = AGILE x 10

PHASE

AGILE Pulsar Working Group – Pellizzoni, Pilia, Trois

0.03–0.1GeV

0.1–0.3GeV

0.3–1.0GeV

1.0–3.0GeV    P2

P1

P3

3.0–10.0GeV

>10.0GeV

RXTE 8–16keV    Radio    HST UV

PSR Phase    PSR Phase