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***** AGILE Public Data Release Note v5.0 *****

User's README

AGILE Data Center (ADC), December 21, 2010

The proprietary period for the last two AGILE Cycle-2 Observation Blocks (OB), OB 8300 and OB 8400 (from 2009-09-30 to 2009-10-31), has currently expired, and the data are public and available from the ASDC Multimission Archive webpage <http://www.asdc.asi.it/mmia/> for the AGILE Mission.

Note that a new version of the whole archive for public Cycle-1 and Cycle-2 OB, reprocessed with the latest OB pipeline software version 5_19_18_17, is now available. Software version 5_19_18_17 is the same used in the creation of the proprietary A03 data delivered on November 9, 2010 to successful proponents of the Cycle-3 AGILE Guest Observer Program.

As in previous public deliveries, AGILE data in pointing mode are cleaned by eliminating time periods corresponding to repointing slews and occasional losses of fine-pointing attitude (file type: STDOP_GO).

Moreover the present data release also includes non-cleaned data, treated in a similar way to those presently taken in spinning mode (file type: STDOP).

WARNING: to avoid spurious artefacts, this set of non-cleaned data must be carefully analysed using a smaller field of view, according to the following recommendations on parameter values when generating maps:

fovrad=50 albrad=90 phasecode=2

See explanation for the new file naming convention in the Data Retrieval section below.

***** Delivered Data *****

AGILE Cycle-1 observations were structured as a series of 29 OBs each corresponding to a unique identifying number. The schedule can be found at: http://agile.asdc.asi.it/current_pointing.html (click on the red text: "Click here to show previous pointings").

Cycle-1 observations, following the first year AGILE Baseline Pointing Plan and including 7 Target of Opportunities (ToO) and 1 Partial Repointing, are listed below:

#	OB #	OB Name	RA_PNT	DEC_PNT	OB start date	OB end date	Mean OB Exp.	Notes
1	4900	Cygnus Field 1	20 26 47.9	+53 17 59.9	2007-12-01 12:00	2007-12-05 09:00	7863569	Baseline
2	4910	Cygnus Field 1 b<0	21 53 59.9	+38 00 00.0	2007-12-05 09:00	2007-12-15 12:00	17534267	Part.Rep.
3	4920	Cygnus Field 1 Ext	22 15 35.9	+37 53 59.9	2007-12-15 12:00	2007-12-16 12:00	1818760	ToO
4	5010	Virgo Field 1	11 58 00.0	-00 24 00.0	2007-12-16 12:00	2008-01-08 12:00	26087354	Baseline
5	5100	Vela Field	10 45 12.0	-63 47 59.9	2008-01-08 12:00	2008-02-01 12:00	33770516	Baseline
6	5200	South Gal Pole	04 06 23.9	-38 06 00.0	2008-02-01 12:00	2008-02-09 09:00	12842897	Baseline
7	5210	ToO MKN 421	16 48 47.9	+50 30 00.0	2008-02-09 09:00	2008-02-12 12:00	6068356	ToO
8	5220	South Gal Pole Res	04 27 11.9	-35 47 59.9	2008-02-12 12:00	2008-02-14 12:00	3550767	Baseline
9	5300	Musca Field	13 51 36.0	-73 54 00.0	2008-02-14 12:00	2008-03-01 12:00	33480692	Baseline
10	5400	Gal. Cent. I OB	17 04 47.9	-51 23 59.9	2008-03-01 12:00	2008-03-16 12:00	25219658	Baseline
11	5450	Gal. Cent. II OB	18 14 00.0	-28 36 00.0	2008-03-16 12:00	2008-03-30 12:00	18890136	Baseline
12	5500	Anti-Center	07 00 00.0	+21 41 59.9	2008-03-30 12:00	2008-04-05 12:00	9156017	Baseline
13	5510	SA Raster Scan 23d	07 19 59.9	+28 36 00.0	2008-04-05 12:00	2008-04-07 12:00	3433405	Baseline
14	5520	SA Raster Scan 28d	07 30 23.9	+35 42 00.0	2008-04-07 12:00	2008-04-08 12:00	624562	Baseline
15	5530	Anti Center Res.	07 28 23.9	+20 48 00.0	2008-04-08 12:00	2008-04-10 12:00	3495799	Baseline
16	5600	Vulpecula Field	19 36 24.0	+20 36 00.0	2008-04-10 12:00	2008-04-30 12:00	32487373	Baseline
17	5700	North Gal Pole	16 53 36.0	+71 00 00.0	2008-04-30 12:00	2008-05-10 12:00	20943837	Baseline
18	5800	Cygnus Field 2	21 11 12.0	+35 12 00.0	2008-05-10 12:00	2008-06-09 18:00	46349986	Baseline

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19	5810	ToO WComae ON +231	12 23 12.0	+29 48 00.0	2008-06-09 18:00	2008-06-15 12:00	9974044	ToO
20	5820	Cygnus Field 2 Res	22 06 47.9	+50 00 00.0	2008-06-15 12:00	2008-06-30 12:00	28796719	Baseline
21	5900	Antlia Field	11 50 47.9	-48 36 00.0	2008-06-30 12:00	2008-07-25 18:00	76999062	Baseline
22	5910	ToO 3C454.3	01 33 12.0	+38 12 00.0	2008-07-25 18:00	2008-07-31 12:00	18507796	ToO
23	5920	ToO 3C454.31 Ext	02 22 48.0	+39 00 00.0	2008-07-31 12:00	2008-08-15 12:00	50065481	ToO
24	6010	Musca Field 2 Post	12 52 00.0	-77 05 59.9	2008-08-15 12:00	2008-08-31 12:00	32538600	Baseline
25	6110	ToO SGR 0501+4516	04 34 48.0	+44 17 59.9	2008-08-31 12:00	2008-09-10 12:00	32846816	ToO
26	6200	Gal. center 3	18 08 47.9	-28 36 00.0	2008-09-10 12:00	2008-10-10 12:00	91172040	Baseline
27	6210	ToO PKS 0537-441	06 43 11.9	-46 36 00.0	2008-10-10 12:00	2008-10-17 12:00	22294784	ToO
28	6310	Aquila Field Post	19 48 24.0	+10 00 00.0	2008-10-17 12:00	2008-10-31 12:00	37164472	Baseline
29	6400	Cygnus Field 3	20 07 12.0	+34 00 00.0	2008-10-31 12:00	2008-11-30 12:00	83470966	Baseline

AGILE Cycle-2 observations were structured as a series of 24 OBs each corresponding to a unique identifying number. The schedule can be found at: http://agile.asdc.asi.it/current_pointing.html (click on the red text: "Click here to show previous pointings").

The set GRID data which become public today corresponds to the last two

AGILE observations of Cycle-2, from 2009-09-30 to 2009-10-31.

Cycle-2 observations, following the second year AGILE Baseline Pointing Plan

and including 2 Target of Opportunities (ToO) and 1 Partial Repointing, are listed below:

#	OB #	OB Name	RA_PNT	DEC_PNT	OB start date	OB end date	Mean OB Exp.	Notes
30	6500	Cygnus Field 4	22 02 48.0	+35 12 00.0	2008-11-30 12:00	2008-12-20 12:00	54434163	Baseline
31	6600	Cygnus Field 5	23 13 12.0	+44 17 60.0	2008-12-20 12:00	2009-01-12 18:00	70389796	Baseline
32	6610	ToO Carina	11 07 60.0	-60 17 60.0	2009-01-12 18:00	2009-01-19 18:00	24357157	ToO
33	6710	Cygnus Field 6	23 31 36.0	+73 05 60.0	2009-01-19 18:00	2009-02-28 12:00	121269290	Baseline
34	6800	Gal. Center 4	17 31 12.0	-29 18 00.0	2009-02-28 12:00	2009-03-25 12:00	79351215	Baseline
35	6810	Gal. Center prol	18 37 60.0	-29 18 00.0	2009-03-25 12:00	2009-03-31 12:00	18985924	Part.Rep
36	6910	Crab Field 1 post	07 09 36.0	+31 36 00.0	2009-03-31 12:00	2009-04-07 12:00	22634242	Baseline
37	7010	Aquila Field 1 post	19 33 60.0	-19 18 00.0	2009-04-07 12:00	2009-04-15 12:00	25463004	Baseline
38	7100	Aquila Field 2	19 48 48.0	+16 00 00.0	2009-04-15 12:00	2009-04-30 12:00	40659296	Baseline
39	7200	Cygnus Field 7	20 21 12.0	+29 23 60.0	2009-04-30 12:00	2009-05-15 12:00	46628762	Baseline
40	7300	Vela Field 2	09 33 36.0	-36 00 00.0	2009-05-15 12:00	2009-05-25 18:00	29700936	Baseline
41	7310	3rd ToO 3C454.3	22 03 36.0	+10 48 00.0	2009-05-25 18:00	2009-05-29 12:00	9751998	ToO
42	7320	Vela Field 2 Resum	09 18 24.0	-40 30 00.0	2009-05-29 12:00	2009-06-04 12:00	19212995	Baseline
43	7410	Virgo Field 2 post	11 33 60.0	+10 41 60.0	2009-06-04 12:00	2009-06-15 12:00	34634675	Baseline
44	7500	Cygnus Field 8	22 22 48.0	+43 00 00.0	2009-06-15 12:00	2009-06-25 12:00	32989242	Baseline
45	7600	Cygnus Field 9	23 43 12.0	+38 00 00.0	2009-06-25 12:00	2009-07-15 12:00	62235955	Baseline
46	7700	Cygnus Field 10	23 16 24.0	+66 35 60.0	2009-07-15 12:00	2009-08-12 12:00	94926497	Baseline
47	7800	Vela Field 3	14 30 00.0	-63 30 00.0	2009-08-12 12:00	2009-08-31 12:00	64198325	Baseline
48	7900	Norma Field	16 40 24.0	-35 36 00.0	2009-08-31 12:00	2009-09-10 12:00	32808480	Baseline
49	8000	SA Crab (15,6.3)	05 21 12.0	+06 24 00.0	2009-09-10 12:00	2009-09-13 12:00	7357784	Baseline
50	8100	SA Crab (25,3.5)	05 33 36.0	-03 06 00.0	2009-09-13 12:00	2009-09-16 12:00	9945973	Baseline
51	8200	Galactic Center 5	18 05 12.0	-23 30 00.0	2009-09-16 12:00	2009-09-30 12:00	42668912	Baseline
52	8300	Aquila Field 3	19 05 12.0	-23 11 60.0	2009-09-30 12:00	2009-10-15 12:00	24411329	Baseline
53	8400	Aquila Field 4	19 08 24.0	+28 48 00.0	2009-10-15 12:00	2009-10-31 12:00	4099810	Baseline

 ***** Data Retrieval *****

The query for the AGILE Mission data in the ASDC Multi Mission Interactive Archive <http://www.asdc.asi.it/mmia/> produces an interactive table showing all OBs selected according to the chosen option:

- either the observation mean pointing position (RA_PNT, DEC_PNT) lies within 50 degrees from the source position

- or the observation lies in the specified time-range.
- or the observation has the selected parameters (OB number values).

A query with "Search Type" by "Time", with default Start Date and End Date values results in a complete table of all public AGILE OB available to date.

The Mean OB Exposure column (in cm² s) in the interactive table corresponds to the effective area associated to the FM filtered events.

The "Public access" link makes it possible to download the following files for each OB:

*** cleaned data files ***

- the spacecraft cleaned auxiliary (LOG) files (ag-<TSTART>_STD0P_GO.LOG.gz) needed for the data analysis and covering approximately one-day of observation within each OB, are grouped under the directory STD0P_GO_LOG:

```
* STD0P_GO_LOG
  ag-<TSTART1>_STD0P_GO.LOG.gz
  ag-<TSTART2>_STD0P_GO.LOG.gz
  .....
  .....
  ag-<TSTARTn>_STD0P_GO.LOG.gz
```

and a single general LOG index file with suffix: ag-STD0P_GO_LOG-<TSTART1>.index

WARNING: LOG files have a very accurate time resolution of 100 msec and need several GB of available disk space.

- two cleaned event files including all gamma-ray events in the GRID Field of View (FoV) using AGILE event filters:

```
the standard OB event file ag<TSTART>-<TSTOP>_STD0P_GO_FM.EVT and its index file with suffix: .index
the additional OB event file ag<TSTART>-<TSTOP>_STD0P_GO_FT3AB.EVT and its index file with suffix: .index
```

WARNING: data analysis with event files obtained with FT3AB filter may be more efficient in detecting sources with a soft energy spectrum, but there may be noisy residual artifacts at the border of the Field of View (off-axis angle > 40 deg).

- three maps, count, exposure and diffuse background, centered on the mean OB pointing position:

```
ag<TSTART>-<TSTOP>_STD0P_GO_FM.COUNTS
ag<TSTART>-<TSTOP>_STD0P_GO_FM.EXP
ag<TSTART>-<TSTOP>_STD0P_GO_FM.GAS
```

These maps were automatically generated with the FM filter with the following parameters:

```
mDIM=120.0      index=-2.1      earth_tol=3.0
mres=0.25      fovrad=70      keepmono=NO
lonpole=180    albrad=80      phasecode=18
emin=100       y_tol=0.5     projection=ARC
emax=50000     roll_tol=360.0          step=4
```

To produce your own maps and run likelihood tasks please download and install the public AGILE software available at:
<http://agile.asdc.asi.it/public/>
 and follow the Software User Manual included.

- a GIF file showing the images of both the OB (FM) exposure and count maps.
 For illustrative purpose only, the count map image includes automatic candidate detections in the FoV obtained with XIMAGE software.

*** non-cleaned data files ***

- the spacecraft auxiliary (LOG) files (ag-<TSTART>_STD0P.LOG.gz) needed for the data analysis and covering approximately one-day of observation within each OB, are grouped under the directory STD0P_LOG:

* STD0P_LOG

ag-<TSTART1>_STD0P.LOG.gz

ag-<TSTART2>_STD0P.LOG.gz

.....

.....

ag-<TSTARTn>_STD0P.LOG.gz

and a single general LOG index file with suffix: ag-STD0P_LOG-<TSTART1>.index

- two event files including all gamma-ray events in the GRID Field of View (FoV) using AGILE event filters:

the standard OB event file ag<TSTART>-<TSTOP>_STD0P_FM.EVT and its index file with suffix: .index

the additional OB event file ag<TSTART>-<TSTOP>_STD0P_FT3AB.EVT and its index file with suffix: .index

NOTE: if you choose to download data files with the default option "Automatically unpack the data using a Java applet" then each file name in the corresponding .index file must be changed removing the .gz suffix before running map generator tasks.

**** Interactive Tool ****

An interactive tool allows ASDC Web users to preview the AGILE

public data fields and to perform an interactive preliminary analysis around a chosen sky position.

Warning: use only as a preview of the AGILE gamma-ray field.

To perform your own scientific analysis, please download data and use the official public AGILE software.

To access the preview tool click on "On-line Analysis" in the query output table, under the "GRID Interactive Archive" column. The interactive ASDC tool uses the XIMAGE software package for multi-mission X-ray astronomy (v4.5.1), adapted to gamma-ray image display and data analysis.

*** Note on AGILE Filters ***

The standard AGILE event filter is the FM filter, optimized up to 60 deg off-axis.

The AGILE Team recommends the use of v3.0 EVT files produced with the FM filter for gamma-ray source standard likelihood analysis.

EVT files produced with the FT3AB filter are also published, but they are delivered with a warning (see above).

Each filter is associated with its own calibration and diffuse model files.

Be careful always to use the calibration and diffuse model files appropriate to the chosen EVT filter type.

Calibration and diffuse model files are delivered with the public software release under the directory \$ADC/scientific analysis/data.

* FM filter: if you use the FM-filtered event file with suffix: EVT__GO_FM you should always use as an input to scientific software tasks:

- effective area files of type *FM*.sar.gz

- energy dispersion files of type *FM*.edp.gz

- point spread function files of type *FM*.psd.gz
- flux correction files of type *FM*.expcorr.gz
- diffuse model files of type *FM*.conv.sky.gz

* FT3AB filter: if you use the FT3AB-filtered event file with suffix: EVT__GO_FT3AB
you should always use as an input to scientific software tasks:

- effective area files of type *FT3AB*.sar.gz
- energy dispersion files of type *FT3AB*.edp.gz
- point spread function files of type *FT3AB*.psd.gz
- flux correction files of type *FT3AB*.expcorr.gz
- diffuse model files of type *FT3AB*.conv.sky.gz

* Old F4 filter: this filter is not included in the new data delivery.
If you want to use old F4-filtered event files of previous public
data delivery v1.0 with suffix: EVT__GO
you should always use as an input of scientific software tasks:

- effective area files of type *F4*.sar.gz
- energy dispersion files of type *F4*.edp.gz
- point spread function files of type *F4*.psd.gz
- flux correction files of type *F4*.expcorr.gz
- diffuse model files of type *F4*.conv.sky.gz

For further details please follow the instructions given in
the Software User Manual.

Enjoy!