P2SC-ROB-WR-008-20100503 Weekly Report # 008	**P2SC Weekly report**	
Period Covered: Date: Written By: Released By:	Mon May 3 to Sun May 09 2010 May 12 2010 Carlos Cabanas David Berghmans	Royal Observatory of Belgium PROBA2 Science Center
To:	LYRA PI, hochedez@sidc.be SWAP PI, david@sidc.be	http://proba2.sidc.be ++ 32 (0) 2 373 0 559
cc:	ROB DIR, ronald@oma.be ESA Redu, Etienne.Tilmans@esa.int ESA D/SRE, Joe.Zender@esa.int ESA D/TEC, Karsten.Strauch@esa.int	

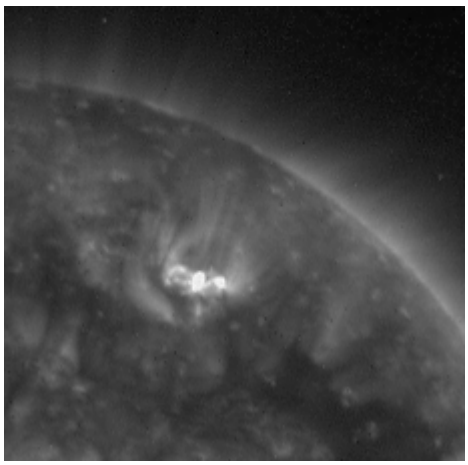
1. Science

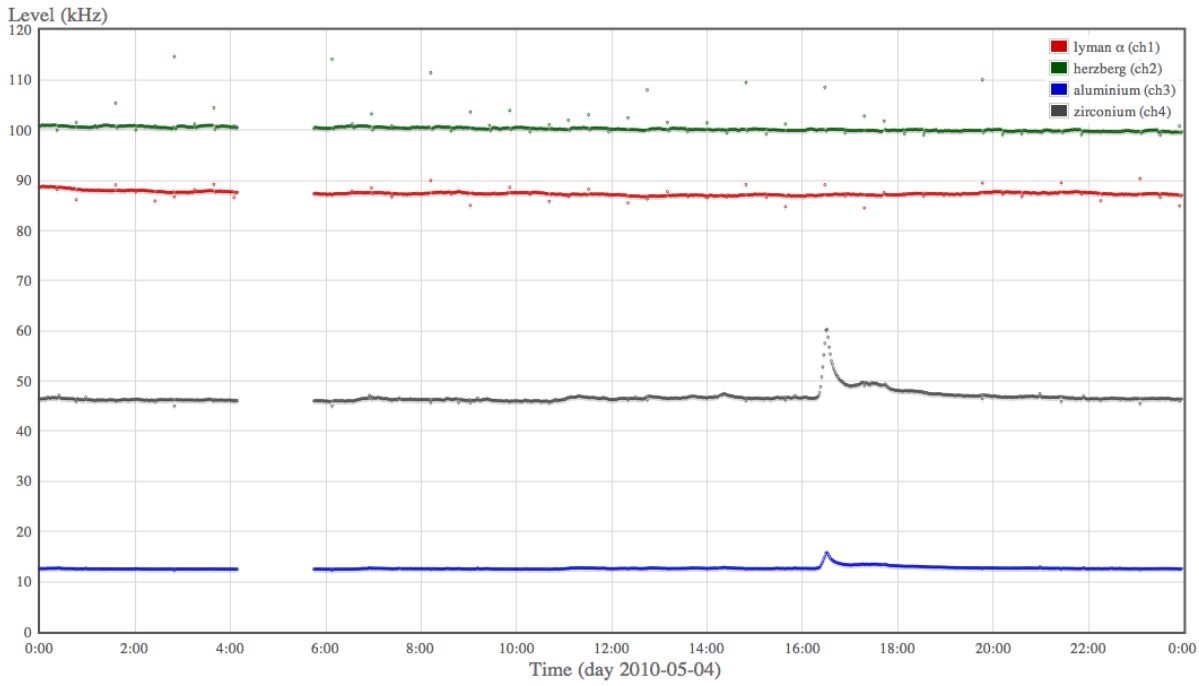
2010-05-04

A C-Class flare took place on 04 May:

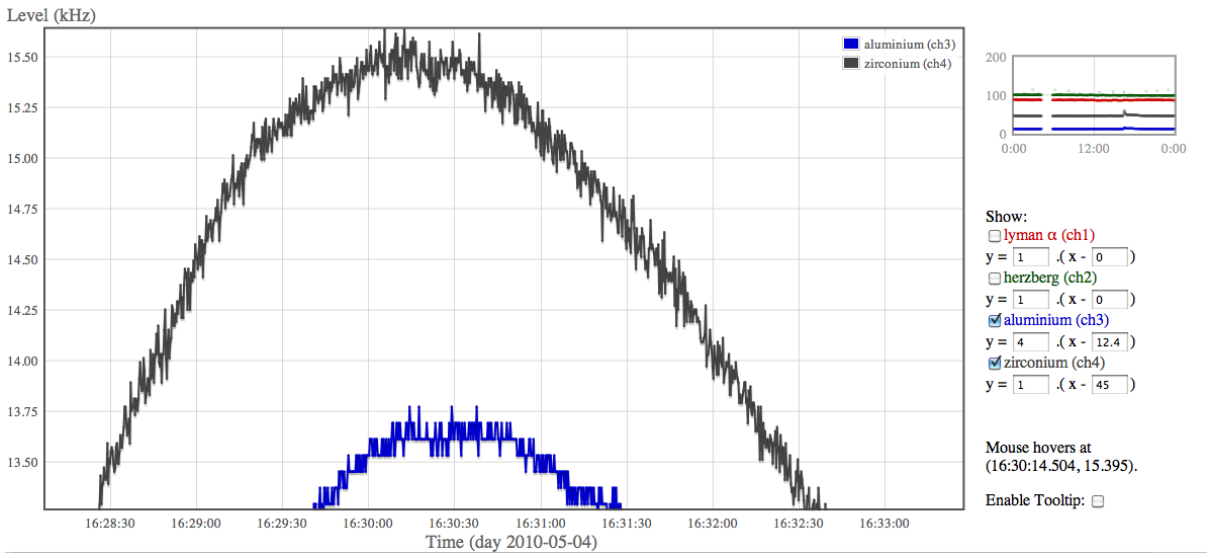
Date	Start	End	Peak	GOES_class	Position
2010/05/04	16:15	16:34	16:29	C3.6	N41W23

SWAP and LYRA recorded this flare.





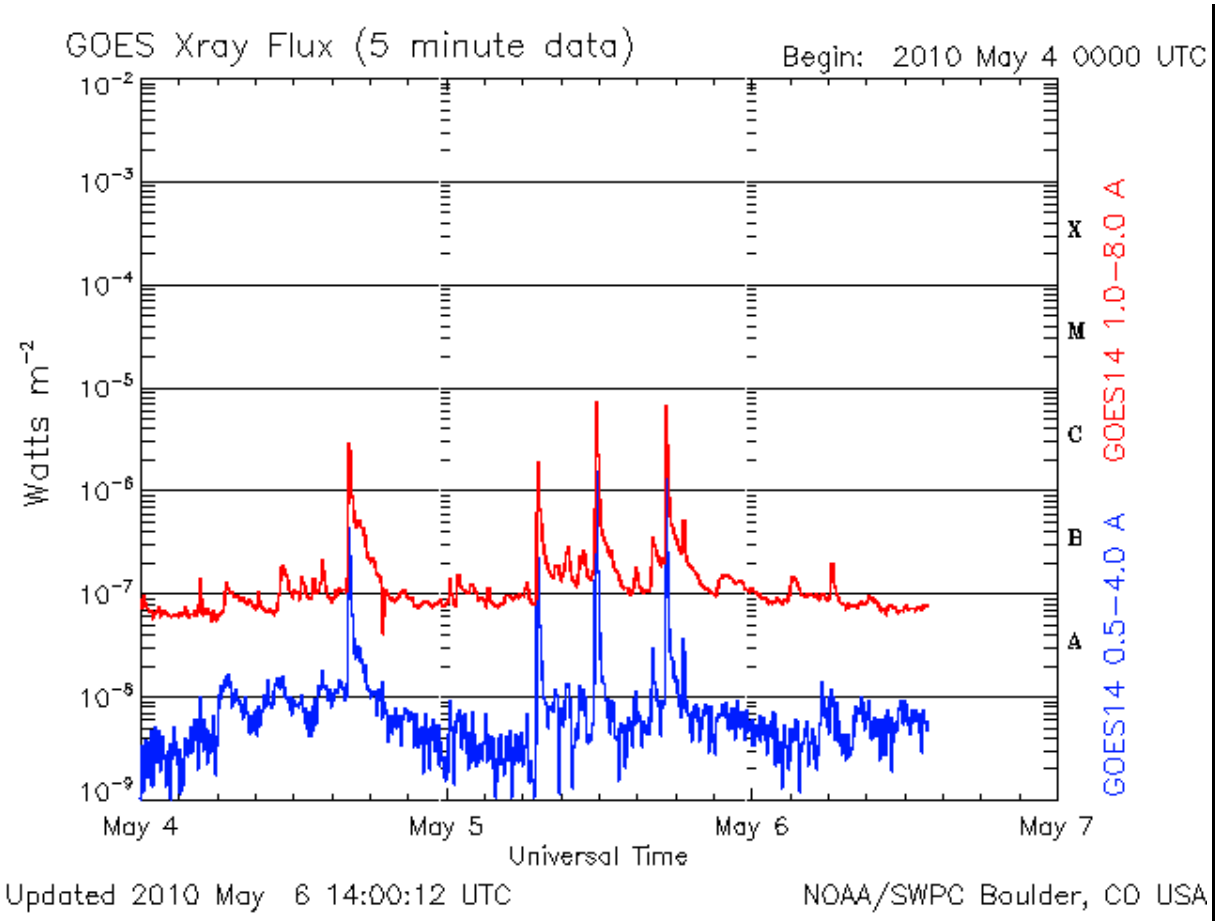
Goes shows the main peak at 16:29. LYRA shows it a bit later, around 16:30:10 in Zr and 16:30:30 in Al:



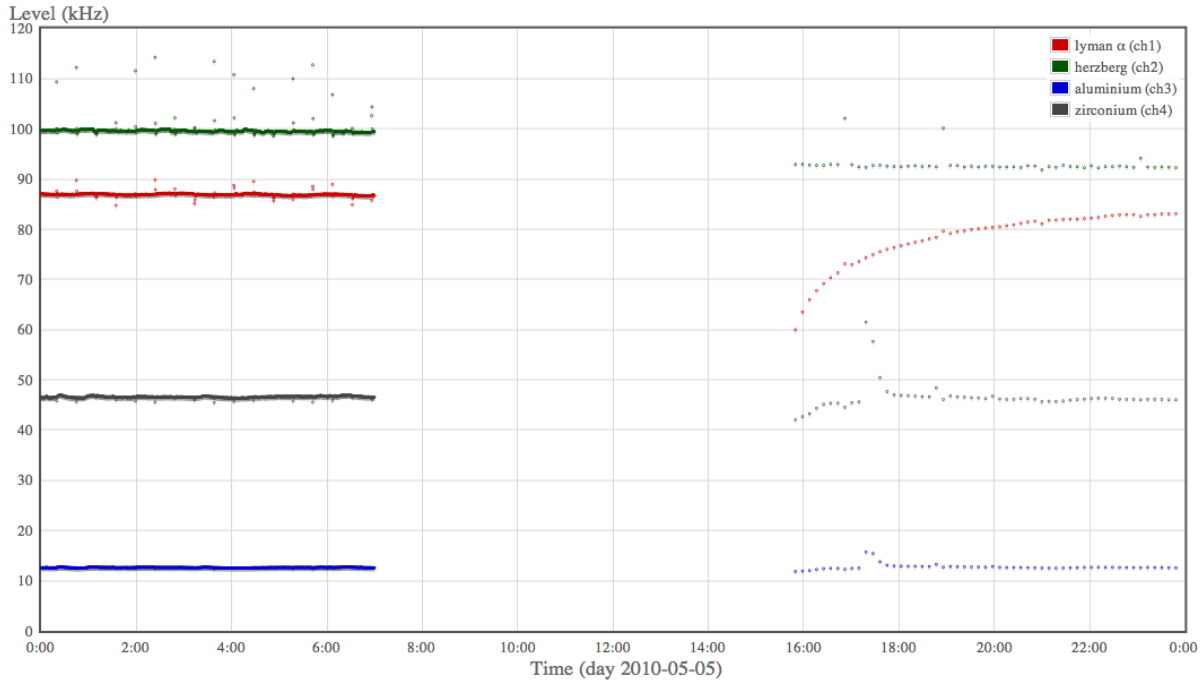
2010-05-05

3 C-Class flares took place on 05 May (see GOES Xray Flux):

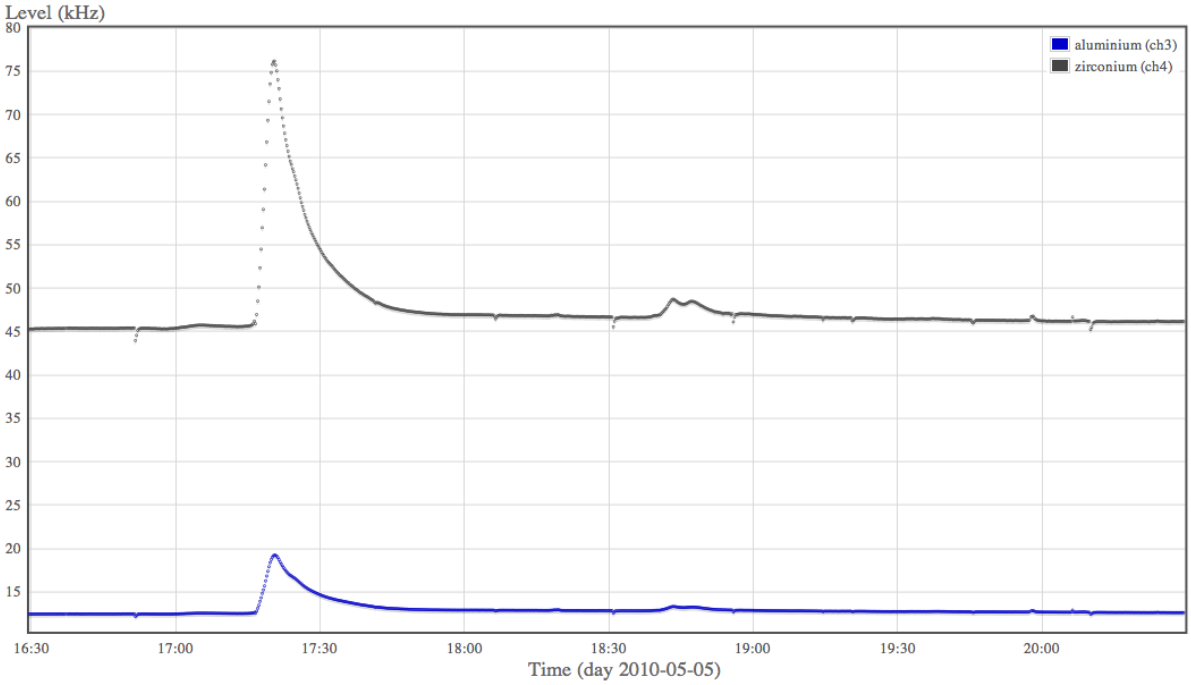
Date	Start	End	Peak	GOES_class	Position
2010/05/05	07:09	07:20	07:16	C2.3	N41W31
2010/05/05	11:58	11:58	11:52	C8.8	N41W34
2010/05/05	17:13	17:22	17:19	M1.2	N42W36



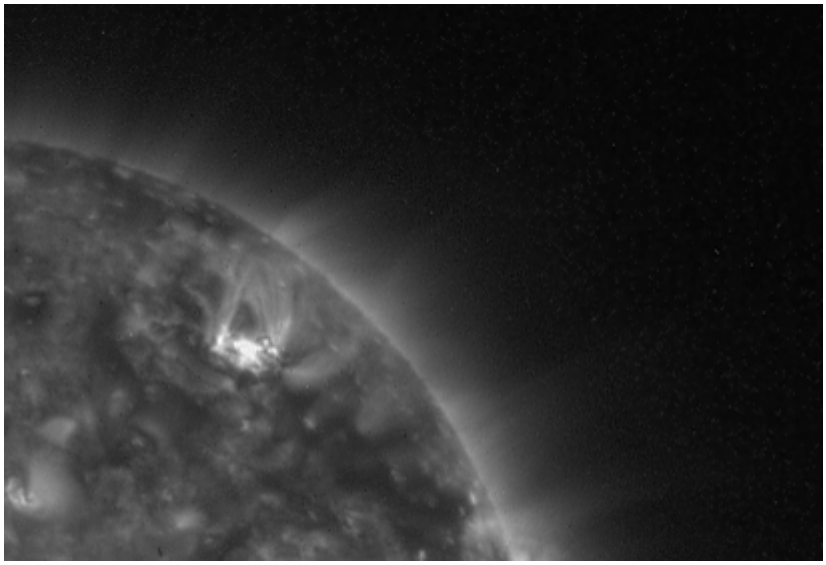
LYRA just detected one (the last one) of the three flares because a calibration camping took place when the other two occurred. The flare and the gap which correspond to the calibration period are present in the LYRA FITS file of that day.



Below, we can see a zoomed image of the flare recorded by the LYRA aluminium and zirconium channels.



SWAP also recorded these flares. Here, we can see an example of the M1.2 flare:

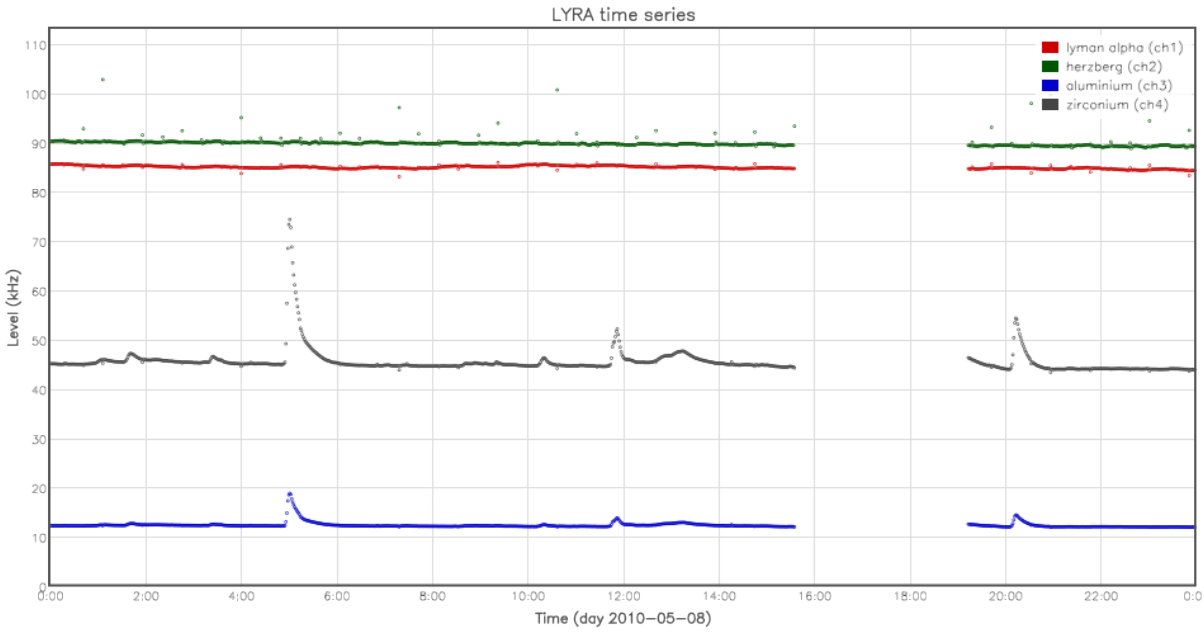


2010-05-08

3 C-Class flare took place:

Date	Start	End	Peak	GOES_class	Position
2010/05/08	04:51	05:04	04:59	C9.3	N40W66
2010/05/08	11:40	11:55	11:50	C1.8	N41W70
2010/05/08	20:04	20:18	20:11	C2.4	N40W81

LYRA saw these three flares. We can also see a data gap in the FITS file.



2. LYRA instrument status

The LYRA instrument functioned normally during the period.

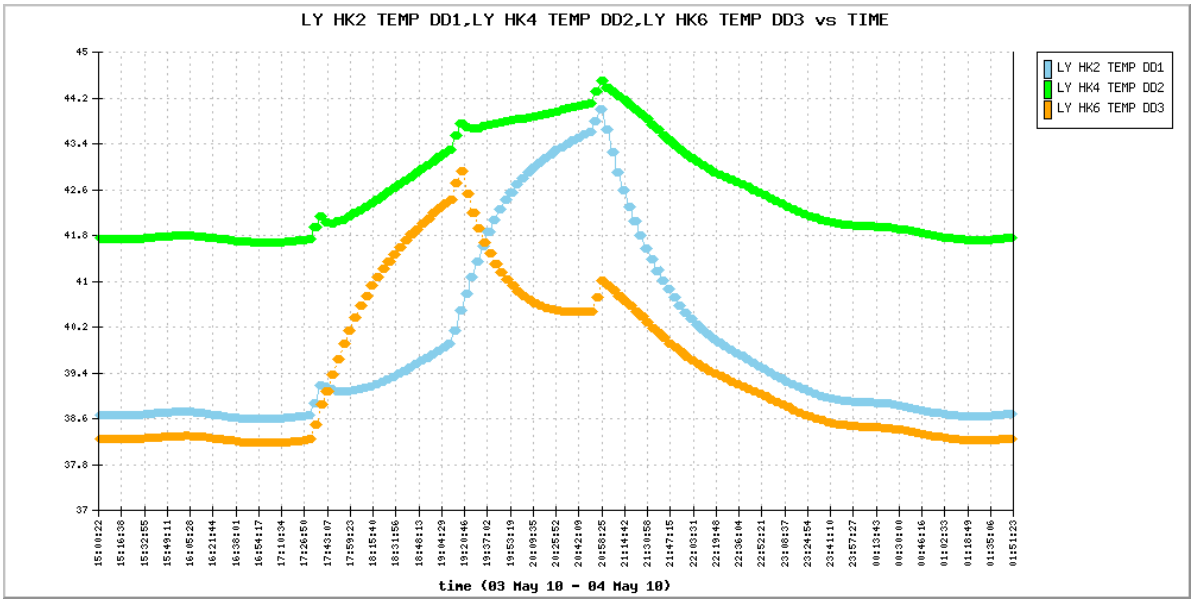
2010-04-03

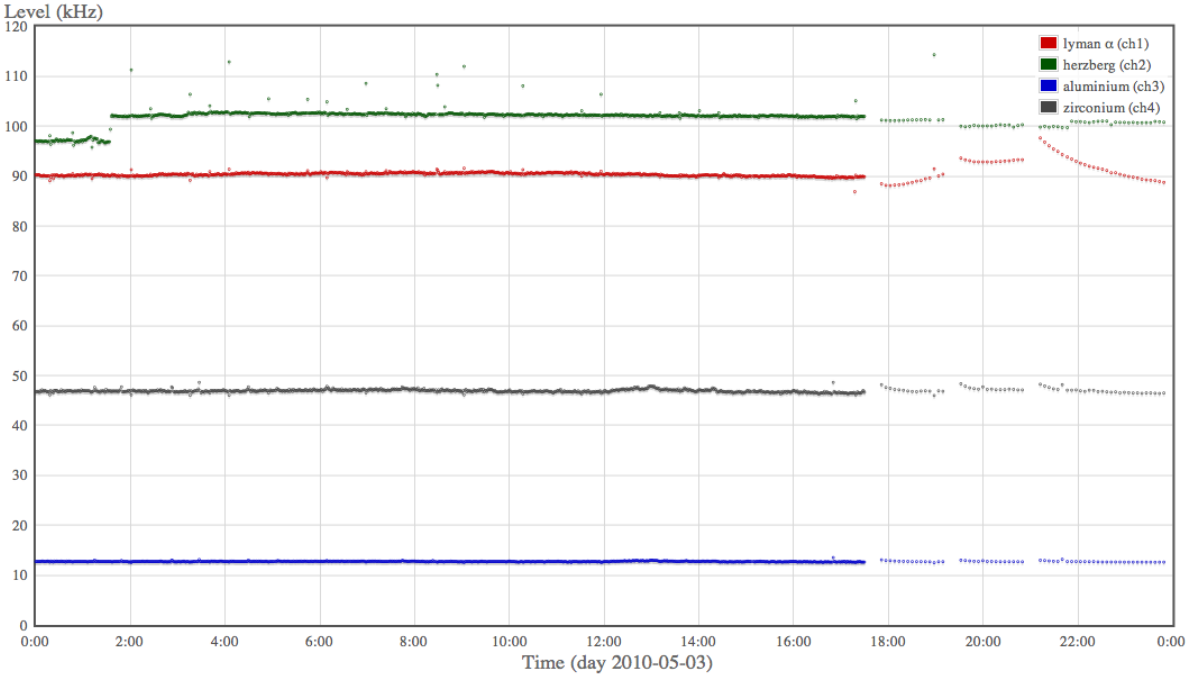
LYRA performed the *LCMP_07_CrossValidationWith_EVE-SDO* campaign. (LYRAIOS000062).

```
LYRA
00062
2010.05.01T12:05:29.000
2010.05.03T17:29:00.000
# generated on 2010-05-01T12:05:29Z by ios.xsl version 1.1
2010.05.03T17:30:00.000 warm_up 50ms unit_2 unit_3 100 off 0 open open
2010.05.03T17:37:00.000 set_heater ab 1 off
2010.05.03T17:37:05.000 set_heater ab 2 off
2010.05.03T17:37:10.000 set_heater ab 3 off
2010.05.03T17:47:00.000 acquisition 50ms unit_2 unit_3 200000 off 0
2010.05.03T19:10:00.000 warm_up 50ms unit_2 unit_1 100 off 0 open open
2010.05.03T19:17:00.000 set_heater ab 1 off
2010.05.03T19:17:05.000 set_heater ab 2 off
2010.05.03T19:17:10.000 set_heater ab 3 off
2010.05.03T19:27:00.000 acquisition 50ms unit_2 unit_1 200000 off 0
2010.05.03T20:50:00.000 warm_up 10ms unit_2 off 100 off 0 open close
2010.05.03T20:57:00.000 set_heater ab 1 off
2010.05.03T20:57:05.000 set_heater ab 2 off
```

2010.05.03T20:57:10.000 set_heater ab 3 off
2010.05.03T21:07:00.000 acquisition 10ms unit_2 off 200000 off 0

Due to the switch to backup acquisition and switching units, a lot of effects are seen in the LYRA data. These are partially due to the temperature effects related to those mode switches. A remarkable point is the influence that a temperature increase of one of the units has over the others.





2010-05-05

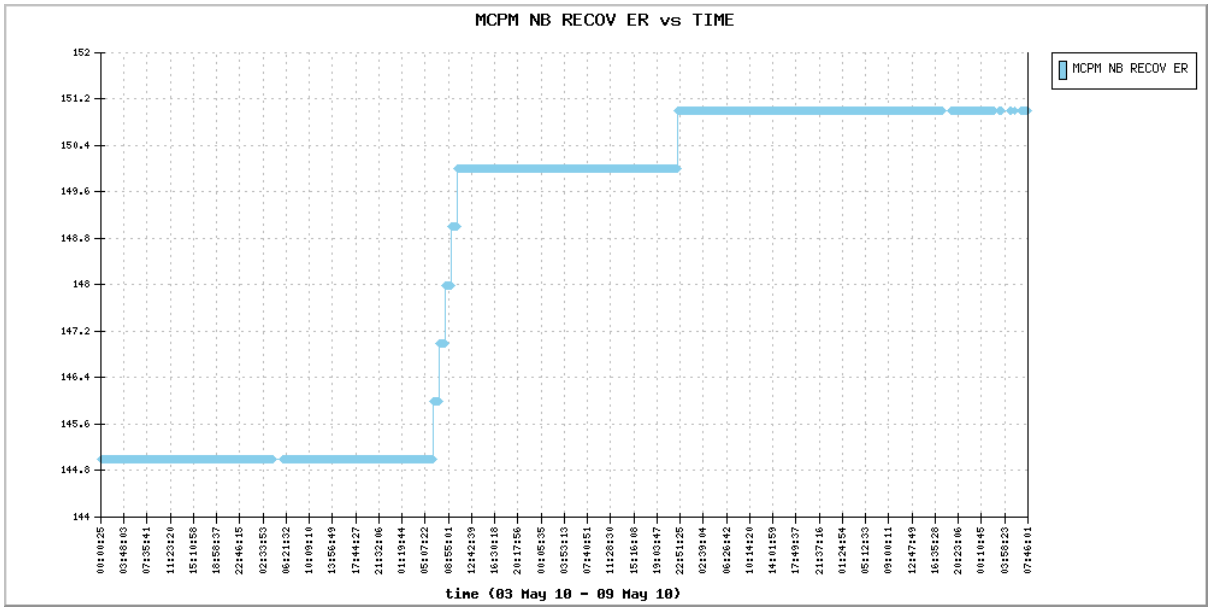
LYRA performed the weekly *LREP_02_Calibration* campaign. (LYRAIOS000063)

```
LYRA
00063
2010.05.03T13:42:30.000
2010.05.03T20:45:00.000
# generated on 2010-05-03T13:42:30Z by ios.xsl version 1.1
2010.05.03T20:50:00.000 warm_up 50ms unit_2 off 100 off 0 open close
2010.05.03T20:57:00.000 set_heater ab 1 off
2010.05.03T20:57:05.000 set_heater ab 2 off
2010.05.03T20:57:10.000 set_heater ab 3 off
2010.05.03T21:07:00.000 acquisition 50ms unit_2 off 200000 off 0
2010.05.05T07:00:00.000 warm_up 50ms unit_2 unit_1 100 off 0 close close
2010.05.05T07:07:00.000 set_heater ab 1 off
2010.05.05T07:07:05.000 set_heater ab 2 off
2010.05.05T07:07:10.000 set_heater ab 3 off
2010.05.05T07:17:00.000 acquisition 50ms unit_2 unit_1 200000 off 0
2010.05.05T07:40:00.000 acquisition 50ms unit_2 unit_1 200000 vis 255
2010.05.05T09:20:00.000 acquisition 50ms unit_2 unit_1 200000 uv 255
2010.05.05T11:00:00.000 acquisition 50ms unit_2 unit_1 200000 off 0
2010.05.05T11:20:00.000 acquisition 50ms unit_2 unit_3 100 off 0
2010.05.05T11:30:00.000 acquisition 50ms unit_2 unit_3 200000 off 0
2010.05.05T11:50:00.000 acquisition 50ms unit_2 unit_3 200000 vis 255
2010.05.05T13:30:00.000 acquisition 50ms unit_2 unit_3 200000 uv 255
2010.05.05T15:10:00.000 acquisition 50ms unit_2 unit_3 200000 off 0
2010.05.05T15:30:00.000 warm_up 1000ms unit_2 off 100 off 0 open close
2010.05.05T15:37:00.000 set_heater ab 1 off
2010.05.05T15:37:05.000 set_heater ab 2 off
2010.05.05T15:37:10.000 set_heater ab 3 off
2010.05.05T15:47:00.000 acquisition 1000ms unit_2 off 200000 off 0
```

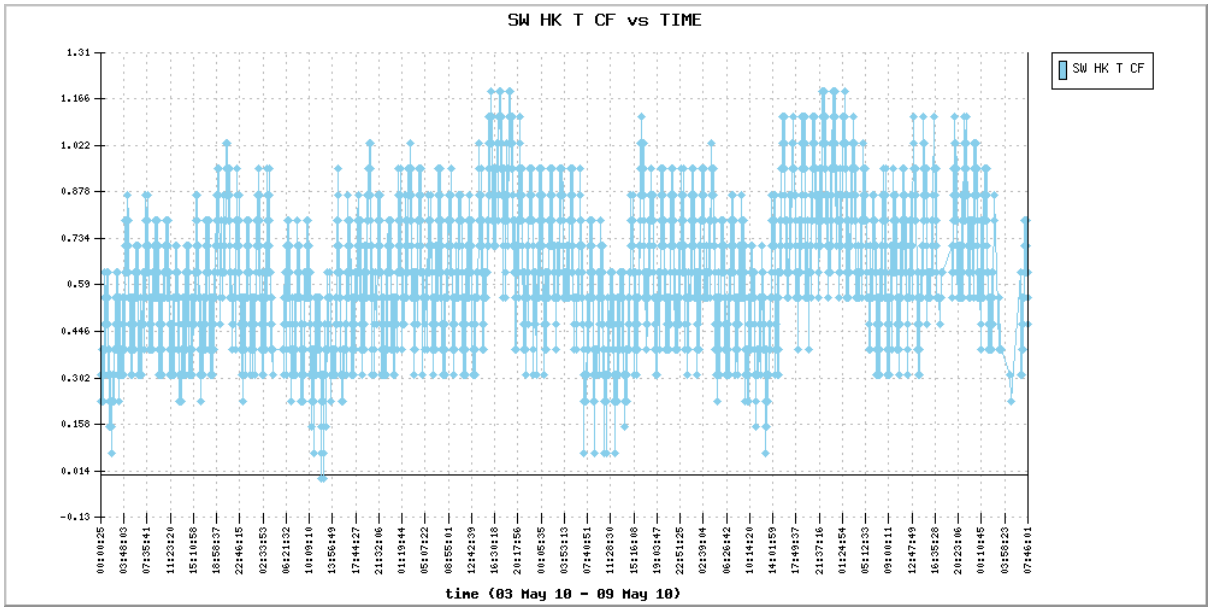
Notice that after this campaign LYRA remained acquiring through unit_2 with a cadence of 1 second instead of 10 milliseconds.

3. SWAP instrument status

The SWAP instrument functioned normally during the period.
The 'MCPM NB RECOV ER' increase from 145 to 151. The 'MCPM NB UNRECOV ER' remained fixed at 0.



The detector temperature ('SW HK T CF') increased a bit towards the end of the week and is now stable around 0.5 degrees.



2010-05-04 (SWAP IOS_000108)

SWAP performed the SCMP_04_SolarImagingWithPaving campaign.
This campaign aims to explore the solar off_limb region. It was the first time that the campaign was performed.
Five sets of images were acquired with different integration times and different acquisition periods:

- 3 images with integration time 20 secs and acquisition period 60 secs
- 3 images with integration time 100 secs and acquisition period 120 secs
- 3 images with integration time 60 secs and acquisition period 100 secs

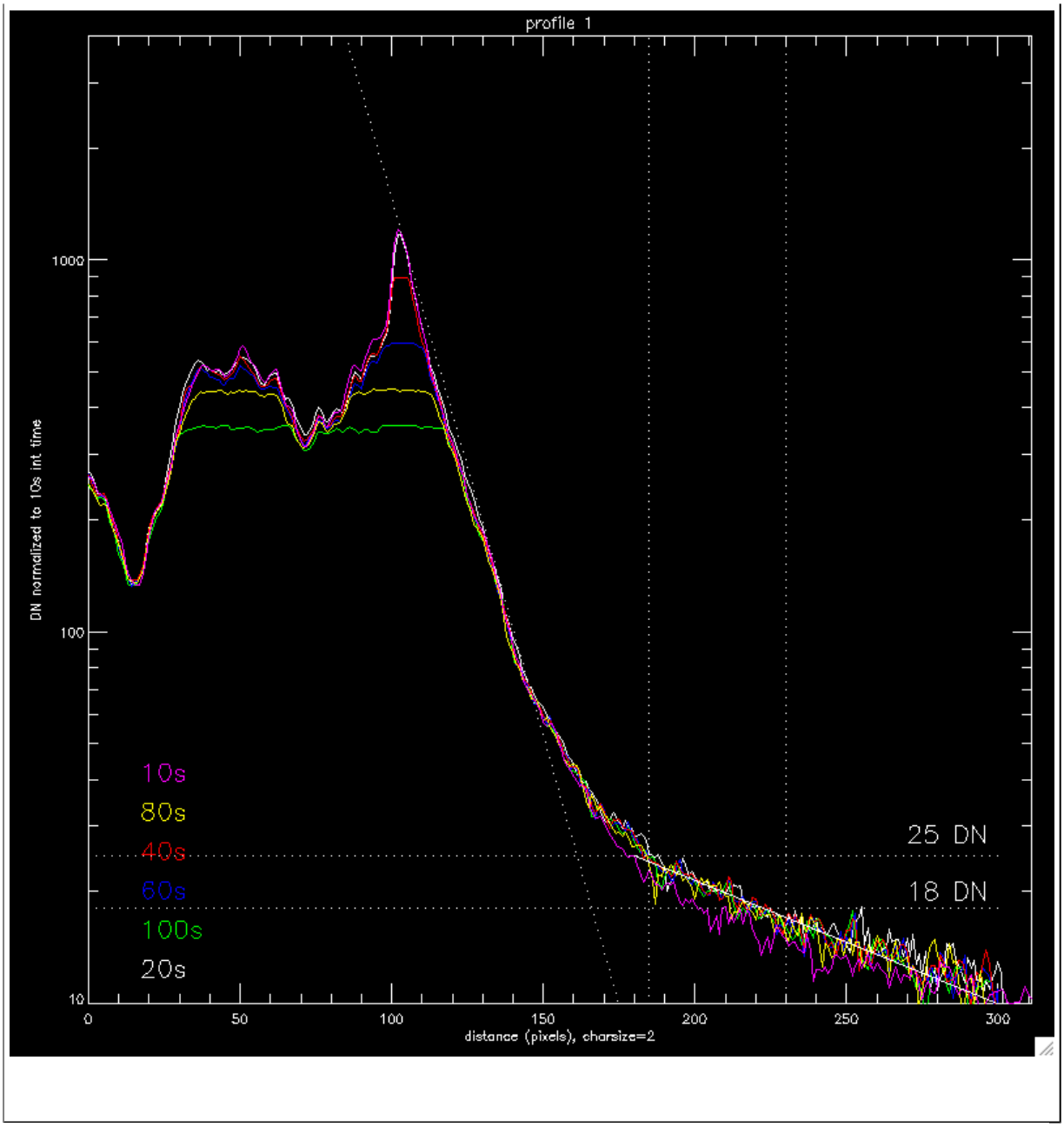
```
- 3 images with integration time 40 secs and acquisition period 80 secs
- 3 images with integration time 80 secs and acquisition period 100 secs
```

The IOS which handled the campaign was SWAP_IOS000108:

```
SWAP
00108
2010.05.04T12:10:02.000
2010.05.04T18:09:30.000
# generated on 2010-05-04T12:10:02Z by ios.xsl version 1.1
2010.05.04T18:09:57.000 idle
2010.05.04T18:10:00.000 data_management on 10 off fixed 10 3600 jpeg 0 on float 128 8 off
on 0 off
2010.05.04T18:10:27.000 acquisition_configuration correlated_double_sampling 20 0 0 1023
1023 59 1 led_off 60 30 12bits 0.0 0.0
2010.05.04T18:10:47.000 specific_acquisition
2010.05.04T18:13:47.000 acquisition_configuration correlated_double_sampling 100 0 0
1023 1023 59 1 led_off 120 30 12bits 0.0 0.0
2010.05.04T18:19:47.000 acquisition_configuration correlated_double_sampling 60 0 0 1023
1023 59 1 led_off 100 30 12bits 0.0 0.0
2010.05.04T18:24:47.000 acquisition_configuration correlated_double_sampling 40 0 0 1023
1023 59 1 led_off 60 30 12bits 0.0 0.0
2010.05.04T18:27:47.000 acquisition_configuration correlated_double_sampling 80 0 0 1023
1023 59 1 led_off 100 30 12bits 0.0 0.0
2010.05.04T18:32:27.000 table_configuration 3
0 10 0 0 1023 1023 1 100 0.0 0.0 off 253
1 10 0 0 1023 1023 1 100 0.0 0.0 off 254
2 10 0 0 1023 1023 1 100 0.0 0.0 off 255
2010.05.04T18:32:47.000 table_acquisition 0 3
```

After the calibration, SWAP remained imaging through a table of 3 entries, with 3 different priority numbers and with a cadence of 100 seconds, without jumping over LARS.

The first result is shown in the figure below showing a cut through the signal strength (vertically) along a cut through the images (horizontally). The high peak corresponds to the solar limb and the decay towards the right is the off-limb region. Two different slopes can be seen: a steep slope close to the solar limb and a weaker slope in the far-off limb region. The first one is presumably true solar signal while the second is presumably stray-light from the complete solar disk.



4. PROBA2 Science Center Status

Carlos Cabanas was operator during this week.

In the LYRA pipeline, only the LY-TMR runs automatically. The LY-EDG, taking a lot of time to complete, is scheduled manually on a daily basis, when no overlap is expected with the after-pass activities.
Please note that May 5 data were not processed by LYEDG yet on s2 but processed on s9 and FITS files moved to s2/public.

2010-05-06
New version of the SWAP Telemetry Reformatter -SWTMR - takes care of safe defaults values for

REBIN, ARTEFX, RECODING, COMPRESS and other keywords in case the images are ONBOARD-RAWS.

2010-05-07
A new version of the Ancillary Data Processor - ADP - was installed. This revision contains an improved version of the regression line calculation algorithm (for the LYRA parameters) and adds a second at the beginning and end of processing to increase the time range that the SWEDG will check.

The ADP had problems with reprocessing old files. Currently, the ADP moves the AD file from the dropbox to its p2sc/temp subdirectory at the beginning of processing. Afterwards it puts the input file into the MOC/archive. When this AD file already exists in the archive (owned by psc_ftp), it can not be overwritten by the file from the new ADP (owned by p2sc_ops). To avoid this, the ownership of the AD files that were processed before this change in the ADP (the move to temp) was changed to p2sc_ops.

2010-05-07
LMAT was updated . This new version of LMAT implements the split of the SWAP and LYRA processing pipelines, to avoid that one pipeline can stall the other. The LMATtools.ini file was updated to adjust for this splitting.

5. Data reception & discussions with MOC

Overview of the received data.

This section overviews the recovery data from pass 1151 to the pass 1216 (03-05-2010 / 09-05-2010).

House keeping data

Some GAPS in the house keeping data:

- From 2010-05-04T04:13:17.000Z to 2010-05-04T05:44:57.000Z
- From 2010-05-08T17:35:52.000Z to 2010-05-08T19:20:02.000Z (very low cadence)
- From 2010-05-09T03:15:03.000Z to 2010-05-09T06:30:53.000Z (very low cadence)

Science data

Missing science products:

- LYRA/SWAP 1161 (REDU info: No session recorded for this pass neither on BBE4 nor on BBE2.)
- BINSWAP_1204 (not in REDU web page)
- BINSWAP/BINLYRA_1205 (not in REDU web page)
- BINSWAP_1208 (not in REDU web page)
- BINSWAP/BINLYRA_1209 (not in REDU web page)
- BINSWAP/BINLYRA_1210 (not in REDU web page)

Several corrupted images. Some examples:

- BINSWAP20100508042811000006030 7PROCESSED - Corrupted first packet
- BINSWAP20100509191815000006125 5PROCESSED - Corrupted first packet

- BINSWAP20100505204309000058408PROCESSED - Packet CRC does not validate
- BINSWAP20100502201700000056238PROCESSED - Packet CRC fails to validate
- BINSWAP20100503232402000056934PROCESSED - Packet CRC fails to validate

Some corrupted LYRA packets:

- BINLYRA_1208: size of this packet is 3773, but the expected value given in the header is 2945
- BINLYRA_1204: size of this packet is 3758, but the expected value given in the header is 2911

On May 05, the ON_STACK report for the SWAPIOS_108 was not sent in the regular way due to some internal REDU problem. After having informed about the situation, REDU sent the report to P2SC and commanding databases inconsistencies were fixed.

6. APPENDIX Frequently used acronyms

ADPMS	Advanced Data and Power Management System
AOCS	Attitude and Orbit Control System
APS	Active Pixel image Sensor
ASIC	Application Specific Integrated Circuit
BBE	Base Band Equipment
CME	Coronal Mass Ejection
COGEX	Cool Gas Generator Experiment
CRC	Cyclic Redundancy Check
DR	Destructive Readout
DSLP	Dual Segmented Langmuir Probe
EIT	Extreme ultraviolet Imaging Telescope
FITS	Flexible Image Transport System
FOV	Field Of View FPA Focal Plane Assembly
FPGA	Field Programmable Gate Arrays
GPS	Global Positioning System
HAS	High Accuracy Star tracker
HK	Housekeeping
ICD	Interface Control Document
IIU	Instrument Interface Unit
IOS	Instrument Operations Sheet
LED	Light Emitting Diode
LEO	Low Earth Orbit
LYRA	Lyman Yield Radiometer
LYTMR	LYRA Telemetry Reformatter (software module of P2SC)
LYEDG	LYRA Engineering Data Generator (software module of P2SC)
MCPM	Mass Memory, Compression and Packetisation Module
MOC	Mission Operation Center
NDR	Non Destructive Readout
OBET	On board Elapsed Time
OBSW	On board Software
PE	

PGA	
PI	
P2SC	Proximity Electronics
PPT	Programmable Gain Amplifier
ROB	Principal Investigator
SAA	PROBA2 Science Center
SCOS	Pointing, Positioning and Time (software module of P2SC)
SEU	Royal Observatory of Belgium
SOHO	South Atlantic Anomaly
	Spacecraft Operation System
SWAP	Single Event Upset
SWEDG	Solar and Heliospheric Observatory
SWTMR	
TBC	Sun Watcher using APS detector and image Processing
TBD	SWAP Engineering Data Generator (software module of P2SC)
TBW	SWAP Telemetry Reformatter (software module of P2SC)
TPMU	To Be Confirmed
UTC	To Be Defined
UV	To Be Written TC Telecommand
	Thermal Plasma Measurement Unit
	Coordinated Universal Time
	Ultraviolet