
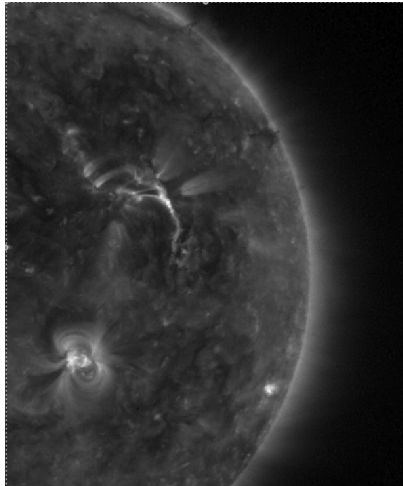


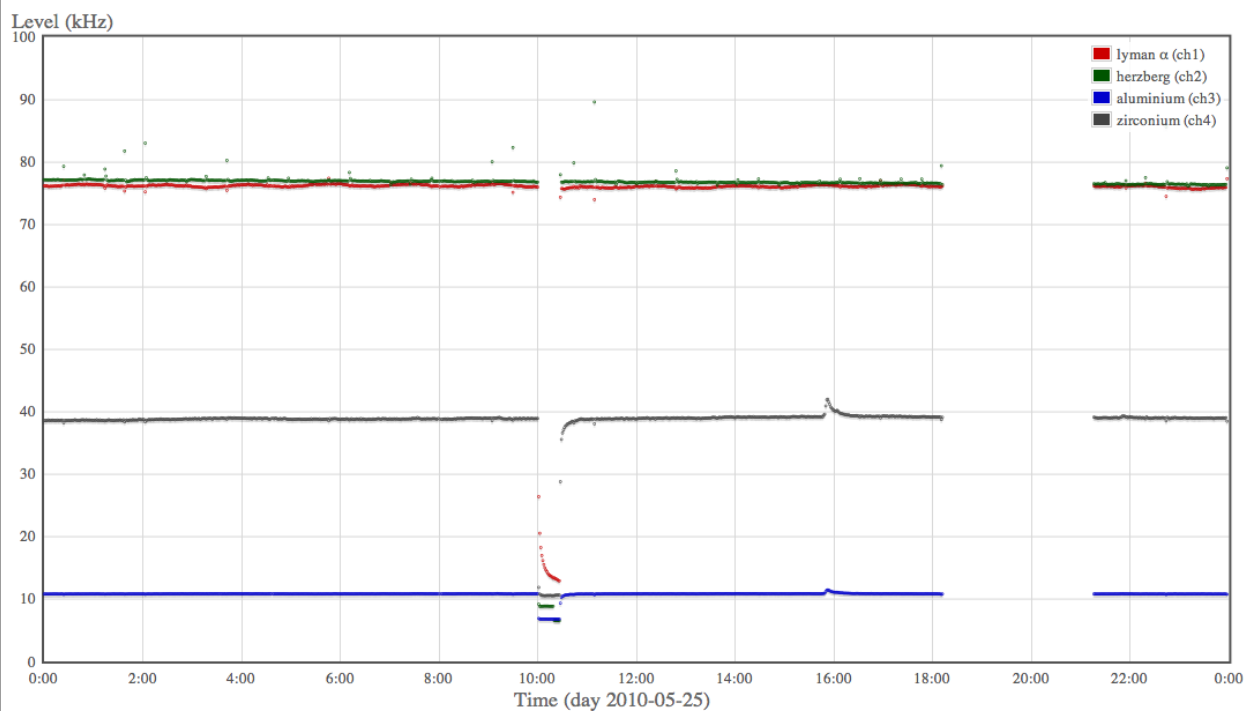
<p>P2SC-ROB- WR-011-20100524 Weekly Report # 010</p>	<p>P2SC Weekly report</p>	
<p>Period Covered: Date: Written By: Released By:</p>	<p>Mon May 24 to Sun May 30 2010 May 31 2010 Carlos Cabanas David Berghmans</p>	<p>Royal Observatory of Belgium PROBA2 Science Center</p>
	<p>To: LYRA PI, hochedez@sidc.be SWAP PI, david@sidc.be</p>	<p>http://proba2.sidc.be ++ 32 (0) 2 373 0 559</p>
	<p>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</p>	

1. Science

On 24 May 2010 an interesting prominence activation occurred around 15:30. SWAP saw this prominence.



On 25 May 2010 a B6.5 flare took place. Its peak occurred at 15:51:00 UTC. LYRA saw the flare:



The feature around 10:00 corresponds to the Tuesday SWAP calibration camping, while the gap around 20:00 corresponds to the loss of a science data packet.

Quiet conditions from 25 May 2010 to 30 May 2010, with no remarkable events excepting some low intensity B flares.

2. LYRA instrument status

The LYRA instrument functioned normally during the period.

2010-05-24 50msec cadence on unit2

2010-05-25 50msec cadence on unit2

2010-05-26

LYRA IOS0067 was sent to carry out two campaigns

- LREP_02_Calibration Wed, May 26, 00:00 -16:50
- LREP_03_BackupAcquisition Wed, May 26, 16:50 - 23:47

Notice that LY-IOS00067 did overwrite LY-IOS00066 in which some errors in the commanding occurred.

The intentions of this IOS were the following ones:

For the calibration campaign:

1. WARM-UP
2. UNIT2/UNIT1
 - 2.1 10MIN CAL
 - 2.2 40MIN DARK
 - 2.3 200MIN VIS
 - 2.4 200MIN UV
 - 2.5 40MIN DARK
3. UNIT2/UNIT3
 - 3.1 10MIN CAL
 - 3.2 40MIN DARK
 - 3.3 200MIN VIS
 - 3.4 200MIN UV
 - 3.5 40MIN DARK

For the backup campaign:

- For 2 orbit:
 - 10 MIN CAL +
 - UNIT2/1 (OPEN/OPEN) acquiring every 50ms

- For 2 orbit:
 - 10 MIN CAL +
 - UNIT2/1 (OPEN/OPEN) acquiring every 50ms

- Go back to nominal
 - UNIT2/OFF (OPEN/CLOSE) acquiring every 50ms

LY-IOS00067

```
LYRA
00067
2010.05.25T10:29:05.000
2010.05.25T23:59:00.000
# generated on 2010-05-25T10:29:05Z by ios.xsl version 1.1
--- (calibration campaign)
2010.05.26T00:00:00.000 warm_up 50ms unit_2 unit_1 100 off
0 close close
2010.05.26T00:07:00.000 set_heater ab 1 off
2010.05.26T00:07:05.000 set_heater ab 2 off
2010.05.26T00:07:10.000 set_heater ab 3 off
```

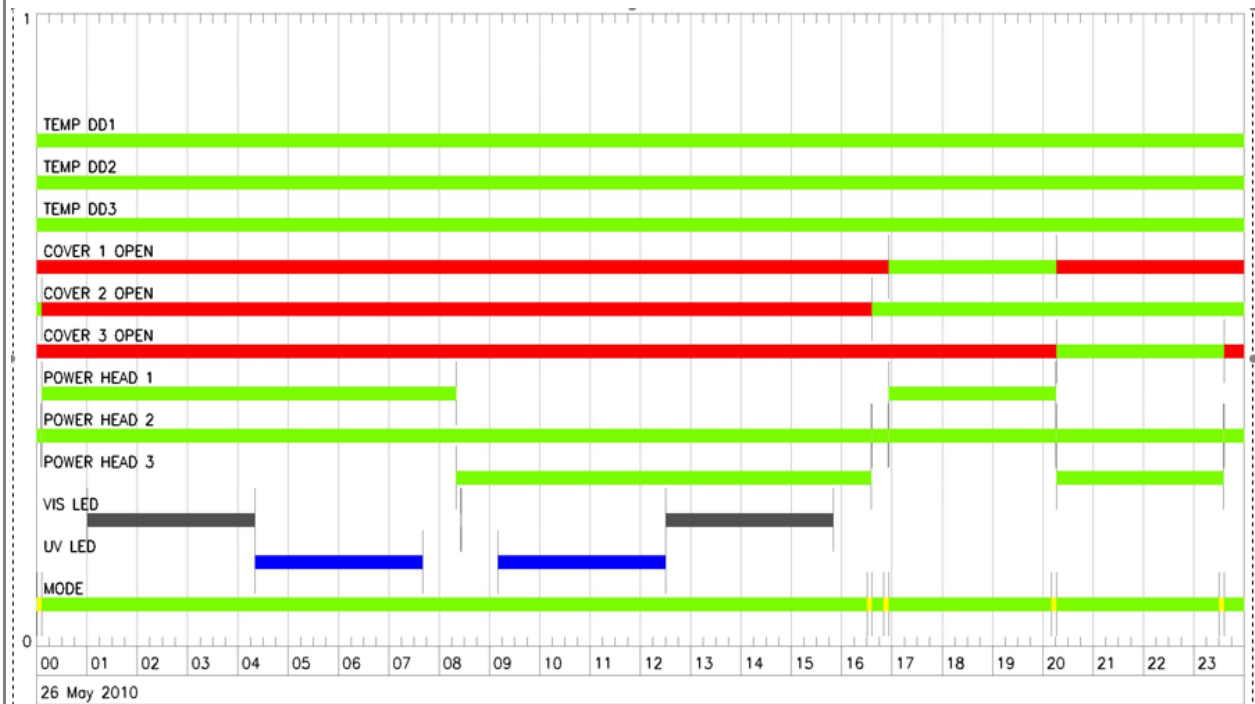
```
2010.05.26T00:20:00.000 acquisition 50ms unit_2 unit_1
200000 off 0
2010.05.26T01:00:00.000 acquisition 50ms unit_2 unit_1
200000 vis 255
2010.05.26T04:20:00.000 acquisition 50ms unit_2 unit_1
200000 uv 255
2010.05.26T07:40:00.000 acquisition 50ms unit_2 unit_1
200000 off 0
2010.05.26T08:20:00.000 acquisition 50ms unit_2 unit_3 100
off 0
2010.05.26T08:30:00.000 acquisition 50ms unit_2 unit_3
200000 off 0
2010.05.26T09:10:00.000 acquisition 50ms unit_2 unit_3
200000 uv 255
2010.05.26T12:30:00.000 acquisition 50ms unit_2 unit_3
200000 vis 255
2010.05.26T15:50:00.000 acquisition 50ms unit_2 unit_3
200000 off 0
2010.05.26T16:30:00.000 warm_up 50ms unit_2 off 100 off 0
open close
2010.05.26T16:37:00.000 set_heater ab 1 off
2010.05.26T16:37:05.000 set_heater ab 2 off
2010.05.26T16:37:10.000 set_heater ab 3 off
2010.05.26T16:47:00.000 acquisition 50ms unit_2 off 200000
off 0

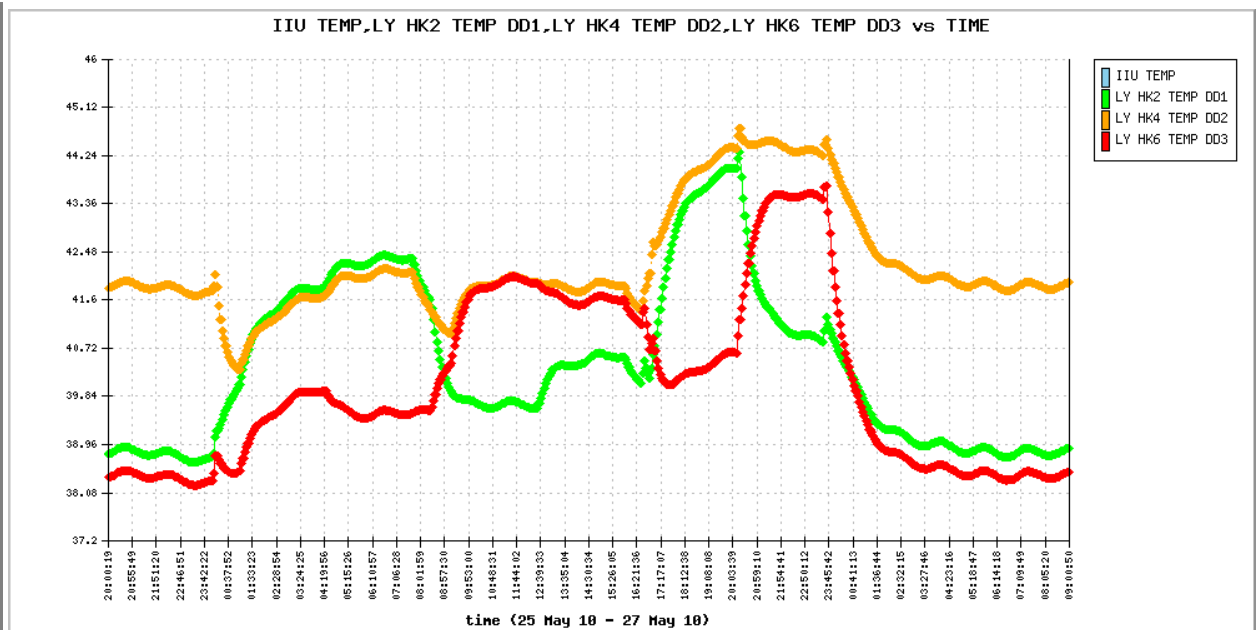
--- (backup campaign)
2010.05.26T16:50:00.000 warm_up 50ms unit_2 unit_1 100 off
0 open open
2010.05.26T16:57:00.000 set_heater ab 1 off
2010.05.26T16:57:05.000 set_heater ab 2 off
2010.05.26T16:57:10.000 set_heater ab 3 off
2010.05.26T17:07:00.000 acquisition 50ms unit_2 unit_1
200000 off 0
2010.05.26T20:10:00.000 warm_up 50ms unit_2 unit_3 100 off
0 open open
2010.05.26T20:17:00.000 set_heater ab 1 off
2010.05.26T20:17:05.000 set_heater ab 2 off
2010.05.26T20:17:10.000 set_heater ab 3 off
2010.05.26T20:27:00.000 acquisition 50ms unit_2 unit_3
200000 off 0

---(back to nominal acquisition)
2010.05.26T23:30:00.000 warm_up 50ms unit_2 off 100 off 0
```

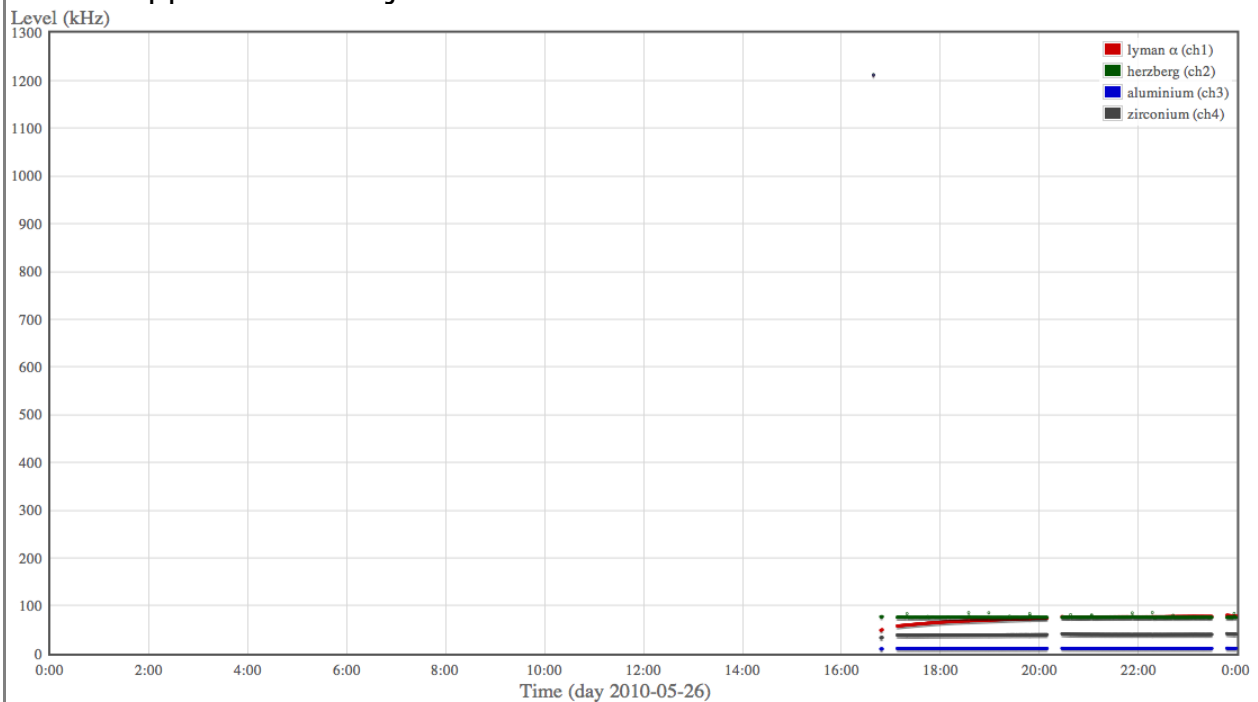
```
open close
2010.05.26T23:37:00.000 set_heater ab 1 off
2010.05.26T23:37:05.000 set_heater ab 2 off
2010.05.26T23:37:10.000 set_heater ab 3 off
2010.05.26T23:47:00.000 acquisition 50ms unit_2 off 200000
off 0
```

LYRA performed the commanded actions handled by IOS00067 (calibration and back-up campaign) as supposed. Notice that when LYRA is acquiring, not only the active heads experiment a rise of temperature, but also those which are off.





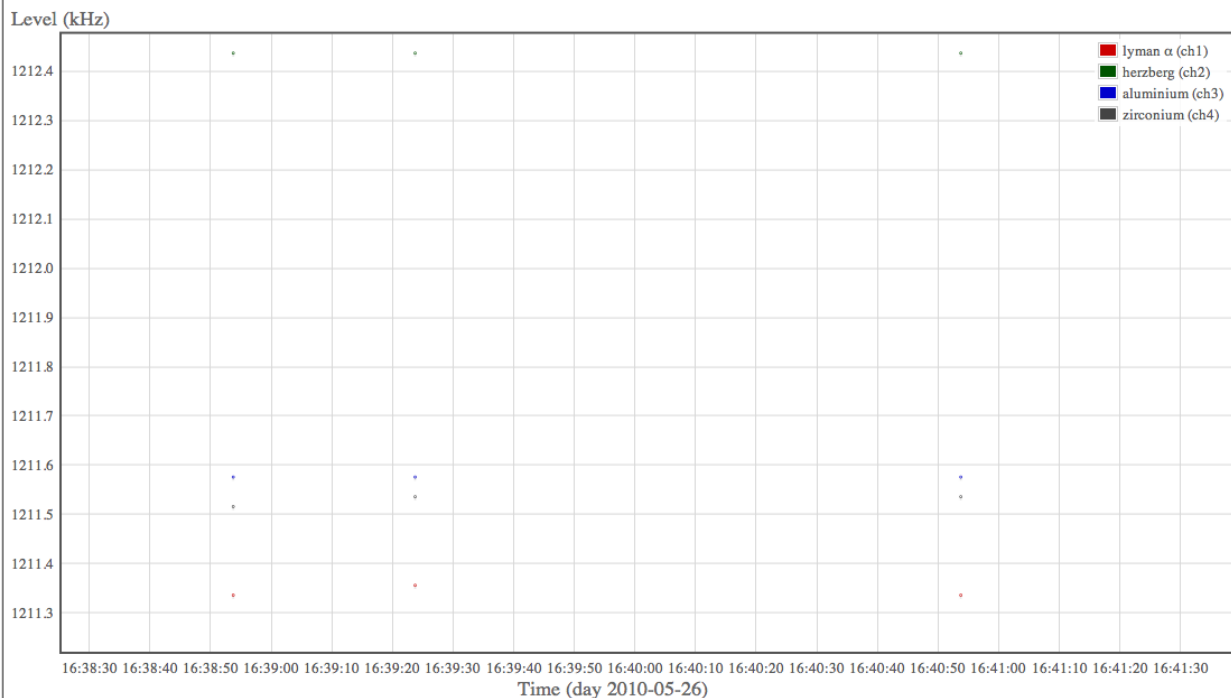
The standard FITS files presented a group of out-range data points which should appear in the rejected FITS files.



LYRA was performing the calibration campaign at that specific moment, so it happened during the conversion of 0V, 2.5V and 5V:

```
2010.05.26T16:30:00.000 warm_up 50ms unit_2 off 100 off 0
open close
2010.05.26T16:37:00.000 set_heater ab 1 off
2010.05.26T16:37:05.000 set_heater ab 2 off
2010.05.26T16:37:10.000 set_heater ab 3 off
2010.05.26T16:47:00.000 acquisition 50ms unit_2 off 200000
off 0
```

Below, we see a zoomed image with the values of the out-range data points. The voltage converter reached the maximum output that it can provide. It seems that for some reason it got saturated. The out range values took place at 16:38:53, 16:39:23 and 16:40:53.



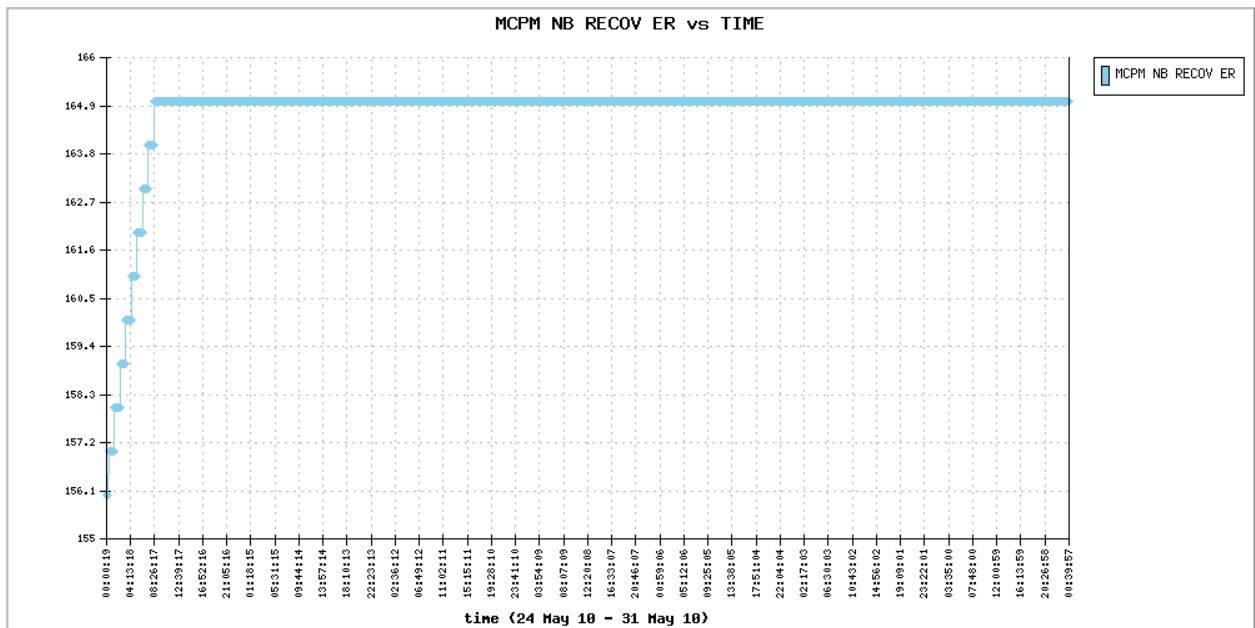
More investigation is needed.

2010-05-27 - 2010-05-30 50msec cadence on unit2

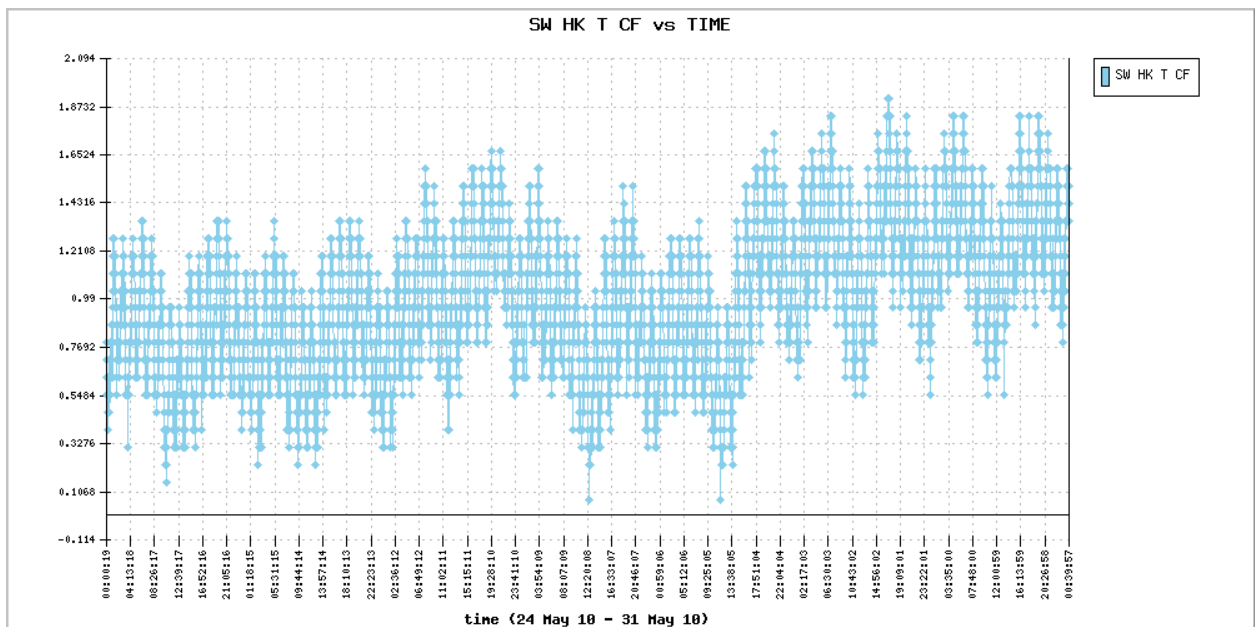
3. SWAP instrument status

The SWAP instrument functioned normally during the period.

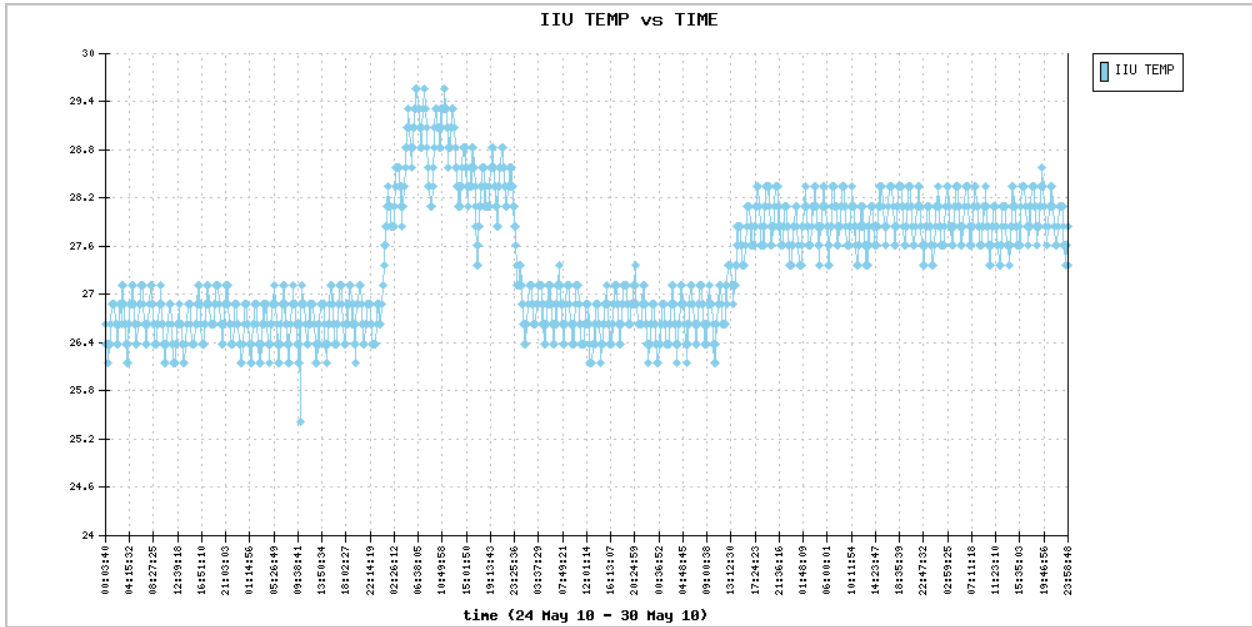
The 'MCPM NB RECOV ER' increased from 153 to 165 on May23-24. The rest of the week it remained stable at 165. The 'MCPM NB UNRECOV ER' remained fixed at 0.



The detector temperature ('SW HK T CF') increased slightly towards the end of the week from 0.7 degrees to 1.2 degrees Celsius (in average). Notice that in the middle of the week, roughly during 24 hours, the detector remained at 1 degree.



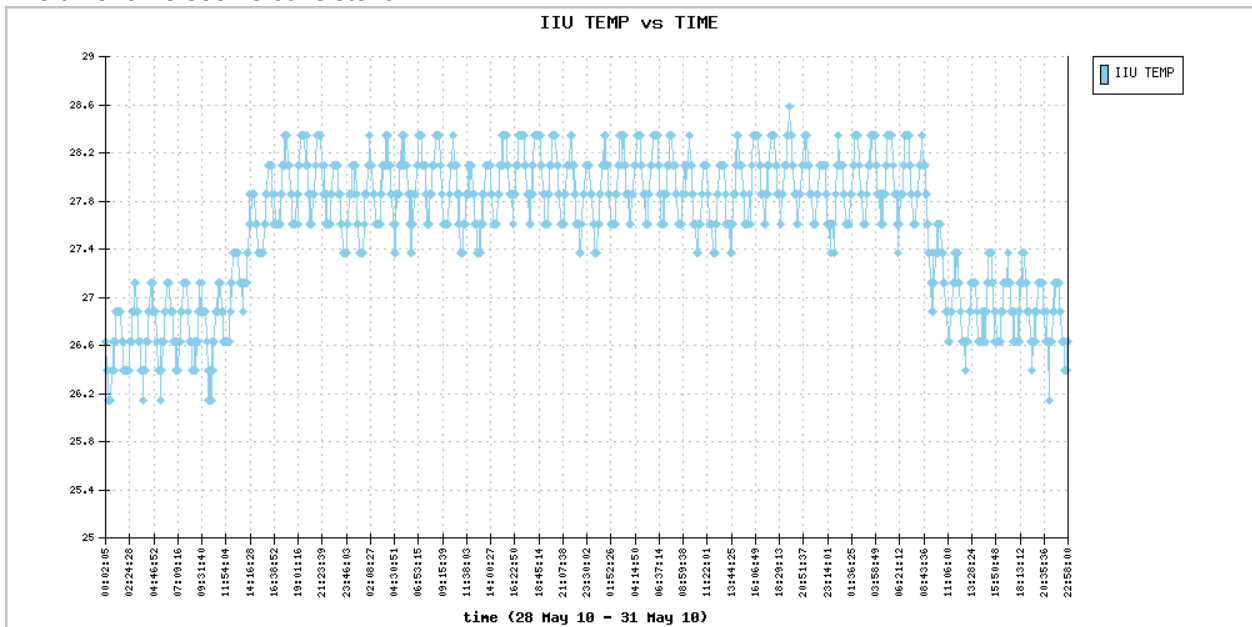
There is a link with the IJU temperature variation over the week (see graph below).



The higher temperature on Wednesday is understood as an effect of the LYRA campaigns. The rise on Friday 28 May (and drop on May 31) could possibly be related to the following (quote from PROBA-2 Operations Status Report #009):

*The following combined DSLP/TPMU activity was scheduled:
 DSLP TC sequence 36 from 2010-05-28T10:00:00 to 2010-05-31T07:41:44*

The timeframe seems consistent:



2010-05-24

Nominal operations, 3 different priorities, 10sec integration time, 100sec cadence.

2010-05-25

SW-IOS00120 handled the SWAP 2-weekly LED campaign.

```
SWAP
00120
2010.05.25T06:04:44.000
2010.05.25T09:59:59.000
# generated on 2010-05-25T06:04:44Z by ios.xsl version 1.1
2010.05.25T10:00:00.000 idle
2010.05.25T10:00:10.000 data_management off 10 off off 0 0
off 0 on float 128 8 off off 0 off
2010.05.25T10:00:20.000 acquisition_configuration
correlated_double_sampling 3 0 0 1023 1023 59 1 led_a_on
60 30 12bits 0.0262 0.0262
2010.05.25T10:00:30.000 specific_acquisition
2010.05.25T10:05:15.000 acquisition_configuration
correlated_double_sampling 3 0 0 1023 1023 59 1 led_b_on
60 30 12bits 0.0262 0.0262
2010.05.25T10:10:15.000 acquisition_configuration
correlated_double_sampling 3 0 0 1023 1023 59 1 led_off 60
30 12bits 0.0262 0.0262
2010.05.25T10:15:15.000 acquisition_configuration
correlated_double_sampling 10 0 0 1023 1023 59 1 led_off
30 30 12bits 0.0262 0.0262
2010.05.25T10:26:55.000 acquisition_configuration
correlated_double_sampling 10 0 0 1023 1023 59 1 led_off
100 30 12bits 0.0 0.0
2010.05.25T10:47:10.000 data_management on 10 off fixed 10
3600 jpeg 0 on float 128 8 off off 255 off
2010.05.25T10:47:20.000 table_configuration 3
0 10 0 0 1023 1023 1 110 0.0 0.0 off 253
1 10 0 0 1023 1023 1 110 0.0 0.0 off 254
2 10 0 0 1023 1023 1 110 0.0 0.0 off 255
2010.05.25T10:47:30.000 table_acquisition 0 3
```

Resulting images still to be analyzed.

2010-05-26 - 2010-05-30

Nominal operations, 3 different priorities, 10sec integration time, 110 sec cadence.

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, is scheduled manually on a daily basis with a version which only uses a temporary database and can produce all daily FITS files. This week, this script was also run a few times a day to produce intermediate data products (incomplete daily FITS with all data available on that time).

Several old daily LYRA FITS files were reproduced during the week as they were incomplete at the first time of creation.

The SWAP pipeline runs automatically until the end.

5. Commanding, Data reception & discussions with MOC

Overview of the received data.

1. House keeping data

No gaps during the week.

2. Science data

2010-05-25

BINLYRA_1358_SVA1 arrived corrupted. (REDU confirmed)

2010-05-27

BINLYRA_1376_SVA1 arrived corrupted.

2010-05-30

BINLYRA_1401_SVA1 arrived corrupted.

The rest of the days of the week the data recovery run nominally.

6. APPENDIX Frequently used acronyms

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

