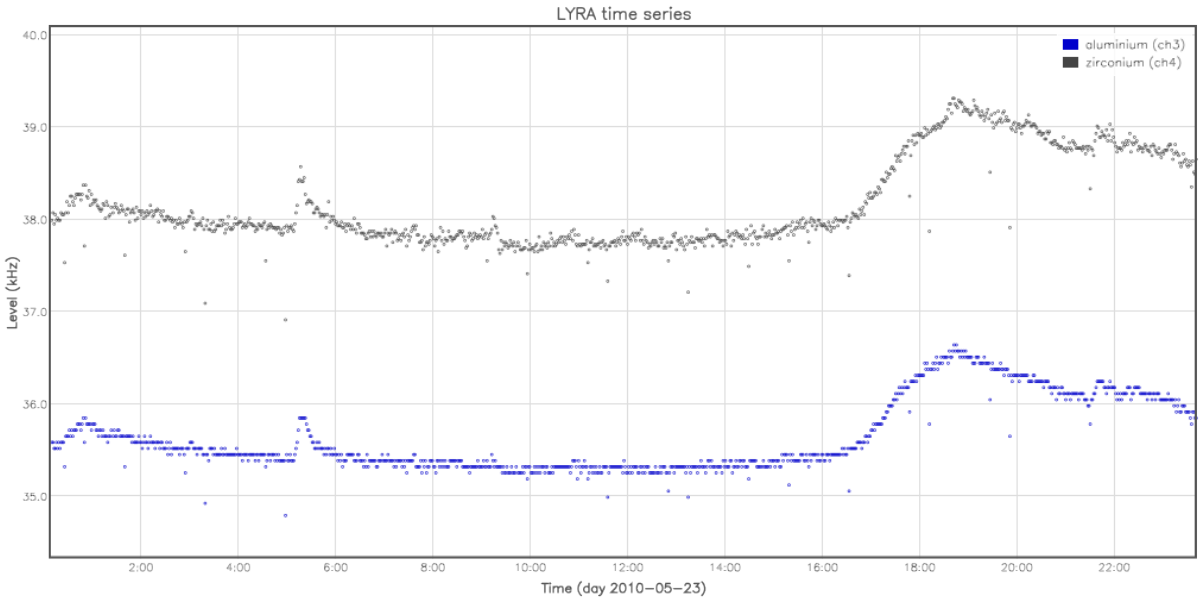
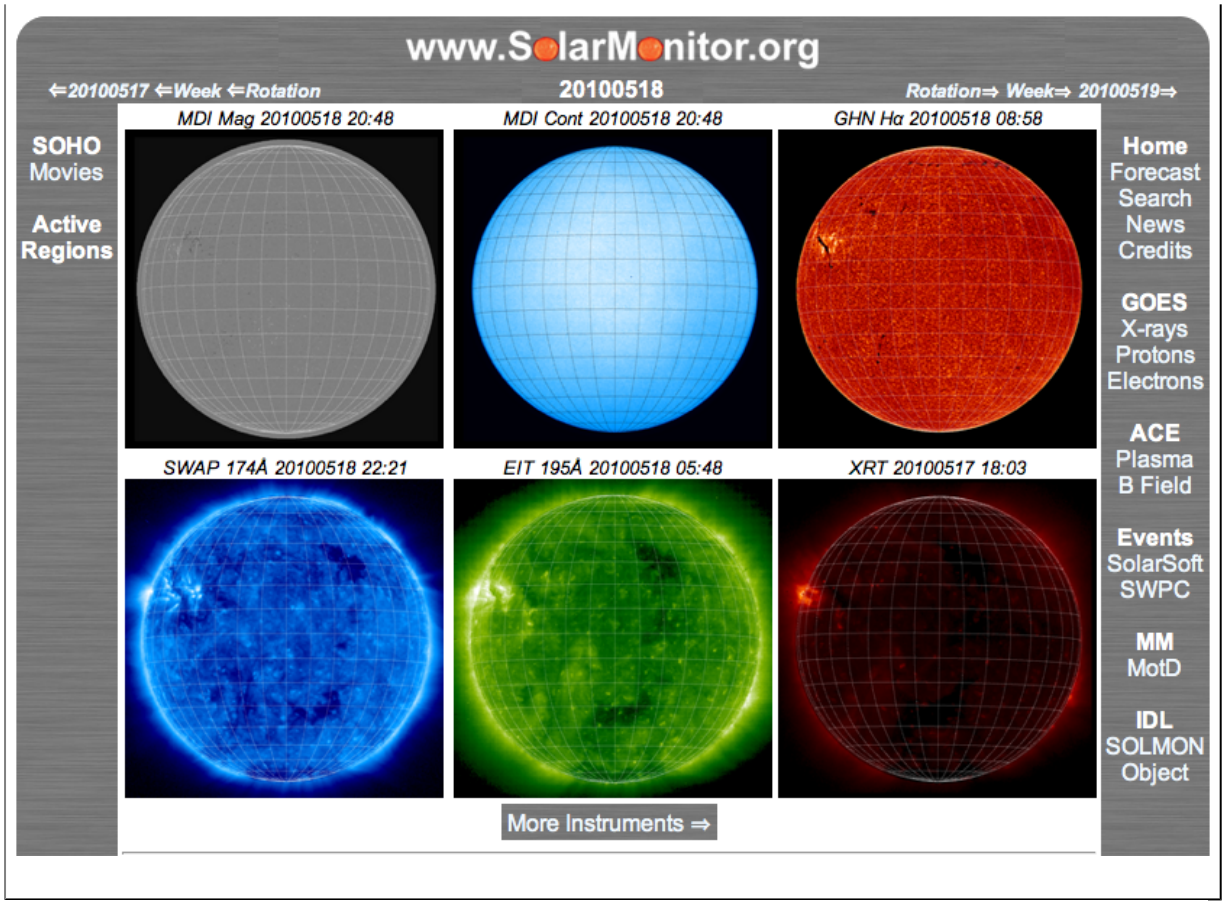
P2SC-ROB-WR-010-20100517 Weekly Report # 010	**P2SC Weekly report**	
Period Covered: Date: Written By: Released By:	Mon May 17-Sun May 23 2010 May 24 2010 Anik De Groof David Berghmans	Royal Observatory of Belgium PROBA2 Science Center
To:	LYRA PI, hochedez@sidc.be SWAP PI, david@sidc.be	http://proba2.sidc.be ++ 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

Quiet week on the Sun with a couple of B-flares on Sat-Sun 22-23 May. Below the LYRA curve of Sun 23 May with 3 flares seen around 05:10, 18:00 and 21:35. (Note that the Al signal has been multiplied by 3.3 to get it to the same curve as Zr.)



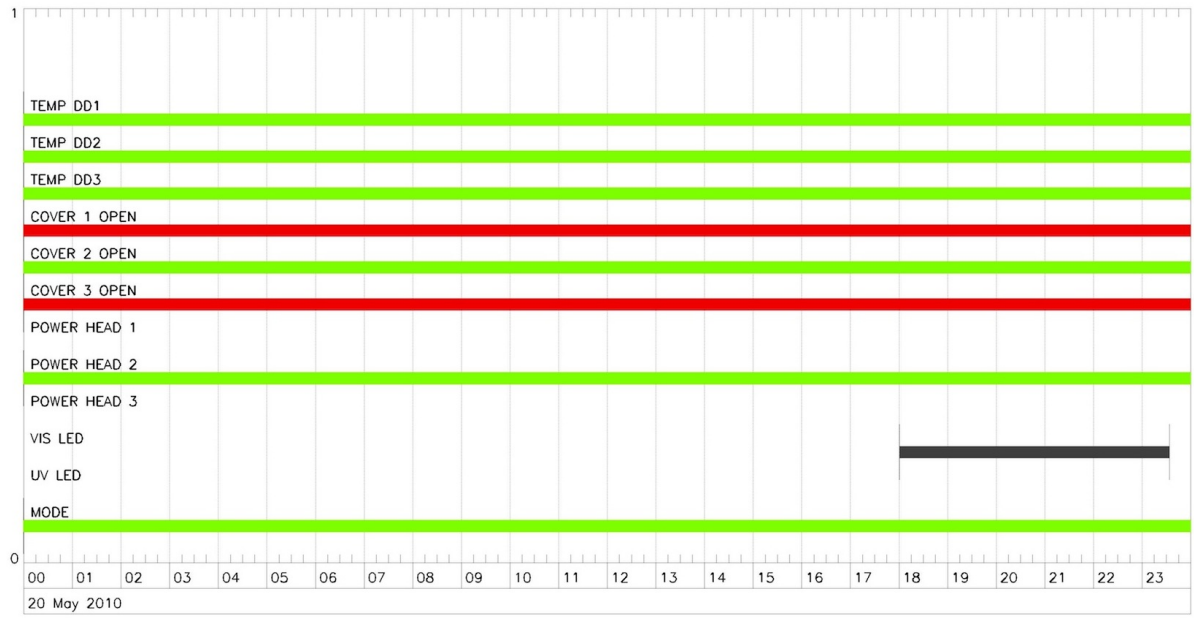
News! SWAP is part of the solar monitor since May 18 (see www.solarmonitor.org):



2. LYRA instrument status

2010-05-20
On May 20, the LYRA instrument made some unexpected and uncommanded mode switches. HK and LYRA data show the following:

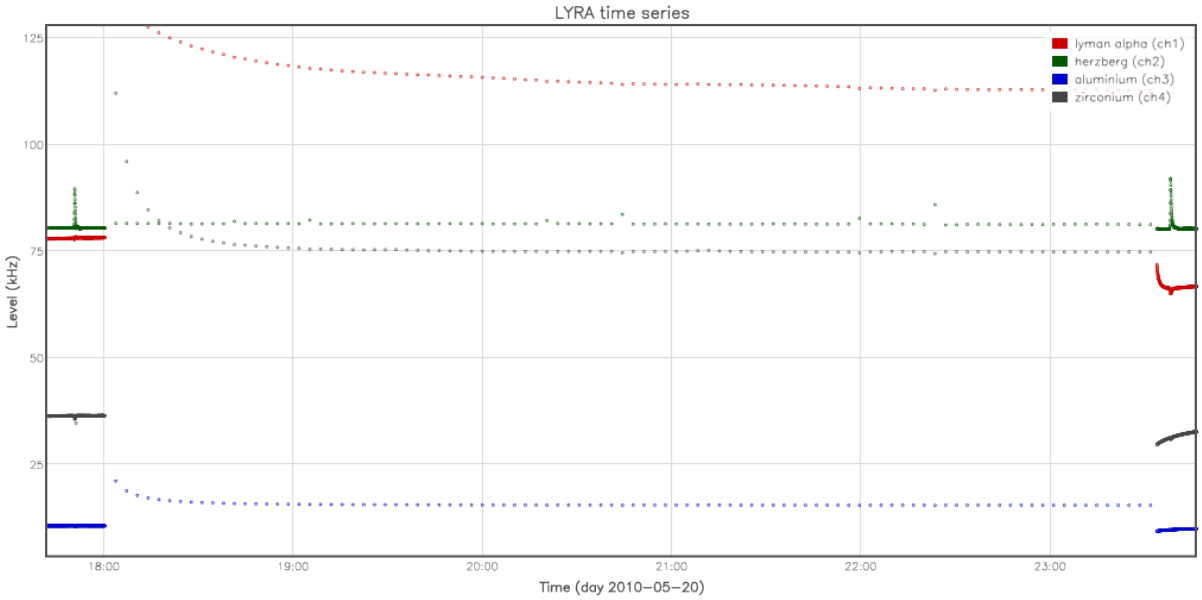
- The visual LED was switched on from 18:00 to 23:33 according to the HK values:



TIME LYRA VIS LED

2010-05-20T18:00:13.000Z| 0
2010-05-20T18:00:43.000Z| 1
...
2010-05-20T23:33:13.000Z| 1
2010-05-20T23:33:43.000Z| 0

Indeed, the signal also increased during this time period.
- In addition the acquisition cadence was decreased from 50ms to 5000ms. We see both effects in the data:



- Remarkable is that after 22:33, everything went back to normal.
- From P2SC side, no commands were sent for May 20 or future days.
- Also Redu confirmed that no manual commands were sent from the MOC to the S/C payload.

More details:

18:00:21:
end of data in package BINLYRA_1314 -> THIS SEEMS INCOMPLETE AS THE PASS 1314 ONLY ENDED AROUND 19:12
end of 50 ms IT,
start of 2.5V VFC test (until 18:00:31, 10 seconds, uninterrupted)
end of time quality factor being constantly 3 (this is quality factor on P2SC side giving the quality of the time data received - we are looking into this!)

18:00:26:
begin of package BINLYRA_1315,
begin 5000 ms IT,
begin of time quality factor alternating between 3 and 4

23:33:32:
end of 5000 ms IT (within BINLYRA_1316)
end of time quality factor alternating between 3 and 4

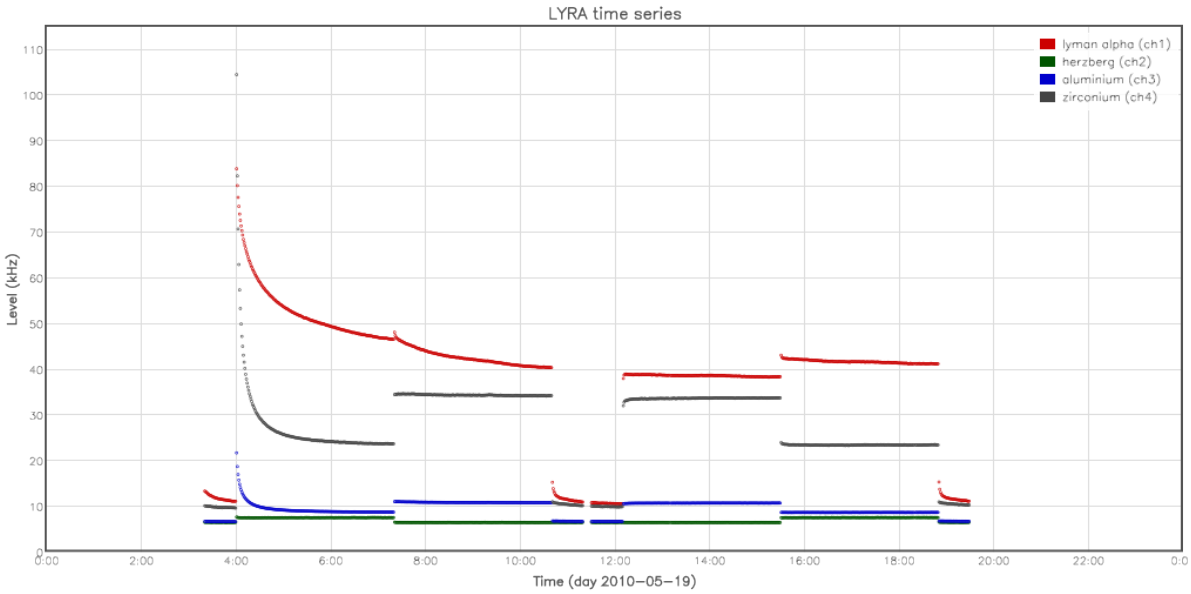
23:33:37:
start of 0.0V VFC test (until 23:33:51, 14 seconds, uninterrupted)

23:33:51:
begin of 50 ms IT (within BINLYRA_1316)
begin of time quality factor being constantly 3 again

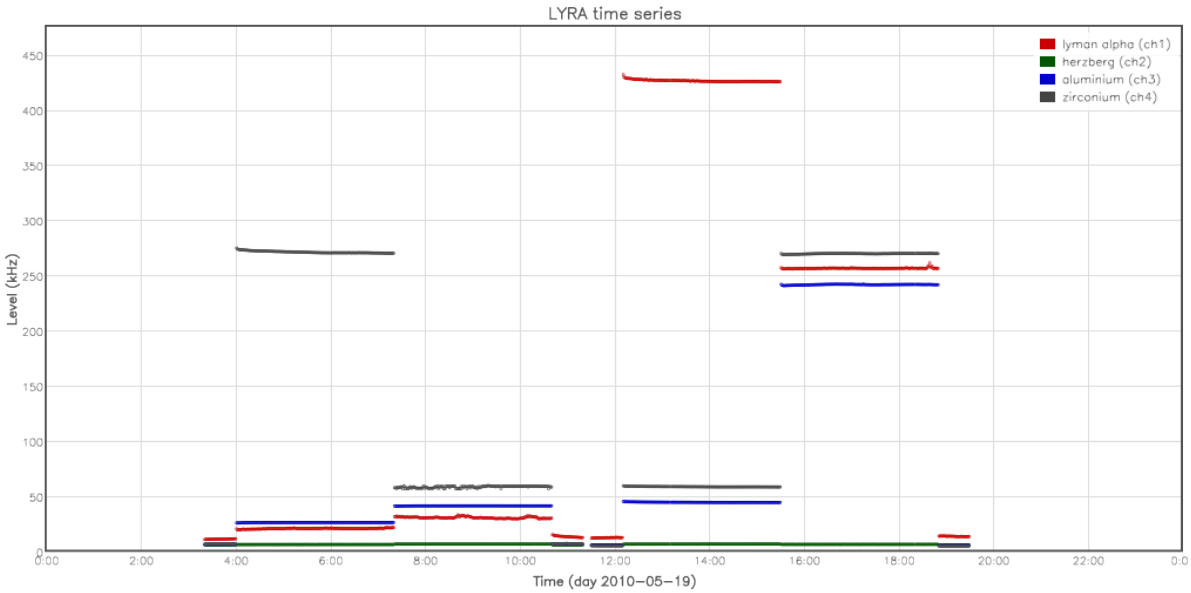
Apart from this hick-up, LYRA functioned normally during this period. Due to further degradation of the Herzberg detector on unit 2, the Herzberg signal comes very close to the Ly Alpha signal.

2010-05-17	50msec cadence on unit2
2010-05-18	50msec cadence on unit2
2010-05-19	50msec cadence on unit2 until 03:00:00

2010-05-19 3:00->19:47: LYRA calibration run
The same commands as last week were used: each acquisition sequence took the length of 2 orbits instead of 1 orbit. Still, it seems that 2 orbits are not enough for the Lyman Alpha detector to settle.



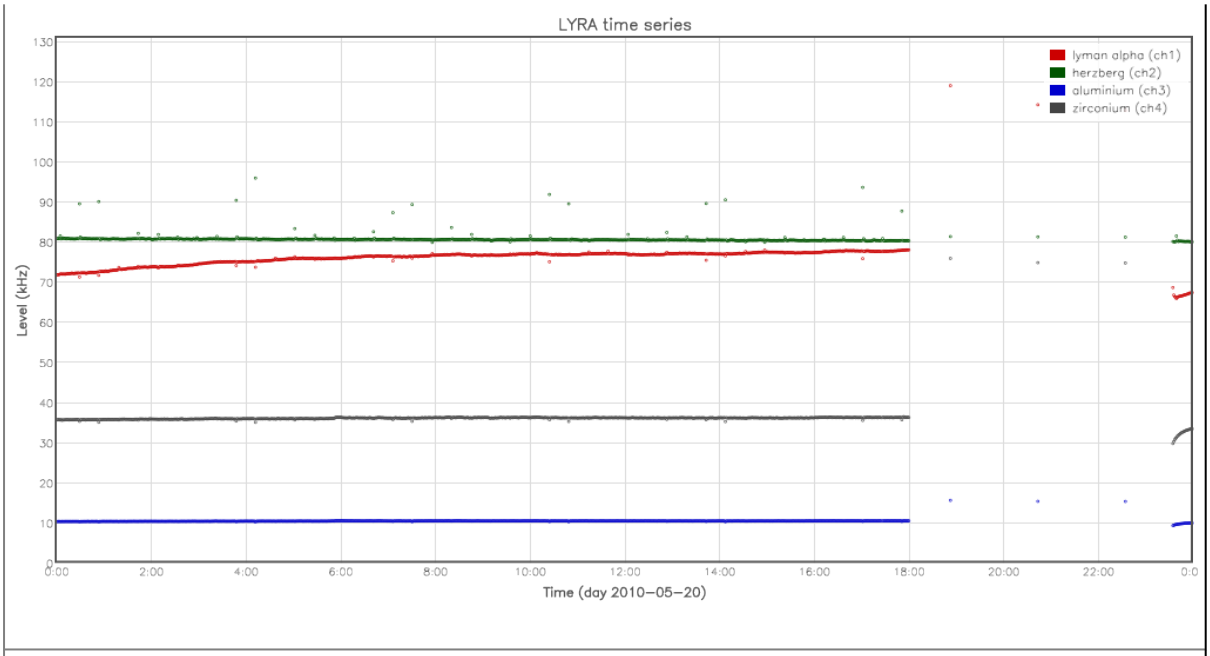
The backup units (unit 1 from 03:00-11:20 and unit 3 from 11:20-19:30) were more stable:



The following days, it took very long for the Ly Alpha detector to settle.

2010-05-20 50msec cadence on unit2 + unexplained switches to 5s cadence and VIS LED on from 18:00 to 23:30 (see issue above).

The Ly alpha detector has not settled yet from the calibration campaign of yesterday. This has an influence on the standard FITS file.

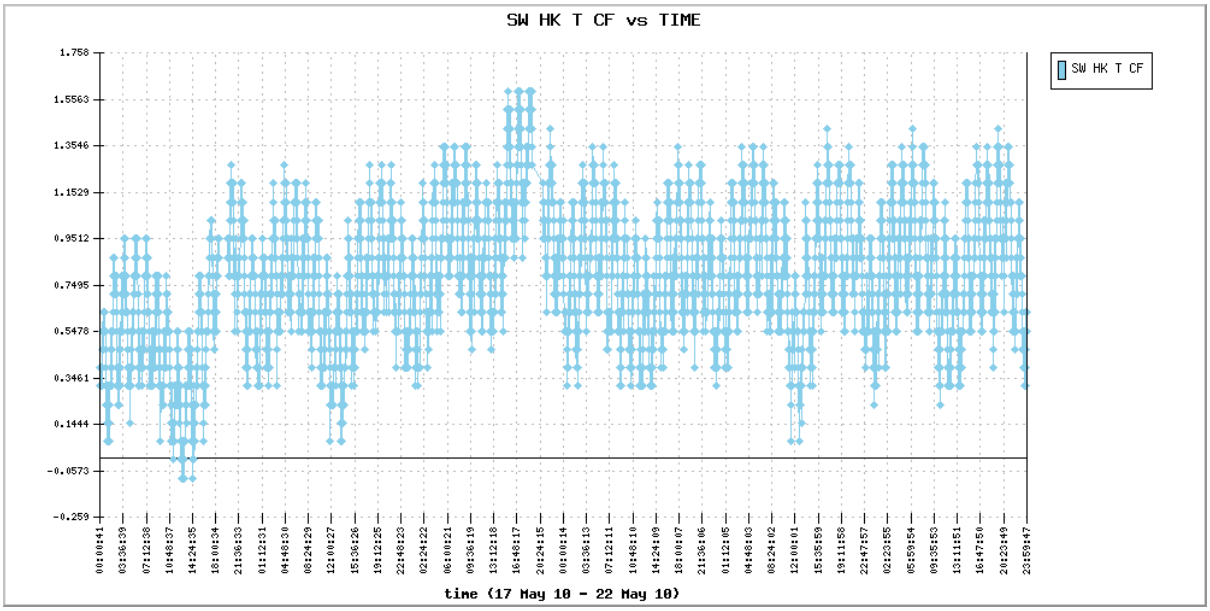


2010-05-21	50msec cadence on unit2
2010-05-22	50msec cadence on unit2
2010-05-23	50msec cadence on unit2

3. SWAP instrument status

The SWAP instrument functioned normally during the period.
The 'MCPM NB RECOV ER' increased from 152 to 153 on May 21 **and from 153 to 165 on May23-24**. The 'MCPM NB UNRECOV ER' remained fixed at 0.

The detector temperature ('SW HK T CF') increased slightly towards a peak in the evening of the 19 May (due to off-pointing campaign?) and then stabilized around 0.9 degrees Celcius.



No LED campaign this week (is now 2-weekly scheduled).

2010-05-19 (SWAP IOS_000119) Pointing Campaign from 13:20 to 17:30 with the aim to observe the North Eastern limb of the Sun with sufficient consecutive images to apply image stacking.

Analysis of resulting images is ongoing.

2010-05-19 - 2010-05-23 (end of SWAP IOS_000119)
Nominal operations, 3 different priorities, 10sec integration time, 100sec cadence.

4. PROBA2 Science Center Status

Anik De Groof 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 on May 20 as they were incomplete at the first time of creation.

The SWAP pipeline runs automatically until the end (SW-BSDG).

Problems & updates:

2010-05-14 - 2010-05-17: The ADP shows problems. It cannot access the database AOCS_ATTITUDE needed for the PPT information. The rest of the runs go smooth. The database seems corrupt (accidentally overwritten) and needs to be replaced. This solves the problem. Many Ancillary Data files are reprocessed on May 18.
2010-05-17 The temporary database used by the quick LYEDG needs to be removed every time we start a new run. Otherwise the DB keeps on growing.
2010-05-18 SWTMR and SWBSDG were updated. The level1 FITS files are now 2MB in size instead of the former 4 MBs (floats).

2010-05-19 ADP was updated.
2010-05-21 LY-QLV was updated.

5. Commanding, Data reception & discussions with MOC

Overview of the received data.
House keeping data

2010-05-17 pass 1241, 1242, 1243 were redelivered on May 17 and filled some of the gaps on May 12 (see previous weekly report).

2010-05-17: Gap from ~18:30 to ~19:50UT
2010-05-19: Gap from ~19:10 to ~20:45UT

Science data

LYRA lv1 FITS files are all complete except on 2010-05-17 (gap from 00:00-01:28).
SWAP lv0 images available online (nominal cadence was 100s):

Total number of images from that time period: 4987
highest cadence in this time period: 40 seconds
average cadence in this time period: 121.24 seconds
number of image gaps larger than 350 seconds: 1
largest data gap: 10.00 minutes
(just before image BINSWAP20100523185155000007 1808PROCESSED in BINSWAP_1340_RED3_2010.05.23T20.36.07.tar)

SWAP lv1 images are missing around the times of HK data gaps.

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
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	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
SCOS	Spacecraft Operation System
SEU	Single Event Upset
SOHO	Solar and Heliospheric Observatory
SWAP	Sun Watcher using APS detector and image Processing
SWBSDG	SWAP Base Science Data Generator
SWEDG	SWAP Engineering Data Generator (software module of P2SC)
SWTMR	SWAP Telemetry Reformatter (software module of P2SC)
TBC	To Be Confirmed
TBD	To Be Defined
TBW	To Be Written TC Telecommand
TPMU	Thermal Plasma Measurement Unit
UTC	Coordinated Universal Time
UV	Ultraviolet