P2SC-ROB-WR-028-20100920 Weekly report #28	**P2SC Weekly report**	
Period covered: Date: Written by: Released by:	Mon Sept 20 to Sun Sept 26 2010 Wed Sept 29 2010 Joe Zender Carlos Cabanas	Royal Observatory of Belgium PROBA2 Science Center
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1. Science

Solar & Space weather events

Several active regions were passing the solar disk:
- NOAA 1106 and NOAA 1107 moved out of the solar disk on 25 September.
- NOAA 1108 was observable the whole week.
- NOAA 1109 moved in the SWAP field-of-view on 21 September.

On Monday 20 three C flares took place (C2.1,C1.2,C1.0), being one of them the largest event of the week (2010/09/20 at 19:45:00 C2.1 flare).
There was a number of small flares (< B4) during the week. On Sunday, 26 September 2010, several small flares were overshadowed by a B5.3 and B7.3 flare.

Scientific and calibration campaigns
The following campaigns were planned during the week:

Start Date	End Date	Campaign	Description	Status
20100921T10:05	20100921T13:00	LYRA ASCI Reloads at every LAR	this ASCI reload got us the Lyra back again	ok
20100921T21:53	20100921T22:42	HOP175 - Polar Plume Observation	table commands did not work as expected, commands were not executed	failed

			not executed	
20100922T04:28	20100922T04:54	HOP156 - High Cadence Subfield	first images blurred	ok
20100922T06:00	20100922T07:15	SDO Eclipse Support	table commands did not work as expected	failed
20100922T15:50	20100922T1725	LYRA Backup with Unit 3	calibration campaign	ok
20100922T21:47	20100922T22:17	HOP175 - Polar Plume Observation	wrong time for the first Large Angle Rotation resulted in wrong subwindow acquisition	failed
20100923T00:42	20100923T01:08	SWAP ESP Support		ok
20100923T01:56	20100923T02:30	HOP156 - High Cadence Subfield	wrong after first LAR due to miscalculation of windowing coordinates	partial
20100923T06:16	20100923T07:15	SDO Eclipse Support		ok
20100923T07:17	20100923T08:00	Table Test Campaign	several offpointings via different tables entries	ok
20100924T18:03	20100924T02:40	HOP175 - Polar Plume Observation		ok
20100924T06:15	20100924T07:15	SDO Eclipse Support		ok
20100925T06:15	20100925T07:15	SDO Eclipse Support		ok
20100926T06:15	20100926T07:15	SDO Eclipse		ok

Outreach, papers, presentations, etc.

- Presentation of P2SC to BELSPO on 24 September.

- PROBA2 Guest Investigator programme continues its way. Last week Krisnha Prasad finished his research period and went back to India. Kariyappa is still with us, actively participating in the daily commanding of SWAP and LYRA according to the needs of his data

analysis proposal.

To be explored

2. LYRA instrument status

Calibration
Backup calibration campaign with only Unit2/Unit3 was run on Tuesday.

IOS & operations
The Lyra ASIC RELOAD that was executed mid day on Tuesday, 21 September 2010, moved the Lyra channels back into a nominal situation. In the pass after the ASCI RELOADS, the LYTMR was processing the data again without problems. All the Lyra binary files received from Redu from 17-Sep-2010 around 06:00 until mid day 21-Sep-2010 can be seen as lost. All of these binary files had several fatal problems, one of them the missing and/or wrong time stamping of most of the lumps.
It is advised to execute ASIC RELOADS in unclear situations asap.

To be explored
none

3. SWAP instrument status

MCPM errors
The MCPM increased from 199 to 200 at 20100920T09:22 and to 201 at 20100922T10:22.
The number of MCPM unrecoverable errors is still 0.

IOS & operations
Due to the number of campaigns, the following IOS's were uploaded:IOS00176 to IOS00180

IOS00176 send on 21-Sep-2010 did use the following table settings:

```
SWAP
00176
2010.09.21T14:57:50.000
2010.09.21T18:29:58.000
# generated on 2010-09-21T14:57:51Z by ios.xsl version 1.1
2010.09.21T18:30:00.000 table_configuration 12
0 10 0 0 1023 1023 1 120 0.0 0.0 off 250
1 10 0 0 1023 1023 1 120 0.0 0.0 off 251
2 10 0 0 1023 1023 1 120 0.0 0.0 off 252
3 10 0 0 1023 1023 1 60 0.0 0.0 off 200
4 10 0 0 1023 1023 1 60 0.0 0.0 off 201
5 10 0 0 1023 1023 1 60 0.0 0.0 off 202
6 10 0 200 511 819 1 15 -0.0015 0.0 off 190
7 10 0 200 511 819 1 15 -0.0015 0.0 off 190
8 10 0 200 511 819 1 90 -0.0015 0.0 off 190
9 10 200 819 512 1023 1 15 -0.0015 0.0 off 189
10 10 200 819 512 1023 1 15 -0.0015 0.0 off 189
```

11 10 200 819 512 1023 1 90 -0.0015 0.0 off 189

The table entries were then commanded with the table acquisition command, e.g.

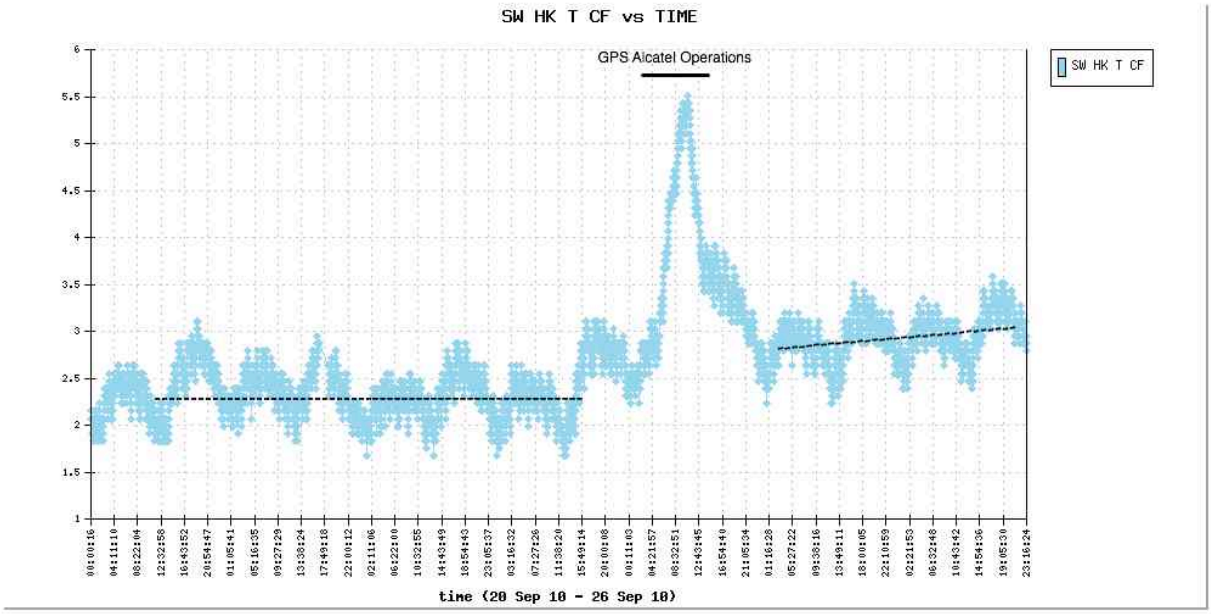
2010.09.21T21:54:55.000 table_acquisition 6 3
2010.09.21T22:20:00.000 table_acquisition 9 3

The table commands - once uploaded - were not executed! From the received images and the spacecraft pointing, it was not understood exactly which commands were executed. Some commands could be linked to previously uploaded table entries, but not all.
MOC confirmed that the IOS00176 was uploaded correctly.

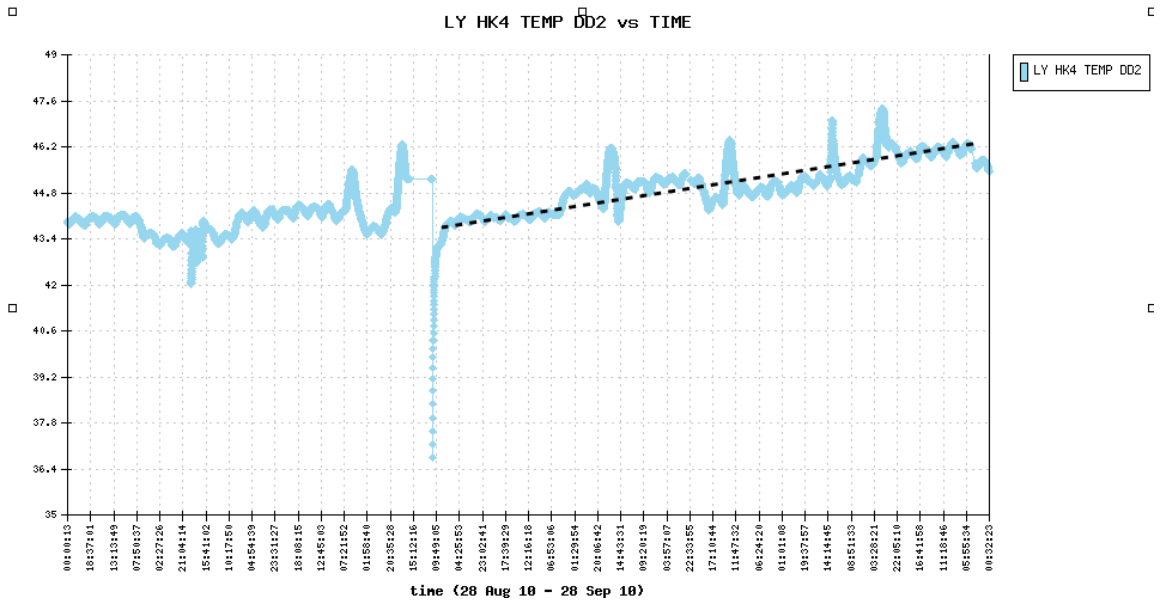
The situation is still unclear.

On the 23rd in the morning, all full table test was executed that resulted in expected commanding and pointing. The table was used then in the rest of the week without any problems.

SWAP detector and IIU temperature
The SWAP detector and IIU temperature were nominal during the week.
Along the operations of the Alcatel GPS device, an (expected) increase in temperature was observed on Friday morning. The drop of the temperature after the GPS operations went very slow over several hours and a slight higher temperature could be observed for up to 2 days.



LYRA second head detector temperature also suffered the effects of the operations with the Alcatel GPS device.
Below we can see the temperature increase over the last month.



To be explored
none

4. PROBA2 Science Center Status

Joe Zender was operator during this week.

Software name	Update	Date	Comment
SWAVINT	r3707	20100923	Initial installation of tool on server s2
SWBSDG	r3712	20100924	Improving the subwindow coordinate computations
CAT-UI	r3714	20100924	New tool that interfaces the catalog databases and let the user select and download Level0 SWAP FITS files. Soon it will be extended to be able to download SWAP Level1, LYRA Level 0 and LYRA level1 FITS files.
PPT	r3716	20100924	PPT: add a high accuracy Earth rotation kernel.

5. Data reception & discussions with MOC

- Nominal HK during the reported period.
- Problematic passes for LYRA and SWAP can be seen below. (corrupted LYRA packets from 17 Sep to 21 Sep are not included in this table).

Date	Pass	Info

2010-09-21	2446	10 packets with a not expected size. Example: size of packet BINLYRA20100921164754000186769 2RAW_____00002876582010092118454 8 is 1748, but the expected value given in the header is 1160
2010-09-21	2448	BINSWAP20100921220320000015430 2PROCESSED - Packet CRC does not validate
2010-09-22	2448	11 packets with a not expected size.Example: BINLYRA20100921215446000186825 0RAW_____00006724282010092201223 2 is 1872, but the expected value given in the header is 527
2010-09-22	2451	BINSWAP20100922061659000015463 6PROCESSED - Packet CRC does not validate
2010-09-23	2457	BINSWAP20100922223211000015521 5PROCESSED - Packet CRC does not validate
2010-09-23	2458	BINSWAP20100923020149000015534 3PROCESSED - LZW block truncated: 373 < 15025
2010-09-23	2464	BINSWAP20100923200319000015588 7PROCESSED - Truncated packet: 41601 < 65530
2010-09-24	2469	BINSWAP20100924080401000015661 8PROCESSED - Packet CRC does not validate
2010-09-25	2480	BINSWAP20100925174715000015781 2PROCESSED - Packet CRC does not validate
2010-09-25	2481	BINSWAP20100925182915000015787 5PROCESSED - Packet CRC does not validate
2010-09-27	2499	BINSWAP20100927171120000015929 5PROCESSED - Packet CRC does not validate 3 packets with a not expected size. Example: size of packet BINLYRA20100927163358000188764 6RAW_____00001560832010092718391 4 is 1741, but the expected value given in the header is 1094

Total number of images between 2010 Sep 20 0UT and 2010 Sep 27 0UT: 5712
Highest cadence in this period: 12 seconds
Average cadence in this period: 105.89 seconds
Number of image gaps larger than 300 seconds: 55
Largest data gap: 270.00 minutes

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 alpha 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