
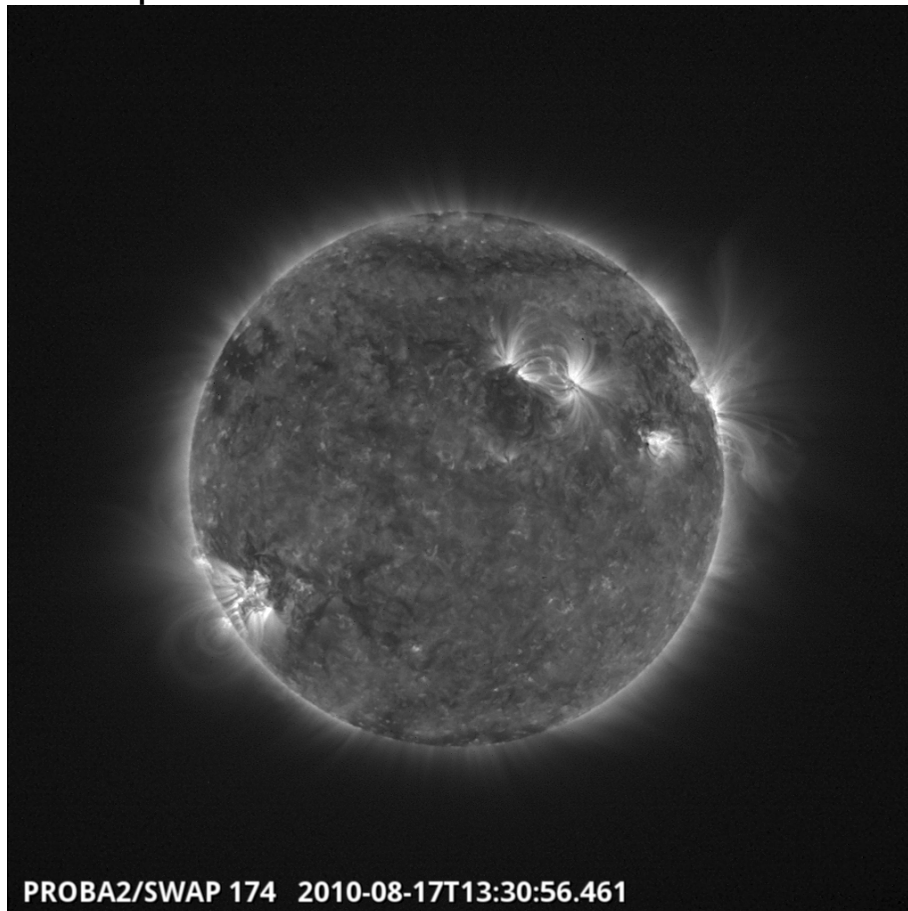


P2SC-ROB-WR-023- 20100816 Weekly report #023	P2SC Weekly report	
Period covered: Date: Written by: Released by:	Mon Aug 16 to Sun Aug 22 2010 Mon Aug 23 2010 David Berghmans Anik De Groof	Royal Observatory of Belgium PROBA2 Science Center
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1. Science

Solar & Space weather events



Beautiful loop system were observed on Aug 17 in the NW (top right) and SE (bottom left). This image was the first taken after the PROBA2 BDOT excursion. The image is of noticeably enhanced quality because the detector temperature was at -11C, much colder than nominal (>0C).

A spectacular C4.5 flare was seen in the loop system (NOAA AR 11098) in the NW (top right) on Aug 18 around 05:48UT, please consult the SWAP movie:
http://proba2.oma.be/swap/data/mpg/movies/20100818_swap_movie.mp4

The event was associated with a coronal mass ejection, well observed in SWAP, and an increase in solar proton fluxes (see http://www.swpc.noaa.gov/ftplib/plots/proton/20100819_proton.gif). The MCPM REC ERROR increase on Aug 18 (see below) is perhaps a consequence of this.

Unfortunately LYRA was not on during the peak event, but was switched back on in the aftermath.

Scientific campaigns

No scientific campaigns were planned.

Outreach, papers, presentations, etc.

Marie Dominique and Ingolf Dammasch visited the LYRA co-I team in PMOD-WRC (Switzerland).

To be explored

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2. LYRA instrument status

Calibration

No calibration campaign was done this week because of the switch to PROBA2's BDOT mode (see below).

IOS & operations

PROBA2 switched unexpectedly to BDOT mode at Aug 16 10:30 which caused LYRA to be switched off drastically: the power to the hardware is cut, but the software (LYRA instrument manager) still thinks LYRA is on. The consequences were:

- the LYRA hardware is off but the cover of unit 2 was never closed.
- the LYRA instrument manager notices that he does no longer receiver data and concludes erroneously that the hardware is latched-up. When the recovery from latch-up fails, the LYRA instrument manager goes in off mode.
- when we tried to switch on LYRA again (LYRA IOS 00080, Aug 17, 13:35), the software notices that the cover of unit 2 was still open and therefore triggers a clean switch off with a cover closing.

Finally, with LYRA IOS 00081, we got LYRA again in a nominal state from pass 2128 (Aug 18 08:52UT) onwards.

To be explored

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3. SWAP instrument status

MCPM recoverable errors

increased from 196 to 197 on August 18 at 21:22.
 The number of MCPM unrecoverable errors is still 0.

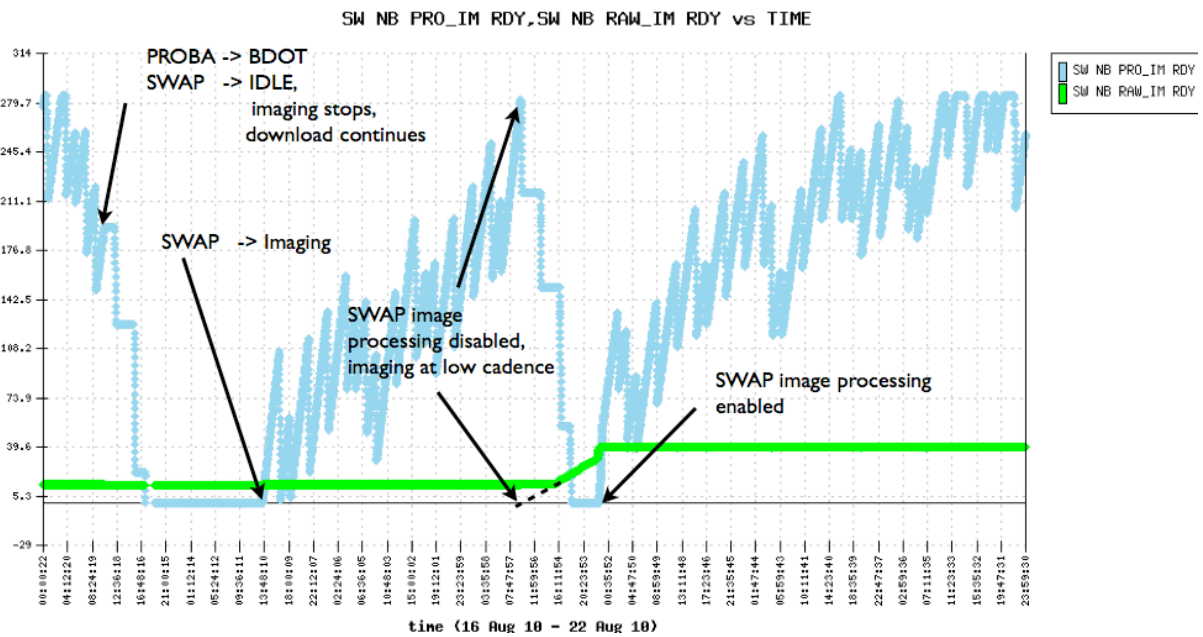
IOS & operations

PROBA2 switched unexpectedly to BDOT mode at Aug 16 10:30 which caused SWAP to switch from IMAGING to IDLE mode at Aug 16 10:45. While SWAP was in IDLE mode, we still got previously taken images until the MCPM PROCESSED buffer was empty at Aug 16 17:27.

Due to this unexpected switch to PROBA2's BDOT mode, the calibration sequence on Tuesday Aug 17 was rescheduled (to Aug 24).

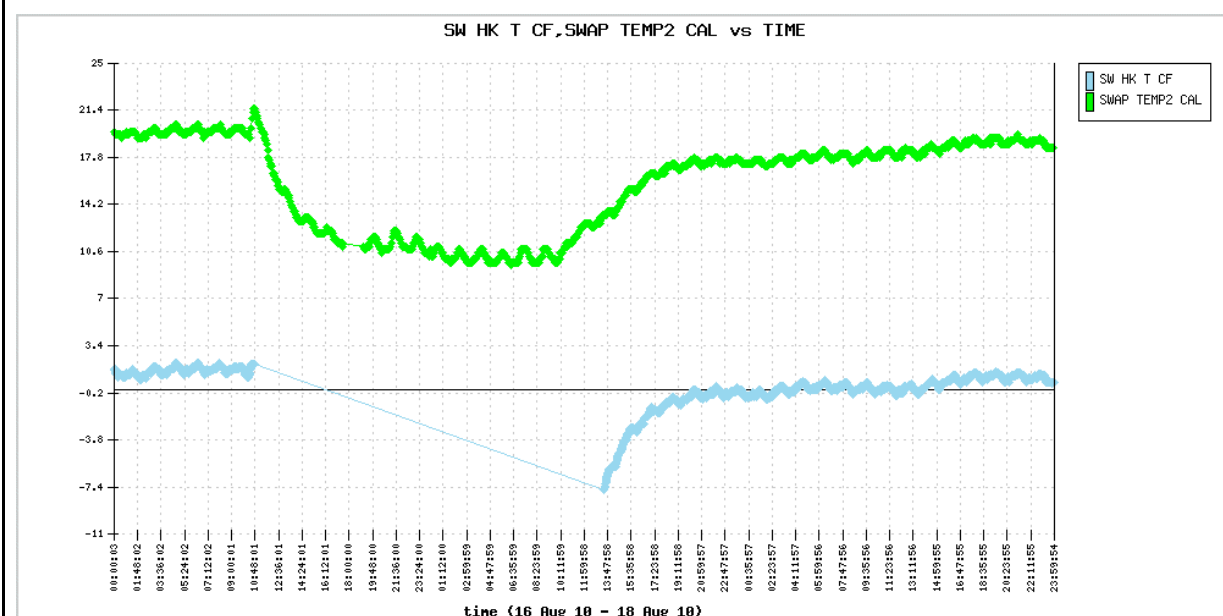
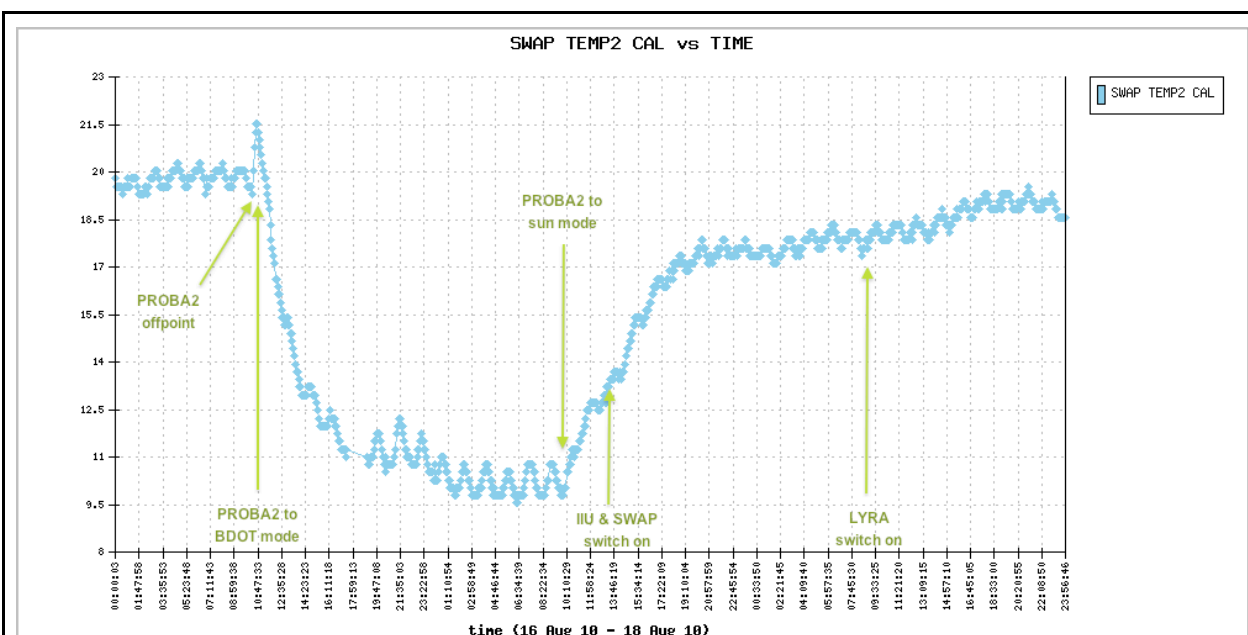
SWAP imaging resumed on Aug 17 13:30 with IOS 00156.

On Aug 19 from 09:42 onwards and during 8 orbits, PROBA2 was testing LOCOOS operations. To spare ADMPS time, SWAP image processing was disabled by telecommand (ECP7508T) during the period: Images were taken at a slow cadence (IOS00157) and stored in RAW buffer, meanwhile old processed images from the PROCESSED buffer were downloaded. As a consequence, the MCPM PROCESSED buffer was again empty between Aug 19 18:15 and Aug 19 23:07.. After the LOCOOS period, the newly taken images were processed and downloaded.



SWAP detector and IIU temperature

As a consequence of the BDOT mode, strong temperature fluctuations were observed, see figures below.



Note that the SWAP cold finger was at -11C when the PE switched back on. The steepness of the subsequent temperature rise suggest, when extrapolating backwards, the cold finger was perhaps at -20C when PROBA2 re-acquired sun mode (but SWAP was still in IDLE mode, the PE was thus off and we have no temperature recordings of the cold finger).

To be explored

An announcement for the availability of SWAP movies appeared on Monday August 16 in the online, solar physics newsletter [Solarnews](http://www.solarnews.com).

4. PROBA2 Science Center Status

David Berghmans was operator during this week.

The LYRA EDG was operated manually until Friday Aug 20 pass 2146. From pass 2147, the LYEDG was run automatically in the LYRA pipeline that is triggered by the BINLYRA file arrival. The P2SC team celebrated with some bottles of cava :-).

SWAP daily movies were also created manually.

During the period, there have been tens of jobs that produced an LMAT warning "runid 42895 is taking too long status changed to not responding". These correspond mostly to runs of ADP, DCVC, SWEDG. It is suspected that this caused by slowness of the auxDB database. To be monitored.

We discovered that all SWAP lv1 images before March 8, 2010 were blurred due to the use of a faulty version of the onboard pixel map. This was causing the SWAP BSDG to median filter the images acquired before 8 March. To fix this we started a reprocessing of all images acquired before this date, making use of a new tool SWBSDRP (Swap BSD Reprocessor). The reprocessing was done by Aug 17 10h20UT.

The following tools were updated on the operational server:

Software name	Update	Date	Comment
DCVC	rev3570	Aug 19	bug fix
libswap	rev3577	Aug 20	libswap: swap_y4m - use precomputed colormaps
LYTMR	rev3578	Aug 20	complete new version of LYTMR is installed. lya_dda.db database schema is renewed (with contents of April 2010)
LYEDG	rev3578	Aug 20	update of the LYEDG to be compatible with new DB schema and with a much better performance such that it can be run in the pipeline
LYBSDG	rev3578	Aug 20	new version of the mock-up LYBSDG: it copies over the FITS files to public directories instead of moving. No processing is done yet.

5. Data reception & discussions with MOC

Passes

There were no missed passes observed during the period.

Data coverage HK

LYRA_AD_2152 was received twice.

There was a housekeeping data gap between Aug 16 17:31 and Aug 16 19:02.

Data coverage SWAP

There was a datagap of more than 27 hours (approximately Aug 16 10:45 - Aug 17 13:30) due to the unexpected PROBA2 switch to BDOT. On Aug 19 the LOCOS campaign took place and the SWAP imaging cadence was strongly reduced to an image per 25min. As a consequence, the SWAP processed buffer was emptied, resulting in an enhanced image cadence on Aug 18 of 100s. For the remaining of the period an average cadence of 133s was attained.

The total number of downloaded SWAP images was 3261 during the period. This is more than 25% lower than on previous weeks. This has several reasons, the main ones being the data gap due to BDOT mode and the LOCOOS campaign during which SWAP switched to low cadence (1500s):

Total number of images between 20100816 00UT and 20100823 00UT: **3832**

Commanded cadence: very variable (120s, 100s, 1500s during LOCOOS campaign) Average cadence in this period: 157.84 seconds

Number of image gaps larger than 300 seconds: 33

Largest data gap: 1621.73 minutes

Total number of images per day:

Aug 16: 315 (no images after 10:30UT) - all images received

Aug 17: 380 (no images before 13:30UT) - all images received

Aug 18: 862

Aug 19: 409 (LOCOOS)

Aug 20: 711

Aug 21: 584

Aug 22: 571

Data coverage LYRA

The LYRA data is complete, except for a gap caused by the above mentioned PROBA2 BDOT mode excursion from approximately Aug 16 10:00 till approximately Aug 18 10:00.

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
DSLIP	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