


P2SC-ROB-WR-098-20120206 Weekly report #098	P2SC Weekly report	
Period covered: Date: Written by: Released by:	Mon Feb 06 to Mon Feb 13, 2012 16 Feb 2012 Erik Pylyser David Berghmans	Royal Observatory of Belgium PROBA2 Science Center
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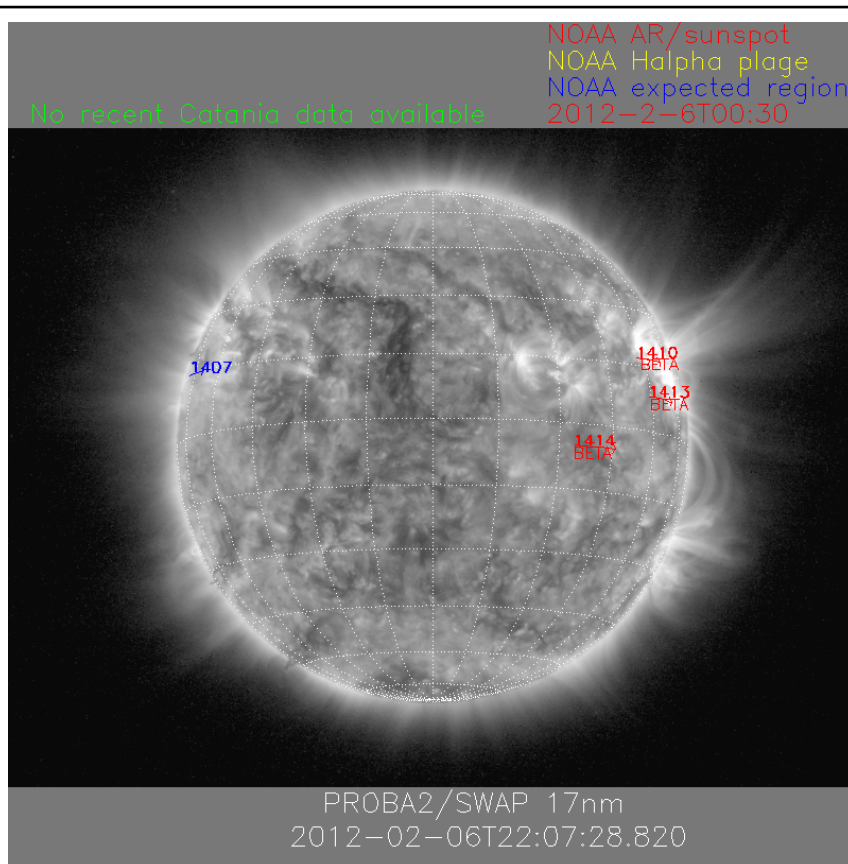
1. Science

Solar & Space weather events

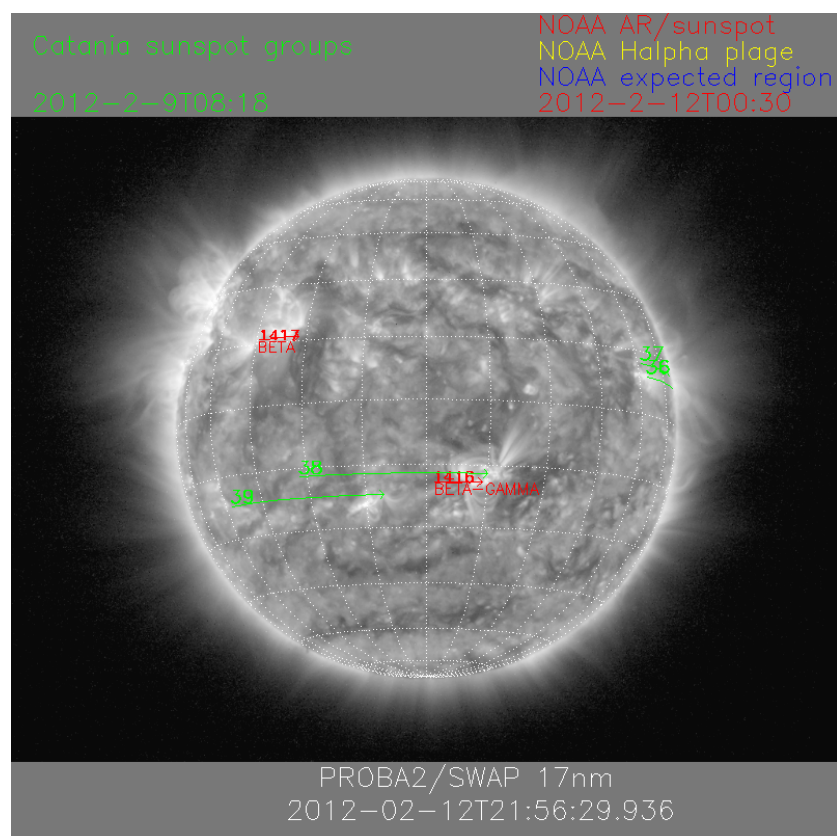
Overview

Solar activity was at MEDIUM level this week, with a dip at LOW level in the middle of the week.

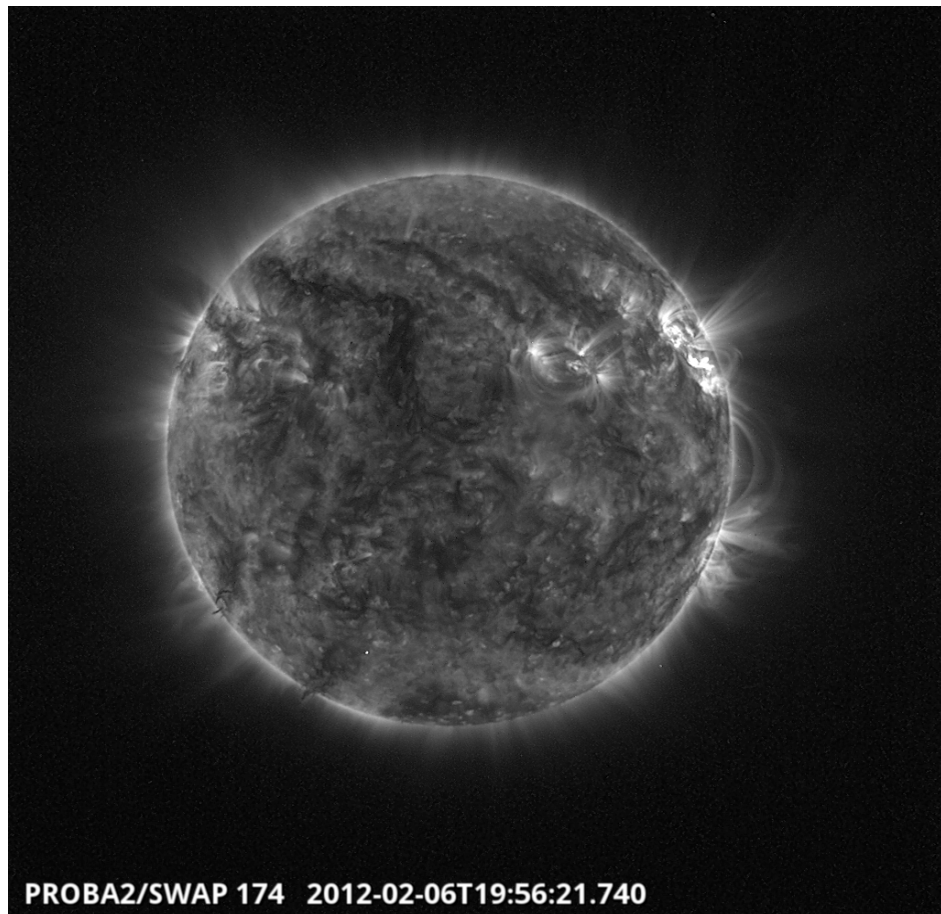
The SWAP images of Feb 06 and Feb 12 are shown below, with annotated active regions.



<http://sidc.be/html/CmapPage.html>

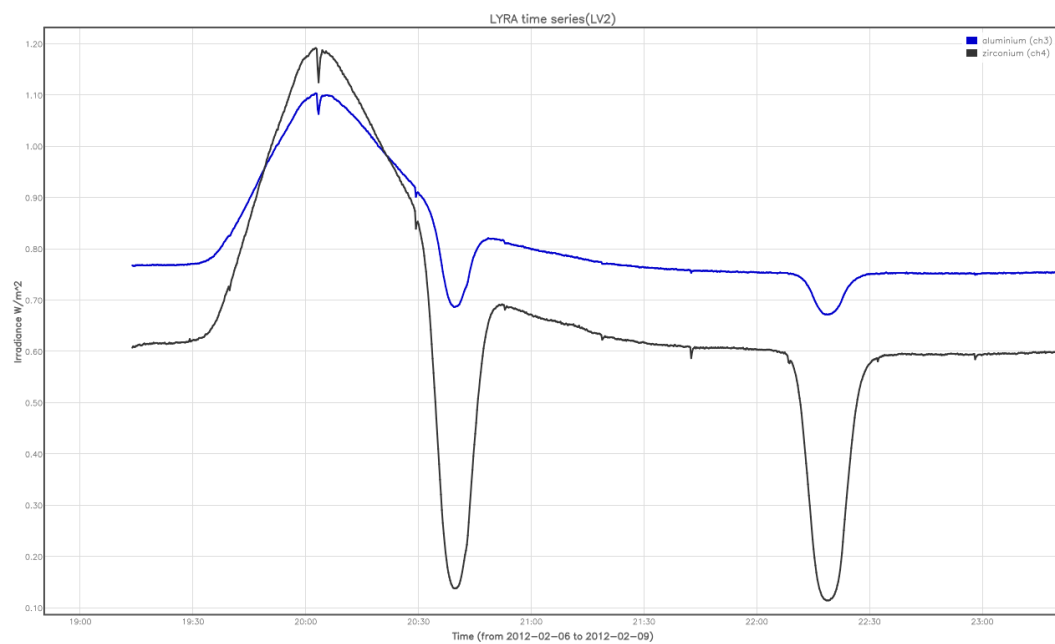


On Monday 6th, AR 11410, close to the North-West limb, exhibited an M1.0 flare (max at 20:03).



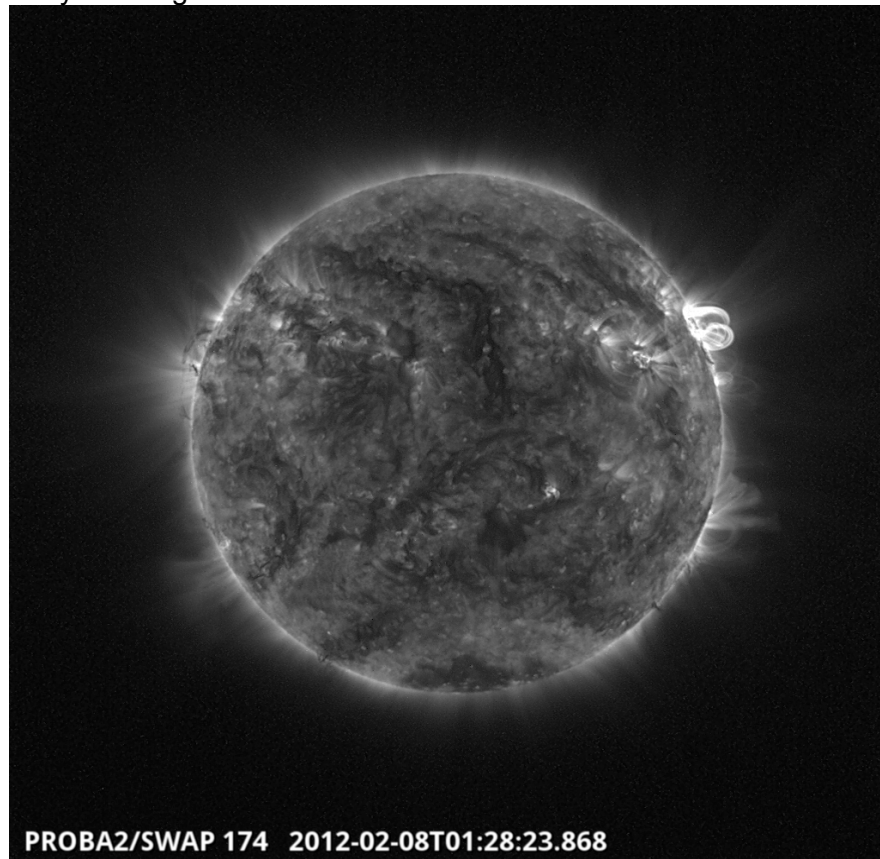
http://proba2.oma.be/swap/data/qlviewer/2012/02/06/swap_01170146034222_925d6436.png

LYRA curves for this flare:



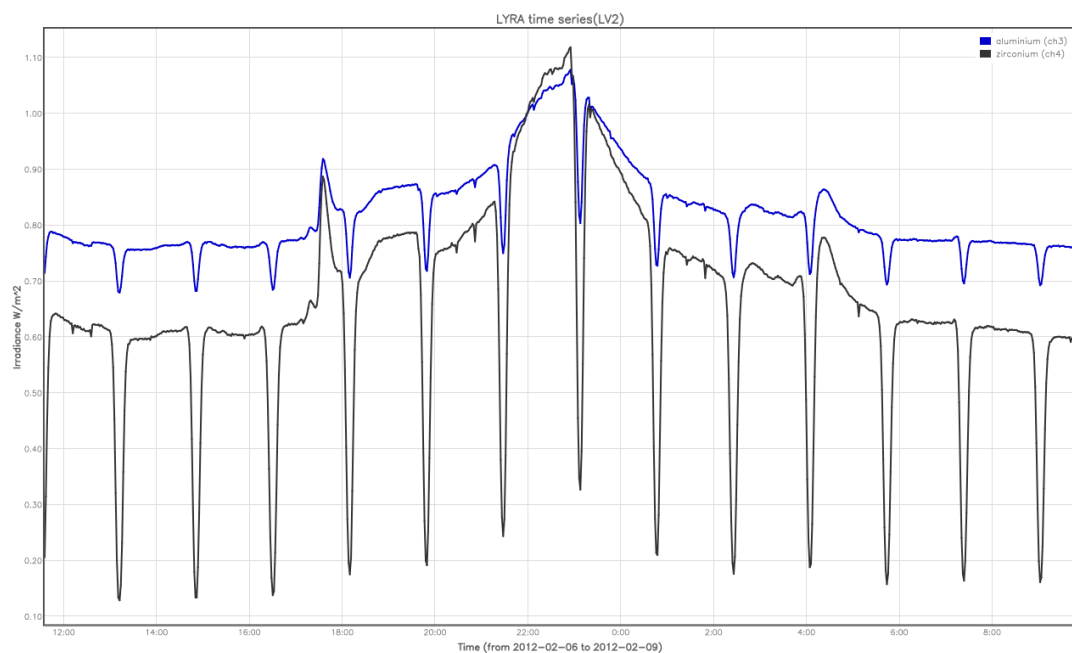
During the evening of Tuesday 7th and early Wednesday 8th, a sequence of 3 C7-level flares occurred in AR 11410.

Wednesday 8th, early morning:



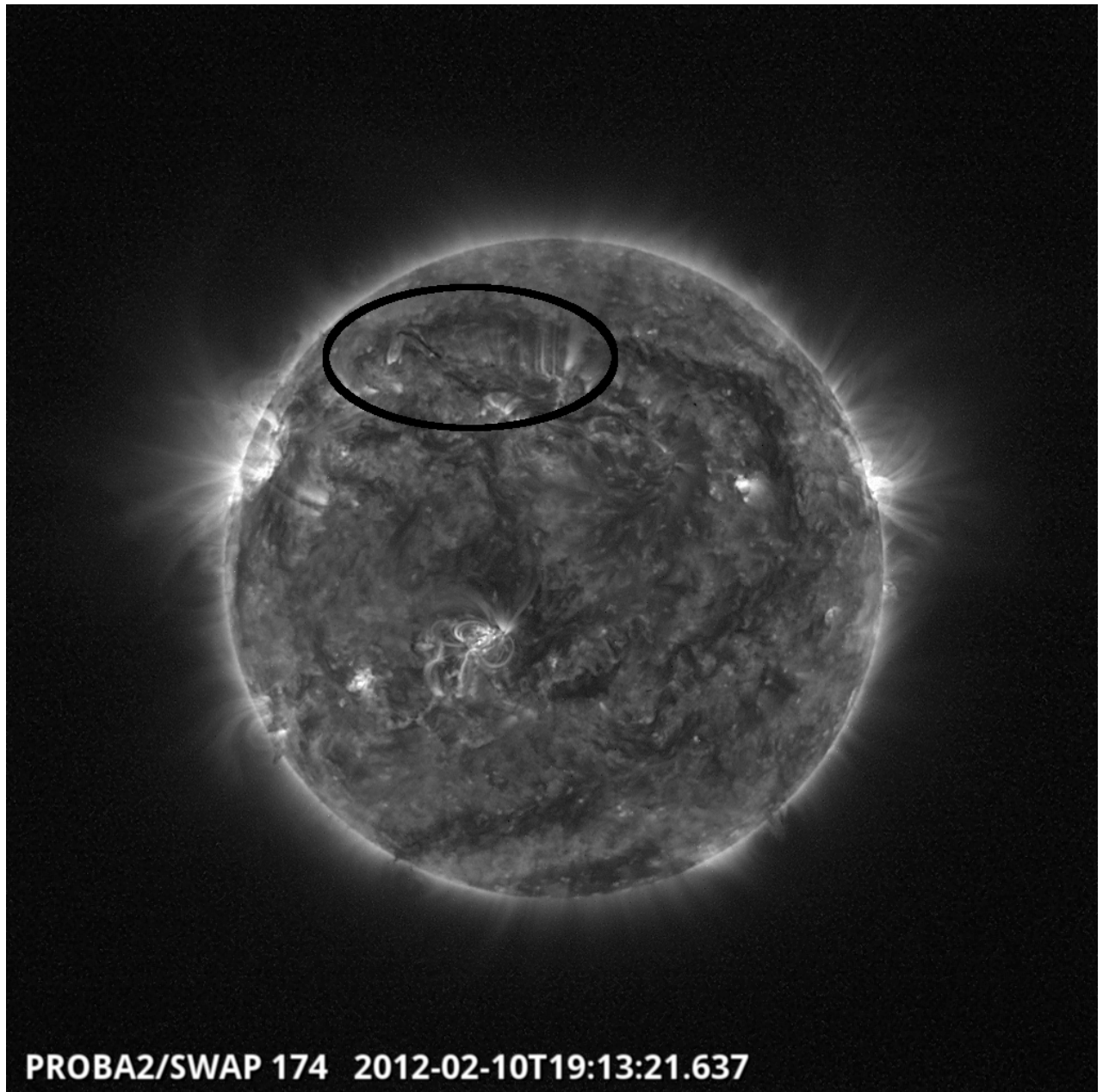
http://proba2.oma.be/swap/data/qlviewer/2012/02/08/swap_01171887991748_581e7799.png

LYRA curve for this series of C7-level flares:



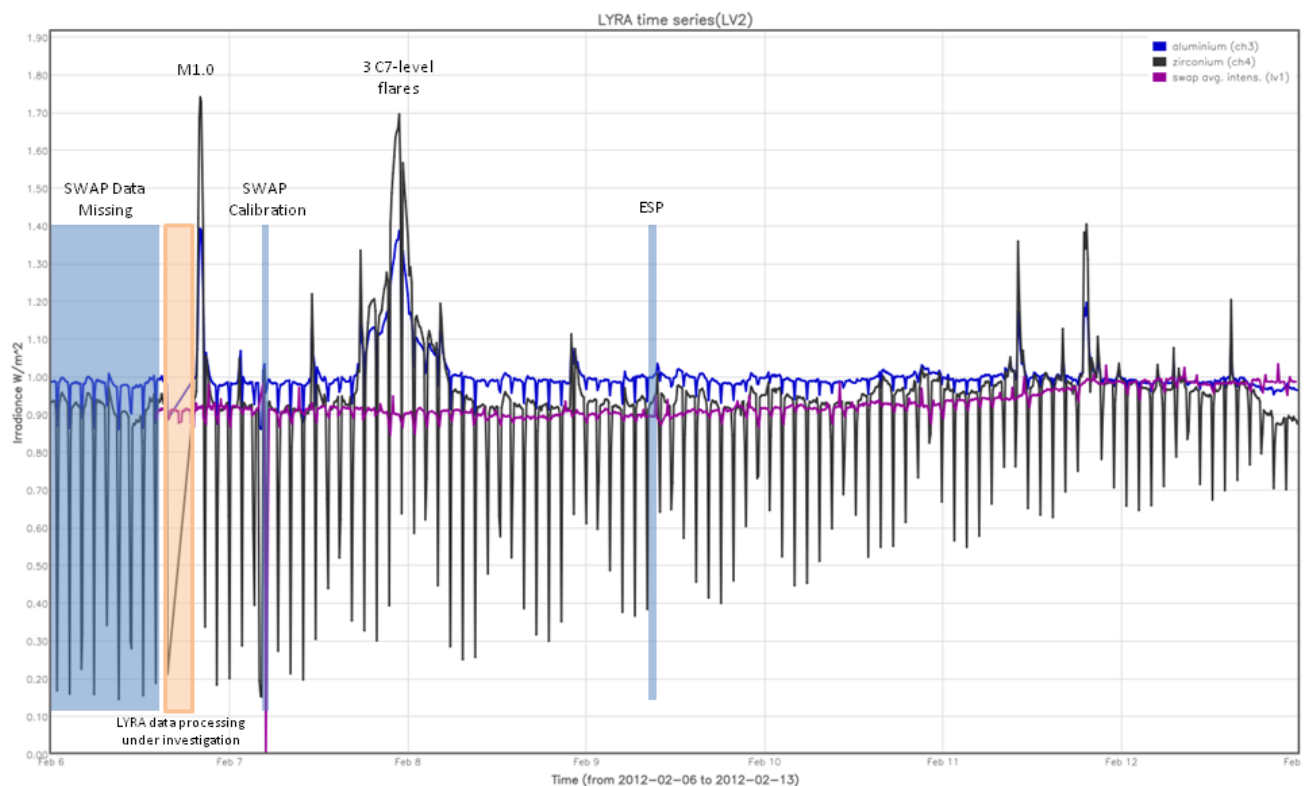
By the end of the week, a new sunspot group emerged rather quickly - AR 11416. It triggered copious B and low-level C-flares on Fri/Sat/Sun. Also during the week-end, a previously very active AR (i.e. 11402) re-emerged on the East limb.

On Friday, around 19:10, SWAP imaged a nice filament eruption - the filament is ejected to the left of the encircled area towards the North-East limb, but the whole encircled area is affected afterwards:



The movie can be found here: http://proba2.oma.be/swap/data/mpg/movies/20120210_swap_movie.mp4

Below is provided an overview of the weekly LYRA & SWAP data:



The blue shaded periods correspond, from left to right, to 1. a SWAP missing data period (from Sun 5th 09:23 - Mon 6th 14:26), 2. a SWAP calibration on Tue, 3. the ESP campaign on Thu. The orange shaded period corresponds to a period where a TBD (under investigation) problem occurred during the LYRA data processing.

The figure clearly shows that the occultation season is ending rapidly.

Scientific campaigns

The following LYRA and SWAP specific scientific campaigns are on-going:

- daily LYRA occultation ingress & egress (planned around 10:00 every day), with unit 3,
- bi-weekly, on Monday, a LYRA occultation ingress & egress with unit 1, after the unit 3 occultation of that Monday - this week, unit 1 was activated.
- the weekly SWAP occultation ingress & egress imaging (usually planned on Mon, in parallel to the 10:00 LYRA occultation) will no longer be performed.

On Saturday 4th, SWAP data downlink was interrupted because of an 'MCPM blockage'. The Redu ground station issued the necessary recovery commands on Monday 6th, to resume SWAP data downlink during pass 6984.

Independently, however, due to an inconsistent pass-plan update, there was a missing on-

board 'stop SWAP downlink' command at the end of pass 6984. Consequently, after the end of pass 6984, all available SWAP data continued to be downlinked - while there was no station to capture them - until the buffers were empty. No more SWAP data was available for downlink during pass 6985.

The data from pass 6984 was consolidated by Redu ground stations and received the day after. It contained 80 SWAP images (of the 283 which were on-board at the start of pass 6984).

Outreach, papers, presentations, etc.

- None (TBC)

2. LYRA instrument status

Calibration

No LYRA calibration this week.

IOS & operations

Monday 06 Jan	Tuesday 07 Jan	Wednesday 08 Feb	Thursday 09 Feb	Friday 10 Feb	Saturday 11 Feb	Sunday 12 Feb
Nominal acquisition LYIOS00219	Nominal acquisition LYIOS00219	Nominal acquisition LYIOS00219	Nominal acquisition LYIOS00219	Nominal acquisition LYIOS00219	Nominal acquisition LYIOS00219	Nominal acquisition LYIOS00220 - > 221

For the whole week, the daily occultation campaign continued.

LYRA detector temperature

The LYRA detector 2 temperature (nominal unit) fluctuated between 50.5 and 49.6 with peaks up to 51.5 to 52.3 during additional unit 3/1 active periods.

To be explored

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3. SWAP instrument status

Calibration

SWAP calibration was performed on Tuesday.

MCPM errors

The number of MCPM recoverable errors increased from 1761 to 1913.

The number of MCPM unrecoverable errors is still 0.

IOS & operations

Monday 06 Jan	Tuesday 07 Jan	Wednesday 08 Feb	Thursday 09 Feb	Friday 10 Feb	Saturday 11 Feb	Sunday 12 Feb
Nominal acquisition 80s cadence + occult. jumps	Nominal acquisition + calibration + occult. jumps	Nominal acquisition + + occult. jumps	Nominal acquisition + + occult. jumps	Nominal acquisition + + occult. jumps	Nominal acquisition + occult. jumps	Nominal acquisition + occult. jumps
IOS00365 240 images	IOS00365 610 images	IOS00365 616 images	IOS00365 684 images	IOS00365 647 images	IOS00365 601 images	IOS00366 602 images

Occultation imaging jumps are commanded and performed during each orbit.

A new, more elaborate concept for prioritizing on-board data was devised to counteract the potential of SWAP image losses during an MCPM blockage period, i.e. especially in week-end occurrences - this concept is depicted below:

[illegible]

This new concept ensures that every 8th image has the highest priority and will always be kept on-board until subsequent downlink (see below). This ensure a continuity in the SWAP images even in cases of longer duration contingencies and on-board storage 'overflow'.

SWAP detector temperature

The SWAP Cold Finger Temperature diminished from 2.85 to 1.9 degrees Celsius, under nominal operations.

To be explored

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4. PROBA2 Science Center Status

The main operator is Koen Stegen; Erik Pylyser provides support, when needed.

The weekly 'P2SC Operations meeting' was held on 08/02/2012.

Updates to P2SC, this week:

- None.

5. Data reception & discussions with MOC

Passes

The delivery of the following passes for this week (passes 6980 till 7040) was nominal, except for:
- pass 6984: delivery was delayed until next morning. The BINLYRA_6984 data was embedded in BINLYRA_6991.

Data coverage HK

The HK data for pass 6984 have been lost.

Data coverage SWAP

Due to a problem linked to a pass-plan upload, SWAP images continued to be downloaded after the end of pass 6984 (Monday 6th). As a result, no images were left on-board for download during pass 6985.

Combining the MCPM blockage of previous week-end and the pass-plan inconsistency during pass 6984 results in a limited SWAP data coverage from Saturday 4th - around 15:00 until Monday 14:00. 80 images of the full on-board buffer were received during pass 6984 - all these images were from Sunday 5th. The other 200 images in the buffer, covering the limited number of week-end images, were subsequently lost.

Statistics for the week:

Total number of images between 2012 Feb 06 OUT and 2012 Feb 13 OUT: 4000

Highest cadence in this period: 30 seconds

Average cadence in this period: 138.42 seconds

Number of image gaps larger than 300 seconds: 94

Largest data gap: 31.83 minutes

The total number of images is relatively small. This is the consequence of the problems which have occurred during the previous week-end and following Monday (i.e. 4-5-6 Feb; see above).

Data coverage LYRA

The LYRA data were complete. The data of pass 6984 were embedded in BINLYRA_6991.

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
IU	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
SEU	Single Event Upset
SOHO	Solar and Heliospheric Observatory
SWAP	Sun Watcher using APS detector and image Processing
SWAVINT	SWAP AVerage INTensity
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
TC	Telecommand
UTC	Coordinated Universal Time
UV	Ultraviolet