P2SC-ROB-WR-107- 20120409 Weekly report #107	**P2SC Weekly report**	
Period covered: Date: Written by: Approved by:	Mon Apr 09 to Sun Apr 15, 2012 18 Apr 2012 Erik Pylyser David Berghmans	Royal Observatory of Belgium PROBA2 Science Center
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1. Science

Solar & Space weather events

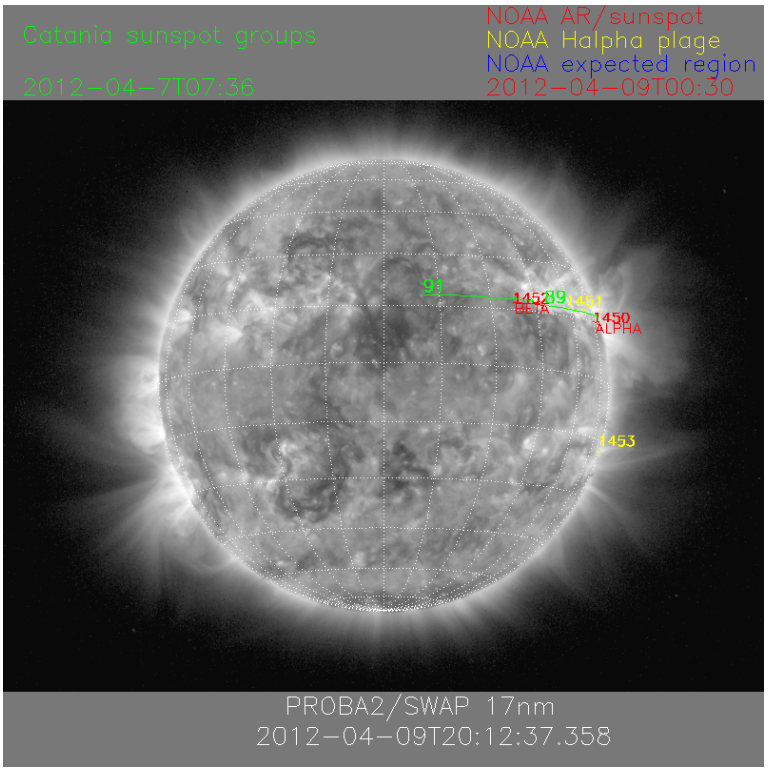
Overview

The level of solar activity this week[1] and associated M- and X-flares (if any):

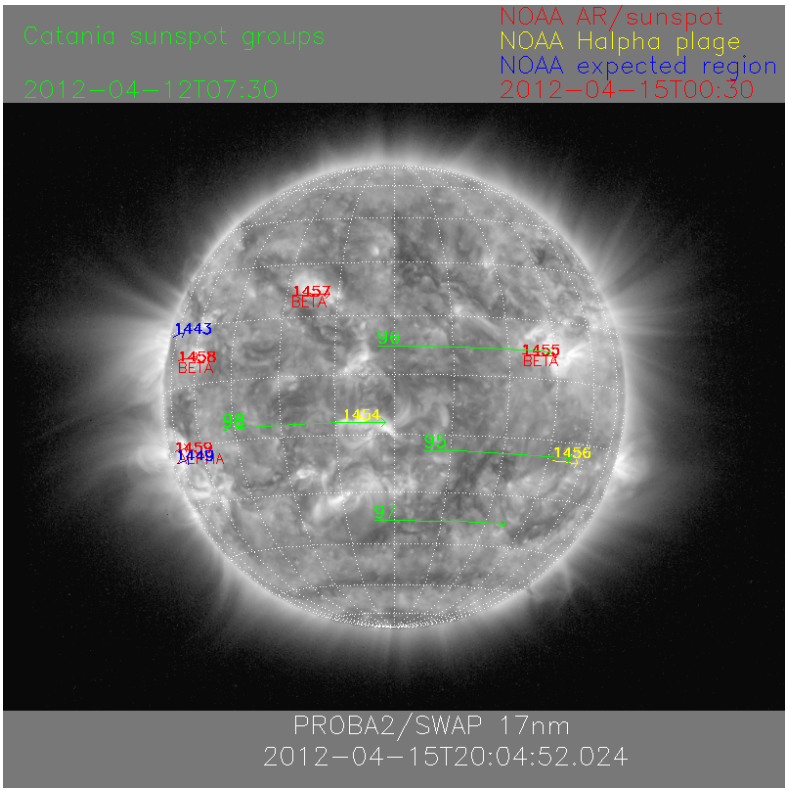
	Monday 09 Apr	Tuesday 10 Apr	Wednesday 11 Apr	Thursday 12 Apr	Friday 13 Apr	Saturday 14 Apr	Sunday 15 Apr
Activity	low	very low	very low	very low	very low	very low	low
Flares	-	-	-	-	-	-	-

[1] See appendix.

The SWAP images of Apr 09 and Apr 15 are shown below, with annotated active regions.

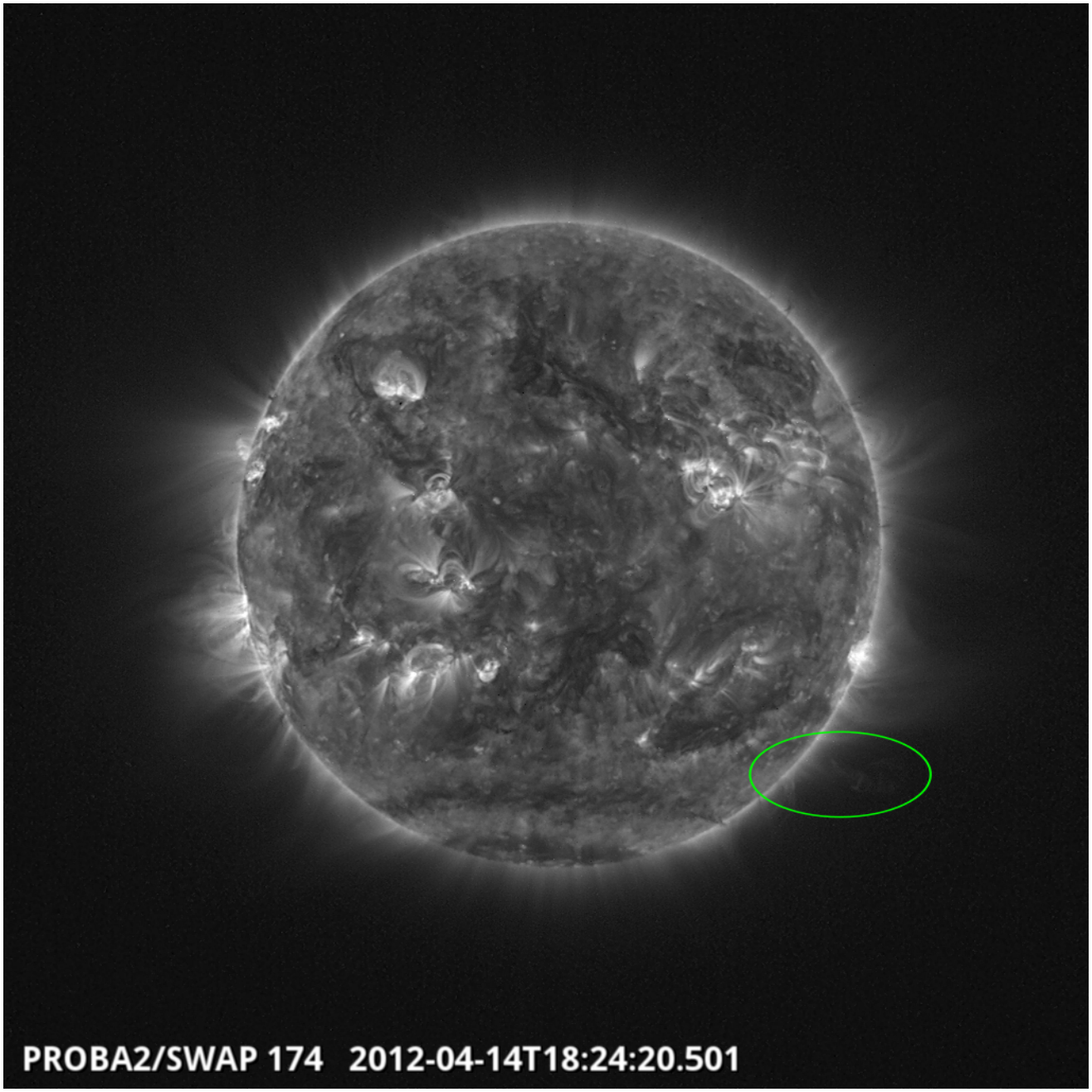


http://sidc.be/html/CmapPage.html



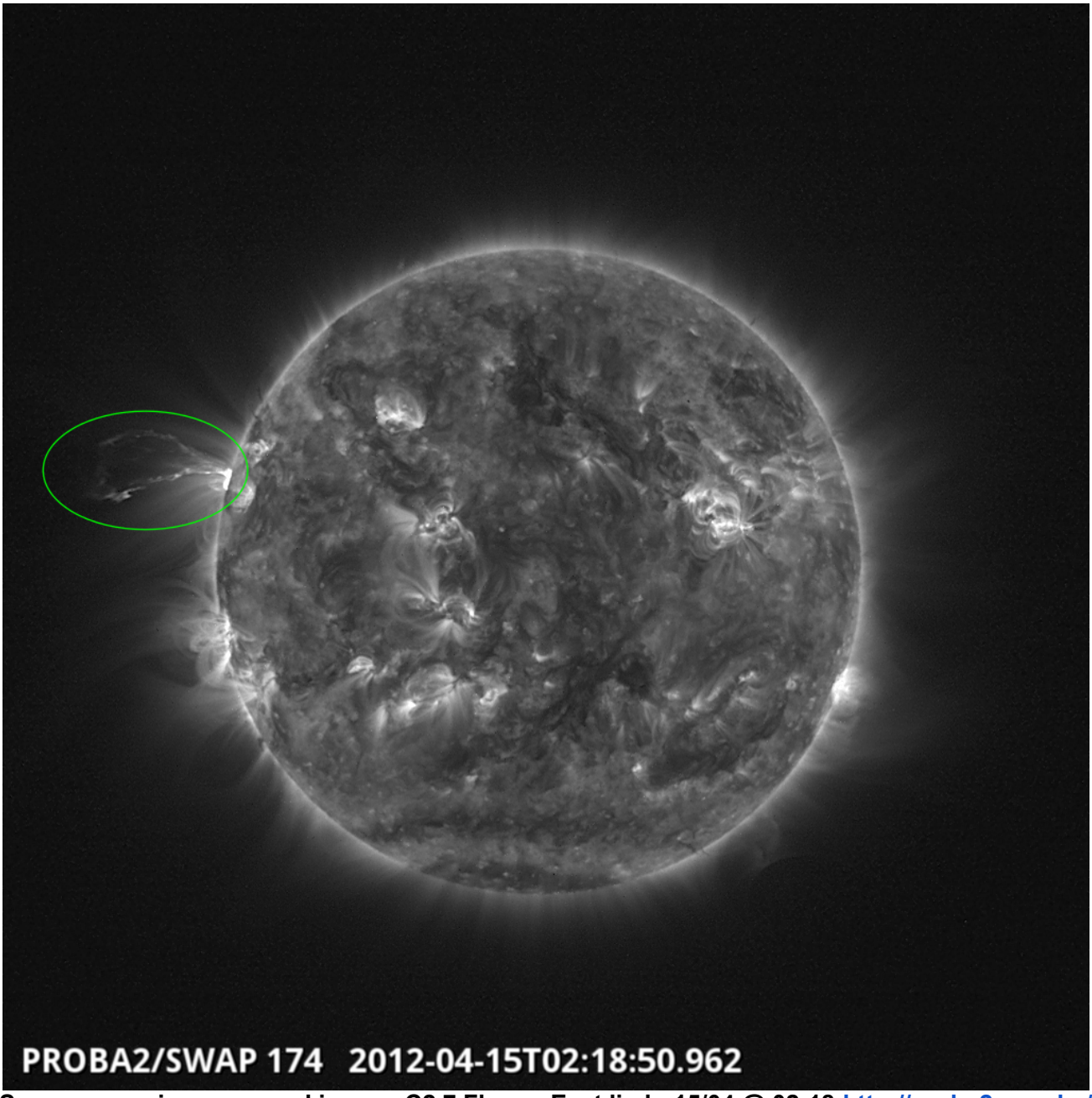
The Sun’s activity was very low to low. No M- or X-flares occurred.
However, several events were recorded by SWAP (and/or LYRA) and some of them are shown below:

Eruption - South-West limb, 14/04 @ 18:24 - image taken from SWAP difference movie - http://proba2.oma.be/swap/data/mpg/movies/201200414_swap_diff.mp4



Same as previous - normal image: Eruption - South-West limb, 14/04 @ 18:24 -
http://proba2.oma.be/swap/data/mpg/movies/201200414_swap_movie.mp4

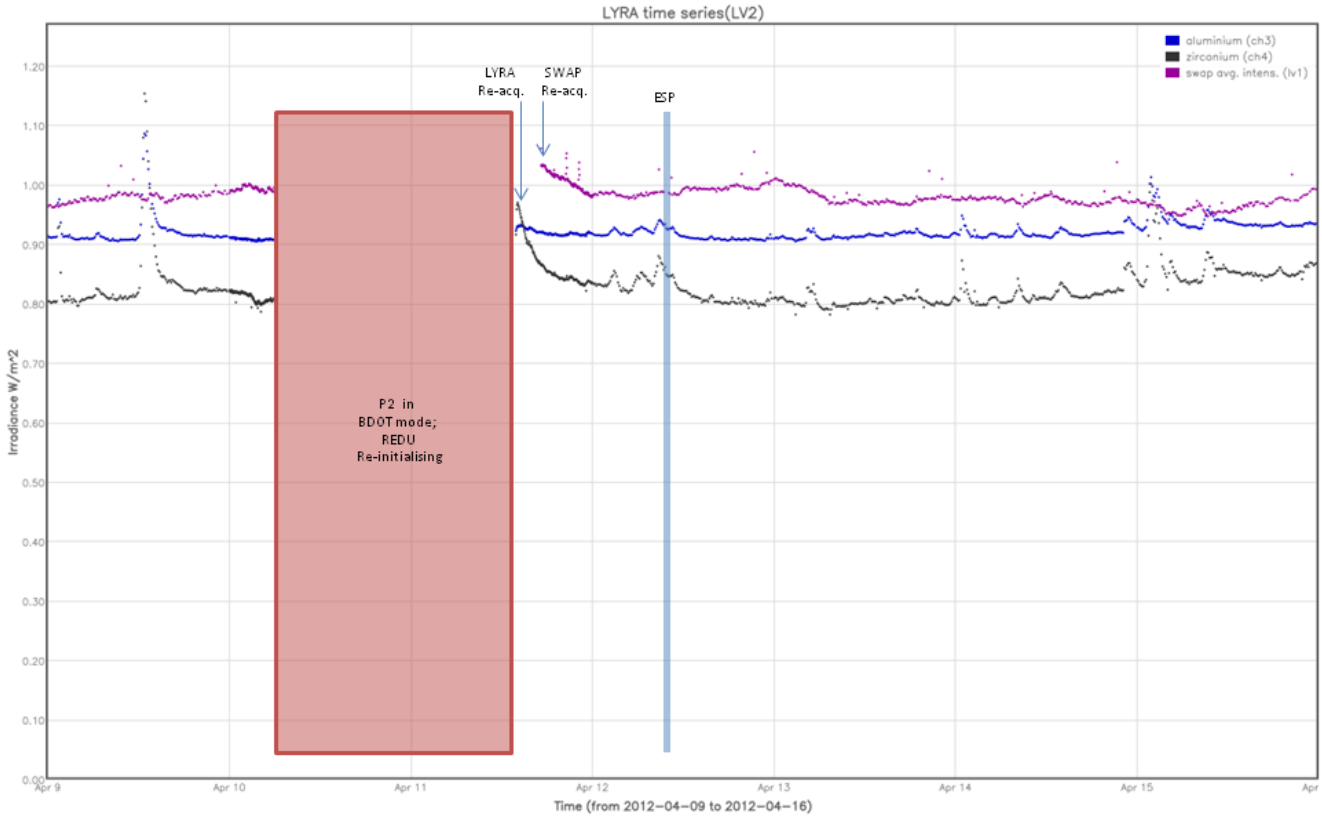
C2.7 Flare - East limb, 15/04 @ 02:21 - image taken from SWAP difference movie -
http://proba2.oma.be/swap/data/mpg/movies/201200415_swap_diff.mp4



Same as previous - normal image: C2.7 Flare - East limb, 15/04 @ 02:18 http://proba2.oma.be/swap/data/mpg/movies/201200415_swap_movie.mp4

Eruption - East limb, 15/04 @ 08:44 - image taken from SWAP difference movie - http://proba2.oma.be/swap/data/mpg/movies/201200415_swap_diff.mp4

An overview of the weekly LYRA & SWAP data is provided below:
The following curves are visible:
- black: Zirconium Channel LYRA Unit 2
- blue: Aluminium Channel of LYRA Unit 2
- purple: SWAVINT (solar intensity derived from ‘integrated’ SWAP images)



The blue shaded periods correspond to, from left to right:
- an ESP campaign on Thursday

The orange shaded periods correspond to, from left to right:
- none

The red shaded period corresponds with the period starting with the PROBA2 satellite reboot, which occurred on Tue Apr 10th, 08:08 and the re-acquisition of data by LYRA and SWAP. During this period no LYRA nor SWAP data was received. After recovery by REDU, PROBA2 SUN mode was commanded on Wed Apr 11th, at 13:23:48z. During pass 7563, data acquisition was re-initiated, for LYRA at 13:36 (after pass 7563), for SWAP at 17:36 (after pass 7564)

Scientific campaigns

The following LYRA and SWAP specific scientific campaigns have been performed this week:
- Daily LYRA campaign with Unit 3, opening the cover for 15 minutes.

Outreach, papers, presentations, etc.

- The science section of this document was also submitted to the weekly STCE Newsletter # 15.

2. LYRA instrument status

Calibration

Due to the PROBA2 Reboot on Tuesday, no calibration occurred this week.

IOS & operations

Monday 09 Apr	Tuesday 10 Apr	Wednesday 11 Apr	Thursday 12 Apr	Friday 13 Apr	Saturday 14 Apr	Sunday 15 Apr
Nominal acquisition + daily U3 LYIOS00235	Nominal acquisition + daily U3 + Proba2 Reboot & Recovery LYIOS00235	Nominal acquisition + daily U3 + Proba2 recovery LYIOS00236	Nominal acquisition + daily U3 LYIOS00236	Nominal acquisition + daily U3 LYIOS00236	Nominal acquisition + daily U3 LYIOS00236	Nominal acquisition + daily U3 LYIOS00236

On Tuesday 10th, 08:08, PROBA2 rebooted. LYRA was in nominal mode, with Unit 2 open. Due to the reboot, LYRA went in OFF mode, with Unit 2 cover open. This cover was closed by Redu during pass 7557.

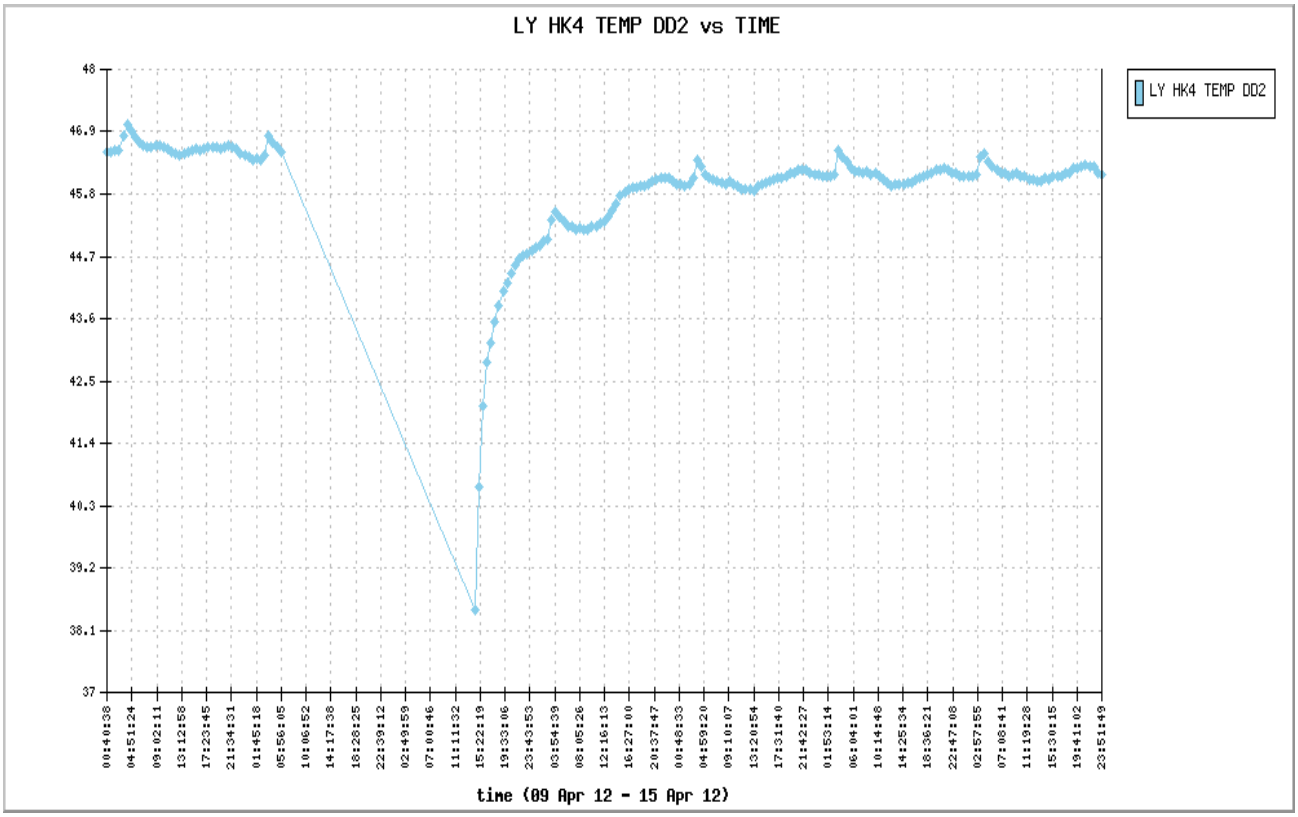
No LYRA data was received from Tue 10th, 05:53 until Wed 11th, 13:56.

No specific operations campaigns were performed (except for the daily U3 campaign).

LYRA detector temperature

LYRA detector 2 temperature fluctuated between 47 and 46 degrees Celsius under nominal circumstances. At re-initialisation LYRA temperature was 38.3 degrees Celsius.

Below is depicted the evolution of the LYRA temperature during the week. The data gap and temperature dip is due to the LYRA switch-off during PROBA2 Reboot and recovery.



To be explored

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3. SWAP instrument status

Calibration

Due to the PROBA2 Reboot on Tuesday, no calibration occurred this week.

MCPM errors

The number of MCPM recoverable errors increased from 93 to 118, when PROBA2 rebooted. The number was reset to 0 after recovery. By Sun 15th 23.59., this number increased to 14.

The number of MCPM unrecoverable errors is still 0.

IOS & operations

Monday 09 Apr	Tuesday 10 Apr	Wednesday 11 Apr	Thursday 12 Apr	Friday 13 Apr	Saturday 14 Apr	Sunday 15 Apr
Nominal acquisition IOS00381 624 images	Nominal acquisition + Proba2 Reboot & Recovery IOS00381 110 images	Nominal acquisition + Proba2 Recovery IOS00380 -> 384 189 images	Nominal acquisition + ESP IOS00384 649 images	Nominal acquisition IOS00384 665 images	Nominal acquisition IOS00384 652 images	Nominal acquisition IOS00384 591 images

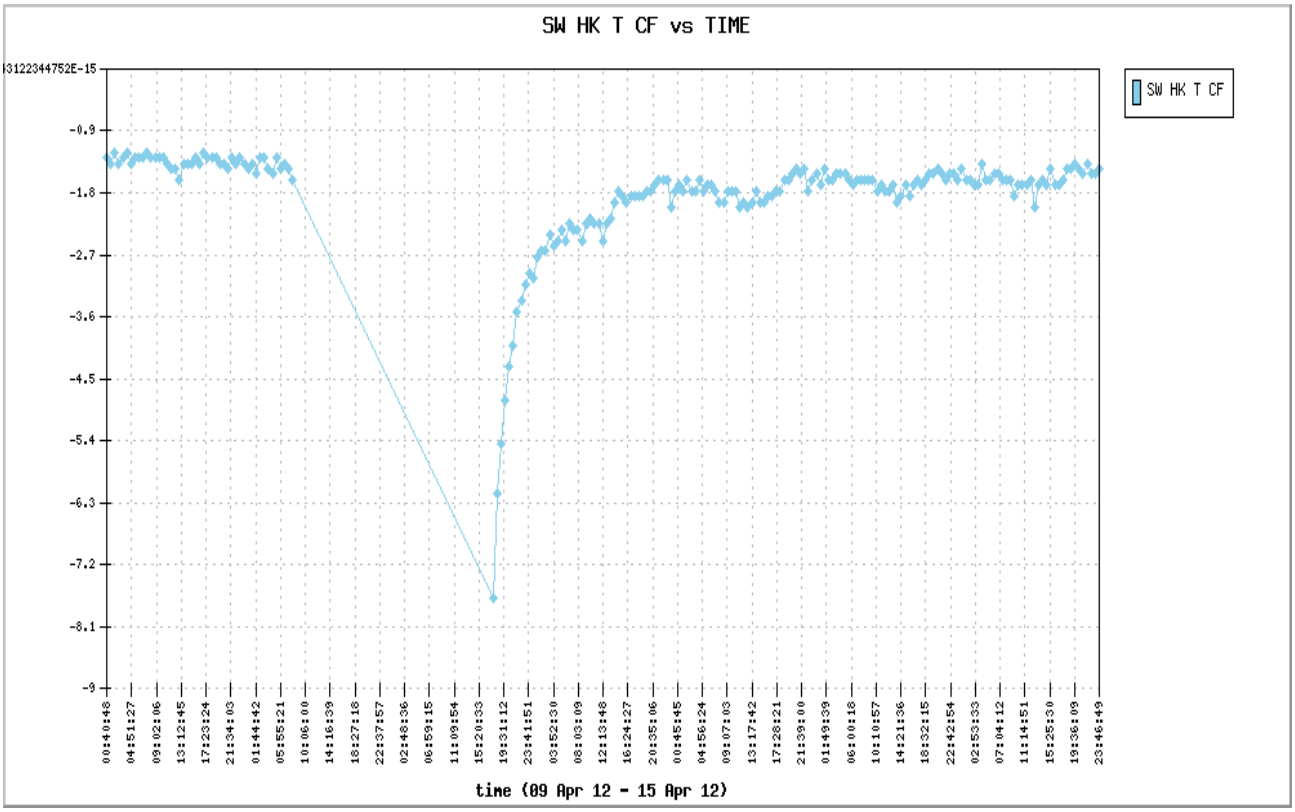
On Tuesday 10th, 08:08, PROBA2 rebooted. SWAP was then in nominal acquisition mode. Due to the reboot, SWAP went in OFF mode.

No SWAP data was received for all passes from 7552 until 7564 included, i.e. between Tue 10th 05:53 and Wed 11th 17:36.

The weekly ESP campaign was performed on Thursday.
No other specific SWAP science campaigns were performed.

SWAP detector temperature
The SWAP Cold Finger Temperature fluctuated between -1.3 and -2.0 degrees Celsius, under nominal operations. At re-initialisation SWAP temperature was -7.7 degrees Celsius.

Below is depicted the evolution of the SWAP temperature during the week. The data gap and temperature dip is due to the SWAP switch-off during PROBA2 Reboot and recovery.



To be explored
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4. PROBA2 Science Center Status

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

No weekly ‘P2SC Operations meeting’ was held.

The following changes were made to the P2SC:
- LY-EDG: 12/04/2012: r4473; Bugfix ticket #259
- LY-BSDG12/04/2012: r4485 Improve pipeline behaviour after satellite reboot.

5. Data reception & discussions with MOC

Passes

The delivery of the passes for this week (passes 7541 to 7601) was nominal, except for:
- 7552, 7553, 7554, 7555, 7556, 7557, 7558, 7559, 7560, 7561, 7562, 7563, 7564 (Proba2 reboot & recovery)

Data coverage HK

Due to the satellite reboot, there is a gap in the housekeeping data from 2012-04-10T09:22:12.000Z until 2012-04-10T12:33:42.000Z.

Data coverage SWAP

No BINSWAP files were received for passes 7553, 7554, 7555, 7556, 7557, 7558, 7559, 7560, 7561, 7562, 7563, 7564 (Proba2 reboot & recovery).
This resulted in a gap in SWAP data from 2012-04-10T05:53:17.920 until 2012-04-11T17:10:36.247.

Total number of images between 2012 Apr 09 0UT and 2012 Apr 16 0UT: 3480
Highest cadence in this period: 130 seconds
Average cadence in this period: 173.80 seconds
Number of image gaps larger than 300 seconds: 2
Largest data gap: 2117.28 minutes

Data coverage LYRA

All LYRA Science data files (BINLYRA) have been received, except for:
- passes 7554, 7555, 7556, 7557, 7558, 7559, 7560, 7561, 7562, 7563 (Proba2 reboot & recovery).
This resulted in a gap in LYRA data from 2012-04-10T05:53:17.920 until 2012-04-11T13:36.247.

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
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

7. APPENDIX Solar Activity Definitions

In the science section we use the following solar activity standards.

The standard scale for solar activity is:
- very low (almost no flares, only B)

- low (a few C flares)
- moderate (many C flares and at least an M flare)
- high (several M flares and an X flare)
- very high (continuous background of C flares, numerous M flares, more than one X flare)
(+ extreme?)