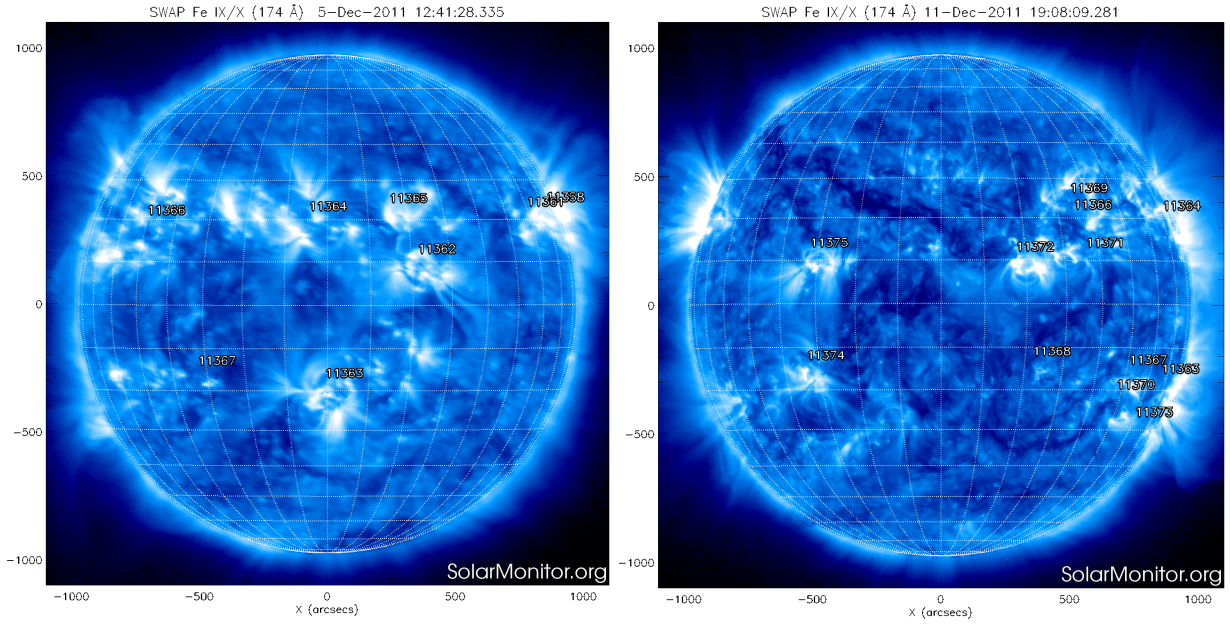
P2SC-ROB-WR-090-20111205 Weekly report #090	**P2SC Weekly report**	
Period covered: Date: Written by: Released by:	Mon Dec 05 to Sun Dec 11, 2011 19 Dec 2011 Koen Stegen David Berghmans	Royal Observatory of Belgium PROBA2 Science Center
To:	LYRA PI, marie.dominique@sidc.be SWAP PI, david@sidc.be	http://proba2.sidc.be ++ 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

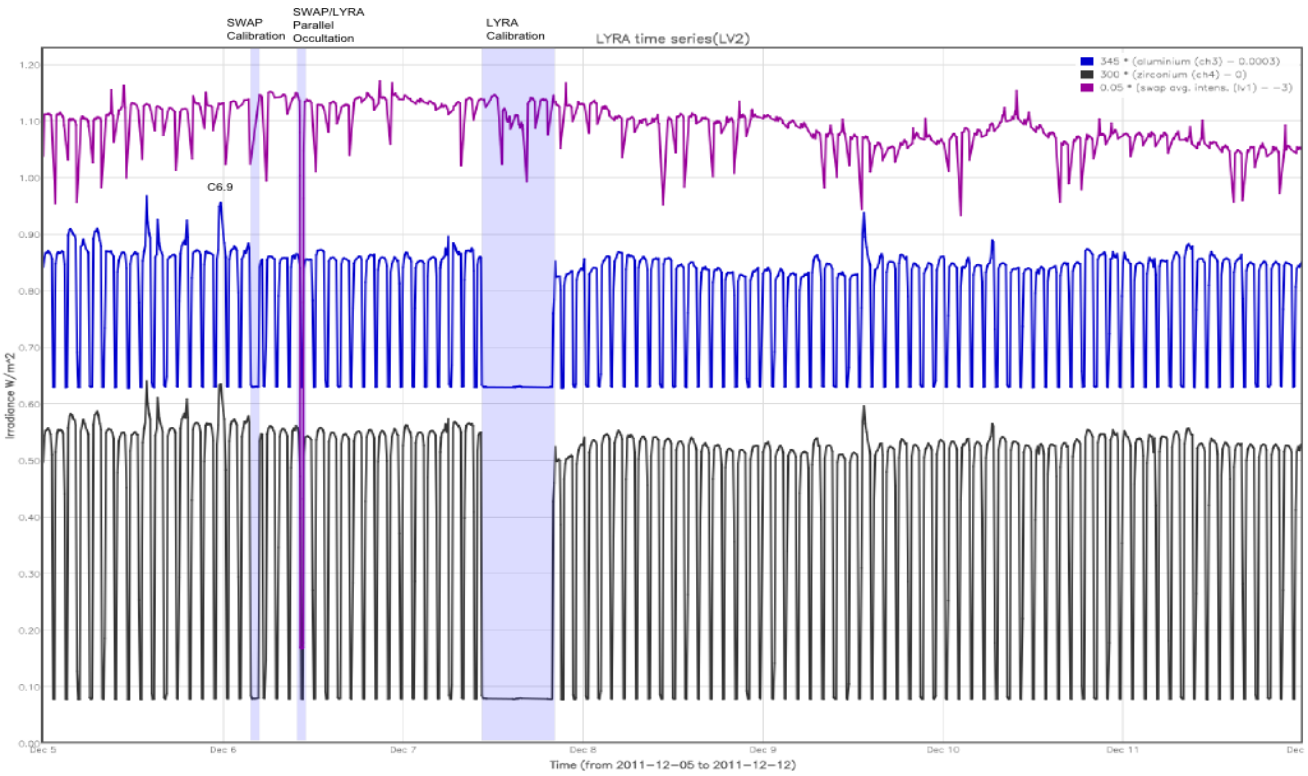
Solar & Space weather events

Overview

The SWAP images of December 5 and December 11 are shown below, with annotated active regions:



Solar activity was at relatively quiet this week. The strongest flare of the week (C6.9), occurred on Monday 4th. There were up to 10 active regions present on the solar disk early in the week. The main active region was NOAA 11363), of type Dki with a Beta-Gamma magnetic configuration. This region decayed over the second half of the week. No low-latitude coronal hole was seen on the solar disk. A noteworthy event was the activation and eruption of a large filament in the NE quadrant of the solar disk on Dec.11, around 6:00UT.



Above is shown the weekly overview of LYRA Al/Zr signals and SWAP average intensity (SWAVINT in purple). The 'intensity' levels have been 'spread' to allow a better presentation of the curves. SWAVINT as well as the LYRA channels exhibit luminosity dips, due to the occultation season. The blue areas indicate, from left to right, the weekly SWAP calibration campaign (on Tue), the weekly LYRA/SWAP parallel occultation campaign, and the LYRA calibration respectively.

Scientific campaigns

The following science campaigns are on-going:
- daily occultation campaign of LYRA
- weekly LYRA/SWAP parallel occultation campaign

On Wednesday 7th of December a specific science campaign was performed for guest investigator David Long (TCD). This campaign consisted of an offpointing, combined with taking rebinned images at high cadence. This was a trial run to be repeated on request by David Long to image a target of opportunity.

Outreach, papers, presentations, etc.
/TBD

2. LYRA instrument status

Calibration
Calibration was performed successfully on 07/12.

IOS & operations

Monday 05 Dec	Tuesday 06 Dec	Wednesday 07 Dec	Thursday 08 Dec	Friday 09 Dec	Saturday 10 Dec	Sunday 11 Dec
Nominal acquisition + occultation LYIOS00202	Nominal acquisition + occultation LYIOS00202	Nominal acquisition + occultation + calibration LYIOS00202	Nominal acquisition + occultation LYIOS00202	Nominal acquisition + occultation LYIOS00203	Nominal acquisition + occultation LYIOS00203	Nominal acquisition + occultation LYIOS00203

LYRA detector temperature

The LYRA detector 2 temperature (nominal unit) fluctuated between 40.8 and 37.3, during nominal operations.

To be explored
/

3. SWAP instrument status

Calibration
Weekly extended LED calibration campaign executed on 6 December.

MCPM errors
Increased from 1471 to 1480 this week.
The number of MCPM unrecoverable errors is still 0.
During pass 6438 (2011-12-05 16:11) Redu noticed that no packets were received from SWAP. This was identified as a "No SWAP download" anomaly. During uplink pass 6443 (2011-12-06 05:11) Redu has performed the "SWAP MCPM unblocking procedure" which resolved this issue.

IOS & operations

Monday 05 Dec	Tuesday 06 Dec	Wednesday 07 Dec	Thursday 08 Dec	Friday 09 Dec	Saturday 10 Dec	Sunday 11 Dec
Nominal acquisition 110s cadence + occult. jumps IOS00347 352 images	Nominal acquisition + LED calibration + occult. jumps + parallel occult w/ LYRA IOS00346 504 images	Nominal acquisition 80s cadence + occult. jumps IOS00348 875 images	Nominal acquisition + ESP campaign + occult. jumps IOS00348 732 images	Nominal acquisition + occult. jumps IOS00348 776 images	Nominal acquisition + occult. jumps IOS00348 751 images	Nominal acquisition + occult. jumps IOS00348 768 images

Occultation jumps occur during every orbit.
On Tuesdays SWAP images the entry & exit of one particular occultation in parallel with LYRA.

SWAP detector temperature
The SWAP Cold Finger Temperature fluctuated between -5.6 and -3.3 degrees Celsius, under nominal operations.

To be explored
/

4. PROBA2 Science Center Status

Erik Pylyser was operator during this week.

This week, unexpected errors were encountered in the P2SC pipeline during the LYRA calibration. First analysis shows that these errors were not caused by the satellite, but purely by the P2SC processing software.
The PPT tool was updated to rename instrument kernel files and proper FOV for LYRA, libswap was updated to further separate YUV code, and the SWMPG tol was updated to express the exposure test in function of SWAVINT, adapt the thresholds for higher solar activity.

5. Data reception & discussions with MOC

Passes

All data were received.

Data coverage HK
The HK data were complete this week.

Data coverage SWAP

SWAP data associated with passes: 6438, 6439, 6440, 6441 and 6442 were not received due to the on-board MCPM blockage.

Statistics for complete week:

Total number of images between 2011 Dec 05 0UT and 2011 Dec 12 0UT: 4758
Highest cadence in this period: 0 seconds
Average cadence in this period: 127.12 seconds
Number of image gaps larger than 300 seconds: 255
Largest data gap: 31.33 minutes

The data gap of 31.33 min was commanded to allow for an ESP test on Thu.

Data coverage LYRA
The LYRA data were complete this week.

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
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
TBW	To Be Written
TC	Telecommand
TPMU	Thermal Plasma Measurement Unit
UTC	Coordinated Universal Time
UV	Ultraviolet