P2SC-ROB-WR-087-20111114 Weekly report #087	**P2SC Weekly report**	
Period covered: Date: Written by: Released by:	Mon Nov 14 to Sun Nov 20, 2011 01 Dec 2011 Erik Pylyser David Berghmans	Royal Observatory of Belgium PROBA2 Science Center
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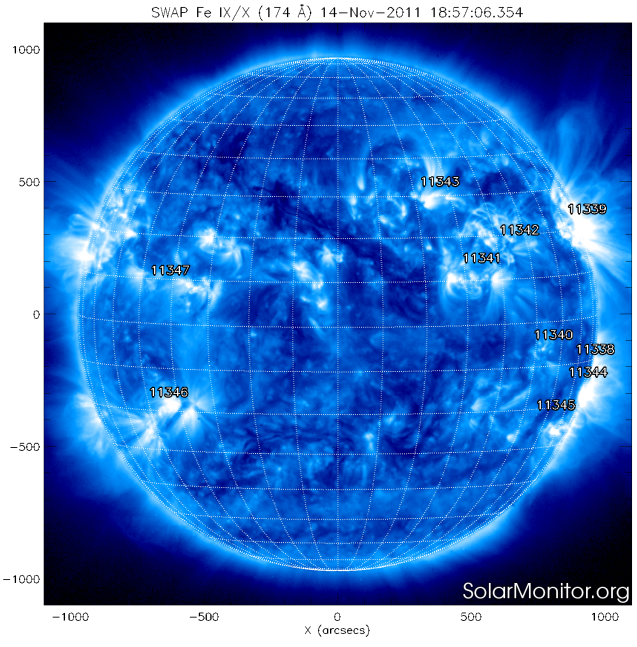
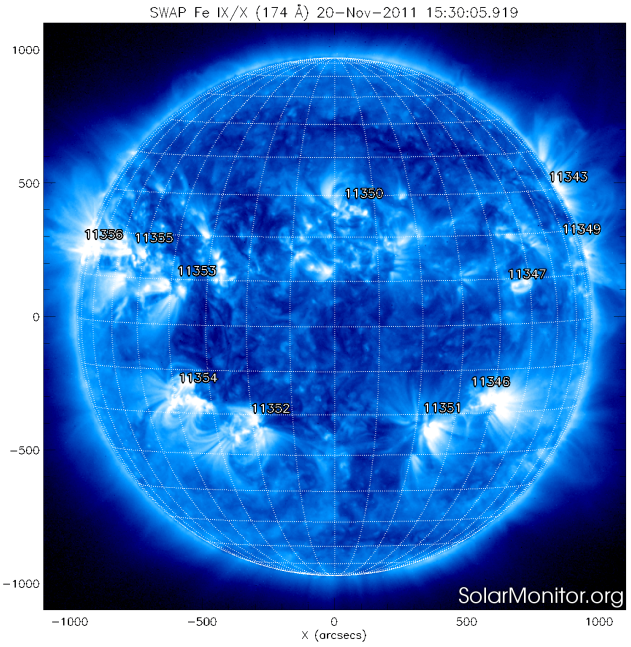
1. Science

Solar & Space weather events

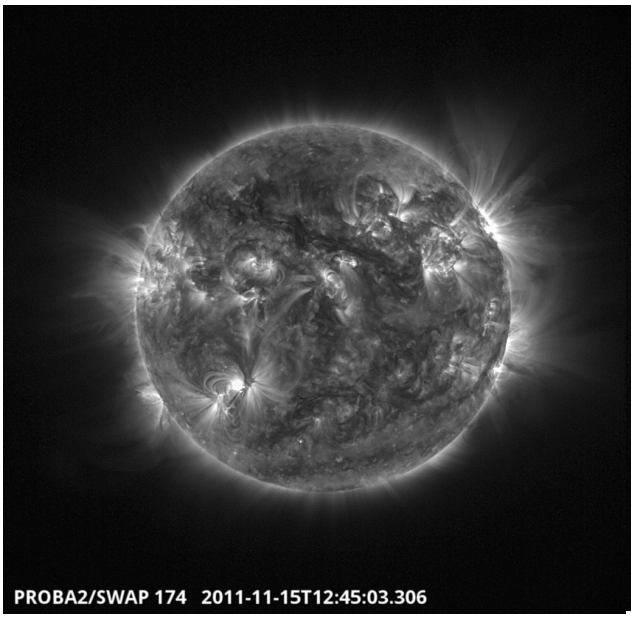
Overview

The SWAP images of November 14 and November 20 are shown below, with annotated active regions:

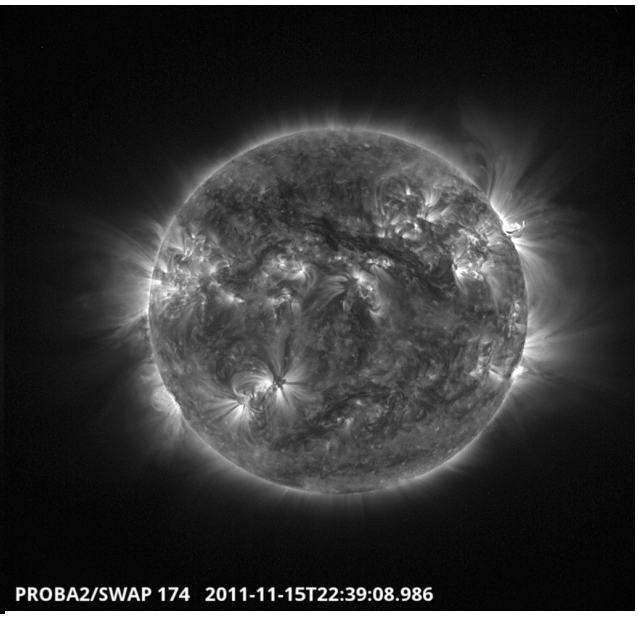




Solar activity was at MEDIUM level this week. Flaring activity has been at eruptive levels, with numerous C-flares occurring every day. In the beginning of the week, the most active regions were NOAA AR 11348 (Cat 42) on the west limb and NOAA AR 11346 (Cat 46) in the south-east. This last region was the source of an M1.9 flare on November 15th at 12:43 UT. Another M-flare occurred on the same day, this time in NOAA AR 11348 (Cat 42). This was an M1.1 flare with peak time 22:35 UT. The other regions on the solar surface were stable and did not produce any C- or M-flares in the first days of the week. Starting from November 17th, more active regions turned over the solar east limb and took over the flaring activity. NOAA AR 11352 (Cat 50), NOAA AR 11354 (Cat 51), NOAA AR 11353 (Cat 52), NOAA AR 11355 and NOAA AR 11356 (together Cat 53) all produced several low C-class flares.



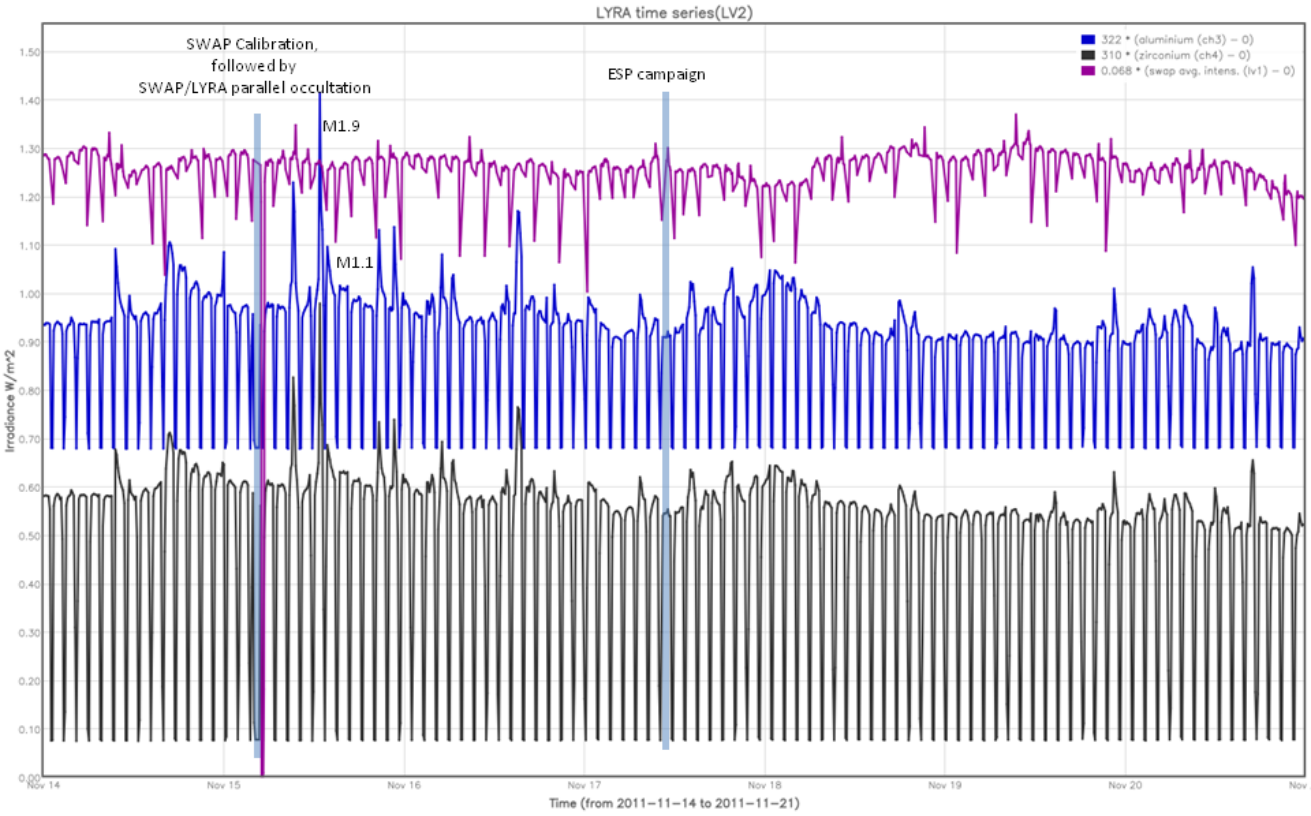
M1.9 Flare - S-E hemisphere



M1.1 Flare - N-W limb

A very large filament was visible on the solar disk throughout the week, running from the north towards the solar center (see both images above). Its top part erupted on November 14th around 13:30 UT - this was observed by SWAP. The rest of the filament remained stable. Another filament eruption was observed around 15:19 UT in SDO/AIA 304 data on November 17 and yet another one at 16:46 UT on November 18 (the latter two were not visible in the SWAP images).

The M1.1 flare on November 15 was associated with a northward CME observed in SOHO/LASCO. Many other CME's were observed by SOHO/LASCO and STEREO/COR2 during the week, but none of them was earth-directed.



Above we show the weekly overview of LYRA Al/Zr signals and SWAP average intensity (SWAVINT in purple). SWAVINT as well as the LYRA channels exhibit luminosity dips, due to the occulation season. On November 15th, SWAVINT reflects the SWAP occultation imaging campaign, executed in parallel with that day's LYRA occultation campaign.
The blue areas indicate, from left to right, the weekly SWAP calibration campaign (on Tue) and the weekly ESP campaign/jump, respectively.

Scientific campaigns

The daily occultation campaign of LYRA continues and now also covers the week-ends.
Since this week, SWAP images the entry and exit of 1 particular occultation in parallel with one of the LYRA daily occultation campaigns. It has been chose to do this on Tuesdays, after the weekly SWAP calibration.

All daily LYRA campaigns this week were executed successfully, except on 18 & 20 Nov (see below for more details).

Outreach, papers, presentations, etc.

/TBD.

To be explored
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2. LYRA instrument status

Calibration

No calibration this week.

IOS & operations

Monday 14 Nov	Tuesday 15 Nov	Wednesday 16 Nov	Thursday 17 Nov	Friday 18 Nov	Saturday 19 Nov	Sunday 20 Nov
Nominal acquisition + occultation LYIOS00199	Nominal acquisition + occultation LYIOS00199	Nominal acquisition + occultation LYIOS00199	Nominal acquisition + occultation LYIOS00199	Nominal acquisition +occultation LYIOS00199	Nominal acquisition + occultation LYIOS00199	Nominal acquisition + occultation LYIOS00199

LYRA detector temperature

The LYRA detector 2 temperature (nominal unit) decreased in a fluctuating manner between 44.2 - on Monday and 41 degrees Celsius - on Sunday, during nominal operations.

To be explored

On 18 & 20/11, HK data indicates that LYRA POW HD3 is not powered, while it was commanded to be. It is - at this time - unknown where this comes from. The same situation occurred on 9 & 10/11. Detailed analysis is done on 21-22 Nov. See weekly report #88.

3. SWAP instrument status

Calibration
Weekly extended LED calibration campaign executed on 15 November.

MCPM recoverable errors
Increased from 1186 to 1335 this week.
The number of MCPM unrecoverable errors is still 0.

IOS & operations

Monday 14 Nov	Tuesday 15 Nov	Wednesday 16 Nov	Thursday 17 Nov	Friday 18 Nov	Saturday 19 Nov	Sunday 20 Nov
Nominal acquisition 110s cadence + occult. jumps IOS00343 592 images	Nominal acquisition + LED calibration + occult. jumps + parallel occult w/ LYRA IOS00344 622 images	Nominal acquisition + occult. jumps IOS00344 584 images	Nominal acquisition + ESP campaign + occult. jumps IOS00344 560 images	Nominal acquisition + occult. jumps IOS00344 581 images	Nominal acquisition + occult. jumps IOS00345 572 images	Nominal acquisition + occult. jumps IOS00345 577 images

Occultation jumps occur now 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 decreased - in a fluctuating manner - between -1.0 and - 3.3 degrees Celsius.

To be explored
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4. PROBA2 Science Center Status

Erik Pylyser, David Berghmans and Koen Stegen were operator during this week.

As during last week, the nominal processing of incoming data was perturbed by the parallel re-processing of SWAP data.

The following tools were updated on the operational server:
- ODP/PP_PLOT: 14/11/2011: r4262
- PTI: 16/11/2011: r4263 (Bugfix)

5. Data reception & discussions with MOC

Passes

Pass 6287 data (Friday 18th, 15:53) was delivered on 21/11.

Data coverage HK
The HK data were complete this week.

Data coverage SWAP

All data was received.

Statistics for complete week:

Total number of images between 2011 Nov 14 0UT and 2011 Nov 21 0UT: 4088
Highest cadence in this period: 30 seconds
Average cadence in this period: 147.84 seconds
Number of image gaps larger than 300 seconds: 101
Largest data gap: 29.00 minutes

The data gap of 29 min was commanded to allow for an ESP test.

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