


P2SC-ROB-WR-402 - 20171204 Weekly report #402	P2SC Weekly report	
Period covered: Date: Written by: Approved by:	Mon Dec 04 to Sun Dec 10, 2017 11 Dec 2017 Jennifer O'Hara Matthew West	Royal Observatory of Belgium - PROBA2 Science Center
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1. Science

Solar & Space weather events

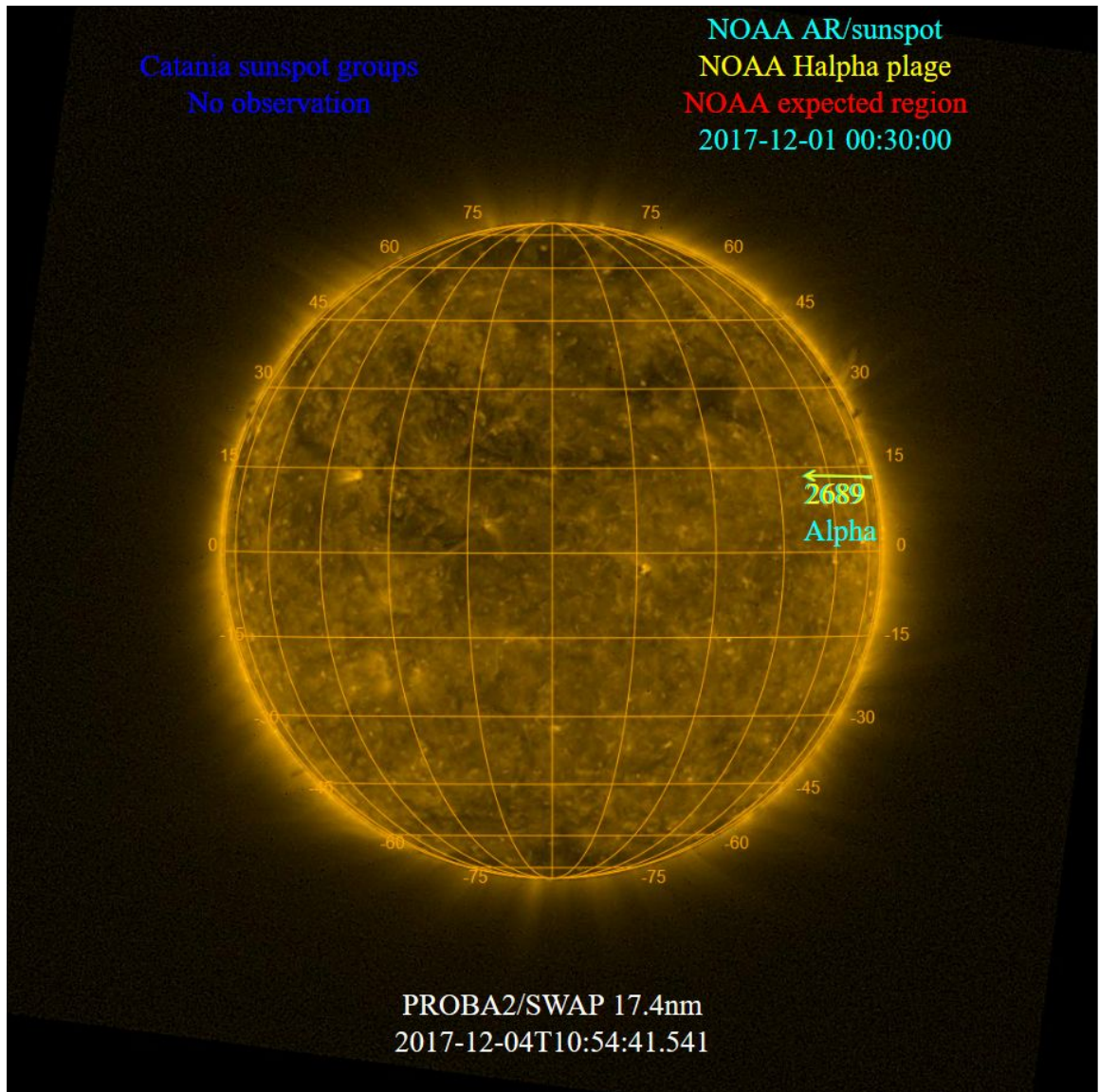
The level of solar activity¹ remained **very low** this week.

Only M- and X-flares are mentioned, the most energetic one(s) per day are presented in **bold**:

	Monday 04 Dec	Tuesday 05 Dec	Wednesday 06 Dec	Thursday 07 Dec	Friday 08 Dec	Saturday 09 Dec	Sunday 10 Dec
Activity	very low	very low	very low	very low	very low	very low	very low
Flares	-	-	-	-	-	-	-

¹ See appendix. All timings are given in UT.

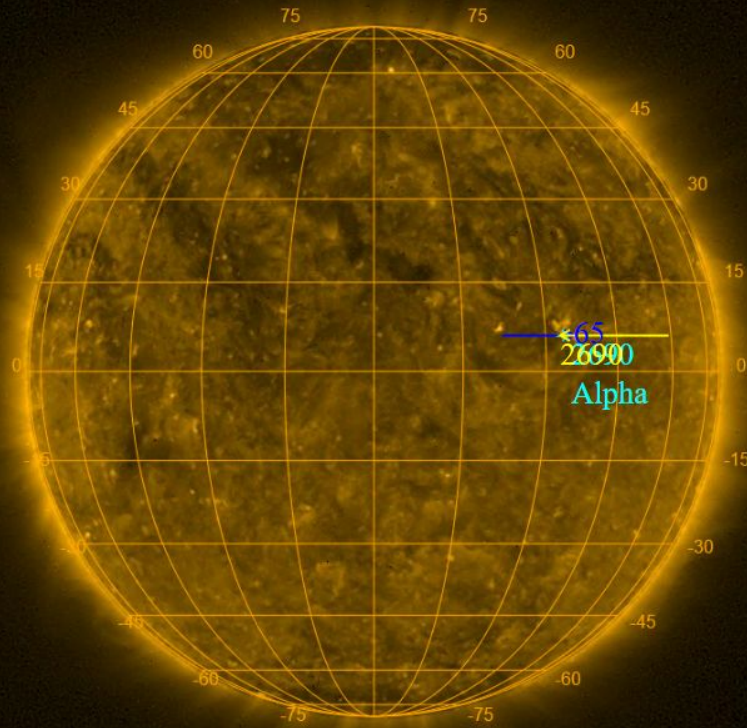
The SWAP images of Dec 04 and Dec 08 (due to a data gap on the 10th) are shown below, with annotated active regions.



<http://sidc.be/soteria/soteria.php>

Catania sunspot groups
2017-12-07 07:30:00

NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2017-12-08 00:30:00



PROBA2/SWAP 17.4nm
2017-12-08T05:48:19.760

Solar Activity

Solar flare activity remained very low during the week.

In order to view the activity of this week in more detail, we suggest to go to the following website from which all the daily (normal and difference) movies can be accessed: <http://proba2.oma.be/ssa>

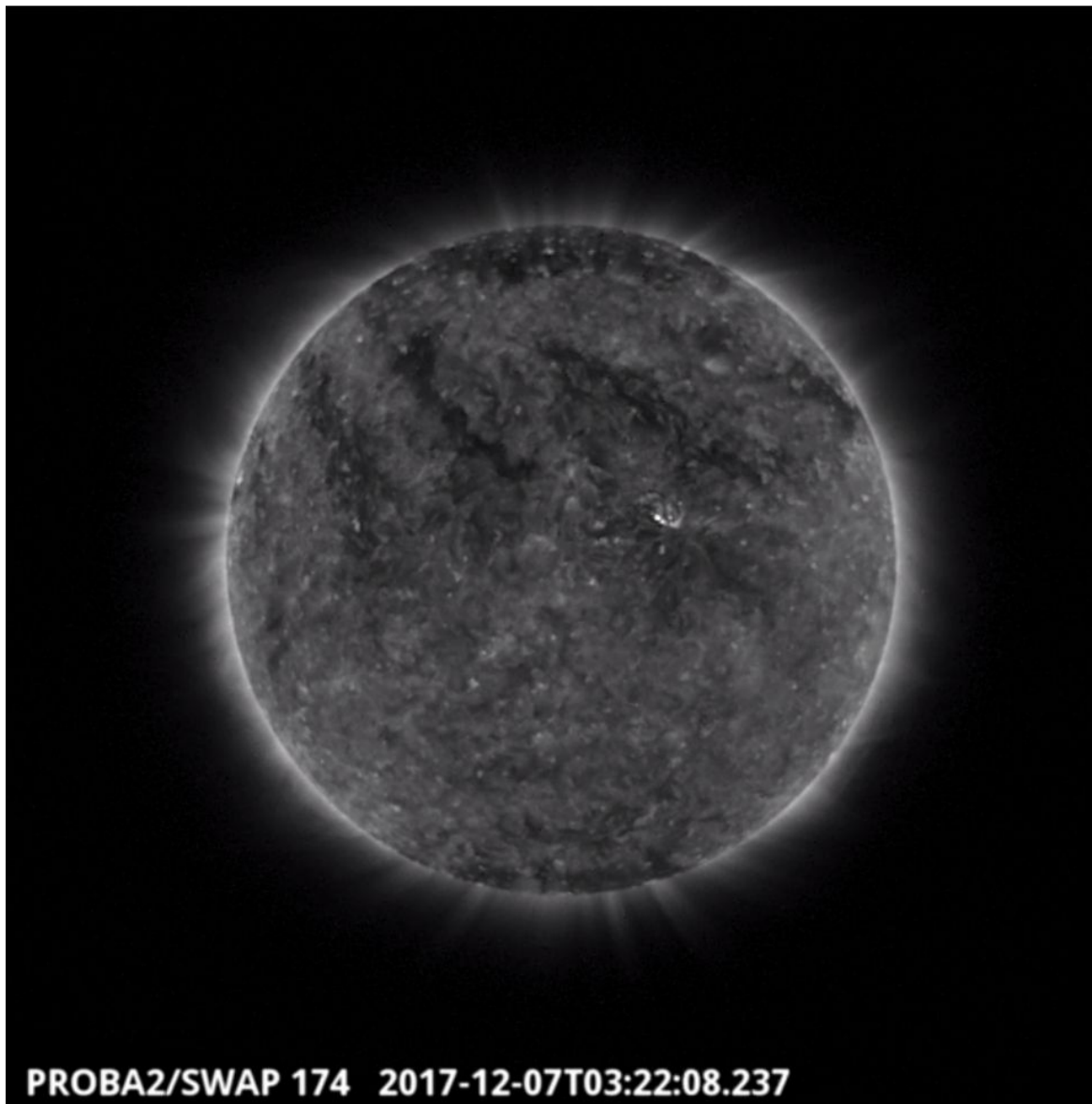
This page also lists the recorded flaring events.

A weekly overview movie can be found [here](#) (SWAP week 402).

Details about some of this week's events, can be found further below.

If any of the linked movies are unavailable they can be found in the P2SC movie repository [here](#)

Thursday Dec 07



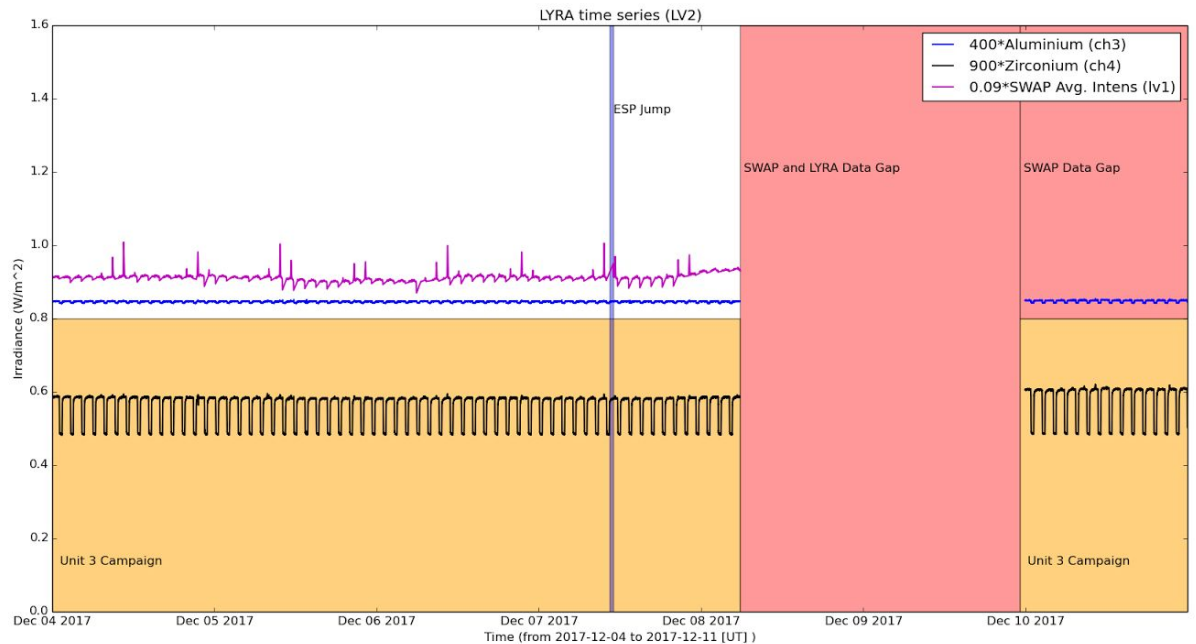
The first flare of the week was a B-class (B1.0) flare and was observed by SWAP on 2017-Dec-07. The flare is visible near the centre of the solar disk in the SWAP image above at 03:22 UT.

Find a movie of the event [here](#) (SWAP movie)

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 (SWAP Average Intensity; integrated solar intensity per SWAP image pixel)



The blue shaded periods related to SWAP, correspond to, from left to right:

- ESP jump, 2017-Dec-07

The orange shaded periods related to LYRA correspond to, from left to right:

- Unit 3 campaign, from 2017-Dec-04 to 2017-Dec-10 (with a data gap)

The red shaded periods related to other issues corresponds to:

- SWAP and LYRA Data gap due to reboot on 2017-Dec-08
- SWAP data gap continued due to reboot on 2017-Dec-08 until 2017-Dec-11

Outreach, papers, presentations, etc.

Please consult <http://proba2.oma.be/science/publications> for a list of interesting articles using SWAP & LYRA data, as well as a link to the complete article list.

The science section of this weekly report is also published in the weekly STCE newsletter (<http://www.stce.be/newsletter/newsletter.php>).

A PROBA2 representative was present at the Science Forum South Africa with a stall displaying a presentation of interesting scientific observations, and a model of the PROBA2 satellite.

Guest Investigator Program

- None

2. LYRA instrument status

Calibration

No Calibration campaign this week.

IOS & operations

Monday 04 Dec	Tuesday 05 Dec	Wednesday 06 Dec	Thursday 07 Dec	Friday 08 Dec	Saturday 09 Dec	Sunday 10 Dec
Nominal acquisition + U3	Nominal acquisition + U3	Nominal acquisition + U3	Nominal acquisition + U3	Nominal acquisition + U3	Nominal acquisition + U3	Nominal acquisition + U3
LYIOS00661	LYIOS00661	LYIOS00661	LYIOS00661	LYIOS00661	LYIOS00663	LYIOS00663

The following science campaigns were performed by LYRA:

- Continuous U3 observation campaign for occultation season

LYRA detector temperature

LYRA detector 2 temperature globally varied between 31.20 and 44.93 °C.

3. SWAP instrument status

Calibration

No calibration campaign this week.

MCPM errors

The number of MCPM recoverable errors decreased from 13076 to 0 (after a reboot on Dec-08)

The number of MCPM unrecoverable errors decreased from 45 to 0 (after a reboot on Dec-08)

IOS & operations

Monday 04 Dec	Tuesday 05 Dec	Wednesday 06 Dec	Thursday 07 Dec	Friday 08 Dec	Saturday 09 Dec	Sunday 10 Dec
Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition + ESP jump	Nominal acquisition * Occultation	Nominal acquisition	Nominal acquisition
IOS00734 760 images	IOS00734 725 images	IOS00735 723 images	IOS00735 751 images	IOS00735 155 images	IOS00737 0 images	IOS00737 0 images

Special operations for SWAP, this week:

On 2017-Dec-07

- ESP jump

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -11.21 and -2.33 °C.

4. PROBA2 Science Center Status

The main operator is Laurence Wauters.

The following changes were made to the P2SC:

- None.

5. Data reception & discussions with MOC

Passes

The delivery of the passes for this week (passes 25939 to 26003) was nominal, except for:

- 25961, 25980 to 26007

Data coverage HK

All HK data files (LYRA_AD) have been received, except:

- 25980 (due to PROBA2 reboot)

Data coverage SWAP

All SWAP Science data files (BINSWAP) have been received, except:

- 25961, due to a small gap in the VPN connexion, the command to activate the recording of the BBE5 failed. No data has been recorded for the pass 25961. LYRA data stores were dumped during next (25962) pass
- No data for passes 25980 to 26007 due to PROBA2 reboot and SWAP in OFF mode and upon restarting the parameters were not set to allow images to be processed on board.

Total number of images between 2017 Dec 04 00:00 UT and 2017 Dec 11 00:00 UT: 3121

Highest cadence in this period: 18 seconds

Average cadence in this period: 117.48 seconds

Number of image gaps larger than 300 seconds: 69

Largest data gap: 62.63 minutes

Data coverage LYRA

All LYRA Science data files (BINLYRA) have been received, except:

- 25961, due to a small gap in the VPN connexion, the command to activate the recording of the BBE5 failed. No data has been recorded for the pass 25961.
- No data for passes 25986 to 25992 due to PROBA2 reboot and LYRA in OFF mode
- 25994

6. APPENDIX: Frequently used acronyms

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
DAC	Data Acquisition Controller
DBR	Deployment, backup & recovery
DDA	Decommutated data archive
ESP	Experimental Solar Panel
FITS	Flexible Image Transport System
FOV	Field Of View FPA Focal Plane Assembly
FPGA	Field Programmable Gate Arrays
GPS	Global Positioning System
HK	Housekeeping
IOS	Instrument Operations Sheet
LED	Light Emitting Diode
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
OBSW	On board Software
PI	Principal Investigator
P2SC	PROBA2 Science Center
ROB	Royal Observatory of Belgium
SAA	South Atlantic Anomaly
SEU	Single Event Upset
SoFAST	Solar Feature Automated Search Tool
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
VFC	Voltage to Frequency Converter

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)