


P2SC-ROB-WR-450 - 20181105 Weekly report #450	P2SC Weekly report	
Period covered: Date: Written by: Approved by:	Mon Nov 05 to Sun Nov 11, 2018 12 Nov 2018 Jennifer O'Hara Matthew West	Royal Observatory of Belgium - PROBA2 Science Center
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1. Science

Solar & Space weather events

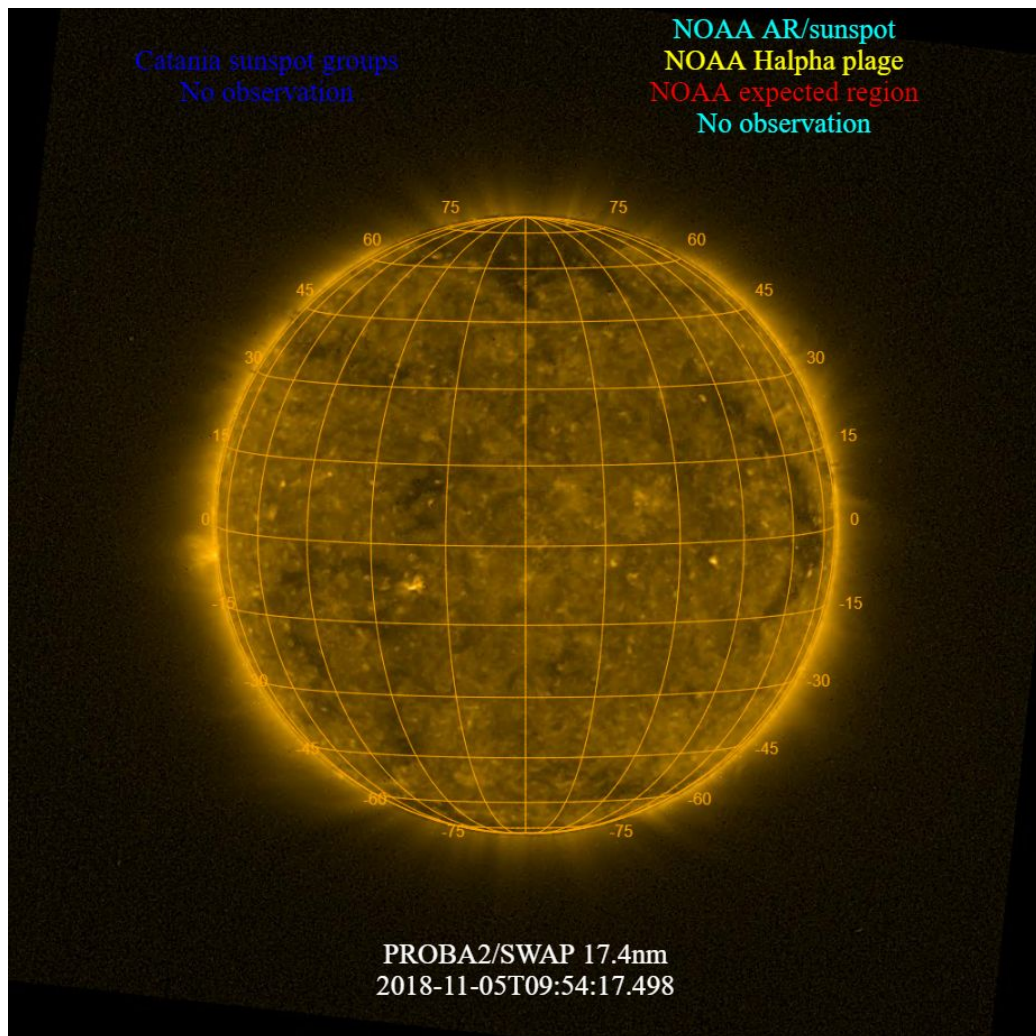
The level of solar activity¹ remained **very low** this week.

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

	Monday 05 Nov	Tuesday 06 Nov	Wednesday 07 Nov	Thursday 08 Nov	Friday 09 Nov	Saturday 10 Nov	Sunday 11 Nov
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.

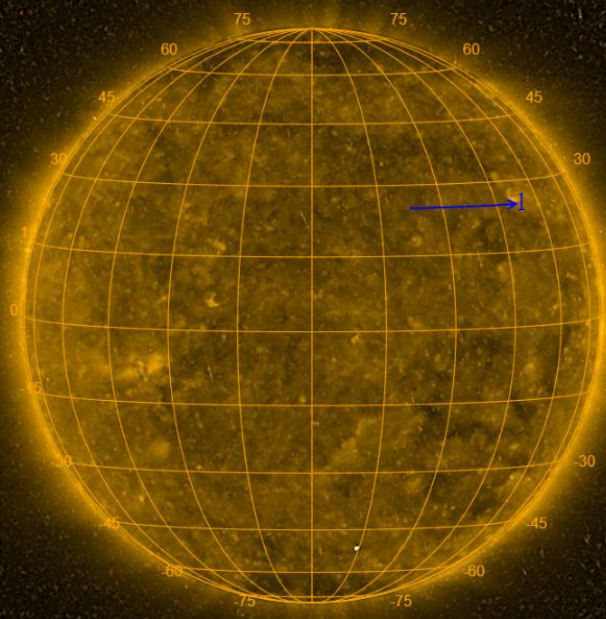
The SWAP images of Nov 05 and Nov 11 are shown below, with annotated active regions.



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

Catania sunspot groups
2018-11-09 07:18:00

NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
No observation



PROBA2/SWAP 17.4nm
2018-11-11T09:51:31.487

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>

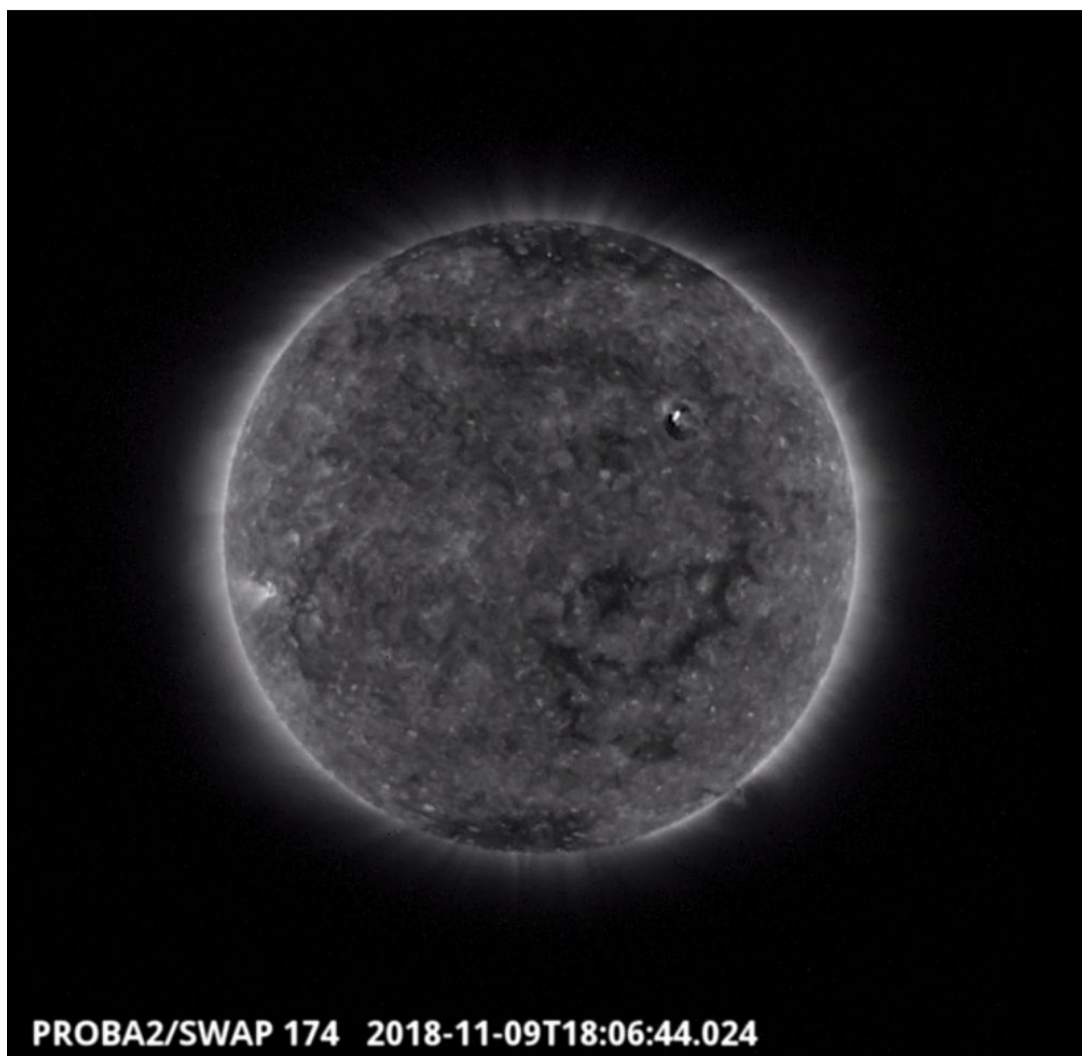
This page also lists the recorded flaring events.

A weekly overview movie can be found [here](#) (SWAP week 450).

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](#)

Friday Nov 09



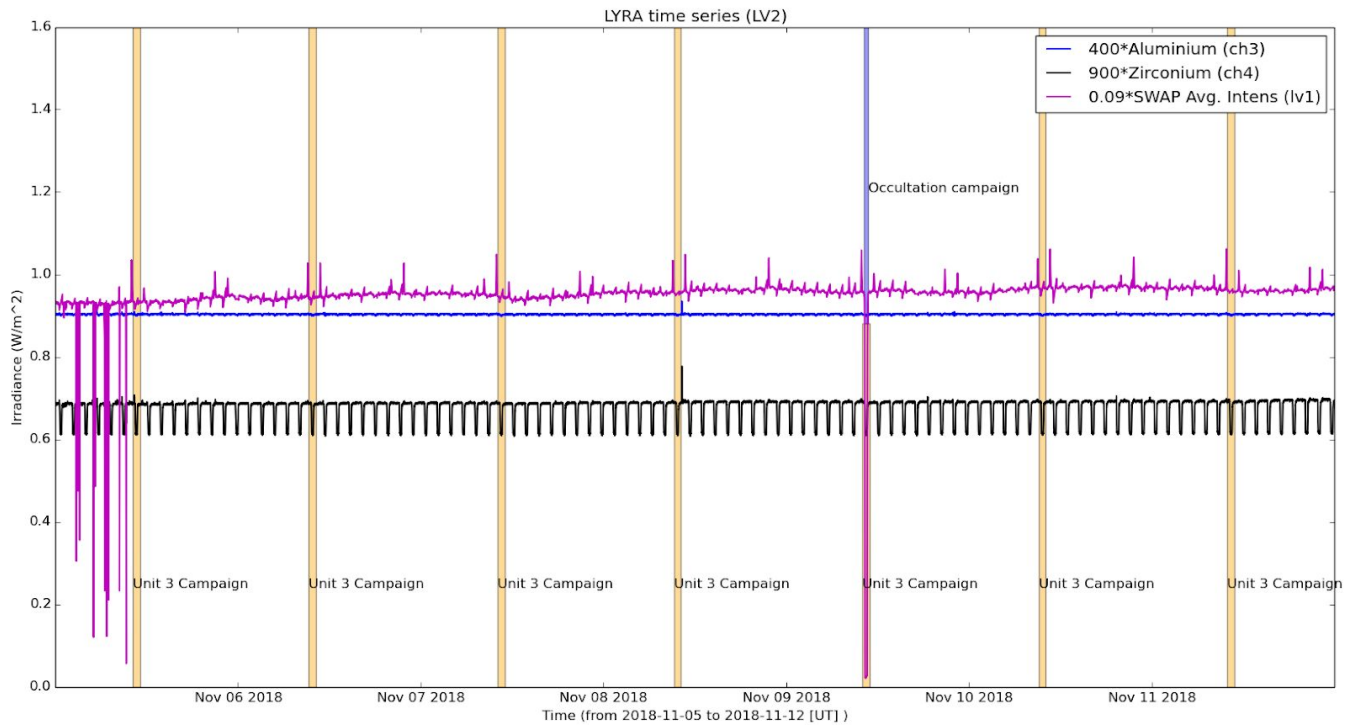
A small bright feature accompanied by a small transient dimming was observed by SWAP on 2018-Nov-09, visible in the north-west of the solar disk in the SWAP image above taken at 18:06 UT.

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:

- Parallel occultation with LYRA, 2018-Nov-09

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

- Daily Unit 3 campaign, 2018-Nov-05
- Daily Unit 3 campaign, 2018-Nov-06
- Daily Unit 3 campaign, 2018-Nov-07
- Daily Unit 3 campaign, 2018-Nov-08
- Daily Unit 3 campaign, 2018-Nov-09
- Daily Unit 3 campaign, 2018-Nov-10
- Daily Unit 3 campaign, 2018-Nov-11

The red shaded periods related to other issues corresponds to:

- None

* Note: the low values observed in the SWAP average intensity on 2018-Nov-05 are due to unplanned depointings caused by the blinding of the CAM2 of the star tracker.

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>).

PROBA2 data was featured in multiple oral and poster presentations at the 15th European Space Weather Week (ESWW15) which took place in Leuven, Belgium between the 05th and the 09th November, including:

- “Multipoint study of an Earth-impacting CME erupting from the solar limb” oral presentation by Erica Palmerio.
- “The detection of ultra-relativistic electrons in low Earth orbit by the LYRA instrument on board the PROBA2 satellite”, oral presentation by Thanasis Katsiyannis.
- “Exceptional Extended Field of View Observations by SWAP on 1 and 3 April 2017” poster by Jennifer O'Hara.
- “Long-term evolution of the solar corona using SWAP data” poster by Marilena Mierla.
- “ Post-Flare Loop Signatures” poster by Matthew West.

Guest Investigator Program

- None

2. LYRA instrument status

Calibration

No calibration campaign this week.

IOS & operations

Monday 05 Nov	Tuesday 06 Nov	Wednesday 07 Nov	Thursday 08 Nov	Friday 09 Nov	Saturday 10 Nov	Sunday 11 Nov
Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3
LYIOS00733	LYIOS00733	LYIOS00733	LYIOS00733	LYIOS00733	LYIOS00734	LYIOS00734

The following science campaigns were performed by LYRA:

- daily U3 observations campaign

LYRA detector temperature

LYRA detector 2 temperature globally varied between 45.37 and 53.15 °C.

3. SWAP instrument status

Calibration

No calibration campaign this week.

MCPM errors

The number of MCPM recoverable errors increased from 1681 to 1853.

The number of MCPM unrecoverable errors remained at 0.

IOS & operations

Monday 05 Nov	Tuesday 06 Nov	Wednesday 07 Nov	Thursday 08 Nov	Friday 09 Nov	Saturday 10 Nov	Sunday 11 Nov
Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition + Parallel occultation with LYRA	Nominal acquisition	Nominal acquisition
IOS00799 656 images	IOS00799 716 images	IOS00800 668 images	IOS00800 688 images	IOS00800 751 images	IOS00801 731 images	IOS00801 587 images

Special operations for SWAP, this week:

On 2018-Nov-09

- Parallel occultation campaign with LYRA.

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -1.93 and 3.19 °C.

4. PROBA2 Science Center Status

The main operator is Jennifer O'Hara.

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 29099 to 29164) was nominal, except for:

- None.

Data coverage HK

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

- None.

Data coverage SWAP

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

- None.

Total number of images between 2018 Nov 05 00:00 UT and 2018 Nov 12 00:00 UT: 4874

Highest cadence in this period: 29 seconds

Average cadence in this period: 124.09 seconds

Number of image gaps larger than 300 seconds: 117

Largest data gap: 26.58 minutes

Data coverage LYRA

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

- None

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)