


P2SC-ROB-WR-451 - 20181112 Weekly report #451	<b>P2SC Weekly report</b>	
Period covered: Date:  Written by: Approved by:	Mon Nov 12 to Sun Nov 18, 2018 21 Aug 2018  Laurence Wauters Matthew West	Royal Observatory of Belgium - PROBA2 Science Center
To:	LYRA PI, marie.dominique@sidc.be SWAP PI, elke.dhuys@sidc.be	<a href="http://proba2.sidc.be">http://proba2.sidc.be</a> ++ 32 (0) 2 3730559
cc:	ROB DIR, ronald@oma.be ESA Redu, Etienne.Tilmans@esa.int ESA D/SRE, Joe.Zender@esa.int ESA D/TEC, Juha-Pekka.Luntama@esa.int	

---

## 1. Science

### Solar & Space weather events

The level of solar activity<sup>1</sup> was **very low** this week.

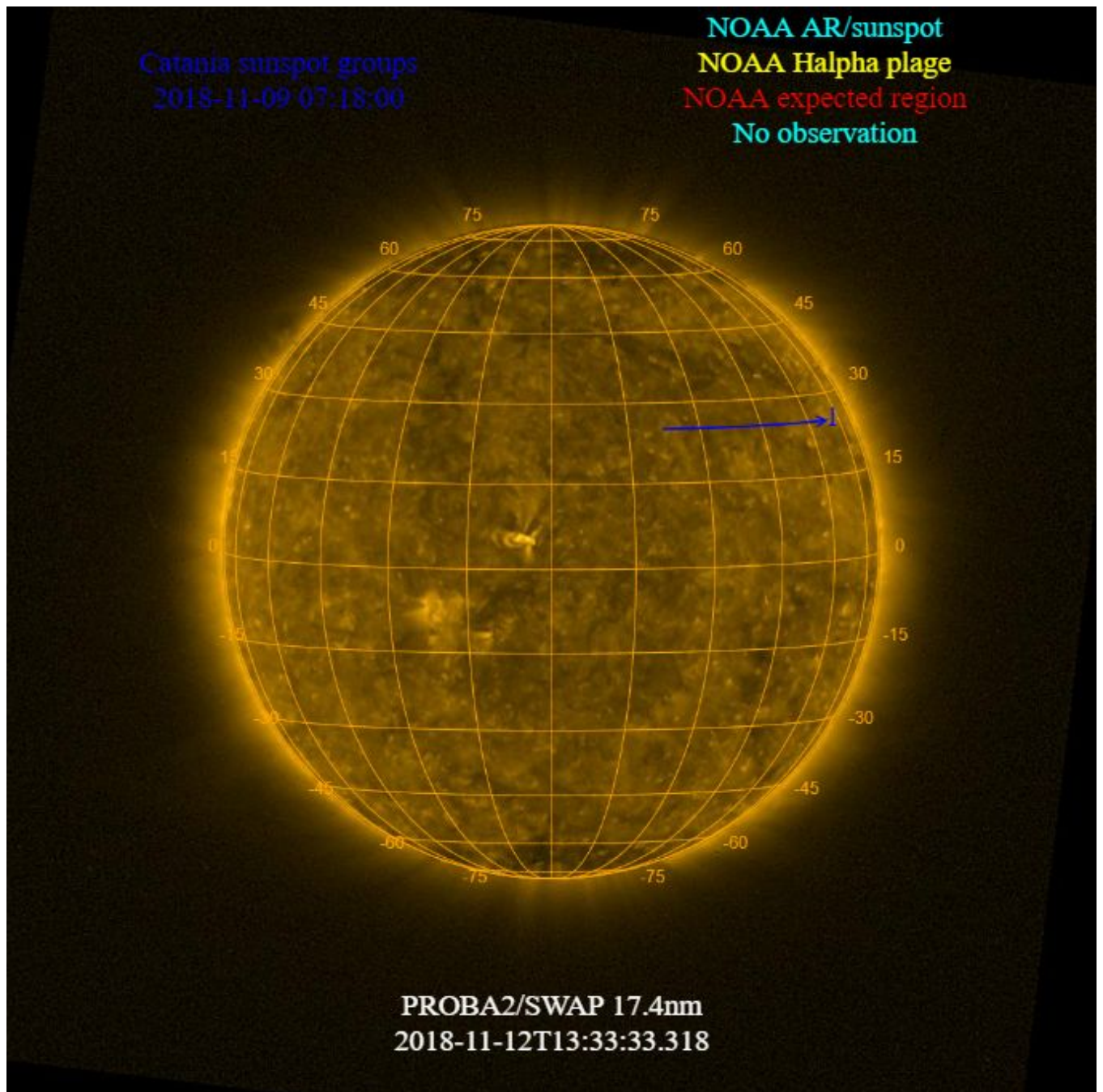
Only M- and X-flares are mentioned, the most energetic one(s) per day are presented in **bold**:

	Monday 12 Nov	Tuesday 13 Nov	Wednesday 14 Nov	Thursday 15 Nov	Friday 16 Nov	Saturday 17 Nov	Sunday 18 Nov
Activity	very low	very low	very low	very low	very low	very low	very low
Flares	-	-	-	-	-	-	-

---

<sup>1</sup> See appendix. All timings are given in UT.

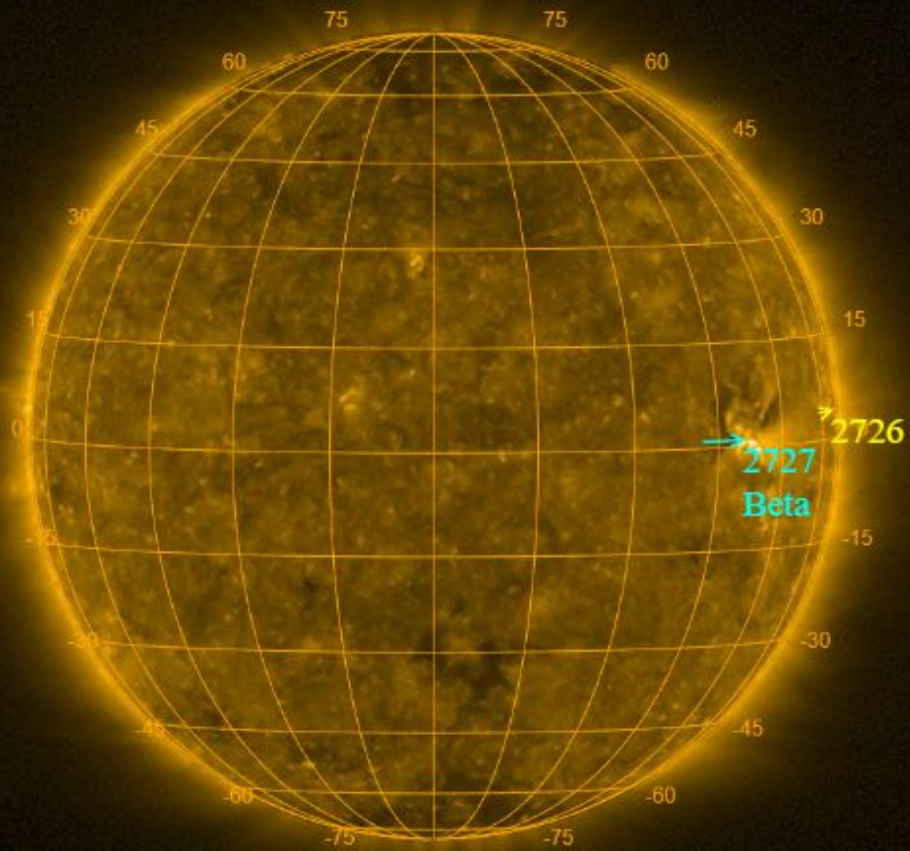
The SWAP images of Nov 12 and Nov 18 are shown below, with annotated active regions.



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

Catania sunspot groups  
No observation

NOAA AR/sunspot  
NOAA Halpha plage  
NOAA expected region  
2018-11-18 00:30:00



PROBA2/SWAP 17.4nm  
2018-11-18T13:36:26.089

## **Solar Activity**

Solar flare activity was 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>

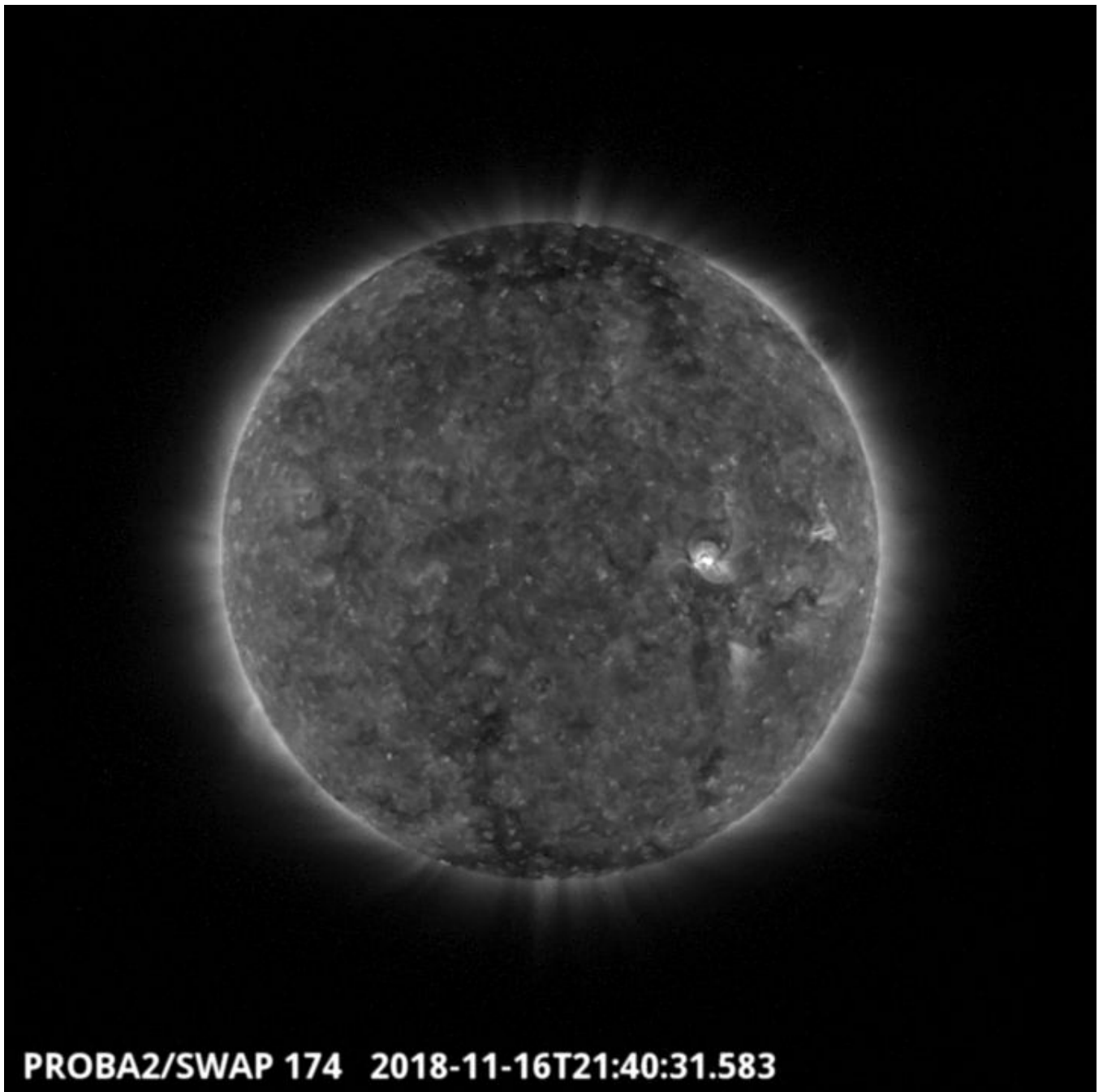
This page also lists the recorded flaring events.

A weekly overview movie can be found [here](#) (SWAP week 451).

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](#)

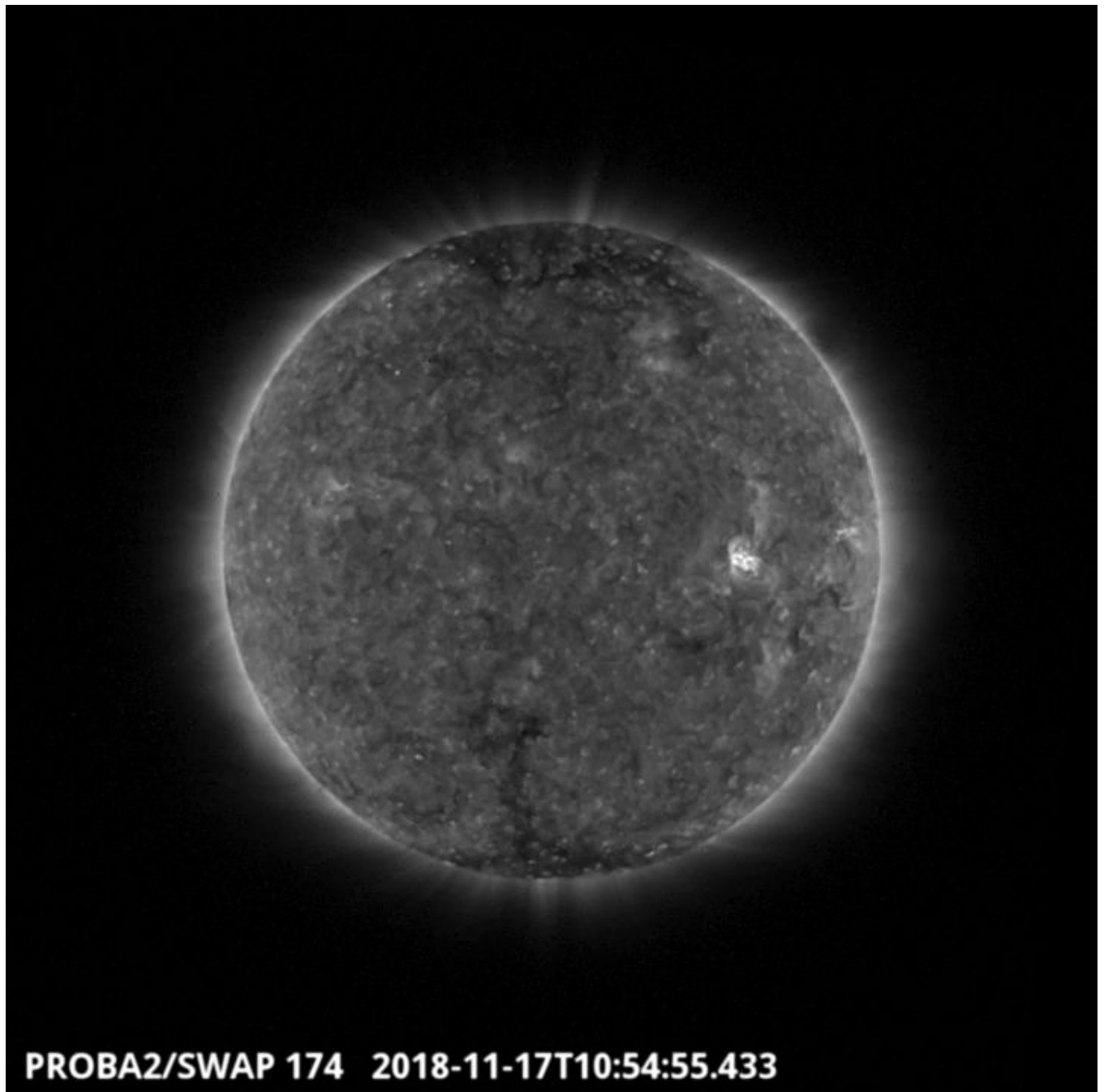
Friday Nov 16



**An extended coronal hole is visible on the south of the solar disk on 2018-Nov-14, and was visible until the end of the week. This can be seen in the SWAP image above.**

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

Saturday Nov 17



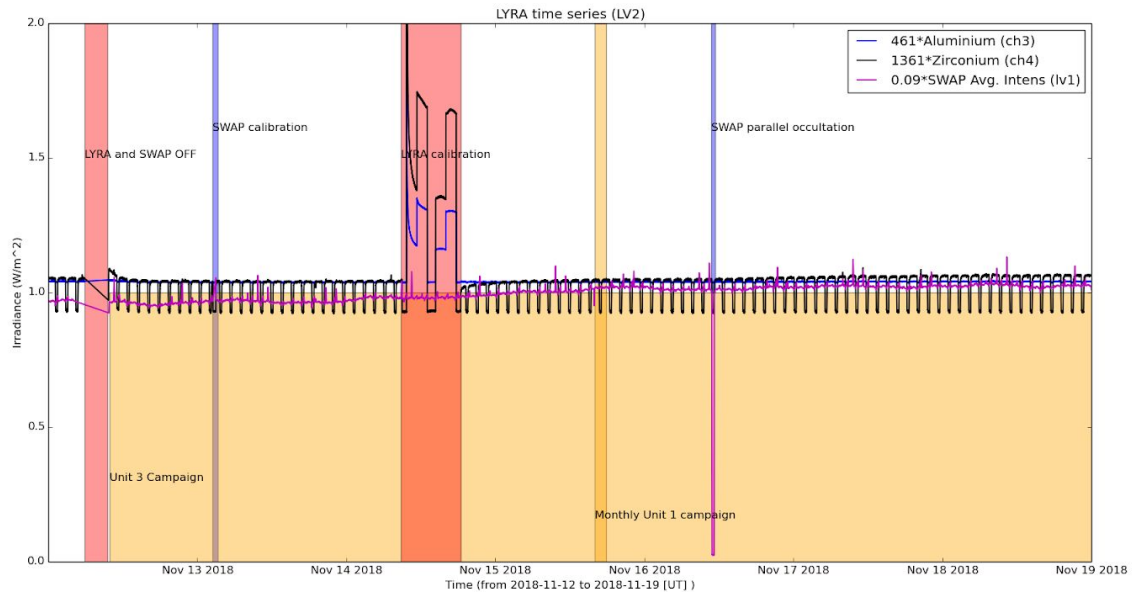
**An A5.3 flare was produced from the sunspot group (NOAA 2727) observed by SWAP on 2018-Nov-17. The flare is visible on the Western hemisphere of the Sun in the SWAP image above at 10:55 UT.**

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:

- Bi-weekly calibration campaign on, 2018-Nov-13
- Parallel occultation, 2018-Nov-16

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

- Continuous Unit 3 campaign, from 2017-Nov-12 to 2017-Nov-18
- Long calibration, 2018-Nov-14
- Monthly unit 1 campaign, 2018-Nov-15

The red shaded periods related to other issues corresponds to:

- Switch off command for LYRA and SWAP, 2018-Nov-12 05:51 UT until 9:35 UT, for upload of the new OBSW 2.1.2 including POCKET.
- Long calibration data, 2018-Nov-14, was put in the std data package, which is the wrong place for them (under PI investigation).

**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>).

**Guest Investigator Program**

- None



## 2. LYRA instrument status

### Calibration

Calibration campaign on Wednesday this week.

### IOS & operations

Monday 12 Nov	Tuesday 13 Nov	Wednesday 14 Nov	Thursday 15 Nov	Friday 16 Nov	Saturday 17 Nov	Sunday 18 Nov
Nominal acquisition + U3  LYIOS00734 & LYIOS00735	Nominal acquisition + U3  LYIOS00735	Nominal acquisition + U3 + Long calibration  LYIOS00735	Nominal acquisition + U3  LYIOS00735	Nominal acquisition + U3  LYIOS00735	Nominal acquisition + U3  LYIOS00736	Nominal acquisition + U3  LYIOS00736

The following science campaigns were performed by LYRA:

- Switch off command for upload of the new OBSW 2.1.2 including POCKET, 2018-Nov-12 05:51 UT
- Warm-up command, 2018-Nov-12 at 9:35 UT
- Continuous U3 campaign, since 2018-Nov-12
- Long calibration, 2018-Nov-14
- Monthly unit 1 campaign, 2018-Nov-15

### LYRA detector temperature

LYRA detector 2 temperature globally varied between 38.17 and 48.69 °C.

### 3. SWAP instrument status

#### Calibration

Calibration campaign on Tuesday this week.

#### MCPM errors

The number of MCPM recoverable errors increased from 0 to 18531.

The number of MCPM unrecoverable errors remained at 0.

#### IOS & operations

Monday 12 Nov	Tuesday 13 Nov	Wednesday 14 Nov	Thursday 15 Nov	Friday 16 Nov	Saturday 17 Nov	Sunday 18 Nov
Nominal acquisition	Nominal acquisition + Calibration	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition
IOS00801& IOS00802 606 images	IOS00802 794 images	IOS00802 778 images	IOS00803 713 images	IOS00803 782 images	IOS00803 695 images	IOS00804 739 images

Special operations for SWAP, this week:

- Switch off command for upload of the new OBSW 2.1.2 including POCKET, 2018-Nov-12 05:51 UT.
- Restart SWAP after reboot, 2018-Nov-12 09:36 UT.
- Occultation jumps from 2018-Nov-12 onwards.
- Bi-weekly calibration campaign on, 2018-Nov-13
- Parallel occultation, 2018-Nov-16

#### SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -5.13 and -0.32 °C (An erroneous value of -273.15°C was recorded on 2018-Nov-12 at 09:46:34 UT, due to restart of SWAP).

#### **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 29165 to 9232) was nominal, except for:

- 29167,29168,29169 due to upload of the new OBSW 2.1.2 including POCKET; LYRA and SWAP were put OFF on 2018-Nov-12 since 05:51 UT until 09:35 UT.

### 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:

- 29167,29168,29169 (SWAP OFF).

Total number of images between 2018 Nov 12 0UT and 2018 Nov 19 0UT: 5117

Highest cadence in this period: 18 seconds

Average cadence in this period: 118.20 seconds

Number of image gaps larger than 300 seconds: 105

Largest data gap: 327.18 minutes

### Data coverage LYRA

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

- 29168,29169 (LYRA OFF).

## 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)