


P2SC-ROB-WR-398 - 20171106 Weekly report #398	<b>P2SC Weekly report</b>	
Period covered: Date:  Written by: Approved by:	Mon Nov 06 to Sun Nov 12, 2017 20 Nov 2017  Laurence Wauters Matthew West	Royal Observatory of Belgium - PROBA2 Science Center
To:	LYRA PI, marie.dominique@sidc.be SWAP PI, david.berghmans@sidc.be	<a href="http://proba2.sidc.be">http://proba2.sidc.be</a> ++ 32 (0) 2 3730559
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## 1. Science

### Solar & Space weather events

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

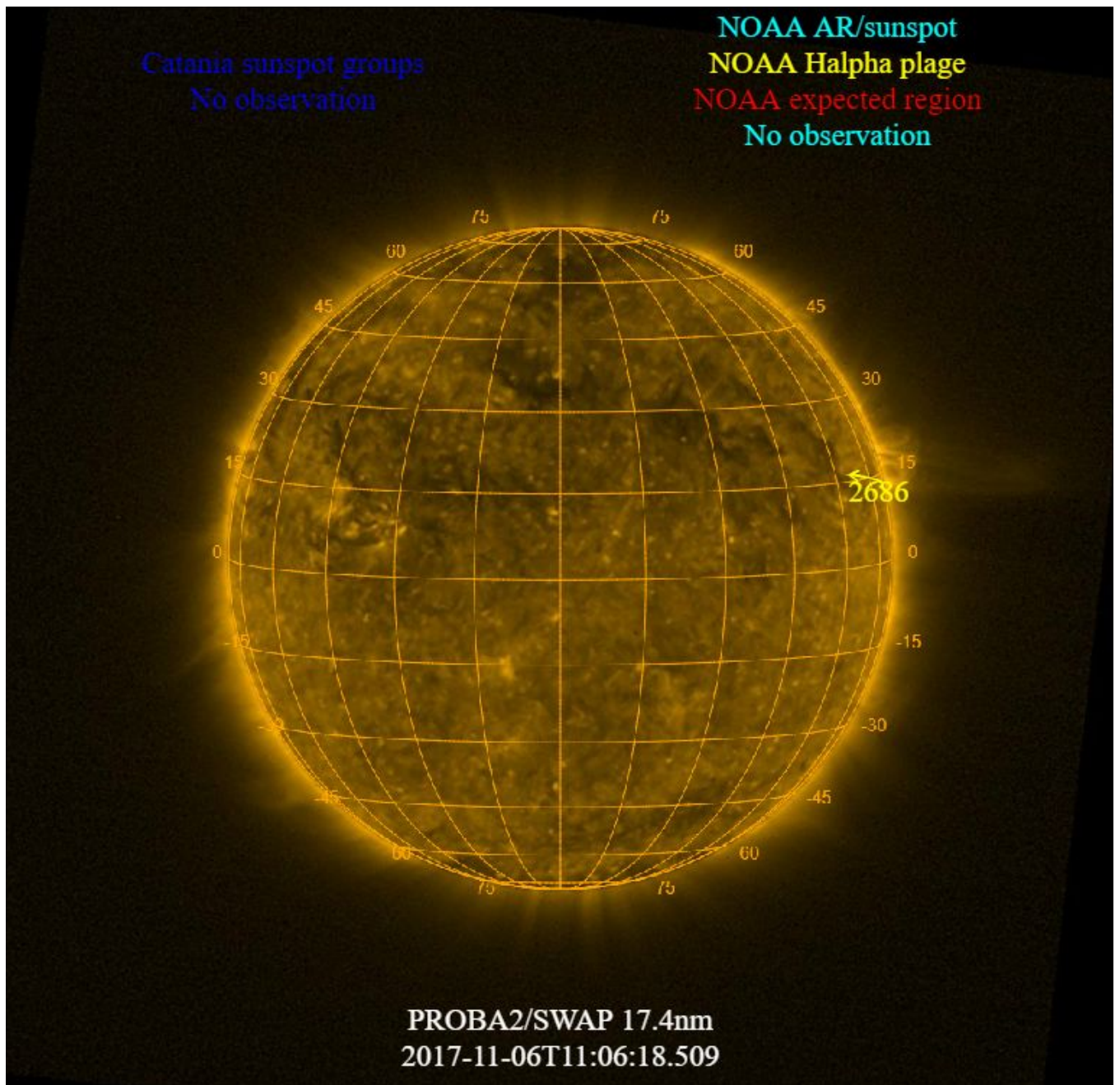
Only M- and X-flares are mentioned, the most energetic one(s) per day are presented in **bold**:

	Monday 06 Nov	Tuesday 07 Nov	Wednesday 08 Nov	Thursday 09 Nov	Friday 10 Nov	Saturday 11 Nov	Sunday 12 Nov
Activity	very low	very low	very low	very low	very low	very low	very low
Flares	-	-	-	-	-	-	-

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

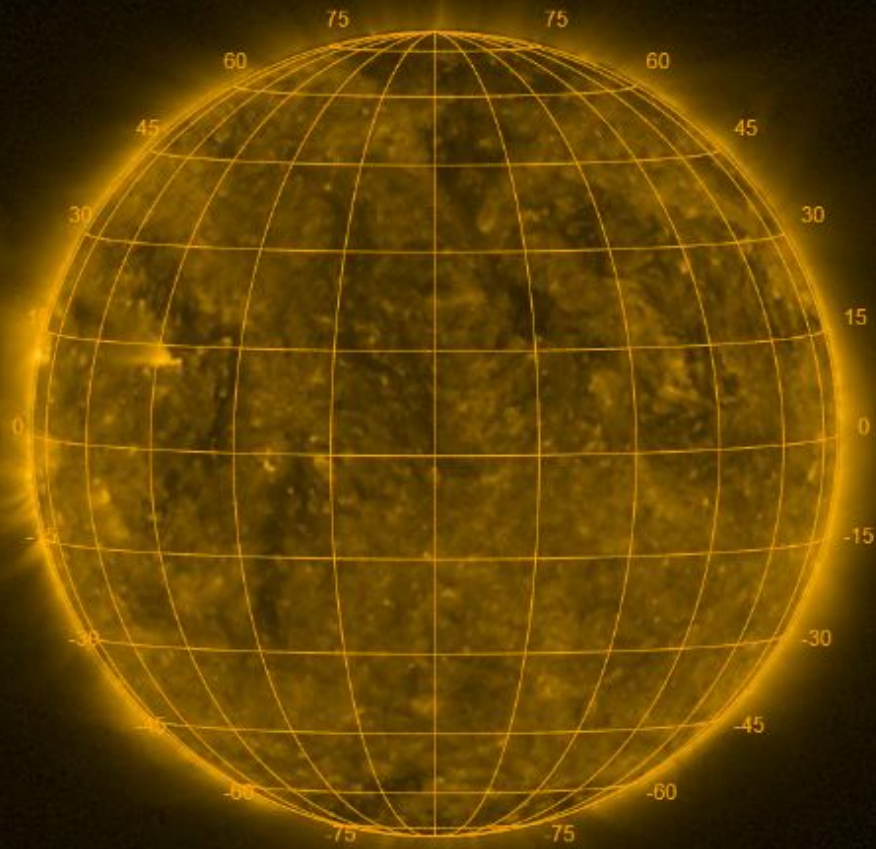
The SWAP images of Nov 06 and Nov 12 are shown below, with annotated active regions.



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

Catania sunspot groups  
No observation

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



PROBA2/SWAP 17.4nm  
2017-11-12T12:36:25.582

## **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>

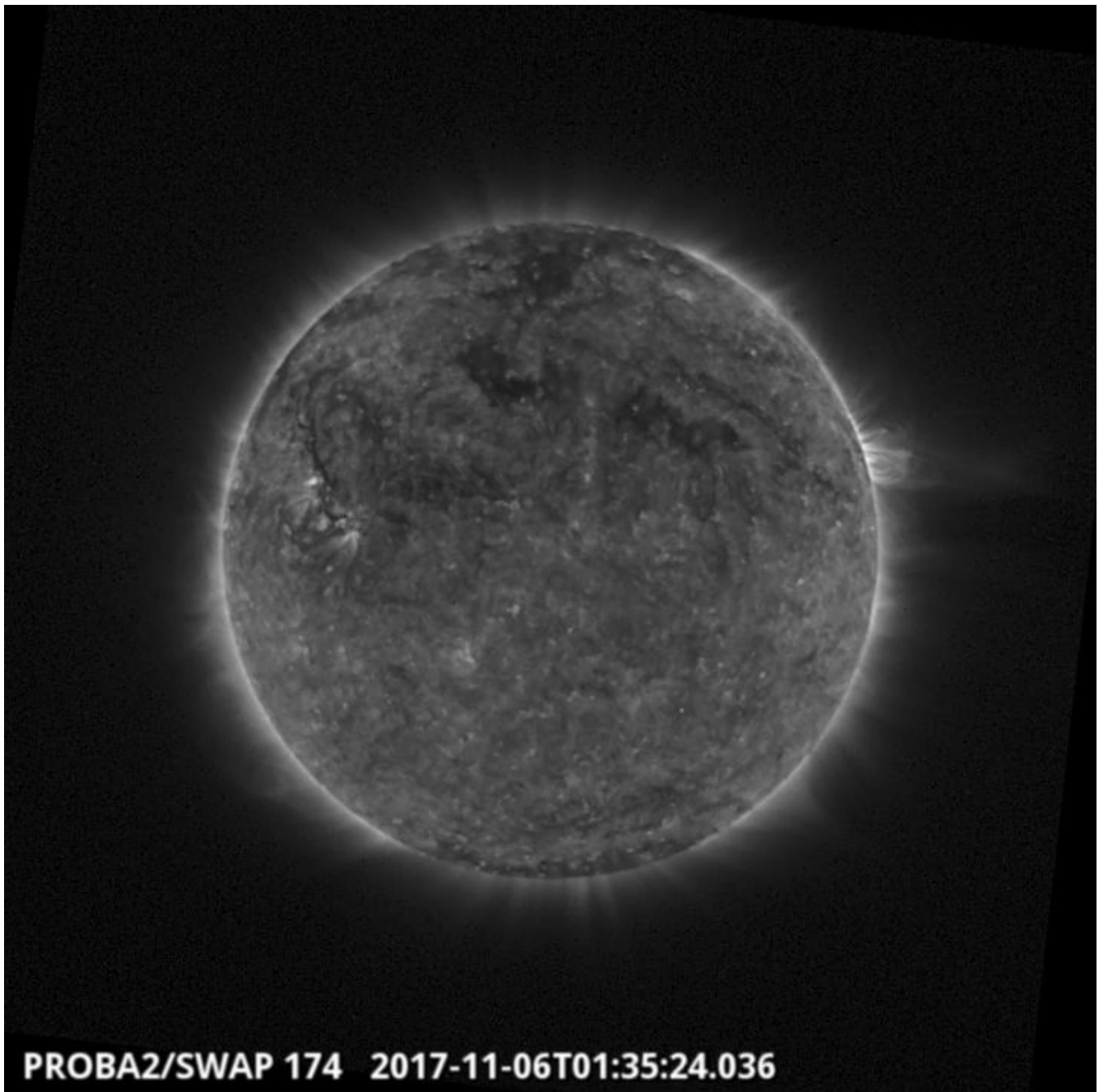
This page also lists the recorded flaring events.

A weekly overview movie can be found [here](#) (SWAP week 398).

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

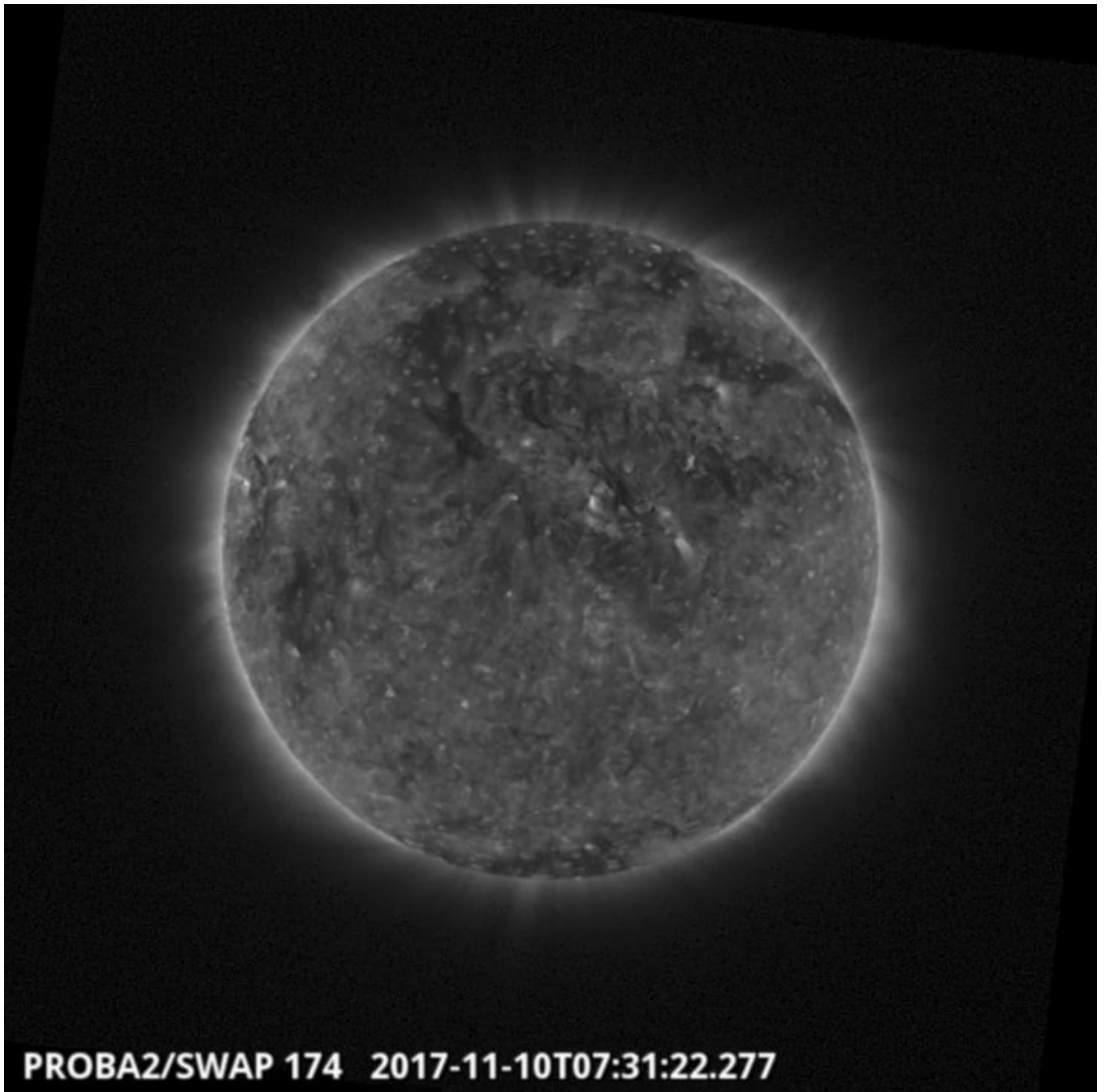
If any of the linked movies are unavailable they can be found in the P2SC movie repository [here](#)

Monday Nov 06



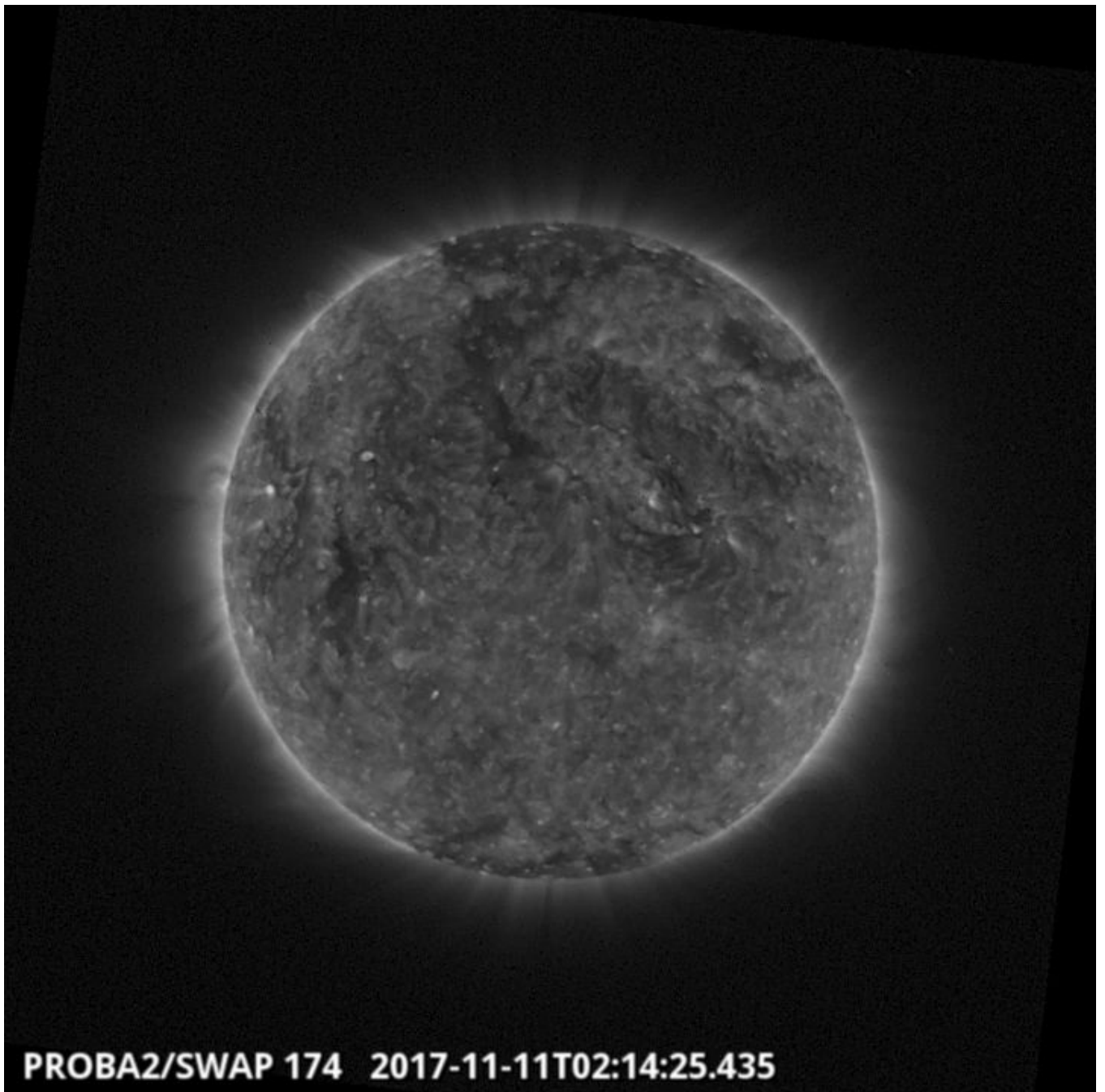
A Coronal Hole extending to low latitudes transited the central meridian last week, and can be seen in the SWAP image above. Find a movie of the event [here](#) (SWAP movie)

Friday Nov 10



A filament located in the North-East quadrant of the Sun erupted on 2017-Nov-10 creating a large coronal dimming. The associated eruption was detected in SOHO/LASCO-C2 coronagraph imagery at 08:12 UT  
Find a movie of the event [here](#) (SWAP movie)

Saturday Nov 11

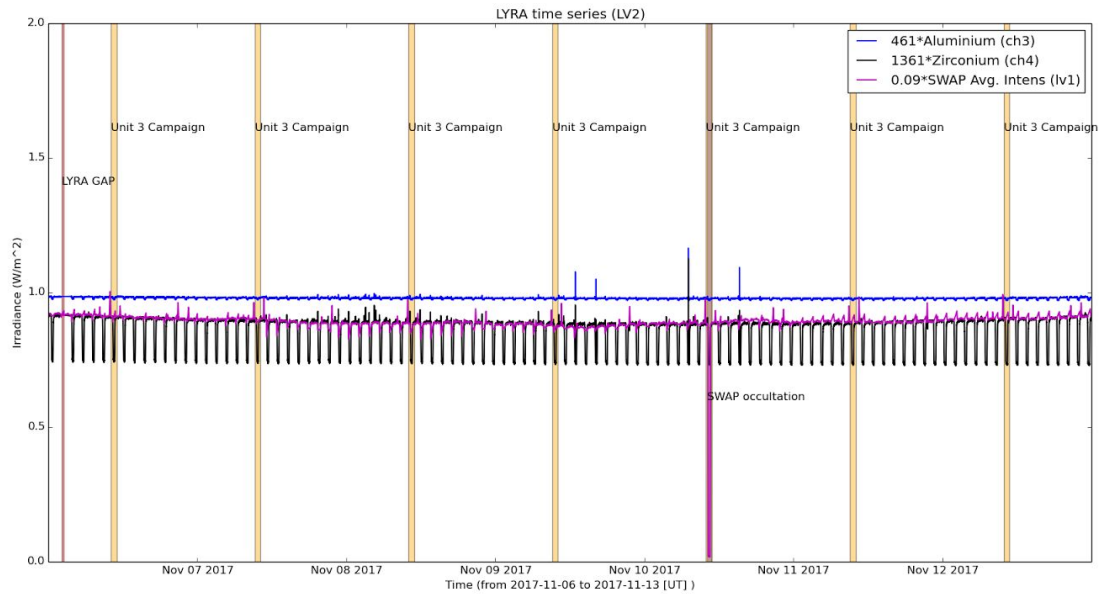


A large northern polar coronal hole was visible in SWAP images on 2017-Nov-11, and can be seen in the image above. Find a movie of the event [here](#) (SWAP movie)

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(purple) shaded periods related to SWAP, correspond to, from left to right:

- SWAP parallel occultation campaign with LYRA, 2017-Nov-10

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

- daily U3 (occultation) observation campaign on 2017-Nov-06
- daily U3 (occultation) observation campaign on 2017-Nov-07
- daily U3 (occultation) observation campaign on 2017-Nov-08
- daily U3 (occultation) observation campaign on 2017-Nov-09
- daily U3 (occultation) observation campaign on 2017-Nov-10
- daily U3 (occultation) observation campaign on 2017-Nov-11
- daily U3 (occultation) observation campaign on 2017-Nov-12

The red shaded periods related to other issues corresponds to:

- LYRA gap for pass 25673 (corrupted file - wrong file size), 2017-Nov-06



**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**

- Willow M Reed from the University of Colorado in Boulder as part of Marty Snow's GI team

## 2. LYRA instrument status

### Calibration

None

### IOS & operations

Monday 06 Nov	Tuesday 07 Nov	Wednesday 08 Nov	Thursday 09 Nov	Friday 10 Nov	Saturday 11 Nov	Sunday 12 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
LYIOS00655	LYIOS00655	LYIOS00655	LYIOS00655	LYIOS00655	LYIOS00656	LYIOS00656

The following science campaigns were performed by LYRA:

- daily U3 (occultation) observations campaign

### LYRA detector temperature

LYRA detector 2 temperature globally varied between 45.24 and 50.10 °C.

### 3. SWAP instrument status

#### Calibration

None

#### MCPM errors

The number of MCPM recoverable errors increased from 12853 to 13040.

The number of MCPM unrecoverable errors remained at 45.

#### IOS & operations

Monday 06 Nov	Tuesday 07 Nov	Wednesday 08 Nov	Thursday 09 Nov	Friday 10 Nov	Saturday 11 Nov	Sunday 12 Nov
Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition+ parallel occultation	Nominal acquisition	Nominal acquisition
IOS00724 774 images	IOS00725 763 images	IOS00725 717 images	IOS00725 731 images	IOS00725 763 images	IOS00726 709 images	IOS00726 691 images

Special operations for SWAP, this week:

- SWAP parallel occultation campaign with LYRA

#### SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -1.60 and 1.75 °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 25672 to 25739) 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 2017 Nov 06 00:00 UT and 2017 Nov 13 00:00 UT: 5176

Highest cadence in this period: 0 seconds

Average cadence in this period: 116.85 seconds

Number of image gaps larger than 300 seconds: 103

Largest data gap: 30.07 minutes

### Data coverage LYRA

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

- None
- LYRA for pass 25673 has been received but file size is wrong, 2017-Nov-06

## 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)