P2SC-ROB-WR-762 - 20241028	**P2SC Weekly report**	
Period covered: Date: Written by: Approved by:	Mon Oct 28 to Sun Nov 03, 2024 07 Nov 2024 Dana Talpeanu Marie Dominique	Royal Observatory of Belgium - PROBA2 Science Center
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1. Science

Solar & Space weather events

The level of solar activity[1] fluctuated between **moderate and high** this week.

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

	Monday 28 Oct	Tuesday 29 Oct	Wednesday 30 Oct	Thursday 31 Oct	Friday 01 Nov	Saturday 02 Nov	Sunday 03 Nov
Activity	moderate	moderate	moderate	high	moderate	moderate	moderate
Flares	**M4.2** **M1.2** **M1.3**	**M1.1**	**M7.2**	**X2.0** **M4.6** **M1.0** **M1.2** **M2.4** **M1.3** **M1.0** **M1.0**	**M2.0** **M1.3** **M1.0** **M1.3**	**M1.2** **M1.0**	**M1.3** **M1.4** **M1.1** **M1.1**

[1] See appendix. All timings are given in UT.

Solar Activity

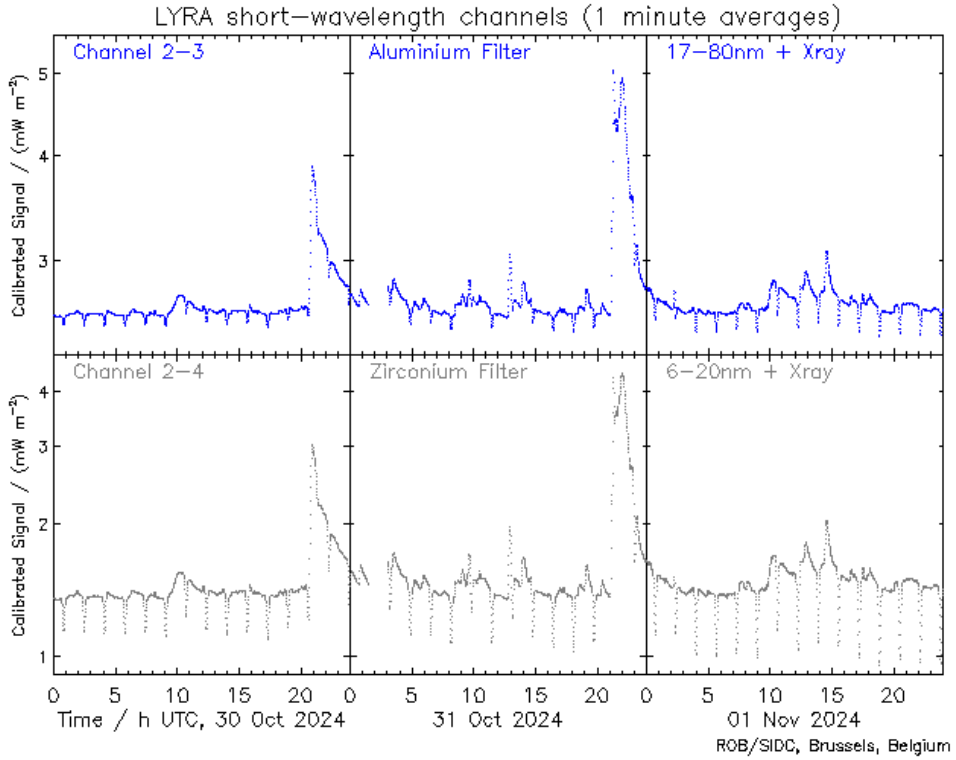
Solar flare activity fluctuated from moderate to high during the week.
In order to view the activity of this week in more detail, we suggest to go to the following website from which all the daily (normal and difference) movies can be accessed: https://proba2.oma.be/ssa
This page also lists the recorded flaring events.

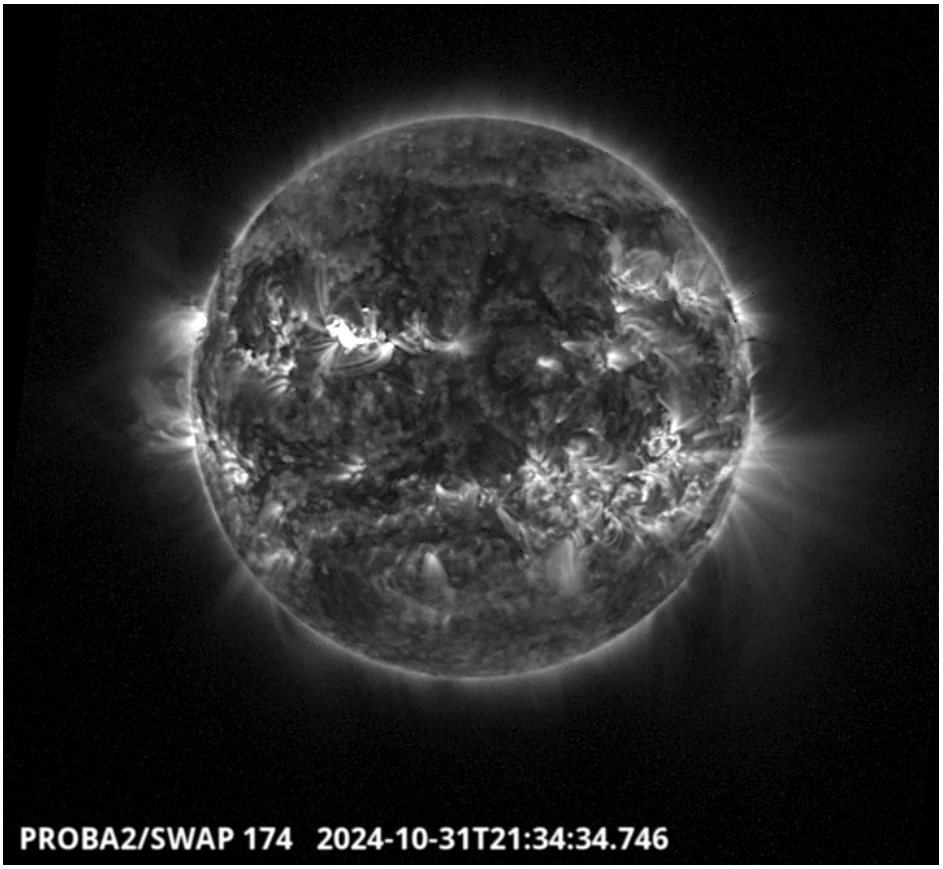
A weekly overview movie can be found here (SWAP week 762).

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 Oct 31



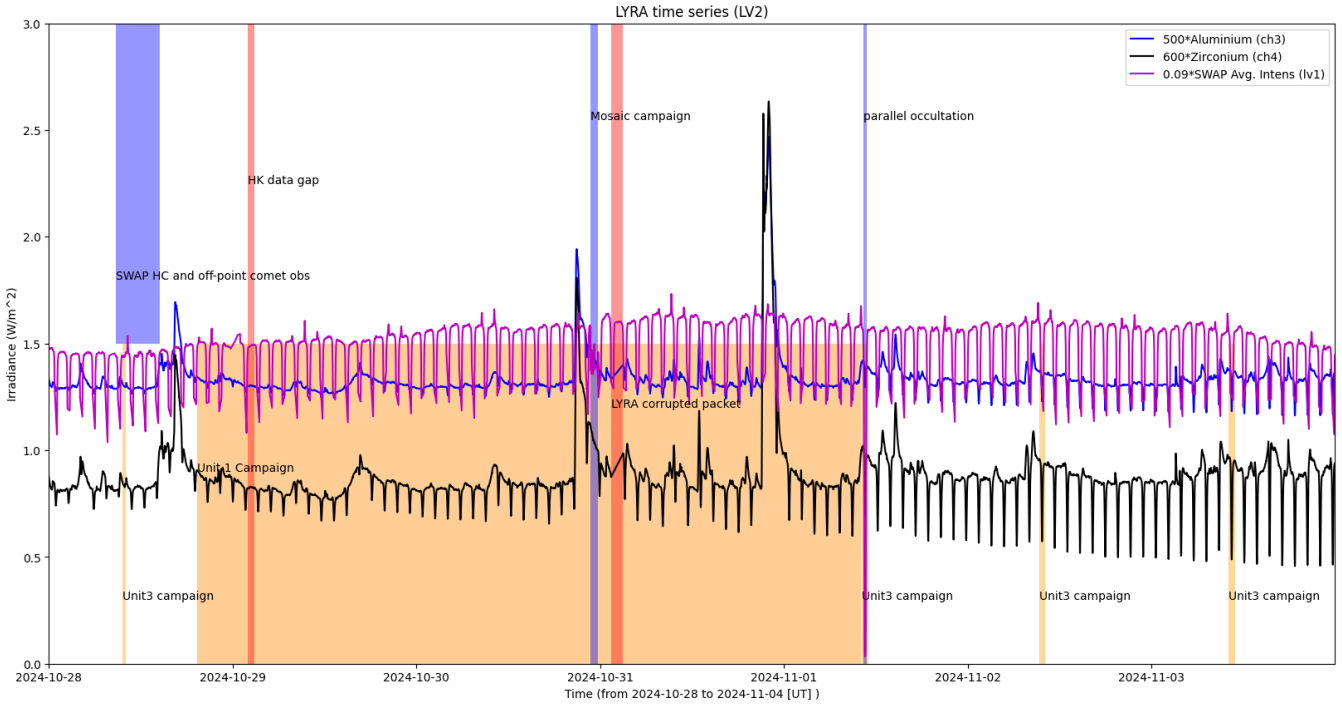


The largest flare of this week was an X2.0, and it was observed by LYRA (top panel) and SWAP (bottom panel). The flare peaked on 2024-Oct-31 at 21:20 UT. It occurred in the north-eastern quadrant, originating from active region NOAA3878.

Find a SWAP movie of the event here.

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)



Operations and Calibrations:

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

- High cadence (40s) with a first off-point left and a second off-point right for the visibility of the trajectory of the comet by SWAP, 2024-Oct-28
- SWAP mosaic, 2024-Oct-30
- SWAP and LYRA parallel occultation, 2024-Nov-01

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

- Daily unit 3 campaign during occultation, 2024-Oct-24
- Unit 1 flare campaign, from 2024-Oct-28 at 19:21 until 2024-Nov-01 at 10:05 UT
- Daily unit 3 campaign during occultation, 2024-Nov-01
- Daily unit 3 campaign during occultation, 2024-Nov-02
- Daily unit 3 campaign during occultation, 2024-Nov-03

The red shaded periods related to other issues corresponds to:

- HK data gap due to bad signal of pass 48654 on 2024-Oct-29 between 02:02 - 02:53 UT
- Corrupted packet for pass 48672, resulting in LYRA data gap on 2024-Oct-31 between 01:26 - 03:01 UT.

2. LYRA instrument status

IOS

Start IOS	Mon Oct 28 2024	LYIOS01128
End IOS	Sun Nov 03 2024	LYIOS01130

LYRA detector temperature

LYRA detector 2 temperature globally varied between 53.7 and 56.525 °C.

3. SWAP instrument status

MCPM errors
The number of MCPM recoverable errors increased from 65392 to 572 (counter reset).
The number of MCPM unrecoverable errors remained at 3135.

IOS

Start IOS	Mon Oct 28 2024	IOS01233
End IOS	Sun Nov 03 2024	IOS01234

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between 2.79 and 4.07 °C.

4. PROBA2 Science Center Status

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 48642 to 48705) was nominal, except for:

- 48654 due to bad signal during the dump of store 6.
- 48672

Data coverage HK

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

- None.
- Small LYRA_AD for pass 48654, hence HK data gap on 2024-Oct-29 between 02:02 - 02:53 UT

Data coverage SWAP

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

- None.
- Small LYRA_AD for pass 48654, hence SWAP calibrated data gap on 2024-Oct-29 between 02:12 - 02:35 UT.

Total number of images between 2024 Oct 28 00:00 UT and 2024 Nov 04 00:00 UT: 4257
Highest cadence in this period: 17 seconds
Average cadence in this period: 142.08 seconds
Number of image gaps larger than 300 seconds: 128
Largest data gap: 35.70 minutes

Data coverage LYRA

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

- None
- Corrupted packet for pass 48672, resulting in LYRA data gap on 2024-Oct-31 between 01:26 - 03:01 UT.

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)