


P2SC-ROB-WR-760 - 20241014	<b>P2SC Weekly report</b>	
Period covered: Date:	Mon Oct 14 to Sun Oct 20, 2024 24 Oct 2024	Royal Observatory of Belgium -
Written by: Approved by:	Dana Talpeanu Marie Dominique	PROBA2 Science Center
To:	LYRA PI, marie.dominique@sidc.be SWAP PI, elke.dhuys@sidc.be	<a href="https://proba2.sidc.be">https://proba2.sidc.be</a> ++ 32 (0) 2 3730559
cc:	ROB DIR, ronald@oma.be ESA Redu, Rene.Wittmann@esa.int and Marcus.De.Deus.Silva@esa.int ESA D/SRE, Joe.Zender@esa.int ESA D/TEC, Juha-Pekka.Luntama@esa.int and Melanie.Heil@esa.int	

## 1. Science

### Solar & Space weather events

The level of solar activity<sup>1</sup> fluctuated between **low and moderate** this week.

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

	Monday 14 Oct	Tuesday 15 Oct	Wednesday 16 Oct	Thursday 17 Oct	Friday 18 Oct	Saturday 19 Oct	Sunday 20 Oct
Activity	moderate	moderate	moderate	moderate	moderate	moderate	low
Flares	<b>M1.8</b> <b>M3.4</b>	<b>M2.1</b> <b>M1.7</b> <b>M1.3</b> <b>M1.1</b> <b>M1.9</b>	<b>M1.3</b> <b>M1.3</b> <b>M1.5</b> <b>M2.8</b> <b>M3.7</b> <b>M3.0</b>	<b>M2.4</b> <b>M1.0</b>	<b>M4.7</b> <b>M4.8</b> <b>M1.1</b>	<b>M1.7</b> <b>M6.5</b>	-

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

## **Solar Activity**

Solar flare activity fluctuated from low to moderate 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>

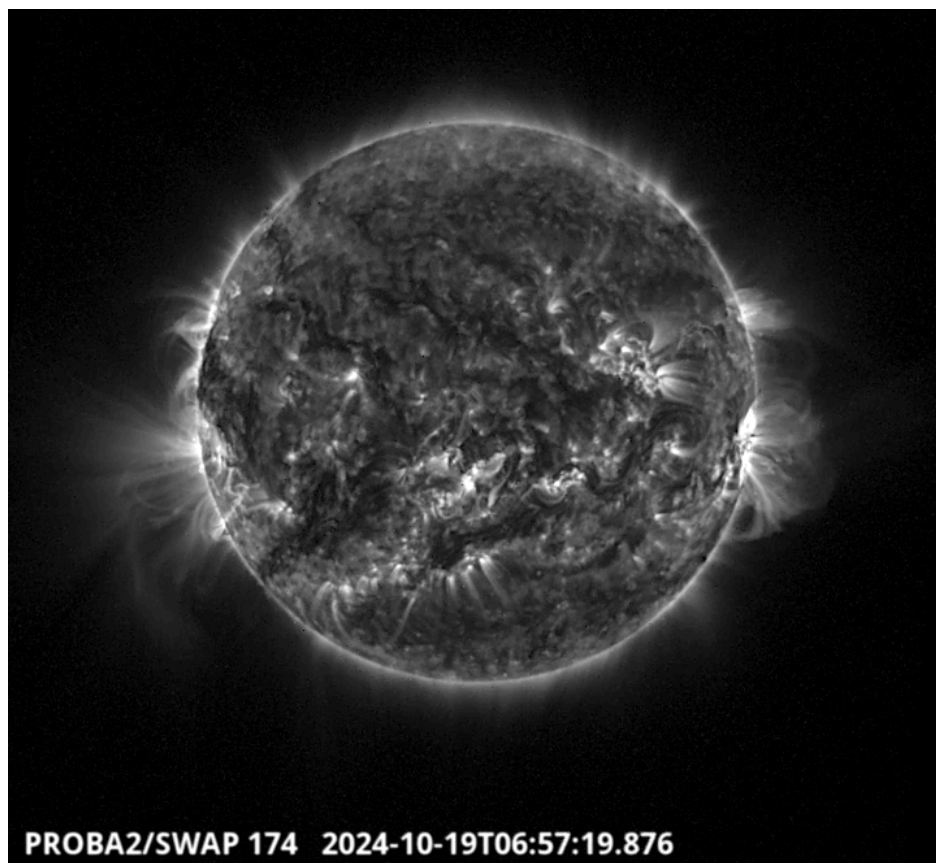
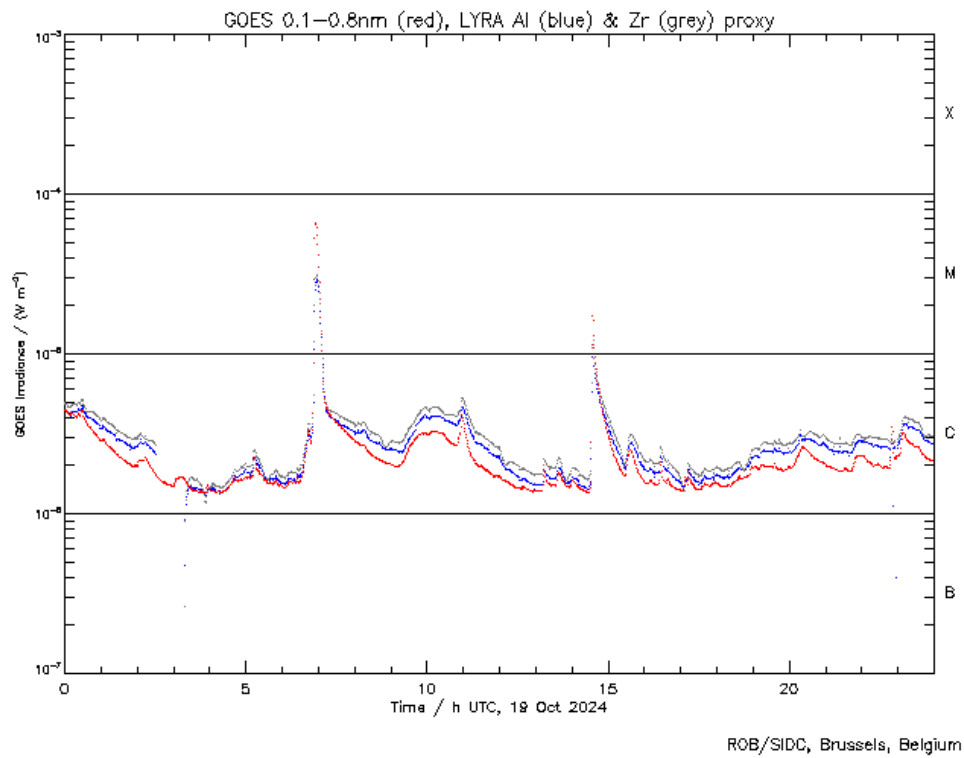
This page also lists the recorded flaring events.

A weekly overview movie can be found [here](#) (SWAP week 760).

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](#)

Saturday Oct 19



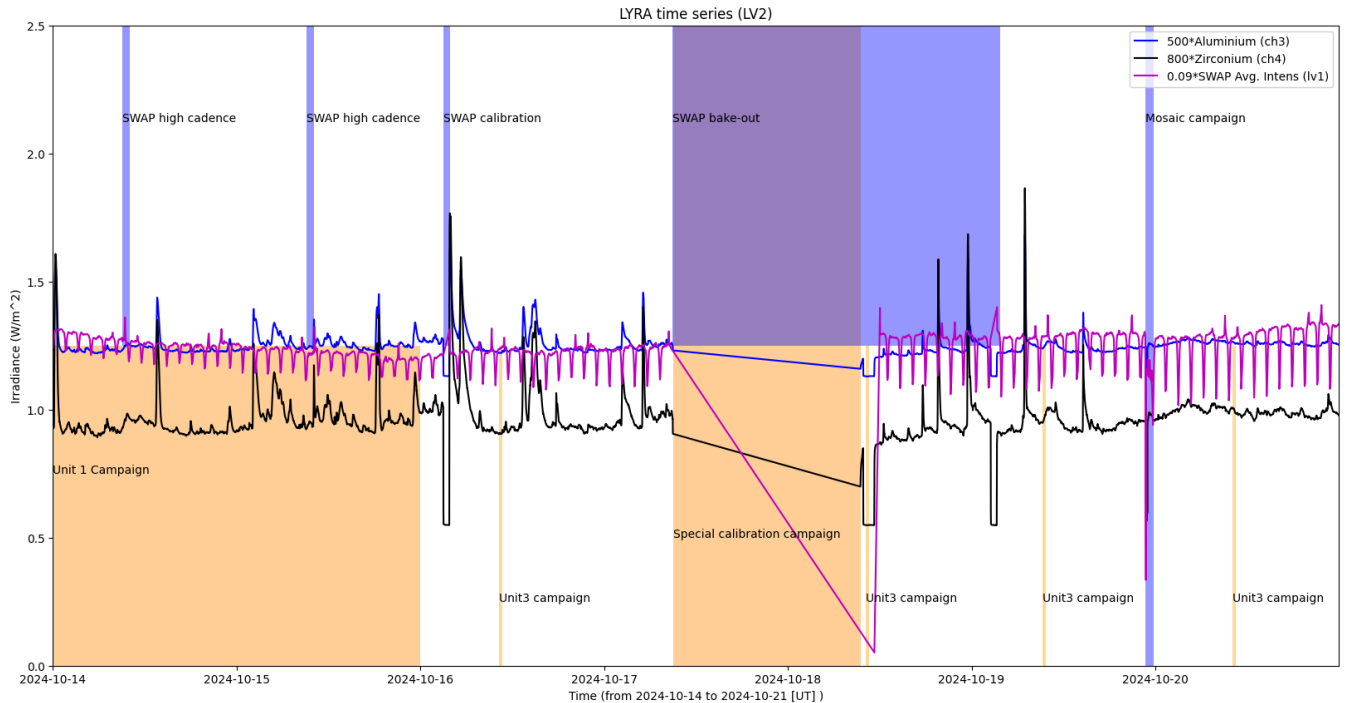
The largest flare of this week was an M6.5, and it was observed by LYRA (top panel) and SWAP (bottom panel). The flare peaked on 2024-Oct-19 at 06:56 UT. It occurred close to the equator at the western limb, originating from active region NOAA3854.

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 (15 sec) joint campaign with EUI/HRIEUV, on 2024-Oct-14 between 09:04:55-10:04:55 UT
- High-cadence (15 sec) joint campaign with EUI/HRIEUV, on 2024-Oct-15 between 09:04:50-10:04:50 UT
- SWAP calibration, 2024-Oct-16
- SWAP bake-out and related campaigns, from 2024-Oct-17 at 08:55 until 2024-Oct-19 at 03:42:30 UT
- Mosaic campaign, on 2024-Oct-19

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

- Unit 1 joint campaign with HRI-EUV since 2024-Oct-02 until 2024-Oct-15 at 23:59 UT
- Daily Unit 3 campaign, 2024-Oct-16
- Extended long calibration campaign during SWAP bake-out, from 2024-Oct-17 09:00:00 until 2024-Oct-18 09:29:50 UT
- Daily Unit 3 campaign, 2024-Oct-18
- Daily Unit 3 campaign, 2024-Oct-19
- Daily Unit 3 campaign, 2024-Oct-20

The red shaded periods related to other issues corresponds to:

- None

## 2. LYRA instrument status

### IOS

Start IOS	Mon Oct 14 2024	LYIOS01122
End IOS	Sun Oct 20 2024	LYIOS01124

### LYRA detector temperature

LYRA detector 2 temperature globally varied between 49.65 and 55.46 °C.

### 3. SWAP instrument status

#### MCPM errors

The number of MCPM recoverable errors increased from 64381 to 64878.

The number of MCPM unrecoverable errors remained at 3135.

#### IOS

Start IOS	Mon Oct 14 2024	IOS01226
End IOS	Sun Oct 20 2024	IOS01228

#### SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between 1.03 and 50.23 °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 48513 to 48578) 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:

- passes 48547 - 48554, no data acquired during warmup of the bake-out campaign; data gap between 17 October 08:43:40 - 18 October 11:18:17 UT.

Total number of images between 2024 Oct 14 00:00 UT and 2024 Oct 21 00:00 UT: 3617

Highest cadence in this period: 17 seconds

Average cadence in this period: 167.23 seconds

Number of image gaps larger than 300 seconds: 277

Largest data gap: 1507.42 minutes

### Data coverage LYRA

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

- None
- data gap between 17 October 08:59:32 - 18 October 09:29:50, due to LYRA not acquiring data during the SWAP warm-up.



## 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)