P2SC-ROB-WR-708 - 20231016	**P2SC Weekly report**	
Period covered: Date: Written by: Approved by:	Mon Oct 16 to Sun Oct 22, 2023 24 Oct 2023 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 **very low and low** this week.

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

	Monday 16 Oct	Tuesday 17 Oct	Wednesday 18 Oct	Thursday 19 Oct	Friday 20 Oct	Saturday 21 Oct	Sunday 22 Oct
Activity	low	low	very low	low	low	low	very low
Flares	-	-	-	-	-	-	-

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

Solar Activity

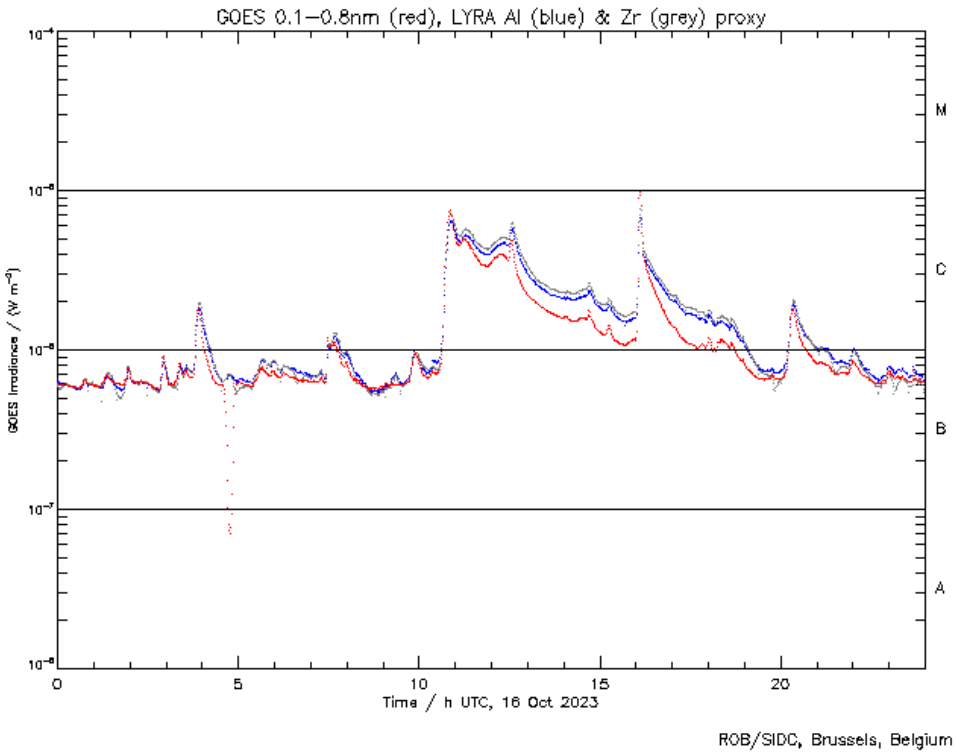
Solar flare activity fluctuated from very low to low during the week.
In order to view the activity of this week in more detail, we suggest to go to the following website from which all the daily (normal and difference) movies can be accessed: https://proba2.oma.be/ssa
This page also lists the recorded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

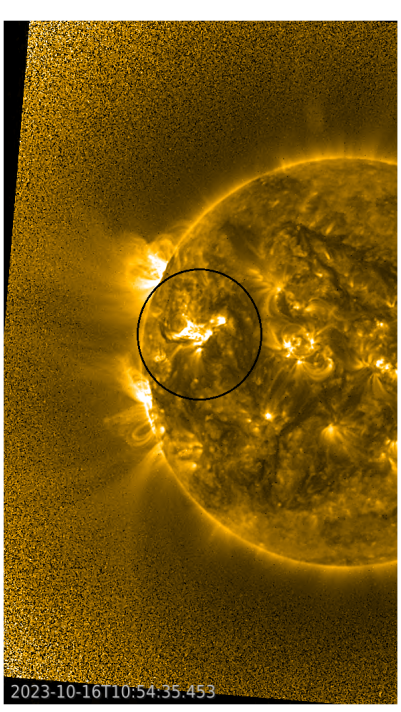
A weekly overview movie can be found here (SWAP week 708).

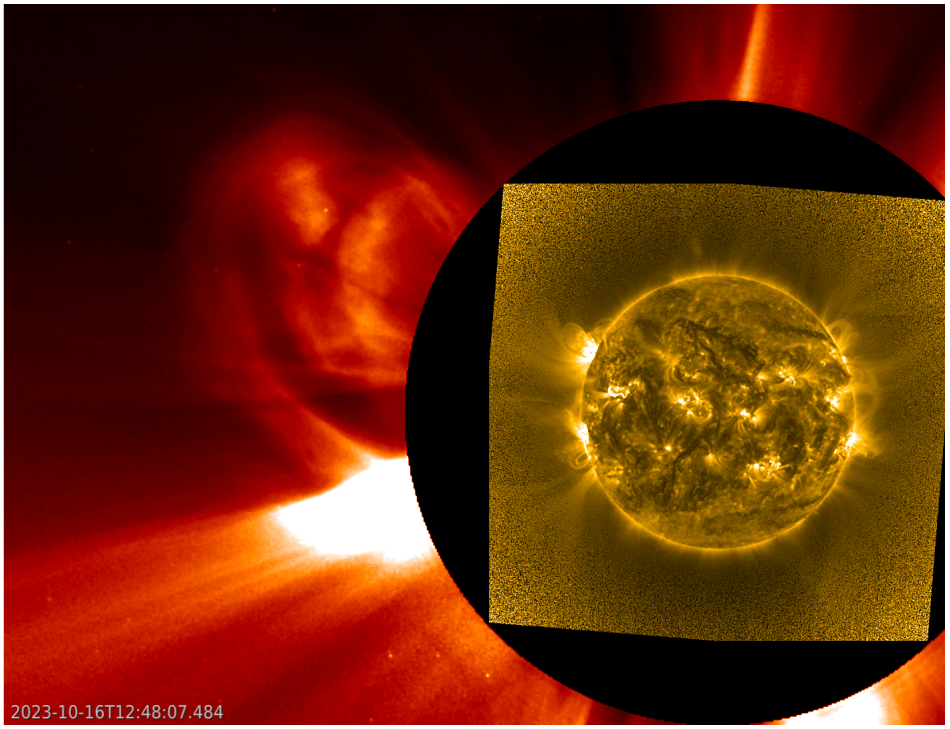
Details about some of this week's events can be found further below.

If any of the linked movies are unavailable they can be found in the P2SC movie repository here

Monday Oct 16





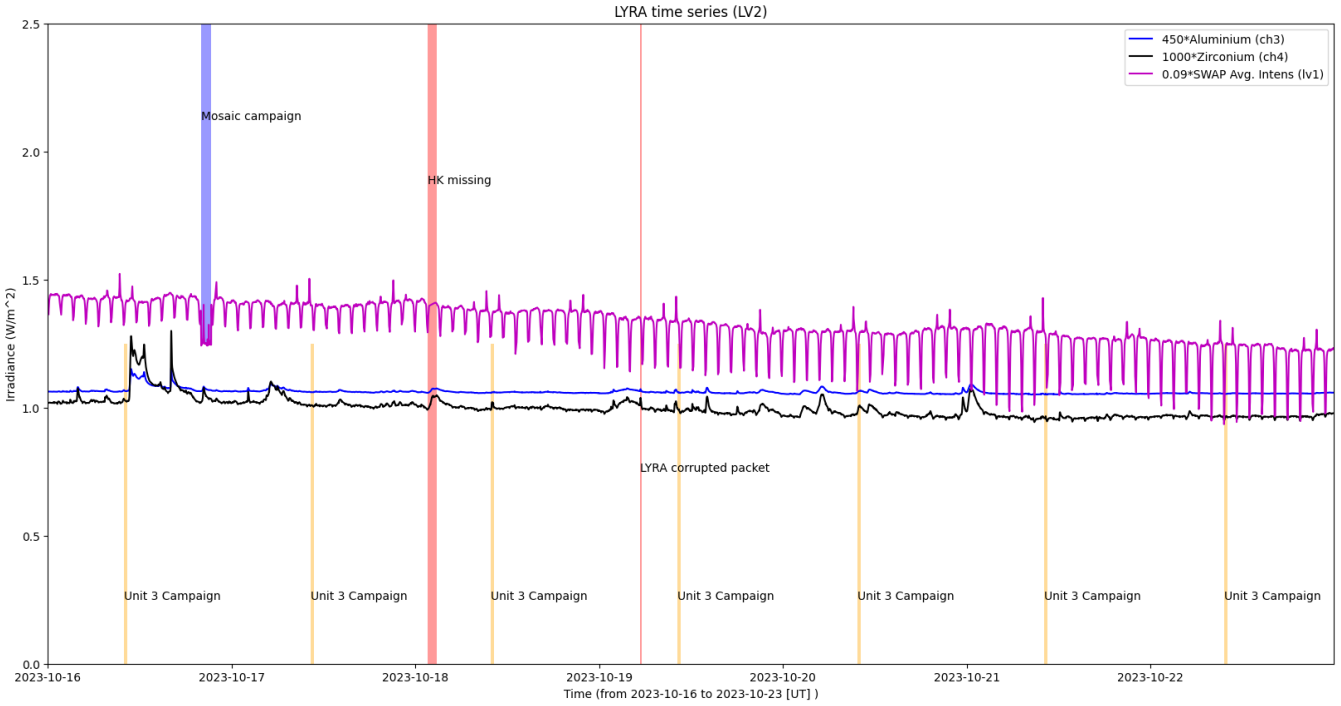


A filament eruption occurred on 2023-Oct-16 and originated from NOAA AR3467 located on the eastern hemisphere. The filament can be seen encircled in black in the SWAP image in the bottom left figure. The eruption was associated with a C7.5 flare, which peaked at 10:51 UT and can be seen in the LYRA curve in the top panel. The event was also correlated with an eastward CME which was captured by SOHO/LASCO C2 (entered the field of view at 11:48 UT) and can be seen in the bottom right composite image with SWAP in the center.

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:

- Mosaic campaign, 2023-Oct-16

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

- Daily Unit 3 campaign, 2023-Oct-16
- Daily Unit 3 campaign, 2023-Oct-17
- Daily Unit 3 campaign, 2023-Oct-18
- Daily Unit 3 campaign, 2023-Oct-19
- Daily Unit 3 campaign, 2023-Oct-20
- Daily Unit 3 campaign, 2023-Oct-21
- Daily Unit 3 campaign, 2023-Oct-22

The red shaded periods related to other issues corresponds to:

- HK data gap on 2023-Oct-18, between 01:37-02:47 UT
- corrupted LYRA data on 2023-Oct-19, between 05:21-05:32 UT

2. LYRA instrument status

IOS

Start IOS	Mon Oct 16 2023	LYIOS01037
End IOS	Sun Oct 22 2023	LYIOS01037

LYRA detector temperature

LYRA detector 2 temperature globally varied between 52.25 and 53.39 °C.

3. SWAP instrument status

MCPM errors
The number of MCPM recoverable errors increased from 49016 to 49384.
The number of MCPM unrecoverable errors remained at 3135.

IOS

Start IOS	Mon Oct 16 2023	IOS01144
End IOS	Sun Oct 22 2023	IOS01144

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between 1.59 and 2.87 °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 45384 to 45441) was nominal, except for:

- Small LYRA_AD for pass 45402
- Small BINSWAP for pass 45421

Data coverage HK

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

- None
- HK data gap on 2023-Oct-18 between 01:37-02:47 UT; initially too small LYRA_AD for pass 45402; data was re-extracted during pass 45411, but the re-processing did not fill in the gap completely.

Data coverage SWAP

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

- None.
- BINSWAP file for pass 45421 was too small (740KB), but the data exists, so it was probably sent with passes 45422 and 45423

Total number of images between 2023 Oct 16 00:00 UT and 2023 Oct 23 00:00 UT: 3852
Highest cadence in this period: 0 seconds
Average cadence in this period: 156.95 seconds
Number of image gaps larger than 300 seconds: 283
Largest data gap: 11.00 minutes

Data coverage LYRA

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

- None
- Corrupted LYRA data on 2023-Oct-19 between 05:21-05:32 UT (during pass 45411); data seems oversampled and overlapping

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)