


P2SC-ROB-WR-721 - 20240115	<b>P2SC Weekly report</b>	
Period covered: Date:  Written by: Approved by:	Mon Jan 15 to Sun Jan 21, 2024 24 Jan 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<sup>1</sup> was **low** this week.

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

	Monday 15 Jan	Tuesday 16 Jan	Wednesday 17 Jan	Thursday 18 Jan	Friday 19 Jan	Saturday 20 Jan	Sunday 21 Jan
Activity	low	low	low	low	low	low	low
Flares	-	-	-	-	-	-	-

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

## **Solar Activity**

Solar flare activity was 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>

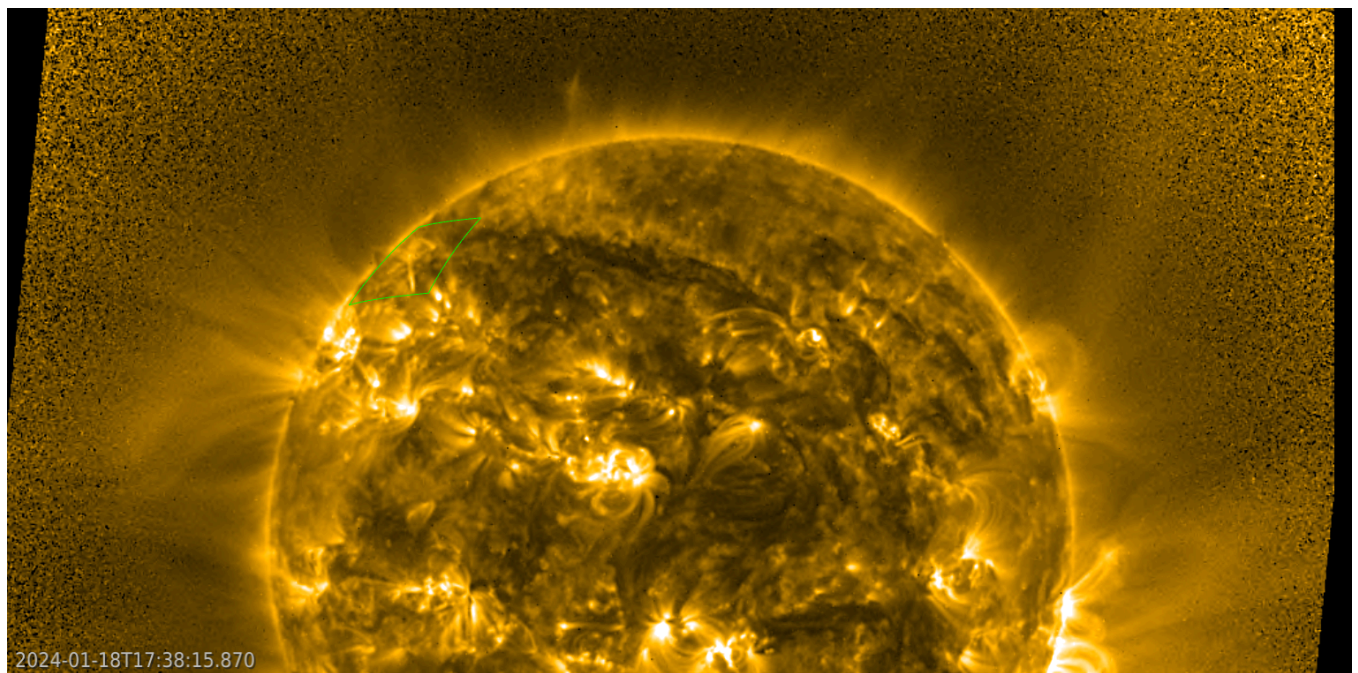
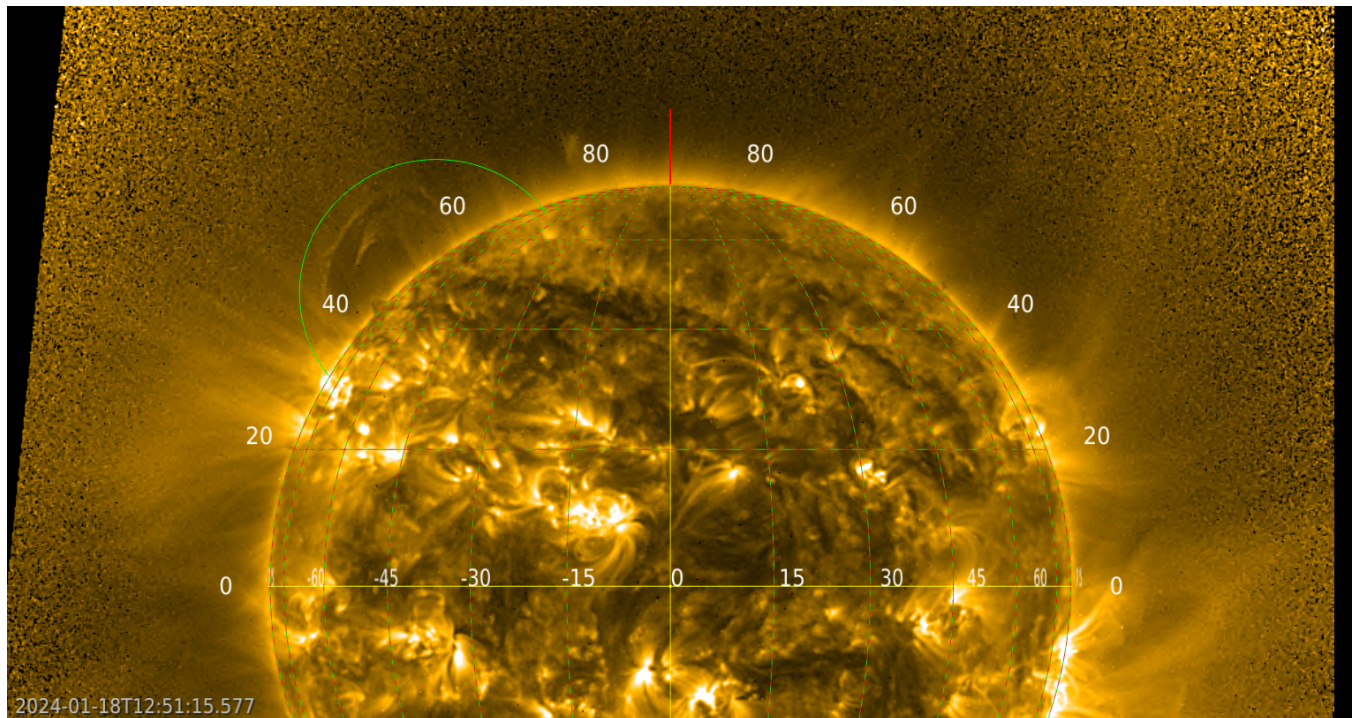
This page also lists the recorded flaring events.

A weekly overview movie can be found [here](#) (SWAP week 721).

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 Jan 18

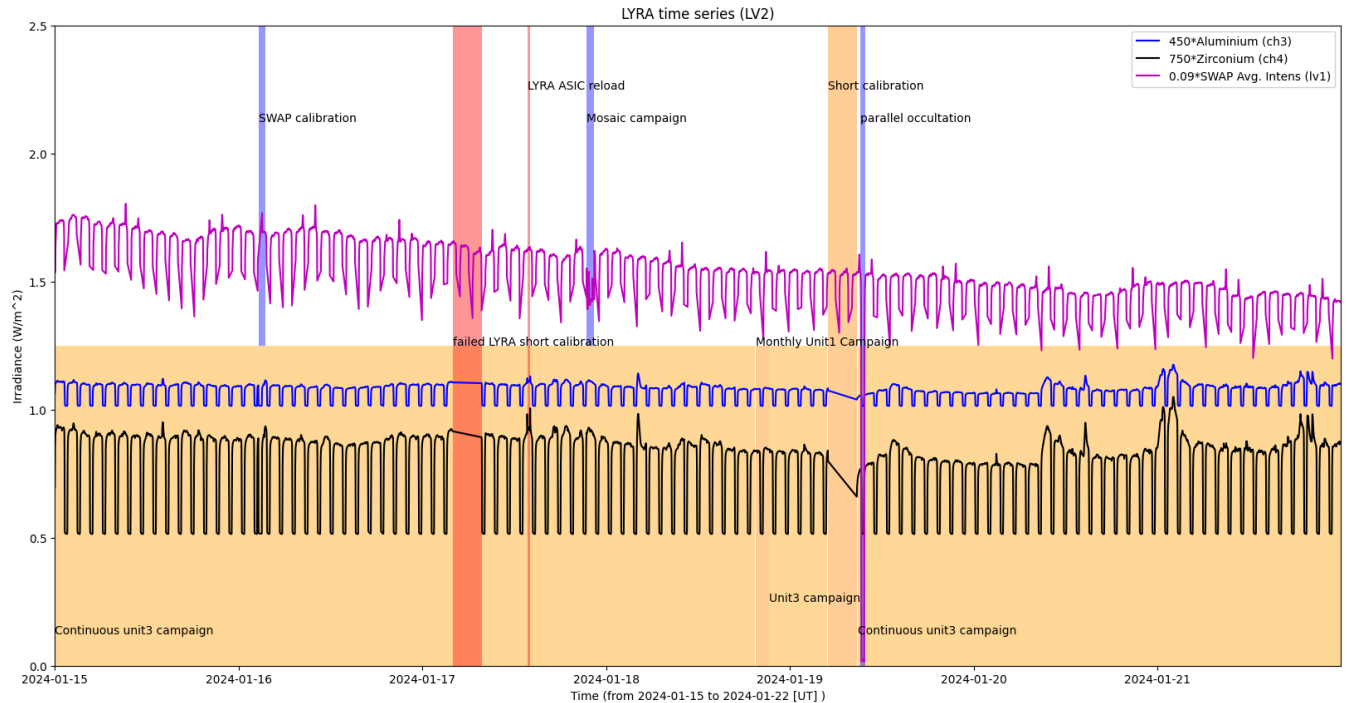


No major flares were recorded this week, so the solar activity was dominated by filament/prominence eruptions. The SWAP images above show observations of one of the filament eruptions of this week (top panel, encircled in green), occurring on 18 January 2024. It originated from the north-eastern quadrant, between NOAA active regions 3556 and 3559. The bottom panel shows the post-eruptive arcades, highlighted by the green rectangle. 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:

- SWAP calibration, 2024-Jan-16
- Mosaic campaign, 2024-Jan-17
- SWAP and LYRA parallel occultation, 2024-Jan-19

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

- Continuous unit 3 campaign, outside the calibration and unit 1 campaign
- Monthly unit 1 campaign, 2024-Jan-18
- Short bi-weekly calibration, 2024-Jan-19

The red shaded periods related to other issues corresponds to:

- Failed short calibration, 2024-Jan-17. The covers have not been responding to commands since ~ Dec. 6, which was fixed along with the ASIC reload on 2024-Jan-17. During this campaign, unit 3 still acquired data, but it is considered by the pipeline as calibration data.
- ASIC reload, 2024-Jan-17

**2. LYRA instrument status**

**IOS**

Start IOS	Mon Jan 15 2024	LYIOS01048
End IOS	Sun Jan 21 2024	LYIOS01051

**LYRA detector temperature**

LYRA detector 2 temperature globally varied between 43.73 and 48.88 °C.

### 3. SWAP instrument status

**MCPM errors**

The number of MCPM recoverable errors increased from 51692 to 51763.  
The number of MCPM unrecoverable errors remained at 3135.

**IOS**

Start IOS	Mon Jan 15 2024	IOS01172
End IOS	Sun Jan 21 2024	IOS01173

**SWAP detector temperature**

The SWAP Cold Finger Temperature globally varied between -2.81 and -0.41 °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 46149 to 46210) 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 2024 Jan 15 00:00 UT and 2024 Jan 22 00:00 UT: 4355

Highest cadence in this period: 18 seconds

Average cadence in this period: 138.82 seconds

Number of image gaps larger than 300 seconds: 201

Largest data gap: 30.33 minutes

### Data coverage LYRA

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

- None
- Corrupted package during pass 46187 on 2024-Jan-19, but the processing finished successfully.
- Data gap during the ASIC reload, on 2024-Jan-17, between 13:42 - 14:06 UT
- On 2024-Jan-17, between 04:00 - 07:45 UT a calibration was commanded, but the covers did not respond, while unit 3 still acquired data during this time. However, the pipeline considers this as calibration data.



## 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)