


P2SC-ROB-WR-722 - 20240122	<b>P2SC Weekly report</b>	
Period covered: Date:	Mon Jan 22 to Jan 28, 2024 31 Jan 2024	Royal Observatory of Belgium -
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## 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 22 Jan	Tuesday 23 Jan	Wednesday 24 Jan	Thursday 25 Jan	Friday 26 Jan	Saturday 27 Jan	Sunday 28 Jan
Activity	moderate	moderate	moderate	low	low	low	low
Flares	<b>M2.1, M1.6,</b> <b>M3.4, M2.0,</b> <b>M1.2, M1.5</b>	<b>M1.0, M1.1,</b> <b>M4.3, M1.3,</b> <b>M1.0, M1.0,</b> <b>M2.3, M2.4,</b> <b>M5.1</b>	<b>M1.3</b> <b>M1.4</b> <b>M2.6</b> <b>M1.0</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>

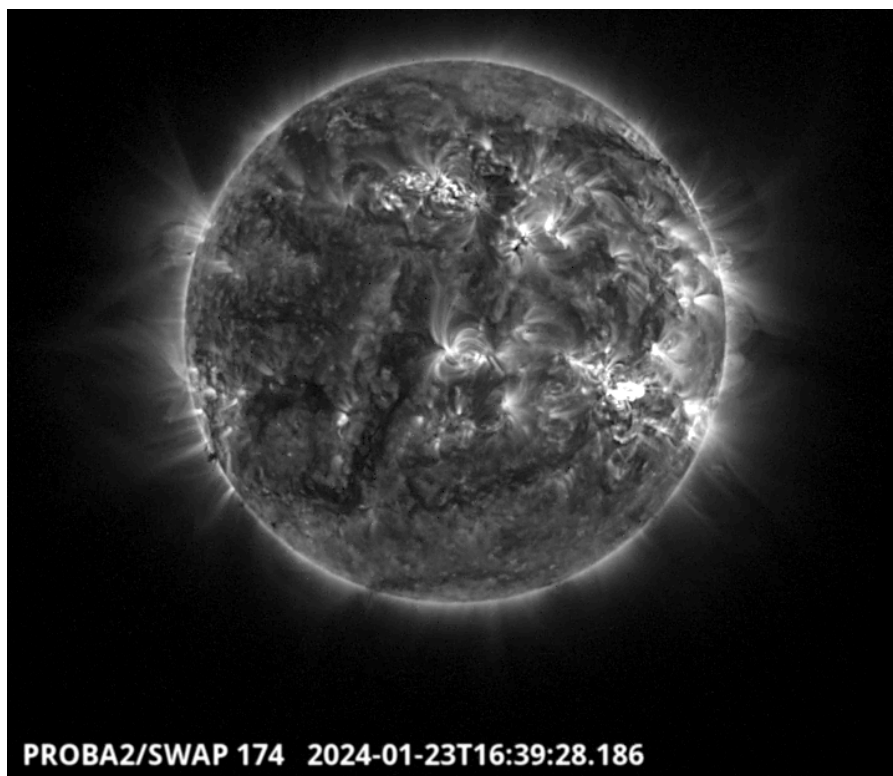
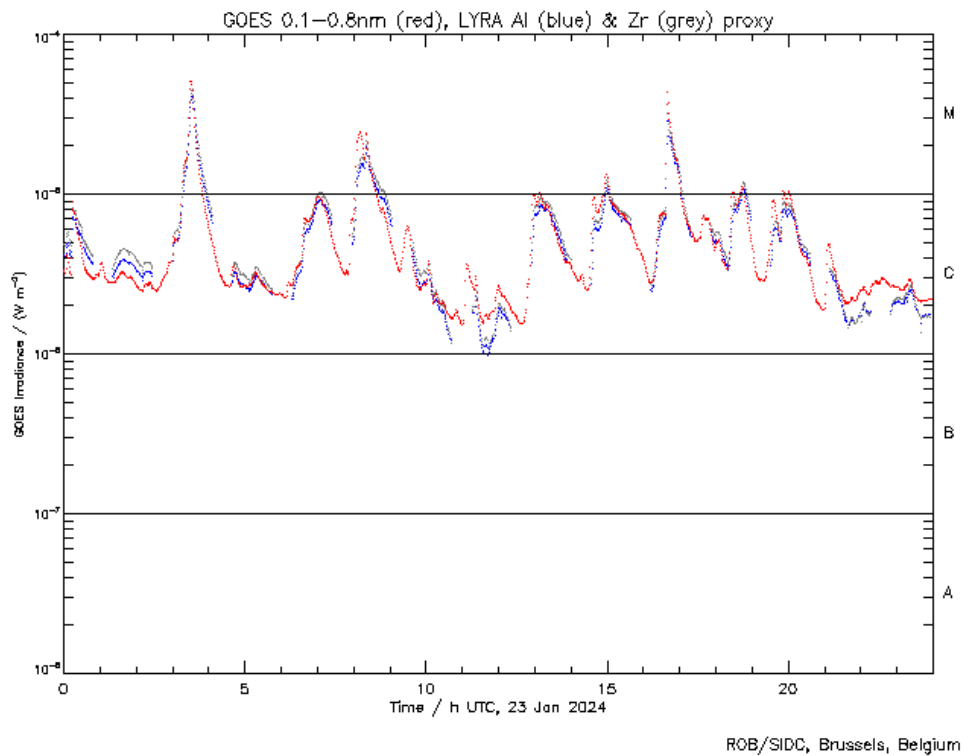
This page also lists the recorded flaring events.

A weekly overview movie can be found [here](#) (SWAP week 722).

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](#)

Tuesday Jan 23



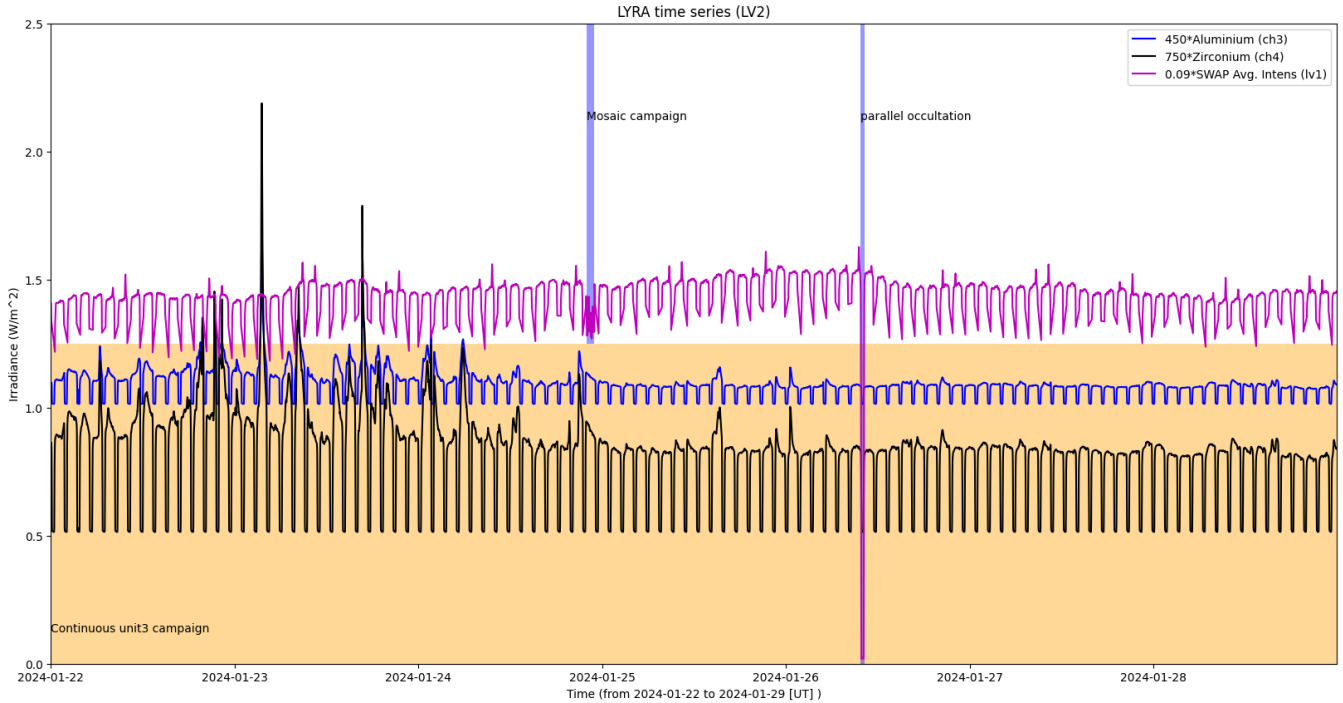
The largest flare of this week was an M5.1, but after a careful inspection of the SWAP data, it is likely that this flux resulted from a summed contribution of two nearly simultaneous flaring regions, NOAA 3559 and 3561. Therefore, the second largest flare was an M4.3, and it was observed by LYRA (top panel) and SWAP (bottom panel). The flare peaked on 2024-Jan-23 at 16:40 UT. It occurred in the south-western quadrant, and it originated from NOAA AR3561.

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, 2024-Jan-24
- SWAP and LYRA parallel occultation, 2024-Jan-26

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

- Unit 3 continuous campaign

The red shaded periods related to other issues corresponds to:

- None

## 2. LYRA instrument status

### IOS

Start IOS	Mon Jan 22 2024	LYIOS01051
End IOS	Sun Jan 28 2024	LYIOS01051

### LYRA detector temperature

LYRA detector 2 temperature globally varied between 47.3 and 51.1 °C.

### 3. SWAP instrument status

#### MCPM errors

The number of MCPM recoverable errors increased from 51763 to 51856.

The number of MCPM unrecoverable errors remained at 3135.

#### IOS

Start IOS	Mon Jan 22 2024	IOS01174
End IOS	Sun Jan 28 2024	IOS01175

#### SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -1.77 and 0.87 °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 46211 to 46269) was nominal, except for:

- 46214

### Data coverage HK

All HK data files (LYRA\_AD) have been received, except:

- None.
- LYRA\_AD for pass 46214 (from 22 Jan, re-extracted on 23 and 24 Jan) contained many empty files from previous passes. The pipeline could not process the empty files, but the data from pass 46214 had been correctly processed. So no data gap occurred.

### Data coverage SWAP

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

- None

Total number of images between 2024 Jan 22 00:00 UT and 2024 Jan 29 00:00 UT: 4179

Highest cadence in this period: 18 seconds

Average cadence in this period: 144.75 seconds

Number of image gaps larger than 300 seconds: 176

Largest data gap: 29.48 minutes

### Data coverage LYRA

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

- None



## 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)