


P2SC-ROB-WR-698 - 20230807	<b>P2SC Weekly report</b>	
Period covered: Date:  Written by: Approved by:	Mon Aug 07 to Sun Aug 13, 2023 17 Aug 2023  Laurence Wauters 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> fluctuated between **low and high** this week.

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

	Monday 07 Aug	Tuesday 08 Aug	Wednesday 09 Aug	Thursday 10 Aug	Friday 11 Aug	Saturday 12 Aug	Sunday 13 Aug
Activity	high	moderate	low	moderate	low	low	low
Flares	<b>X1.5, M1.4, M1.0</b>	<b>M3.6</b>	-	<b>M3.6</b>	-	-	-

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

## **Solar Activity**

Solar flare activity fluctuated from low 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>

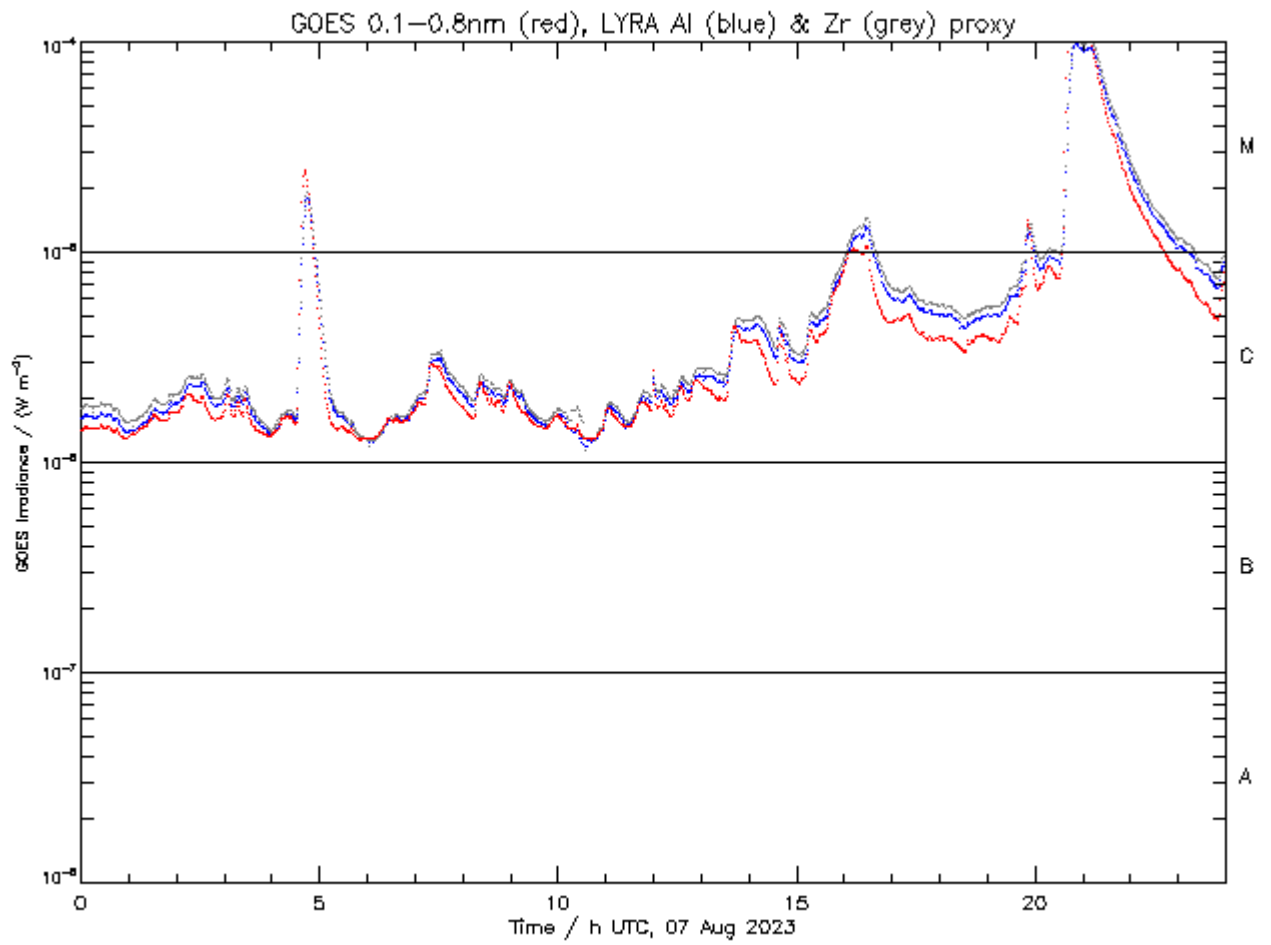
This page also lists the recorded flaring events.

A weekly overview movie can be found [here](#) (SWAP week 698).

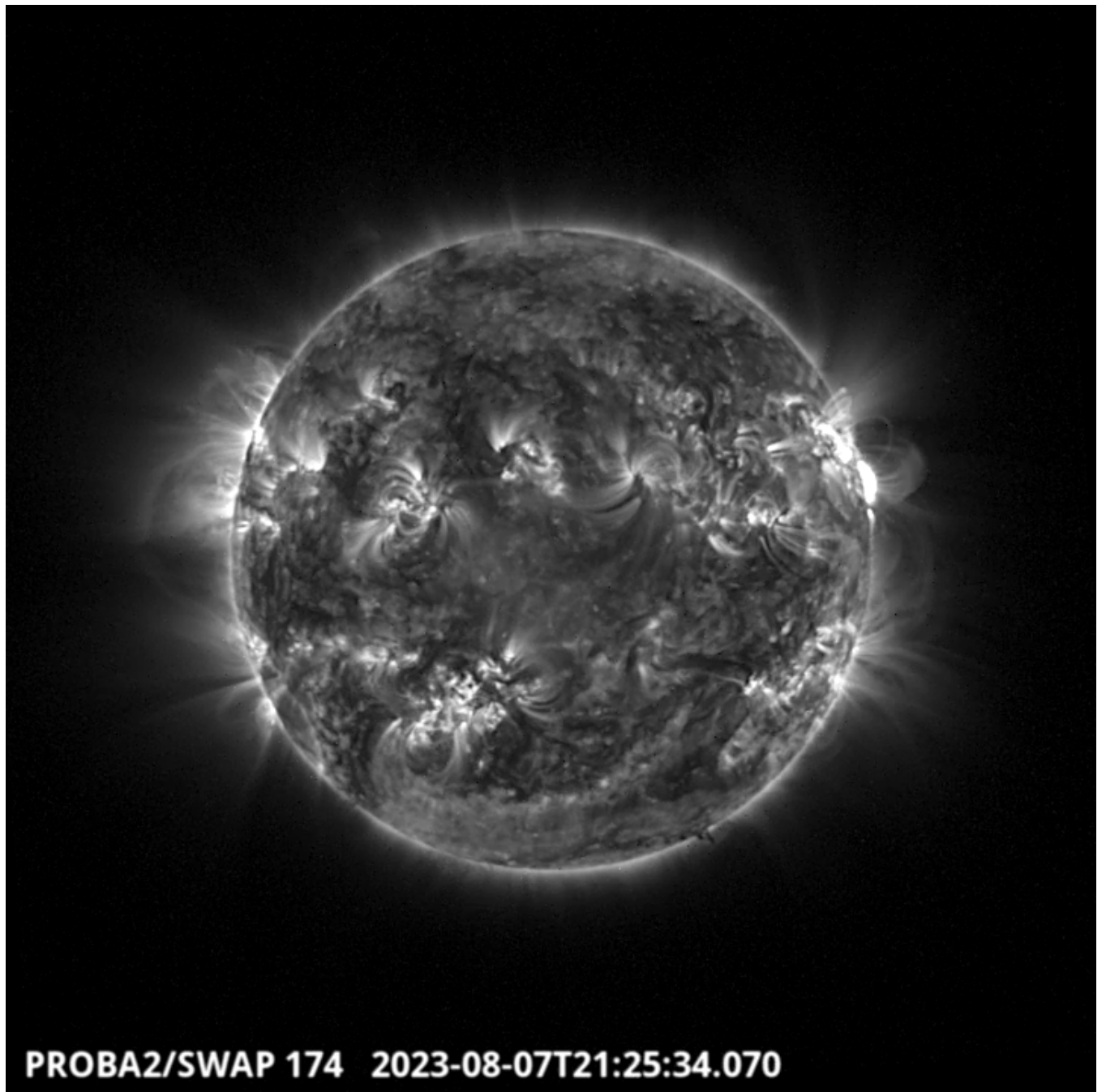
Details about some of this week's events can be found further below.

If any of the linked movies are unavailable they can be found in the P2SC movie repository [here](#)

Monday Aug 07



ROB/SIDC, Brussels, Belgium



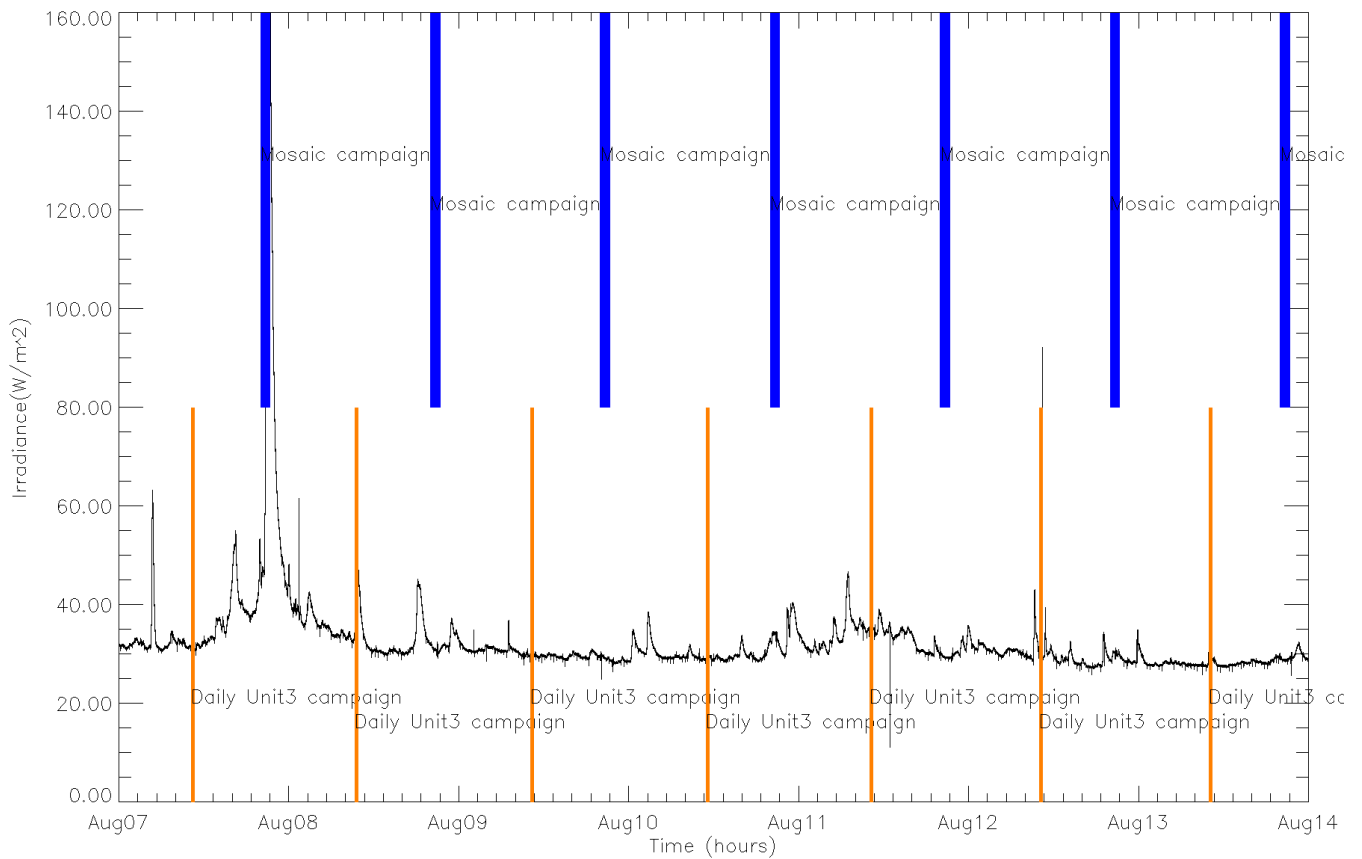
The largest flare of the week, a X1.5 flare, was produced by the active region NOAA 3386 around 21:25 UT (SWAP and LYRA images above). It was located at the North West part of the solar disk.

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:

- Each day of the week, a mosaic campaign is performed between 20:00 and 21:20.

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

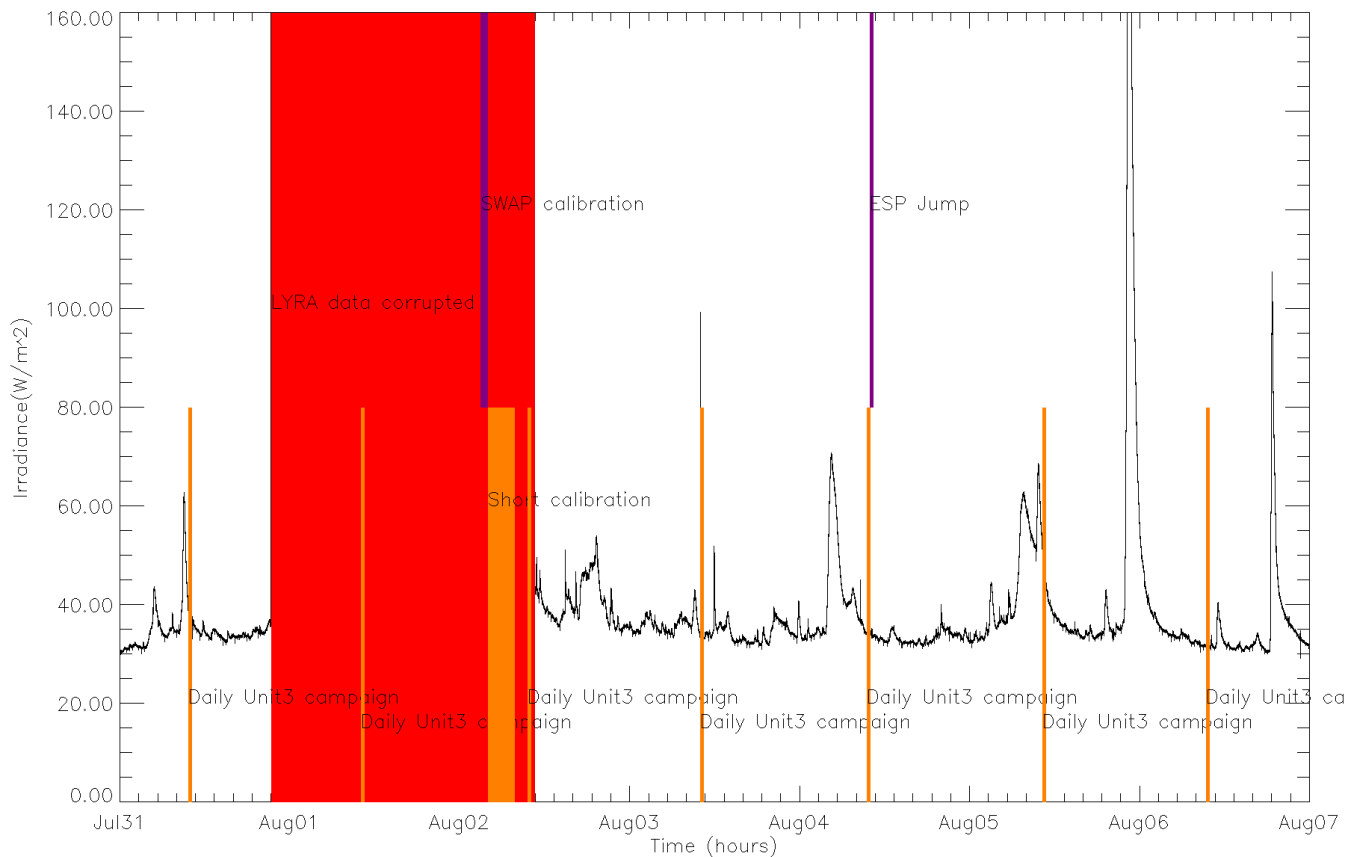
- Daily Unit3 campaign, 2023-Aug-07
- Daily Unit3 campaign, 2023-Aug-08
- Daily Unit3 campaign, 2023-Aug-09
- Daily Unit3 campaign, 2023-Aug-10
- Daily Unit3 campaign, 2023-Aug-11
- Daily Unit3 campaign, 2023-Aug-12
- Daily Unit3 campaign, 2023-Aug-13

The red shaded periods related to other issues corresponds to:

- None

## Erratum of Previous week for Operations and Calibrations:

Last week, we reported an on-board data corruption that apparently affected data from July 31 to August 3. However, after further investigation, only part of the time interval was actually corrupted and untrustable. But this corruption was causing the data calibration to fail on a more extended period. After reprocessing, we managed to reduce the period of untrustable data to the actual period of data corruption, from July 31 at ~21:25 to August 02 ~9:20 UT, time at which the ASIC was reloaded.



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

- Bi-weekly calibration, 2023-Aug-01
- ESP jump, 2023-Aug-03

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

- Daily Unit3 campaign, 2023-Jul-31
- Daily Unit3 campaign, 2023-Aug-01
- Short calibration, 2023-Aug-02
- Daily Unit3 campaign, 2023-Aug-02
- Daily Unit3 campaign, 2023-Aug-03
- Daily Unit3 campaign, 2023-Aug-04
- Daily Unit3 campaign, 2023-Aug-05
- Daily Unit3 campaign, 2023-Aug-06

The red shaded periods related to other issues corresponds to:

- Erroneous LYRA data starting July 31 at ~21:25 until the ASIC reload was performed on August

02 between 09:20 - 10:36 UT.

## 2. LYRA instrument status

### IOS

Start IOS	Mon Aug 07 2023	LYIOS01027
End IOS	Sun Aug 13 2023	LYIOS01028

### LYRA detector temperature

LYRA detector 2 temperature globally varied between 49.03 and 49.83 °C.



### 3. SWAP instrument status

#### MCPM errors

The number of MCPM recoverable errors increased from 45594 to 45867.

The number of MCPM unrecoverable errors remained at 3135.

#### IOS

Start IOS	Mon Aug 07 2023	IOS01132
End IOS	Sun Aug 13 2023	IOS01133

#### SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -1.21 and -0.01 °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 44789 to 44848) 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 2023 Aug 07 00:00 UT and 2023 Aug 14 00:00 UT: 4274

Highest cadence in this period: 17 seconds

Average cadence in this period: 141.47 seconds

Number of image gaps larger than 300 seconds: 239

Largest data gap: 176.38 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)