


P2SC-ROB-WR-694 - 20230710	P2SC Weekly report	
Period covered: Date:	Mon Jul 10 to Sun Jul 16, 2023 19 July 2023	Royal Observatory of Belgium -
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1. Science

Solar & Space weather events

The level of solar activity¹ was **moderate** this week.

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

	Monday 10 Jul	Tuesday 11 Jul	Wednesday 12 Jul	Thursday 13 Jul	Friday 14 Jul	Saturday 15 Jul	Sunday 16 Jul
Activity	moderate	moderate	moderate	moderate	moderate	moderate	moderate
Flares	M1.4 M2.3	M1.2, M5.8, M1.0, M6.8, M1.1, M2.0	M6.9 M1.3 M1.3 M1.4	M2.1	M1.0	M2.2 M1.0 M2.9	M4.0 M1.7 M1.1 M1.1

¹ See appendix. All timings are given in UT.

Solar Activity

Solar flare activity was at a moderate level 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>

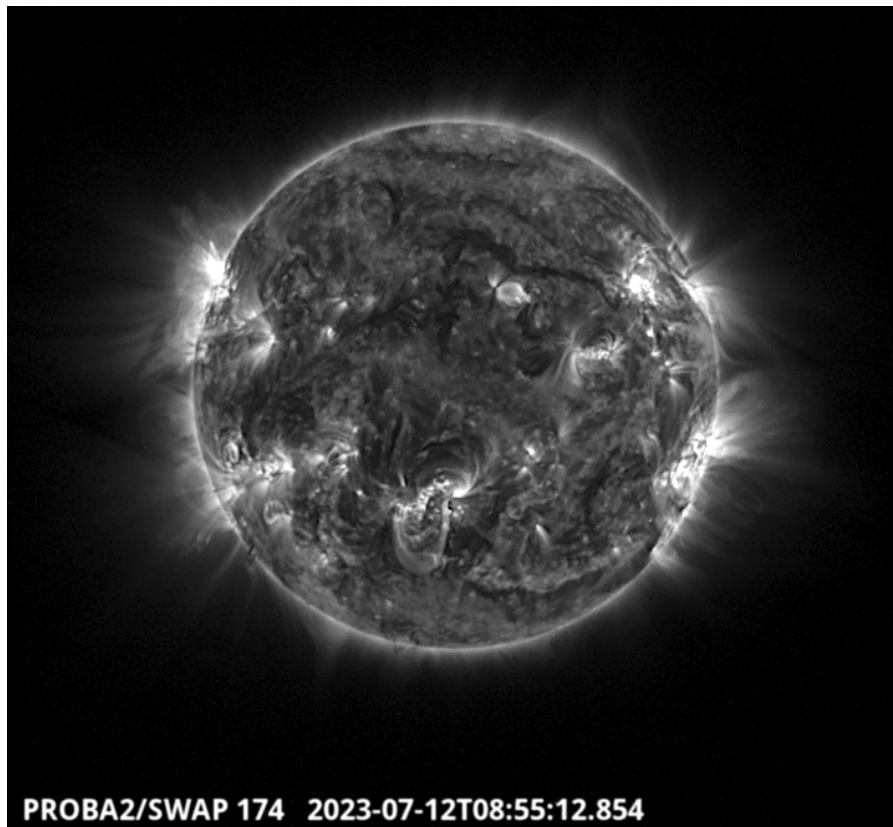
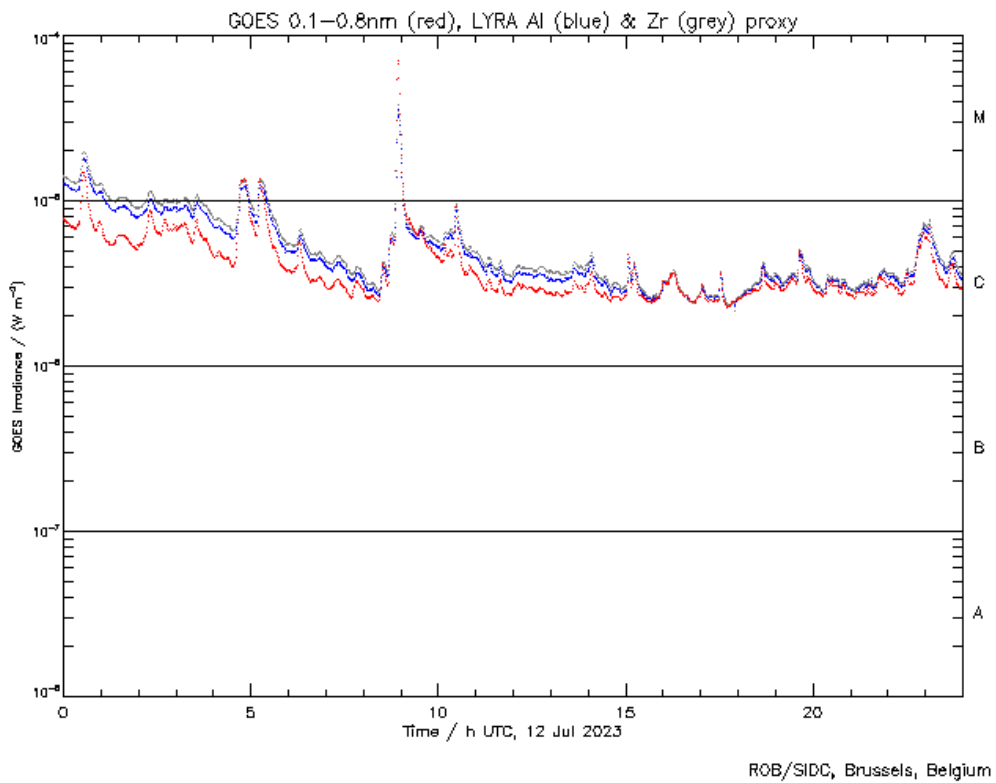
This page also lists the recorded flaring events.

A weekly overview movie can be found [here](#) (SWAP week 694).

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](#)

Wednesday July 12



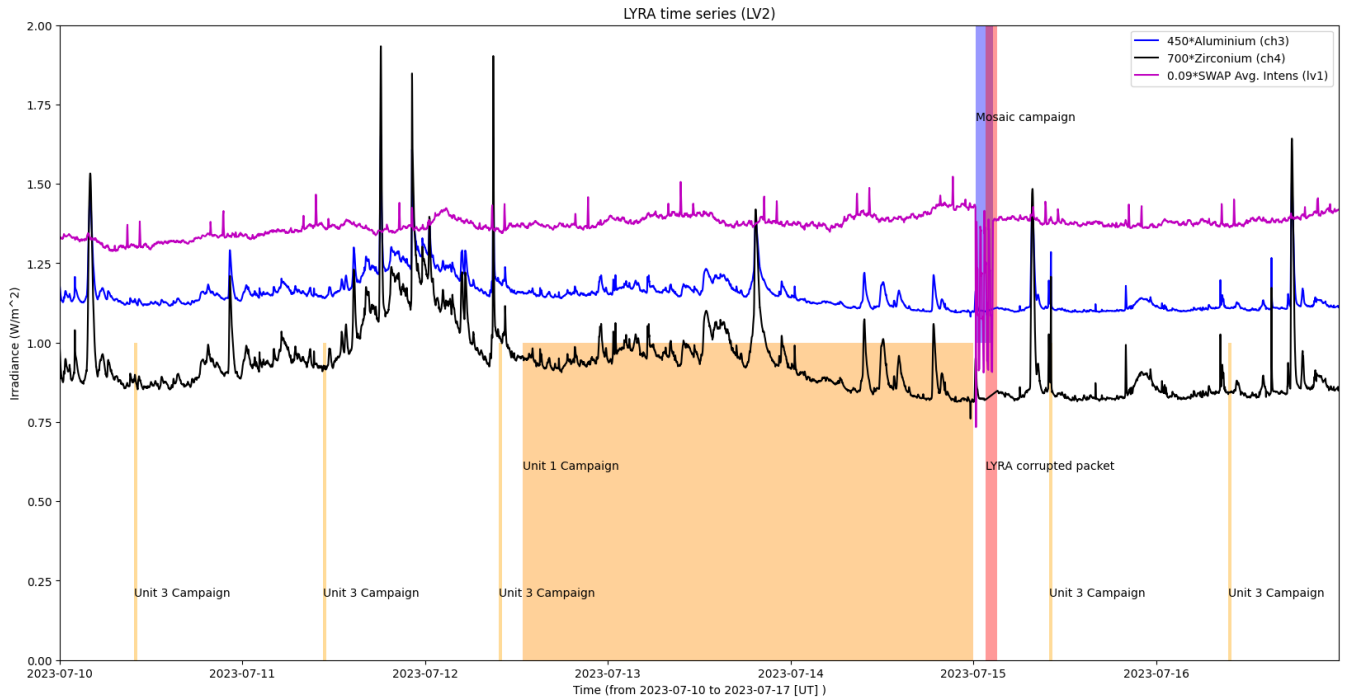
The largest flare of this active week, an M6.9, was observed by LYRA (top panel) and SWAP (bottom panel). The flare peaked on 2023-Jul-12 at 08:55 UT. It occurred in the north-eastern hemisphere close to the solar limb, and it originated from NOAA AR3372.

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 with 4 different exposure times (10s, 30s, 50s and 80s), 2023-Jul-15

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

- Daily Unit 3 campaign, 2023-07-10
- Daily Unit 3 campaign, 2023-07-11
- Daily Unit 3 campaign, 2023-07-12
- Unit1 flare campaign, from 2023-07-12 at 12:45 UT until 2023-07-14 at 23:55 UT
- Daily Unit 3 campaign, 2023-07-15
- Daily Unit 3 campaign, 2023-07-16

The red shaded periods related to other issues corresponds to:

- BINLYRA for pass 44593 was corrupted on board, which resulted in a data gap on 2023-07-15 between 01:34-03:10 UT

2. LYRA instrument status

IOS

Start IOS	Mon Jul 10 2023	LYIOS01021
End IOS	Sun Jul 16 2023	LYIOS01023

LYRA detector temperature

LYRA detector 2 temperature globally varied between 49.017 and 51.79 °C.

3. SWAP instrument status

MCPM errors

The number of MCPM recoverable errors increased from 44792 to 44931.

The number of MCPM unrecoverable errors remained at 3135.

IOS

Start IOS	Mon Jul 10 2023	IOS01127
End IOS	Sun Jul 16 2023	IOS01129

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -0.97 and 0.39 °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 44548 to 44608) was nominal, except for:

- 44563.

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.
- very small BINSWAP file for pass 44563 due to the BBE getting blocked 2 minutes after the beginning of the support (hence only a few SWAP images were recorded); the BBE was reset before the following support and the BBE was again fully available. No more data could be retrieved.

Total number of images between 2023 Jul 10 00:00 UT and 2023 Jul 17 00:00 UT: 4066

Highest cadence in this period: 29 seconds

Average cadence in this period: 148.68 seconds

Number of image gaps larger than 300 seconds: 282

Largest data gap: 16.50 minutes

Data coverage LYRA

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

- None
- BINLYRA for pass 44593 was corrupted on board, which resulted in a data gap on 2023-07-15 between 01:34-03:10 UT

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)