


P2SC-ROB-WR-740 - 20240527	P2SC Weekly report	
Period covered: Date:	Mon May 27 to Sun Jun 02, 2024 05 Jun 2024	Royal Observatory of Belgium -
Written by: Approved by:	Dana Talpeanu Marie Dominique	PROBA2 Science Center
To:	LYRA PI, marie.dominique@sidc.be SWAP PI, elke.dhuys@sidc.be	https://proba2.sidc.be ++ 32 (0) 2 3730559
cc:	ROB DIR, ronald@oma.be ESA Redu, Rene.Wittmann@esa.int and Marcus.De.Deus.Silva@esa.int ESA D/SRE, Joe.Zender@esa.int ESA D/TEC, Juha-Pekka.Luntama@esa.int and Melanie.Heil@esa.int	

1. Science

Solar & Space weather events

The level of solar activity¹ fluctuated between **low and very high** this week.

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

	Monday 27 May	Tuesday 28 May	Wednesday 29 May	Thursday 30 May	Friday 31 May	Saturday 01 Jun	Sunday 02 Jun
Activity	high	low	high	moderate	high	very high	moderate
Flares	X2.8	-	M5.7, M2.7, X1.4, M2.5, M1.8, M1.4, M1.3	M1.0	X1.1 M1.0	M7.3 X1.0 X1.4	M2.0 M1.2

¹ See appendix. All timings are given in UT.

Solar Activity

Solar flare activity fluctuated from low to very 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>

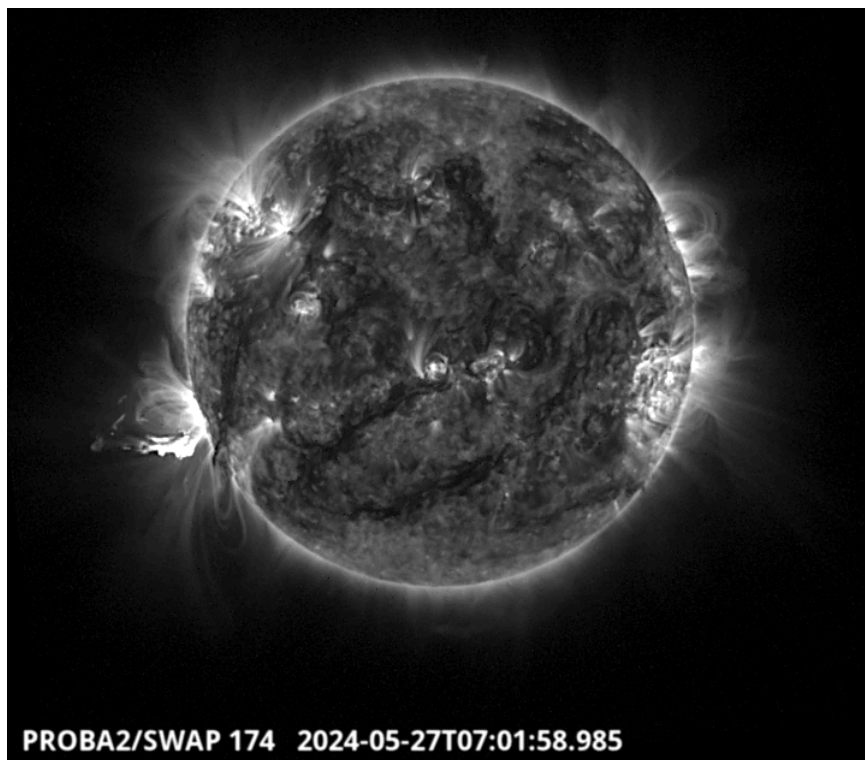
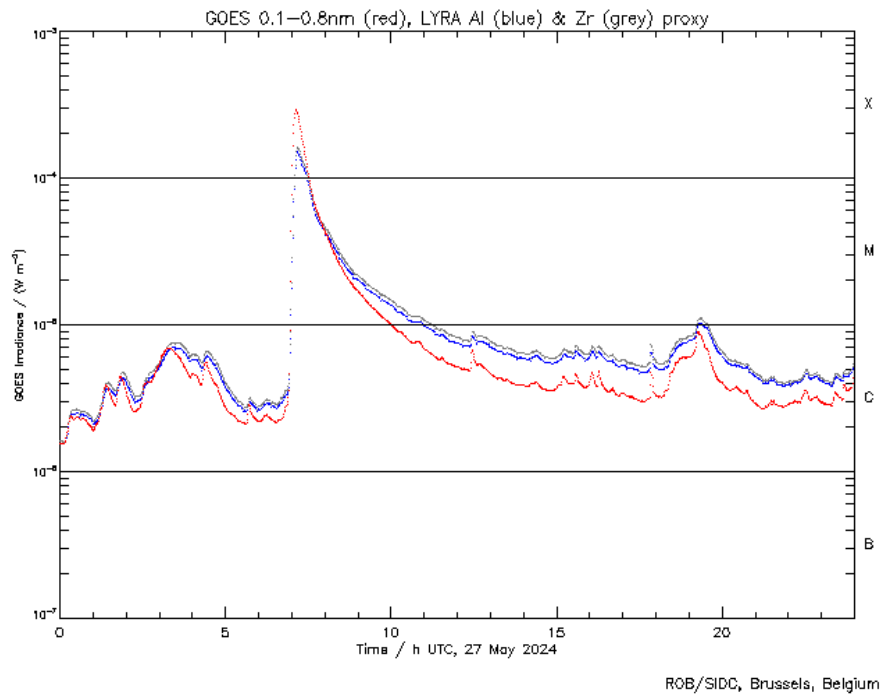
This page also lists the recorded flaring events.

A weekly overview movie can be found [here](#) (SWAP week 740).

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 May 27



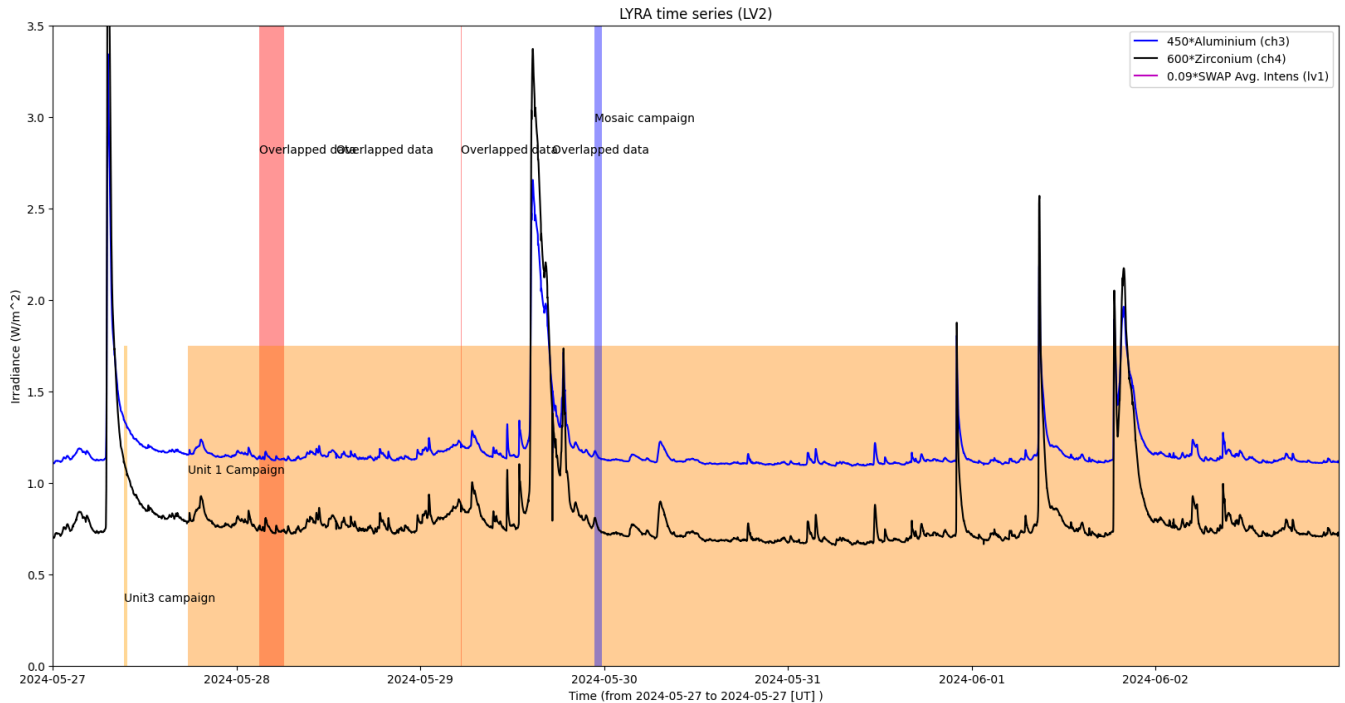
The largest flare of this week was an X2.8, and it was observed by LYRA (top panel) and SWAP (bottom panel, the associated eruption). The flare peaked on 2024-May-27 at 07:08 UT. It occurred close to the equator at the eastern limb, and it originated from NOAA AR3697. This active region was initially AR3664, the source region of the CMEs which impacted Earth on May 12, producing auroras visible even in Belgium. This region completed a solar rotation and reappeared on the eastern limb of the Sun, as AR3697, and was the origin of all five X-flares of this week.

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-May-29

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

- Daily Unit 3 campaign, 2024-May-27
- Unit 1 flare campaign from May 27 2024 17:35 until the end of the week, continuing into the next reporting period

The red shaded periods related to other issues corresponds to:

- re-extracted passes resulted in data gaps and overlapped LYRA data between the following time intervals:
 - 2024-05-28 between 03:00 - 06:13, 13:01 - 13:02 UT
 - 2024-05-29 between 05:19 - 05:21, 17:15:00 - 17:15:11 UT

2. LYRA instrument status

IOS

Start IOS	Mon May 27 2024	LYIOS01084
End IOS	Sun Jun 02 2024	LYIOS01087

LYRA detector temperature

LYRA detector 2 temperature globally varied between 49.75 and 52.435 °C.

3. SWAP instrument status

MCPM errors

The number of MCPM recoverable errors increased from 58850 to 59207.

The number of MCPM unrecoverable errors remained at 3135.

IOS

Start IOS	Mon May 27 2024	IOS01202
End IOS	Sun Jun 02 2024	IOS01203

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -0.49 and 0.71 °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 47288 to 47346) 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 May 27 00:00 UT and 2024 Jun 03 00:00 UT: 4025

Highest cadence in this period: 18 seconds

Average cadence in this period: 150.27 seconds

Number of image gaps larger than 300 seconds: 242

Largest data gap: 9.17 minutes

Data coverage LYRA

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

- None
- re-extracted passes resulted in data gaps and overlapped LYRA data between the following time intervals:
 - 2024-05-28 between 03:00 - 06:13, 13:01 - 13:02 UT
 - 2024-05-29 between 05:19 - 05:21, 17:15:00 - 17:15:11 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)