P2SC-ROB-WR-691 - 20230619	**P2SC Weekly report**	
Period covered: Date: Written by: Approved by:	Mon Jun 19 to Sun Jun 25, 2023 27 Jun 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[1] 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 19 Jun	Tuesday 20 Jun	Wednesday 21 Jun	Thursday 22 Jun	Friday 23 Jun	Saturday 24 Jun	Sunday 25 Jun
Activity	moderate	high	moderate	moderate	low	moderate	low
Flares	**M1.1, M1.4**	**X1.1, M1.1, 4 M1.1, M1.8**	**M1.0, 2 M1.0**	**M4.8, M1.1**	-	**M1.1**	-

[1] See appendix. All timings are given in UT.

Solar Activity

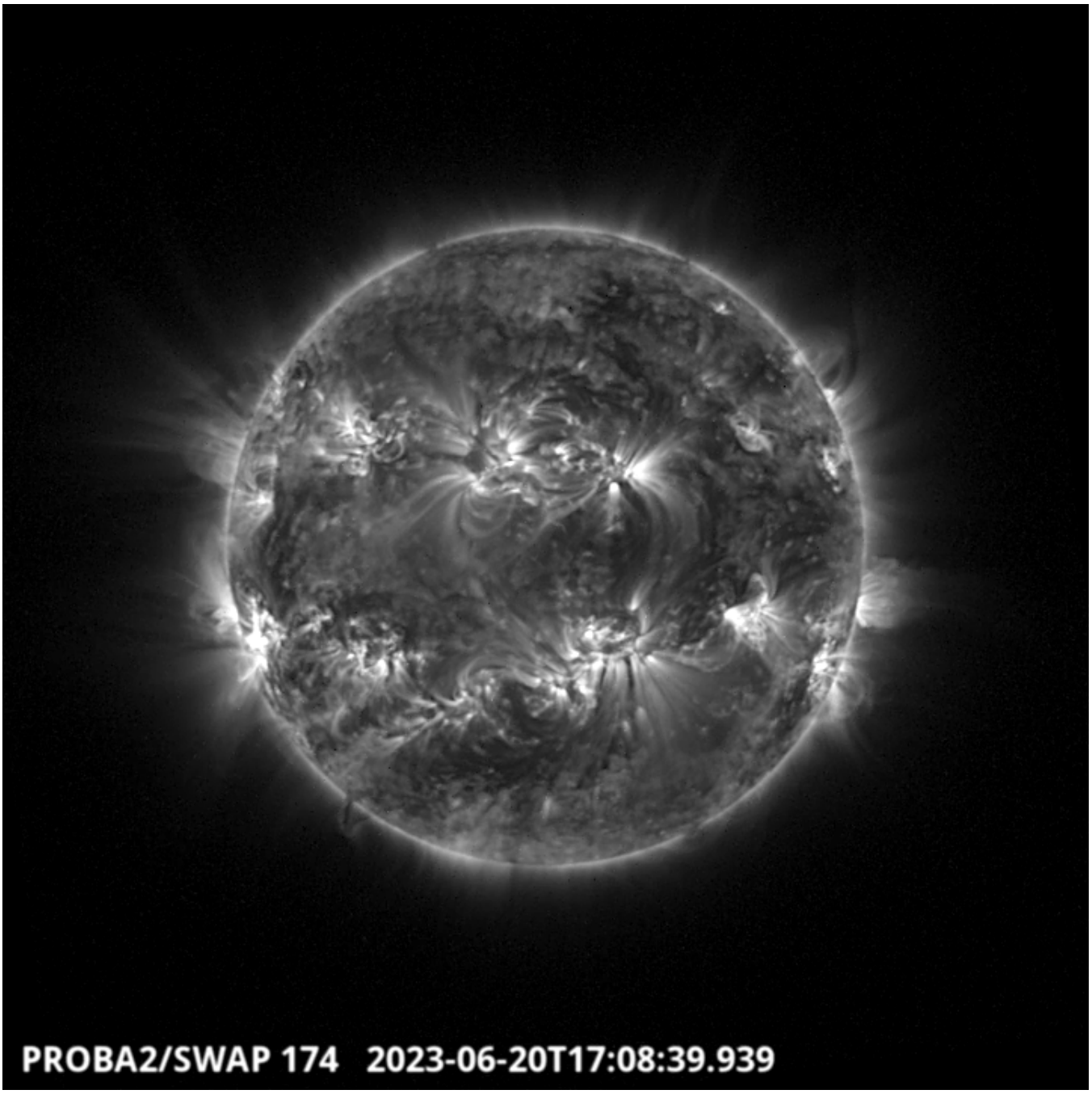
Solar flare activity fluctuated from low to high during the week.
In order to view the activity of this week in more detail, we suggest to go to the following website from which all the daily (normal and difference) movies can be accessed: https://proba2.oma.be/ssa
This page also lists the recorded flaring events.

A weekly overview movie can be found here (SWAP week 691).

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

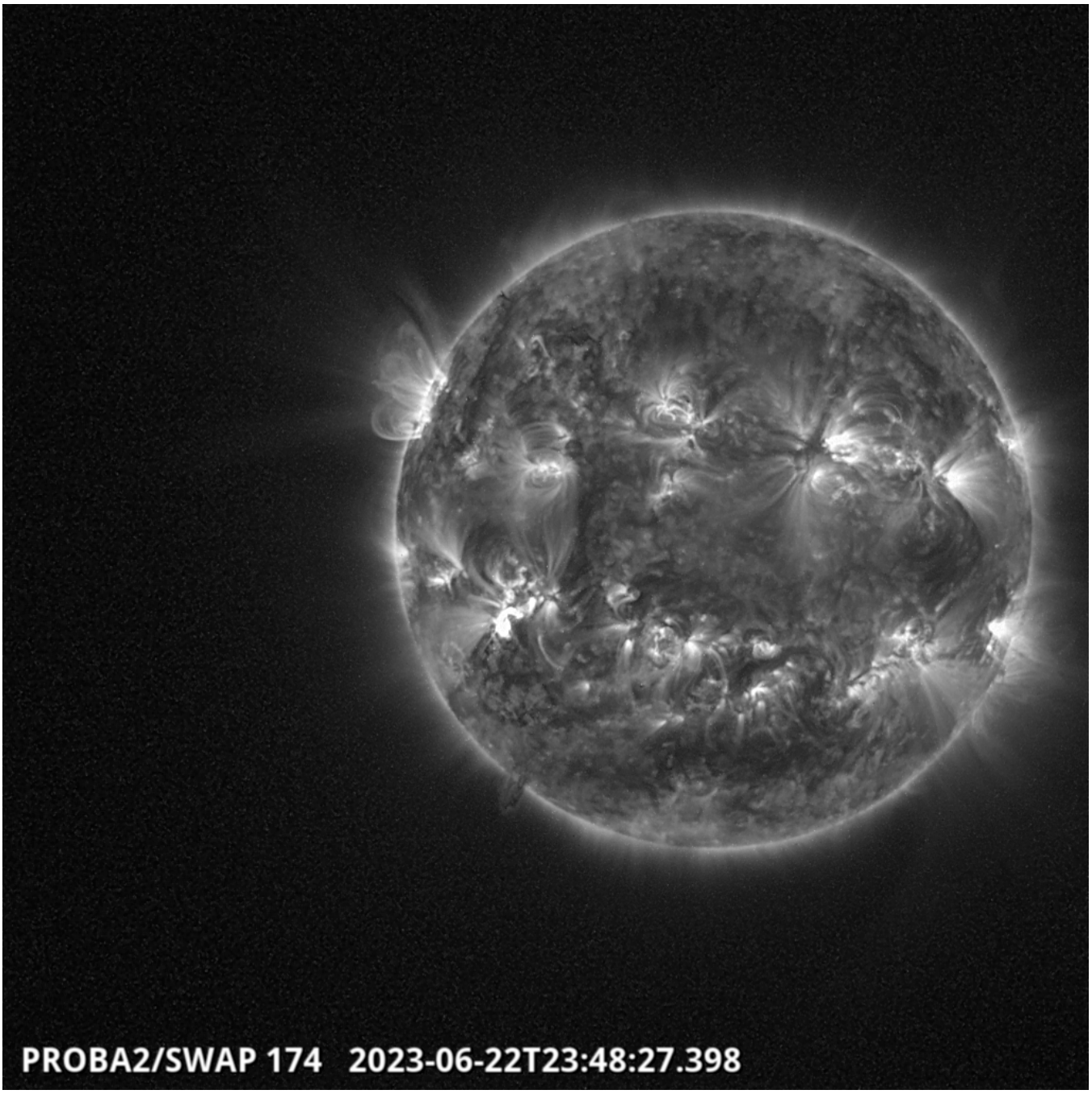
Tuesday Jun 20



Around 17:00 UT, the active region NOAA 3341 at the South Eastern limb produced a strong X1.1 flare associated with a CME, both clearly visible in SWAP observations.

Find a SWAP movie of the event here.

Thursday Jun 22

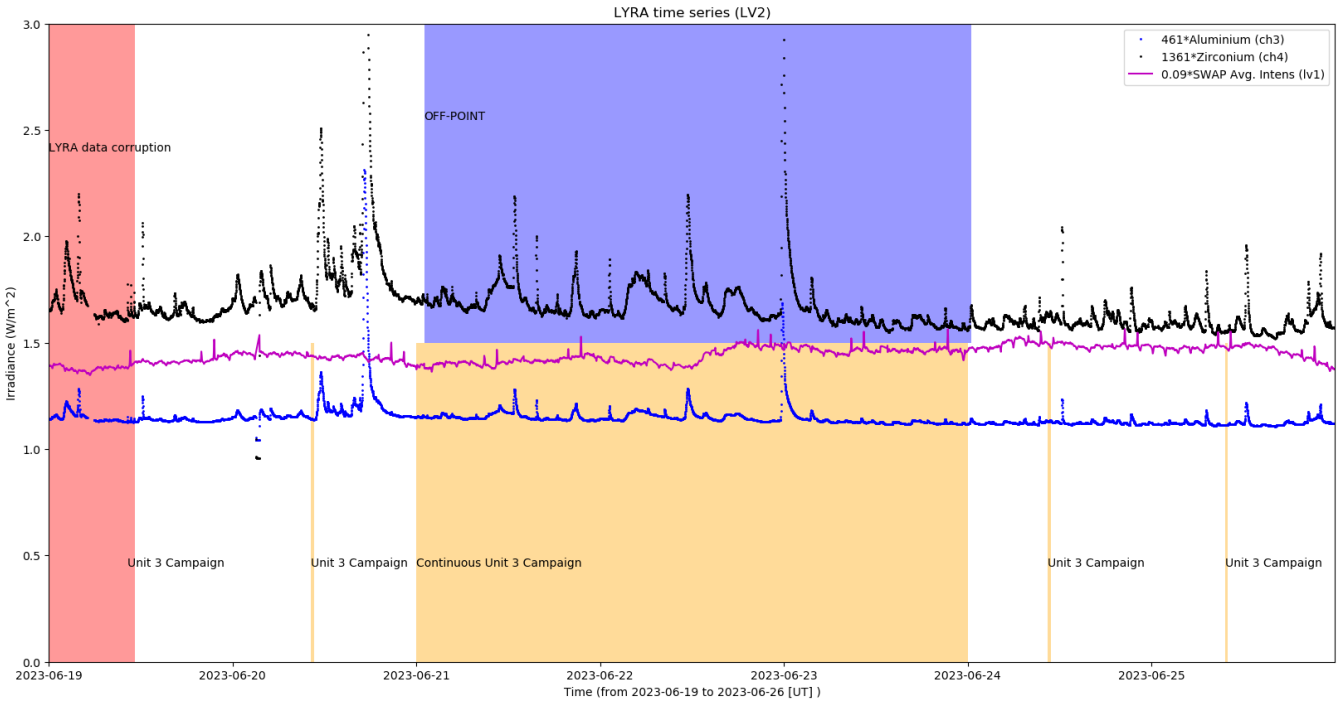


A M4.8 flare happened around 23:45 UT in active region NOAA 3341 on the South-Eastern part of the solar disk .

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:

- SWAP off-point joint campaign with SOLO, from 2023-Jun-21 until 2023-Jun-24 00:30 UT. Sun-centered, low cadence, and high priority periods in between the off-points, during the following times: 2023-Jun-21 between 00:00-01:00 and 12:40-14:00, 2023-Jun-22 between 01:00-01:47 and 13:27-15:00, and on 2023-Jun-23 between 00:00-00:55 and 12:35-13:30.

Note that there was no bi-weekly calibration on 2023-Jun-20. The upload of the campaign telecommands failed due to bad signal stability. The system retried to upload the commands on the next pass without success.

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

- Daily Unit 3 campaign, 2023-Jun-20
- Continuous Unit 3 campaign in support to the Solar Orbiter joint campaign, from 2023-Jun-21 until 2023-Jun-23
- Daily Unit 3 campaign, 2023-Jun-24
- Daily Unit 3 campaign, 2023-Jun-25

Note that a daily Unit 3 campaign was also scheduled on 2023-Jun-19. However, due to the

timestamps issue (see below) data are not trustable.

The red shaded periods related to other issues corresponds to:

- The LYRA timestamps have been corrupted on-board since last week (pass 44327 on 2023-06-14), resulting in timestamps shifted by a few hours in the future. This issue was solved with an ASIC reload that was uploaded during the pass 44366 (2023-06-19T09:24:30) and executed during 3 LAR's (from 10:00z to 11:15z). However, due to the presence of data with shifted timestamps interleaved with normal acquisitions, data cannot be trusted until 2023-06-19T22:36:00.

2. LYRA instrument status

IOS

Start IOS	Mon Jun 19 2023	LYIOS01017
End IOS	Sun Jun 25 2023	LYIOS01018

LYRA detector temperature

LYRA detector 2 temperature globally varied between 49.17 and 51.85 °C.

3. SWAP instrument status

MCPM errors
The number of MCPM recoverable errors increased from 43736 to 44170.
The number of MCPM unrecoverable errors remained at 3135.

IOS

Start IOS	Mon Jun 19 2023	IOS01124
End IOS	Sun Jun 25 2023	IOS01126

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -0.73 and 0.55 °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 44363 to 44426) 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 Jun 19 00:00 UT and 2023 Jun 26 00:00 UT: 4263
Highest cadence in this period: 18 seconds
Average cadence in this period: 141.85 seconds
Number of image gaps larger than 300 seconds: 218
Largest data gap: 11.00 minutes

Data coverage LYRA

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

- None
- Timestamps have been corrupted on-board since last week. It has been solved with an ASIC reload executed during 3 LAR's on 2023-06-19.

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)