


P2SC-ROB-WR-643 - 20220718	P2SC Weekly report	
Period covered: Date: Written by: Approved by:	Mon Jul 18 to Sun Jul 24, 2022 26 Jul 2022 Dana Talpeanu Marie Dominique	Royal Observatory of Belgium - PROBA2 Science Center
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1. Science

Solar & Space weather events

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

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

	Monday 18 Jul	Tuesday 19 Jul	Wednesday 20 Jul	Thursday 21 Jul	Friday 22 Jul	Saturday 23 Jul	Sunday 24 Jul
Activity	low	low	low	low	low	low	low
Flares	-	-	-	-	-	-	-

¹ See appendix. All timings are given in UT.

Solar Activity

Solar flare activity was low 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>

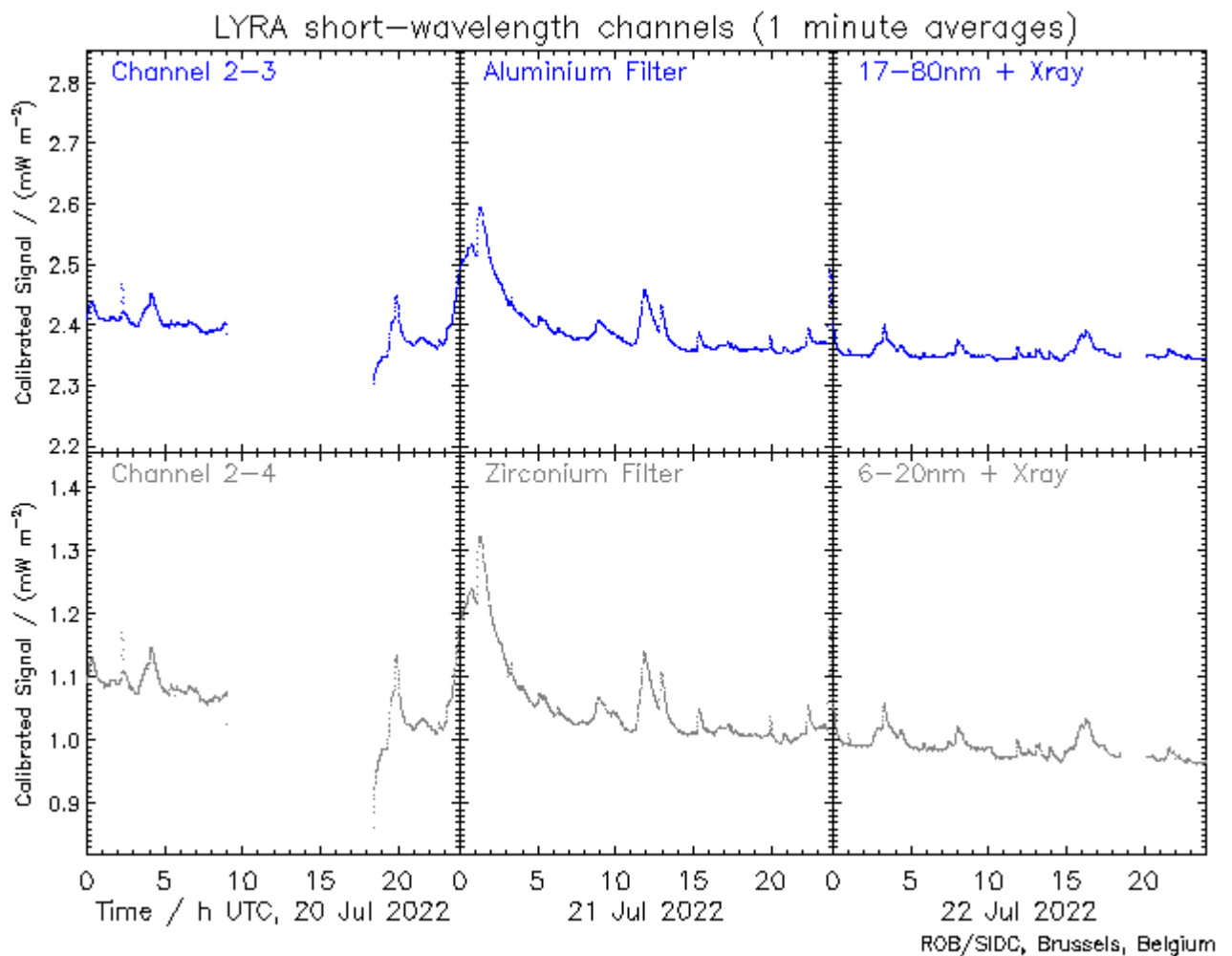
This page also lists the recorded flaring events.

A weekly overview movie can be found [here](#) (SWAP week 643).

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

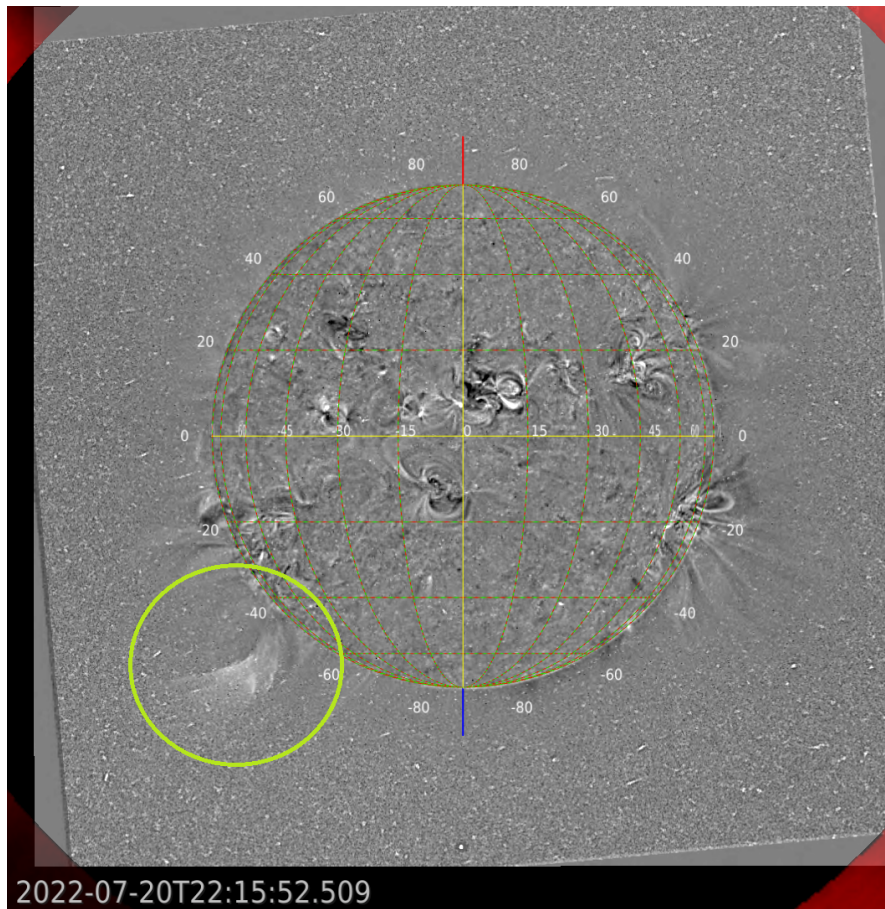
If any of the linked movies are unavailable they can be found in the P2SC movie repository [here](#)

Wednesday-Thursday July 20-21

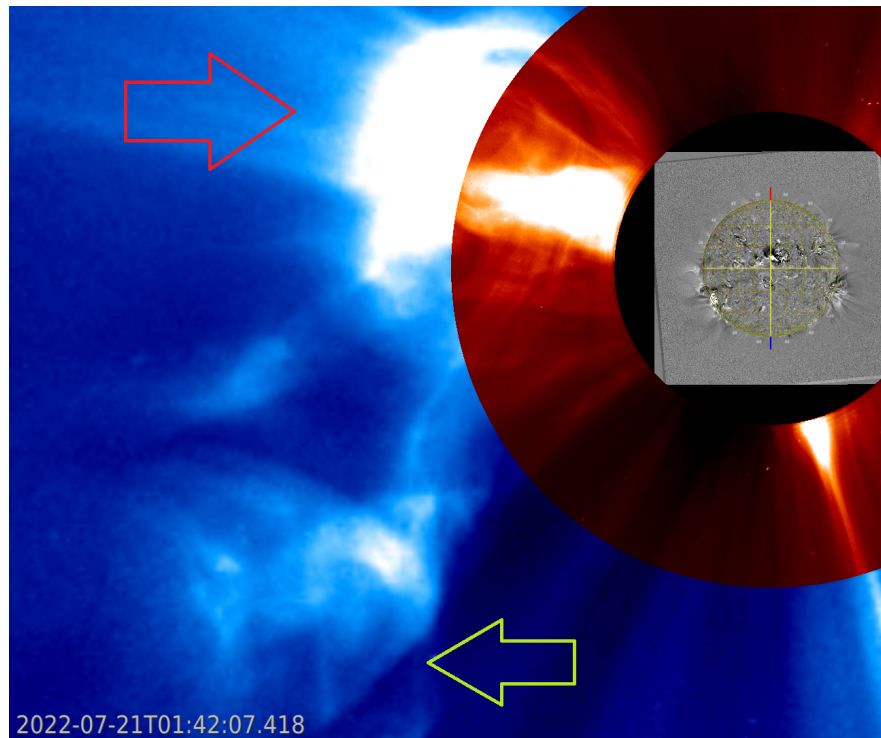


Three interesting events occurred between July 20-21 that resulted in the C5.6 flare observed by LYRA, seen peaking in the plot above on the 21st of July at 01:11 UT.

Wednesday July 20



The first event started on 2022-Jul-20 and consisted in a highly non-radial prominence eruption, indicated by the green circle in the SWAP image above, in the South-East quadrant.

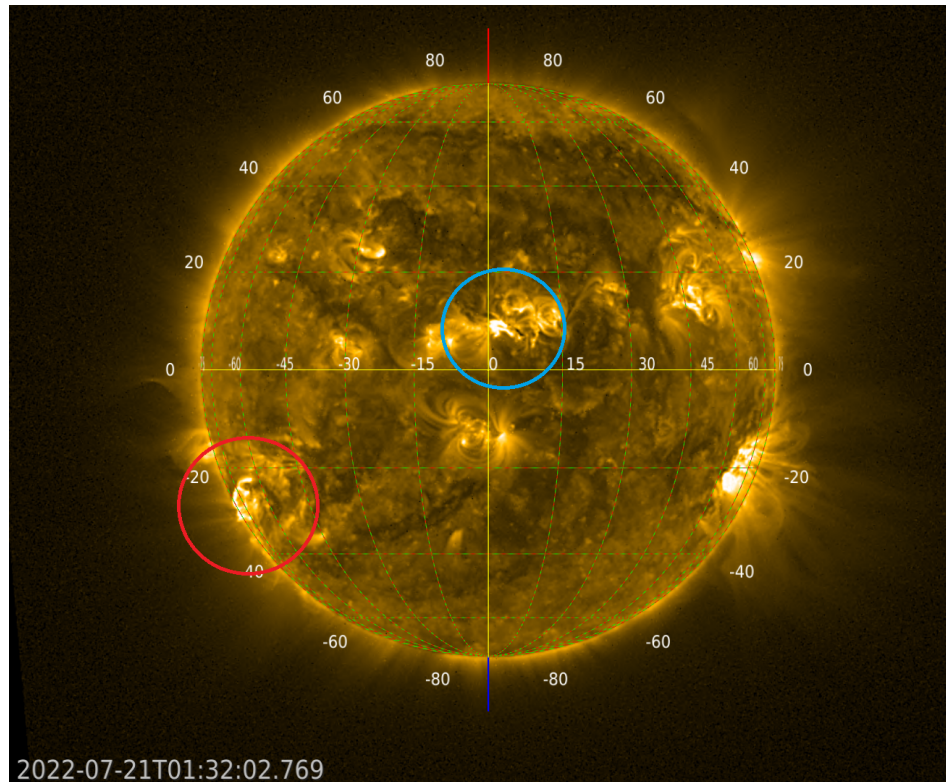


The prominence eruption was associated with the coronal mass ejection seen in the LASCO-C3

image above and indicated by the green arrow. The prominence material destabilized the arcade around which it erupted, causing it to rise and create the CME indicated by the red arrow. This second eruption is associated with the first part and peak of the C5.6 flare.

Find a SWAP movie of the two events [here](#).

Thursday July 21



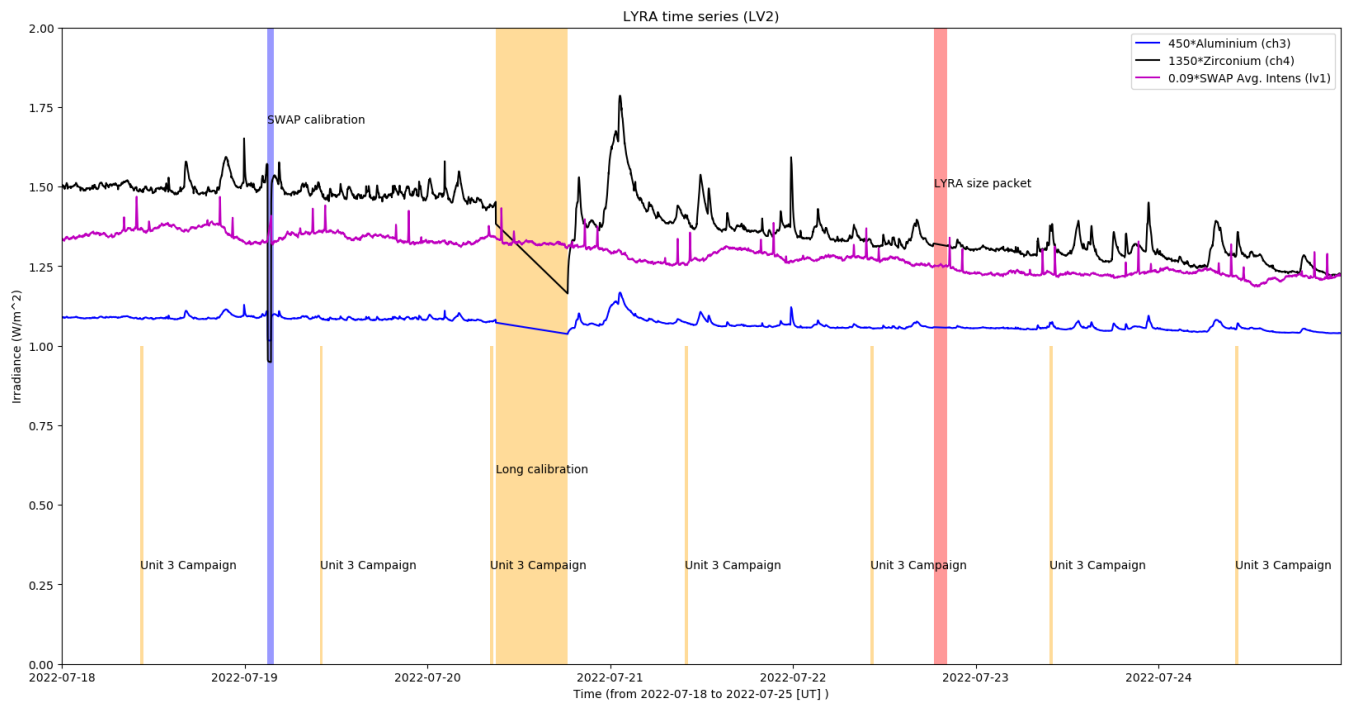
Approximately at the same time as the previous two eruptions, another CME erupted from NOAA 13060 located close to the central meridian. As the previously flaring region (red circle) was decaying, the new flare (blue circle) increased again the measured X-ray flux and created the second and highest peak of the C5.6 flare (at 01:11 UT), based on the already existing elevated level. The two flaring regions can be seen in the SWAP image above, taken on **2022-Jul-21 at 01:32 UT.**

Find a SWAP movie of this last 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:

- Bi-weekly calibration, 2022-Jul-19

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

- Daily Unit 3 campaign, 2022-Jul-18
- Daily Unit 3 campaign, 2022-Jul-19
- Daily Unit 3 campaign, 2022-Jul-20
- Long calibration campaign, 2022-Jul-20
- Daily Unit 3 campaign, 2022-Jul-21
- Daily Unit 3 campaign, 2022-Jul-22
- Daily Unit 3 campaign, 2022-Jul-23
- Daily Unit 3 campaign, 2022-Jul-24

The red shaded periods related to other issues corresponds to:

- LYRA data gap due to poor pass signal (size of compressed data different than expected) on 2022-Jul-22 between 18:30-20:16 (pass 41438)

2. LYRA instrument status

IOS

Start IOS	Mon Jul 18 2022	LYIOS00960
End IOS	Sun Jul 24 2022	LYIOS00961

LYRA detector temperature

LYRA detector 2 temperature globally varied between 46.71 and 49.57 °C.

3. SWAP instrument status

MCPM errors

The number of MCPM recoverable errors increased from 31908 to 32064.

The number of MCPM unrecoverable errors remained at 3135.

IOS

Start IOS	Mon Jul 18 2022	IOS001052
End IOS	Sun Jul 24 2022	IOS001052

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -1.61 and -0.00998 °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 41395 to 41457) was nominal, except for:

- 41438 - poor pass signal, resulting in data gap on 2022-Jul-22 between 18:30-20:16.

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 2022 Jul 18 00:00 UT and 2022 Jul 25 00:00 UT: 4459

Highest cadence in this period: 30 seconds

Average cadence in this period: 135.63 seconds

Number of image gaps larger than 300 seconds: 186

Largest data gap: 12.83 minutes

Data coverage LYRA

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

- BINLYRA file for pass 41438 has been received, but the data is not usable, hence the data gap

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)