


P2SC-ROB-WR-639 - 20220620	<b>P2SC Weekly report</b>	
Period covered: Date:	Mon Jun 20 to Sun Jun 26, 2022 30 Jun 2022	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	<a href="https://proba2.sidc.be">https://proba2.sidc.be</a> ++ 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 activity<sup>1</sup> was **low** this week.

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

	Monday 20 Jun	Tuesday 21 Jun	Wednesday 22 Jun	Thursday 23 Jun	Friday 24 Jun	Saturday 25 Jun	Sunday 26 Jun
Activity	low	low	low	low	low	low	low
Flares	-	-	-	-	-	-	-

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

## Solar Activity

Solar flare activity was **low** this 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>

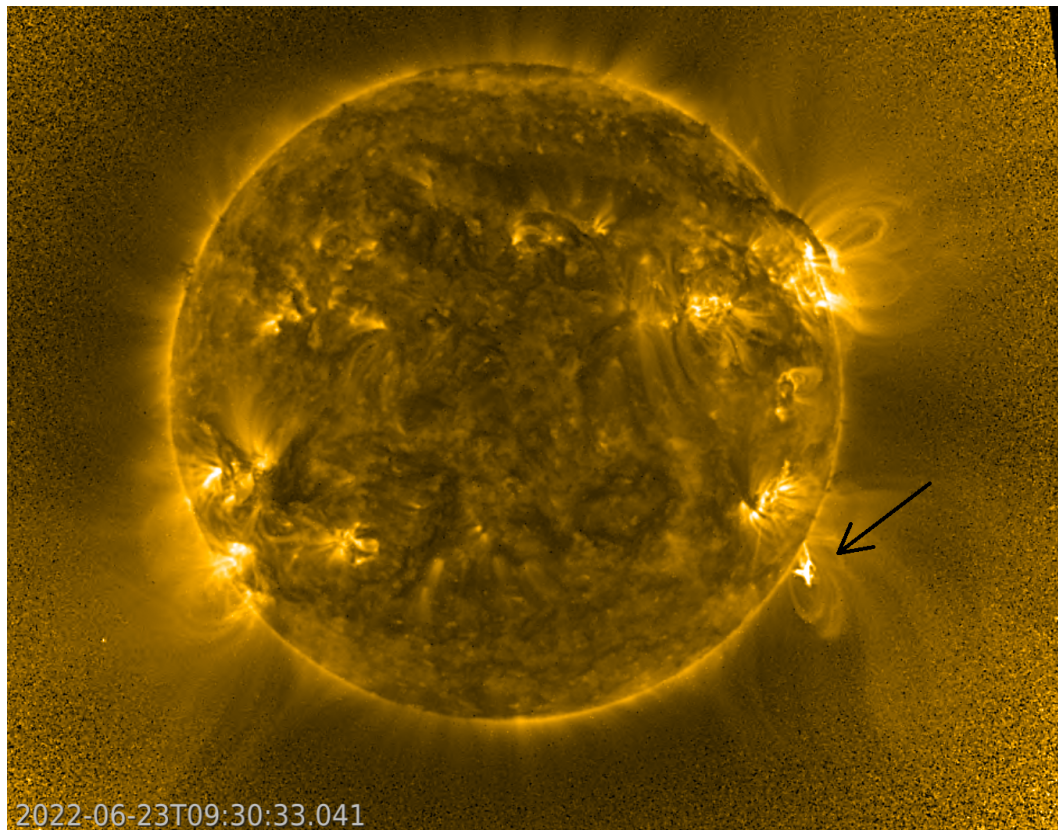
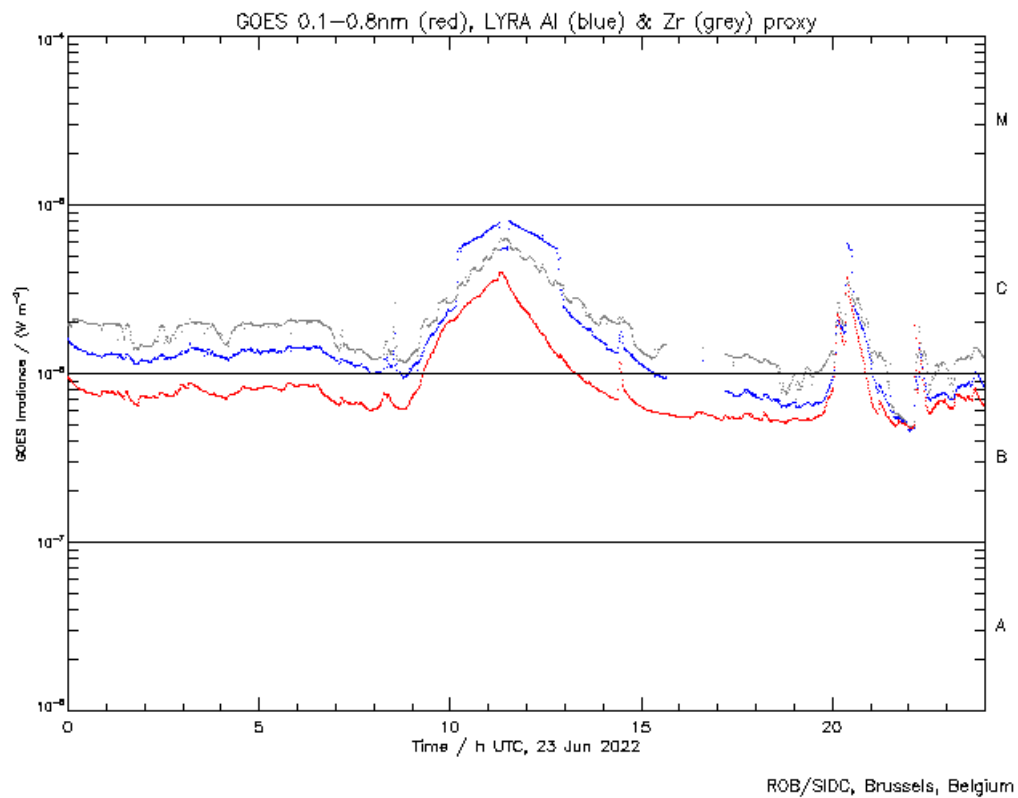
This page also lists the recorded flaring events.

A weekly overview movie can be found [here](#) (SWAP week 639).

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](#)

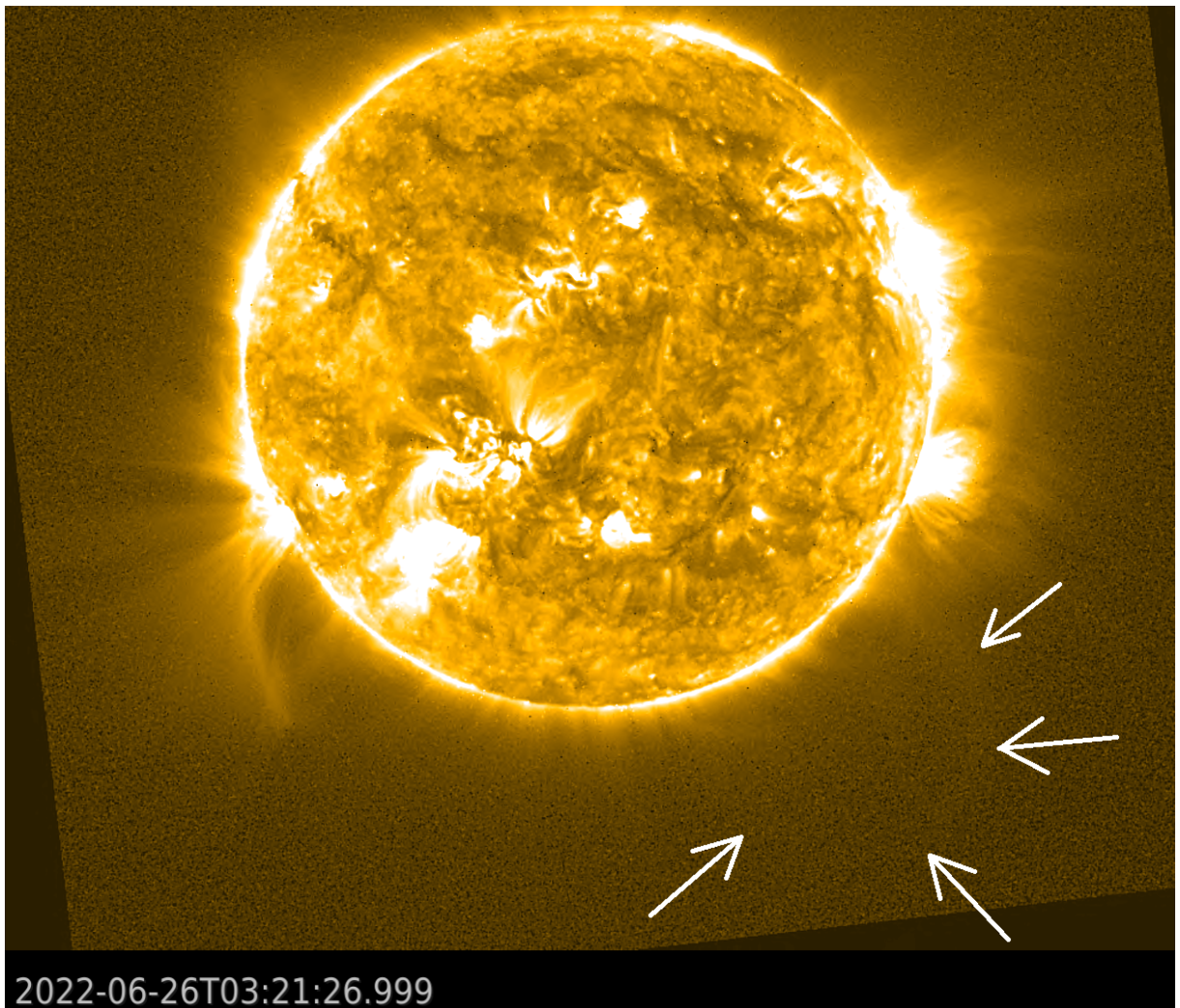
Thursday 23 June



**A very peculiar, gradual and confined flare, a long duration C4.0, is visible on the LYRA and SWAP images above. It was associated with a failed filament eruption seen on the Western limb of the Sun, and it peaked at 08:49 UT on 2022-Jun-23.**

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

Sunday 26 June



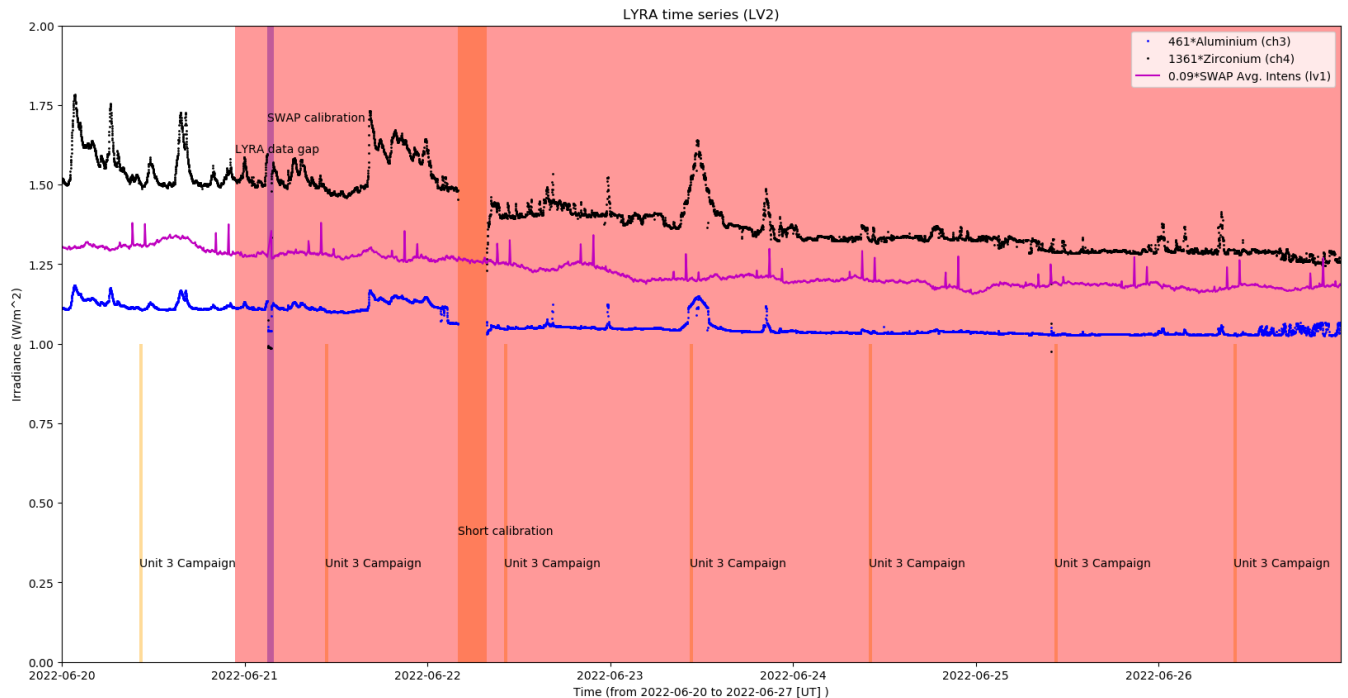
The largest CME of the week is still visible in SWAP observations at heights of more than  $2R_s$ . The front of this partial halo CME can be seen in the south-west quadrant and is indicated by arrows in the above SWAP observation, taken at 03:21 UT on 2022-Jun-26.

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

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-Jun-21

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

- Daily Unit 3 campaign, 2022-Jun-20
- Daily Unit 3 campaign, 2022-Jun-21
- Short calibration, 2022-Jun-22
- Daily Unit 3 campaign, 2022-Jun-22
- Daily Unit 3 campaign, 2022-Jun-23
- Daily Unit 3 campaign, 2022-Jun-24
- Daily Unit 3 campaign, 2022-Jun-25
- Daily Unit 3 campaign, 2022-Jun-26

The red shaded periods related to other issues corresponds to:

- LYRA Timestamps corrupted onboard, 2022-Jun-20 until 2022-Jun-27.

## 2. LYRA instrument status

### IOS

Start IOS	Mon Jun 20 2022	LYIOS00956
End IOS	Sun Jun 26 2022	LYIOS00957

### LYRA detector temperature

LYRA detector 2 temperature globally varied between 47.624 and 49.944 °C.

### LYRA timestamp error

We have detected an on-board corruption of the timestamps in LYRA that started on June 20 around 22:41. The corruption resulted in an erroneous reconstruction of the LYRA time series that persisted until June 28 09:49, when an ASIC reload was performed. The LYRA data corresponding to this time frame have been received but are considered invalid.

### 3. SWAP instrument status

#### MCPM errors

The number of MCPM recoverable errors increased from 31219 to 31376.

The number of MCPM unrecoverable errors remained at 3135.

#### IOS

Start IOS	Mon Jun 20 2022	IOS001050
End IOS	Sun Jun 26 2022	IOS001050

#### SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -0.89 and 0.31 °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 41150 to 41209) was nominal, except for:

- files for pass 41171 had to be re-sent

There were several issues with the data, so all of this week's passes have been re-processed and data gaps have been filled.

### **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 Jun 20 00:00 UT and 2022 Jun 27 00:00 UT: 4050

Highest cadence in this period: 30 seconds

Average cadence in this period: 149.34 seconds

Number of image gaps larger than 300 seconds: 247

Largest data gap: 14.67 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)