P2SC-ROB-WR-597 - 20210830	**P2SC Weekly report**	
Period covered: Date: Written by: Approved by:	Mon Aug 30 to Sun Sep 5, 2021 7 Sept 2021 Jennifer O'Hara and Elke D'Huys Marie Dominique	Royal Observatory of Belgium - 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 activity[1] fluctuated between **very low and low** this week.

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

	Monday 30 Aug	Tuesday 31 Aug	Wednesday 1 Sep	Thursday 2 Sep	Friday 3 Sep	Saturday 4 Sep	Sunday 5 Sep
Activity	low	very low	low	low	very low	very low	very low
Flares	-	-	-	-	-	-	-

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

Solar Activity

Solar flare activity fluctuated from very low to 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.

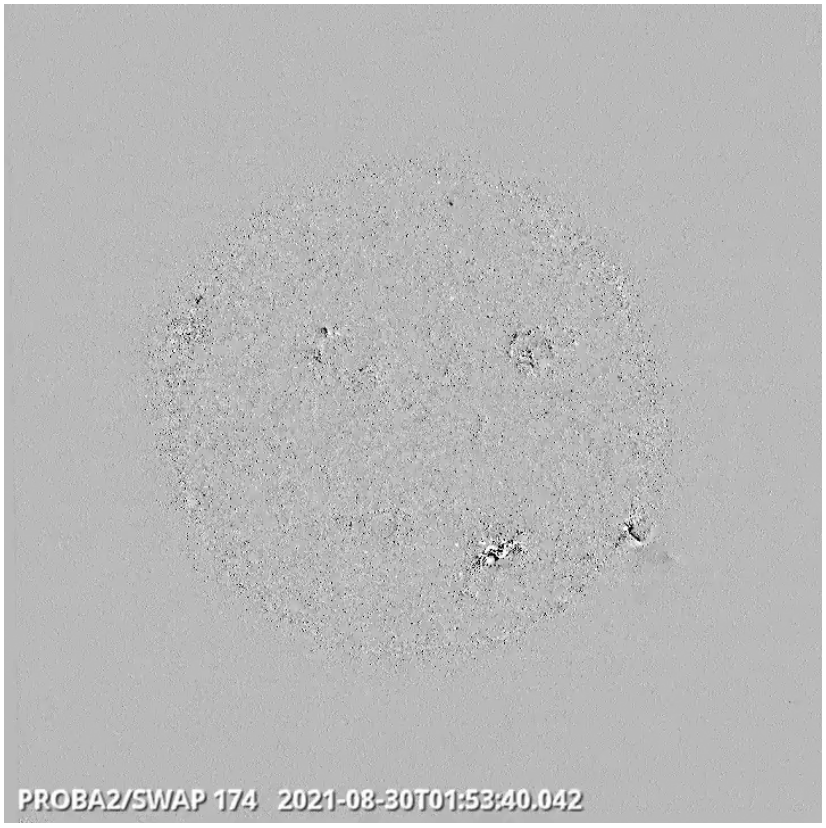
A weekly overview movie can be found here (SWAP week 597).

No strong solar activity was observed this week. The strongest flare measured by LYRA was a C3 flare peaking at 21:34 UT on August 30. SWAP observed filament activity on September 1 and an EUV wave on September 5.

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 Aug 30



Nearly simultaneous eruptions in the south-western hemisphere starting around 01:40UT associated with C-class flaring - SWAP difference image.

Monday Aug 30

Eruption towards the north-east around 23UT - SWAP difference image

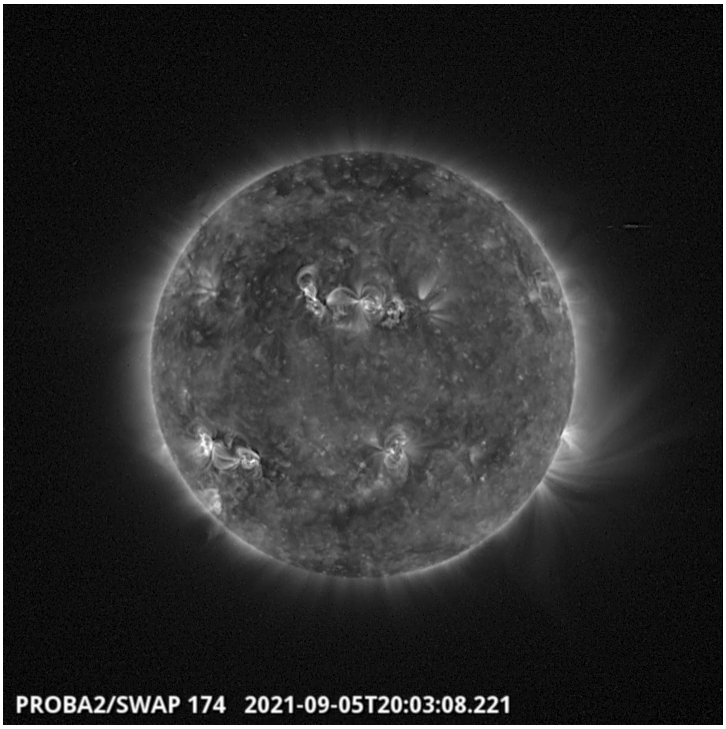
Find a movie of the events **here** (SWAP difference movie).

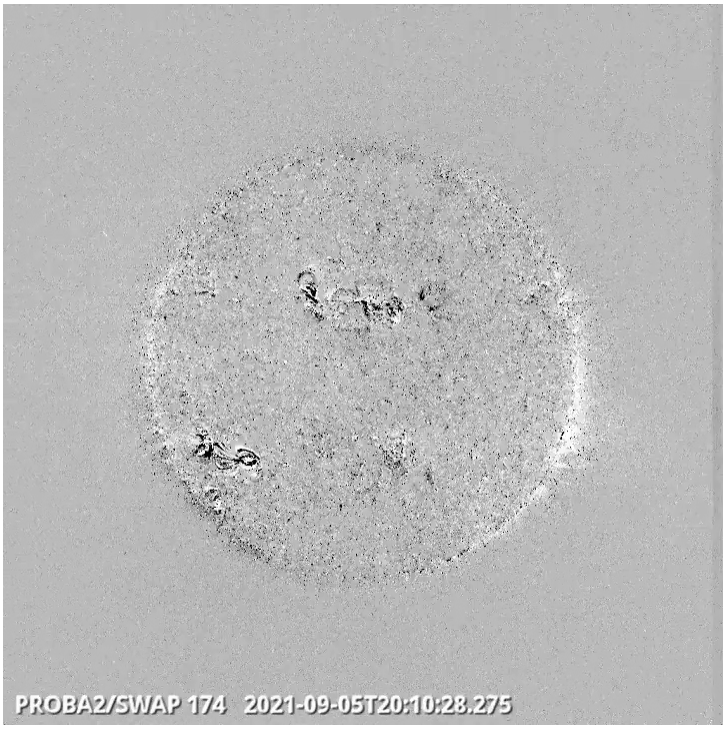
Wednesday September 1

Filament brightening in the south-west around 13:40UT, no associated coronal mass ejection was observed - SWAP difference image

Find a movie of the event **here** (SWAP difference movie).

Sunday September 5



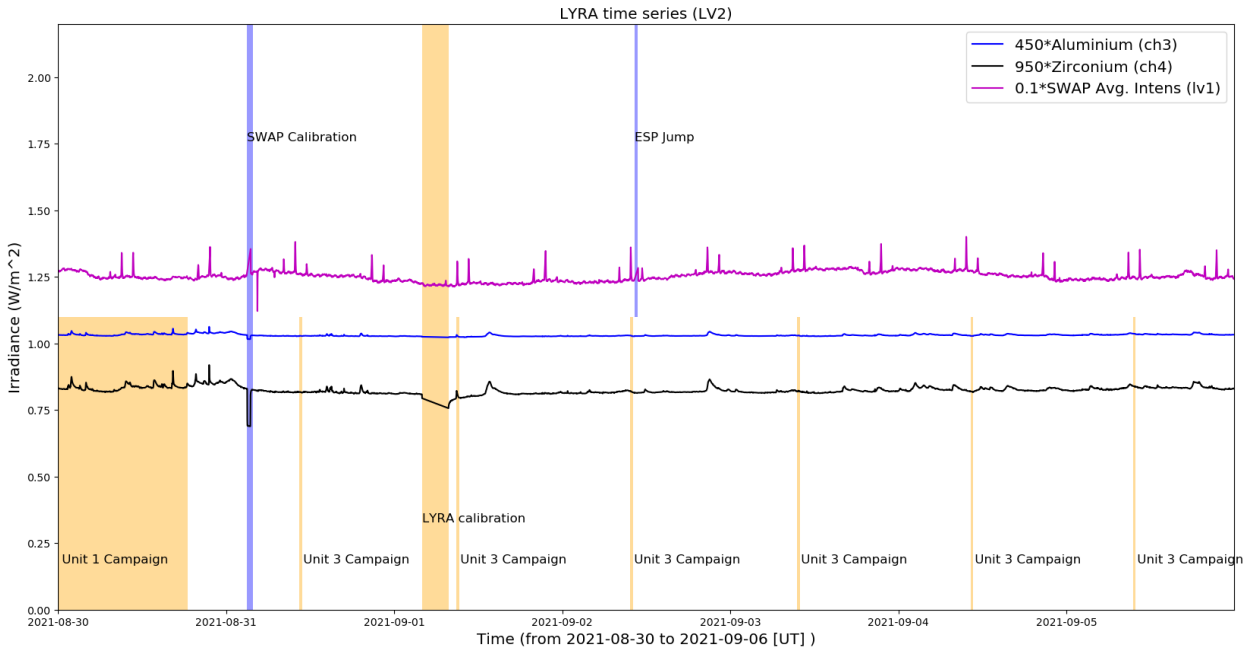


An EUV dimming and EUV wave can be seen in the northern hemisphere starting around 20UT. This is indicative of a CME initiation. No strong flare was associated with this eruption.

Find movies of the event **here** (SWAP difference movie) and **here** (SWAP regular 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 campaign, 2021-Aug-31
- SWAP data gap, 2021-Sep-02

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

- Unit 1 flare hunting Campaign, 2021-Aug-30
- Unit 3 Campaign, 2021-Aug-31
- Unit 3 Campaign, 2021-Sep-01
- Bi-weekly calibration, 2021-Sep-01
- Unit 3 Campaign, 2021-Sep-02
- Unit 3 Campaign, 2021-Sep-03
- Unit 3 Campaign, 2021-Sep-04
- Unit 3 Campaign, 2021-Sep-05

The red shaded periods related to other issues corresponds to:

- None

2. LYRA instrument status

IOS

Start IOS	Mon Aug 30 2021	LYIOS00904
End IOS	Sun Sep 5 2021	LYIOS00905

LYRA detector temperature

LYRA detector 2 temperature globally varied between 51.81 and 46.52 °C.

3. SWAP instrument status

MCPM errors
The number of MCPM recoverable errors increased from 20756 to 20887.
The number of MCPM unrecoverable errors remained at 3135.

IOS

Start IOS	Mon Aug 30 2021	IOS00988
End IOS	Sun Sep 5 2021	IOS00988

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -0.09 and -0.97 °C.

4. PROBA2 Science Center Status

The following changes were made to the P2SC:

- None.

The PROBA2 server slowed down significantly on September 1 due to a distributed denial of service attack. As a result almost none of the data processing finished successfully. The issue was resolved on September 2 and all data was reprocessed on September 3.
Measures are taken to improve the security of SSH and SFTP connections to the PROBA2 servers.

5. Data reception & discussions with MOC

Passes

The delivery of the passes for this week (passes 38573 to 38634) 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 2021 Aug 30 0UT and 2021 Sep 06 0UT: 4385
Highest cadence in this period: 0 seconds
Average cadence in this period: 137.95 seconds
Number of image gaps larger than 300 seconds: 187
Largest data gap: 33.67 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 VFC	Ultraviolet 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)