P2SC-ROB-WR-779 - 20250224	**P2SC Weekly report**	
Period covered: Date: Written by: Approved by:	Mon Feb 24 to Sun Mar 02, 2025 06 Mar 2025 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 activity[1] fluctuated between **low and moderate** this week.

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

	Monday 24 Feb	Tuesday 25 Feb	Wednesday 26 Feb	Thursday 27 Feb	Friday 28 Feb	Saturday 01 Mar	Sunday 02 Mar
Activity	moderate	moderate	low	low	low	low	low
Flares	**M3.9** **M1.5** **M3.3** **M1.3**	**M3.6** **M1.3**	-	-	-	-	-

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

Solar Activity

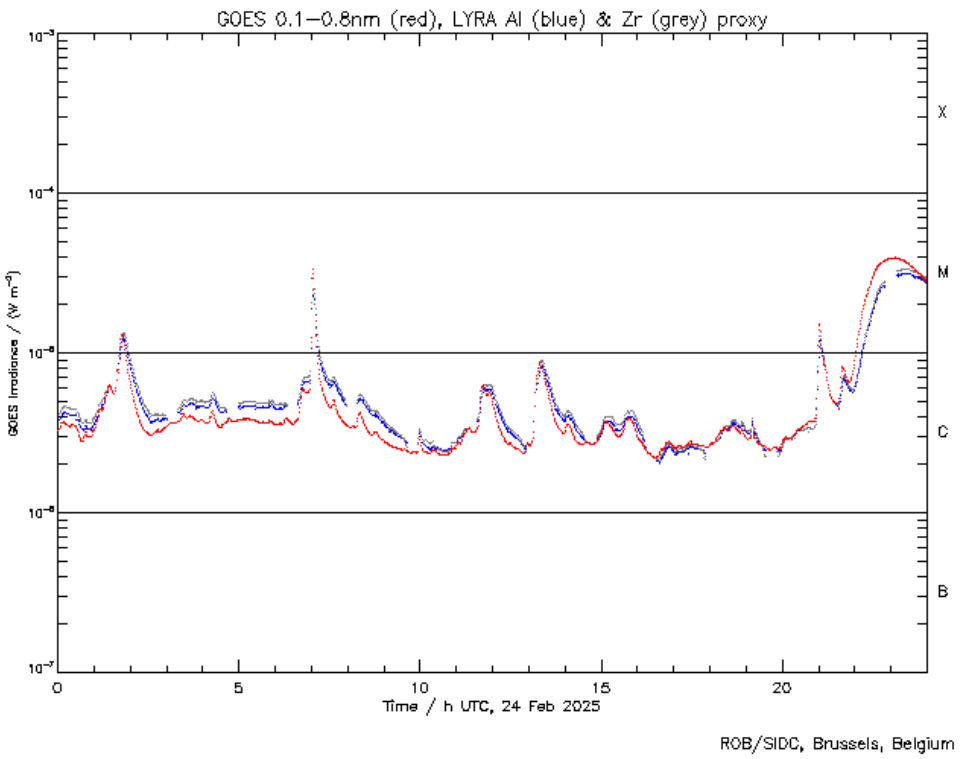
Solar flare activity fluctuated from low to moderate during the week.
In order to view the activity of this week in more detail, we suggest to go to the following website from which all the daily (normal and difference) movies can be accessed: https://proba2.oma.be/ssa
This page also lists the recorded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

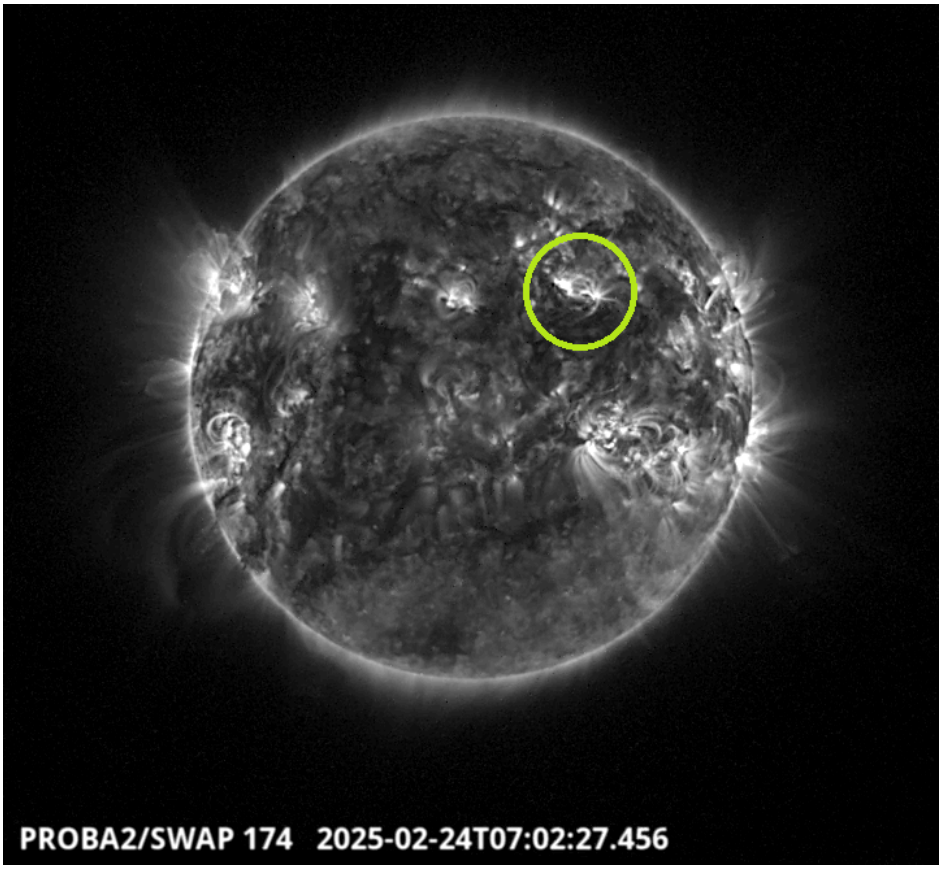
A weekly overview movie can be found here (SWAP week 779).

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 Feb 24



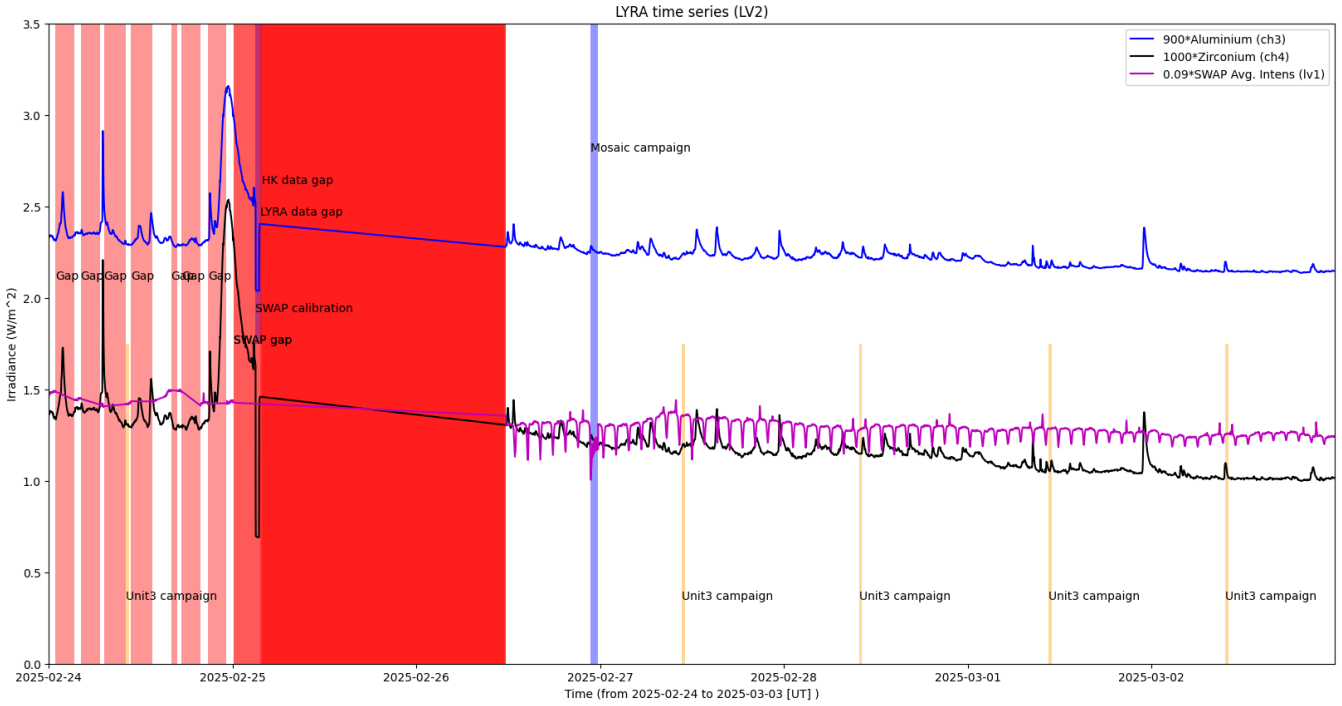


The largest flare of this week was an M3.9 on 2025-Feb-24, but the largest one observed in its entirety by LYRA (top panel) and SWAP (bottom panel) was an M3.3. It occurred on the same day and peaked at 07:02 UT. It originated from AR NOAA4000 (see the green encircled region).

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 calibration, 2025-Feb-25; the calibration data was not downloaded because of image overwriting (full buffer), but the off-point still took place, creating the dip in the LYRA data
- SWAP weekly mosaic, 2025-Feb-26

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

- Daily Unit 3 campaign, 2025-Feb-24
- Daily Unit 3 campaign, 2025-Feb-27
- Daily Unit 3 campaign, 2025-Feb-28
- Daily Unit 3 campaign, 2025-Mar-01
- Daily Unit 3 campaign, 2025-Mar-02

The red shaded periods related to other issues corresponds to:

- SWAP data gaps on 2025-Feb-24 between 00:53-03:21, 04:10-06:40, 07:12-10:04, 10:43-13:31, 15:58-16:47, 17:20-19:49, 20:48-23:11 UT due to uncommanded very high cadence in the rest of the intervals and full buffer, which overwrote images.
- SWAP and LYRA turned off, likely due to multiple EDAC memory errors (cause still under investigation) on 2025-Feb-25 at 03:36 UT, leading to data gaps in the following intervals:
    - SWAP: from 2025-Feb-25 at 00:07 UT until 2025-Feb-26 at 11:40 UT
    - LYRA: from 2025-Feb-25 at 03:35 UT until 2025-Feb-26 at 11:38 UT
    - HK data gap for some parameters between 2025-Feb-25 at ~03:50 UT and 2025-Feb-26 at ~11:30 UT

2. LYRA instrument status

IOS

Start IOS	Mon Feb 24 2025	LYIOS01151
End IOS	Sun Mar 02 2025	LYIOS01153

LYRA detector temperature

LYRA detector 2 temperature globally varied between 43.52 and 53.55 °C.

3. SWAP instrument status

MCPM errors
The number of MCPM recoverable errors increased from 3795 to 370 (the reboot reinitialized the counter).
The number of MCPM unrecoverable errors remained at 0.

IOS

Start IOS	Mon Feb 24 2025	IOS01272
End IOS	Sun Mar 02 2025	IOS01273

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -4.17 and 2.79 °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 49699 to 49760) was nominal, except for:

- passes 49709 - 49720.

Data coverage HK

All HK data files (LYRA_AD) have been received, except:

- None.
- HK data gap for some parameters due to SWAP and LYRA being off, between 2025-Feb-25 at ~03:50 UT and 2025-Feb-26 at ~11:30 UT

Data coverage SWAP

All SWAP Science data files (BINSWAP) have been received, except:

- data gaps on 2025-Feb-25 between 00:53-03:21, 04:10-06:40, 07:12-10:04, 10:43-13:31, 15:58-16:47, 17:20-19:49, 20:48-23:11 UT because of too much time between the table acquisition and the table configuration in the SWAP IOS, which led to very high cadence in the rest of the intervals, full buffer and overwritten images.
- passes 49709 - 49720 due to SWAP being turned off likely from EDAC memory errors, resulting in data gap from 2025-Feb-25 at 00:07 UT until 2025-Feb-26 at 11:40 UT; investigation is still ongoing to determine the exact causes.

Total number of images between 2025 Feb 24 00:00 UT and 2025 Mar 03 00:00 UT: 3947
Highest cadence in this period: 17 seconds
Average cadence in this period: 153.25 seconds
Number of image gaps larger than 300 seconds: 69
Largest data gap: 2133.05 minutes

Data coverage LYRA

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

- passes 49711 - 49720 due to LYRA being turned off likely from EDAC memory errors, resulting in data gap from 2025-Feb-25 at 03:35 UT until 2025-Feb-26 at 11:38 UT; investigation is still ongoing to determine the exact causes.

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)