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|---|---|---|
| P2SC-ROB-WR-663 - 20221205 | **P2SC Weekly report** | |
| Period covered:<br>Date:<br><br>Written by:<br>Approved by: | Mon Dec 05 to Sun Dec 11, 2022<br>16 Dec 2022<br><br>Dana Talpeanu<br>Marie Dominique | Royal Observatory of Belgium<br>-<br>PROBA2 Science Center |
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## 1. Science

**Solar & Space weather events**

The level of solar activity[1] was **low** this week.

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

| | Monday 05 Dec | Tuesday 06 Dec | Wednesday 07 Dec | Thursday 08 Dec | Friday 09 Dec | Saturday 10 Dec | Sunday 11 Dec |
|---|---|---|---|---|---|---|---|
| Activity | low | low | low | low | low | low | low |
| Flares | - | - | - | - | - | - | - |

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

**Solar Activity**

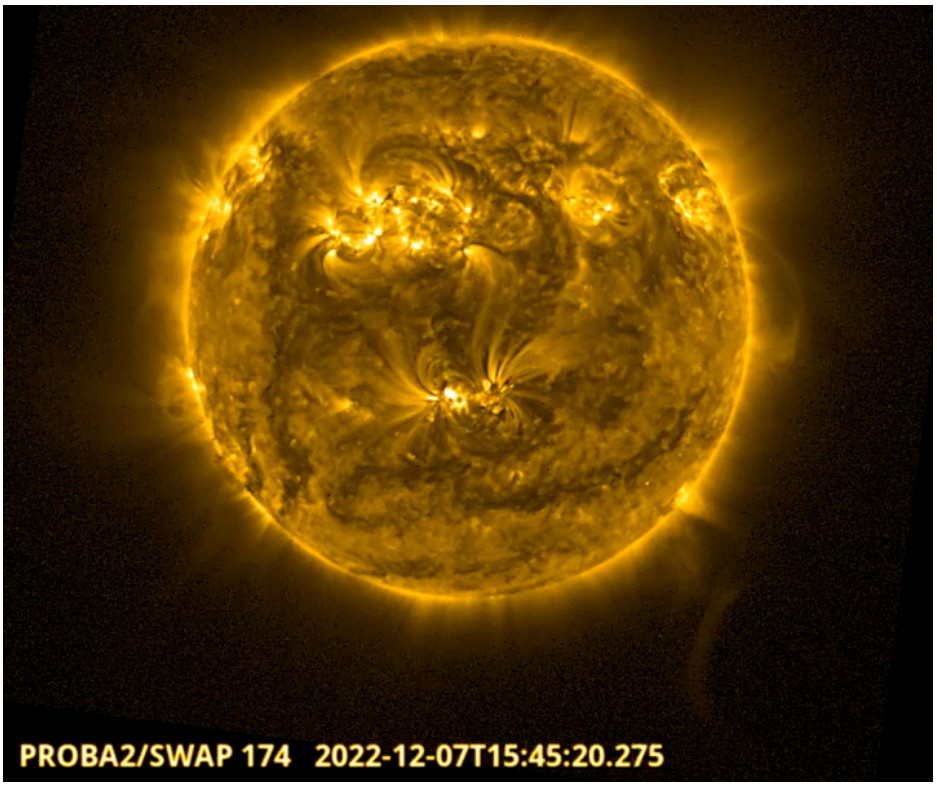
Solar flare activity was low during the week.
In order to view the activity of this week in more detail, we suggest to go to the following website from which all the daily (normal and difference) movies can be accessed: https://proba2.oma.be/ssa
This page also lists the recorded flaring events.

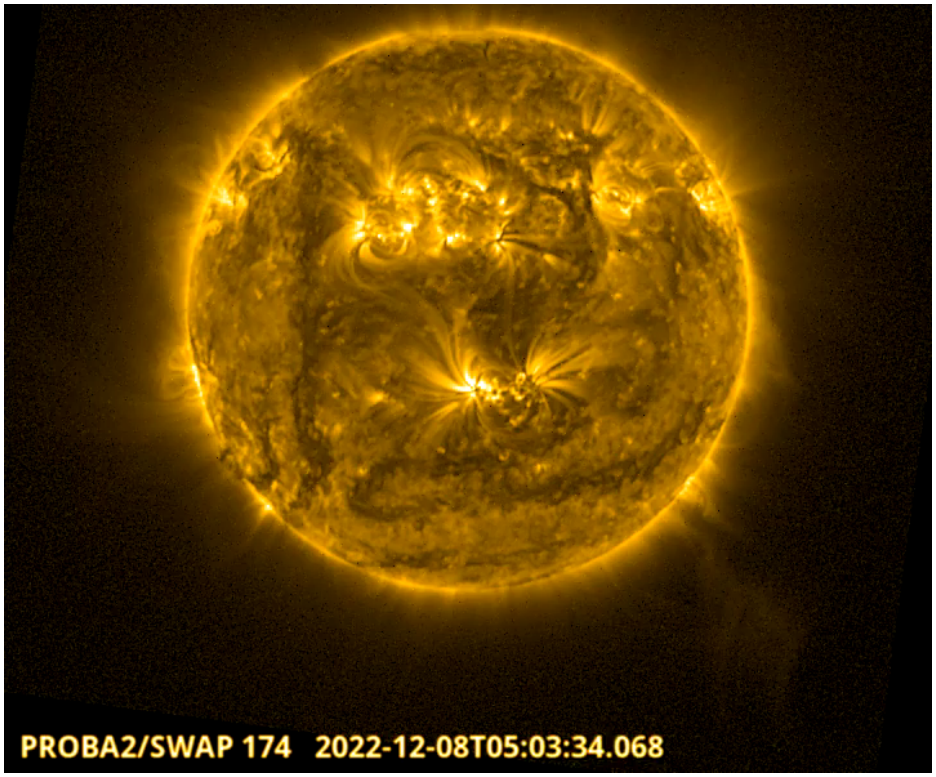
A weekly overview movie can be found here (SWAP week 663).

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 Dec 08



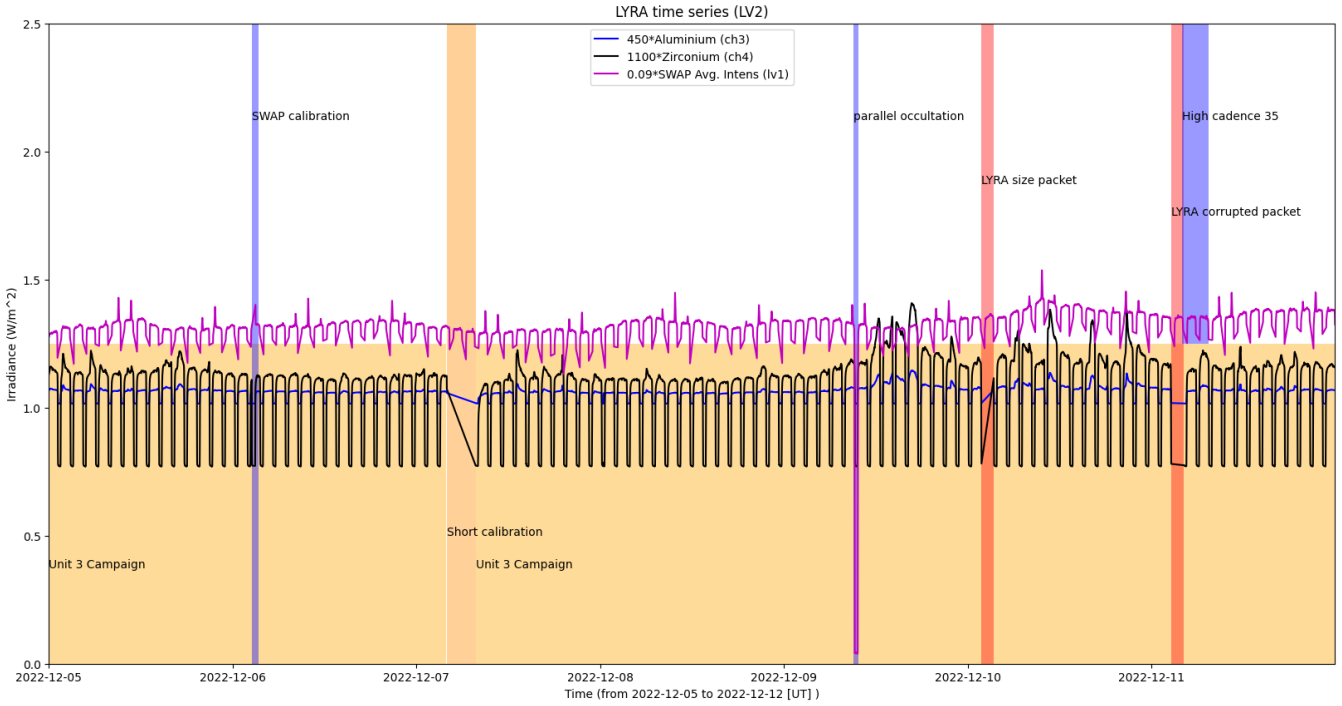




**No major flares were recorded this week, so the solar activity was dominated by filament/prominence eruptions. The SWAP images above show observations during the slow rising phase (top panel) and during eruption (bottom panel) of one of the largest filament eruptions of this week, occurring between 7 and 8 December 2022, at the south-western limb of the Sun.**

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:

- Bi-weekly calibration, 2022-Dec-06
- SWAP parallel occultation with LYRA, 2022-Dec-09
- High cadence campaign, 2022-Dec-11 ( joint campaign with PSP)

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

- Unit 3 campaign, 2022-Dec-05 -> 2022-Dec-07
- Short calibration, 2022-Dec-07
- Unit 3 campaign, 2022-Dec-07 -> 2022-Dec-11

The red shaded periods related to other issues corresponds to:

- Data gap due to LYRA size packet issue (pass 42674), 2022-Dec-10, between 01:49-03:25 UT
- LYRA pass 42685 is possibly corrupted on-board, resulting in data gap on 2022-Dec-11 between 02:36-04:13

## 2. LYRA instrument status

### IOS

| | | |
|---|---|---|
| Start IOS | Mon Dec 05 2022 | LYIOS00982 |
| End IOS | Sun Dec 11 2022 | LYIOS00983 |

### LYRA detector temperature

LYRA detector 2 temperature globally varied between 42.23 and 46.97 °C.

## 3. SWAP instrument status

**MCPM errors**
The number of MCPM recoverable errors increased from 36026 to 36075.
The number of MCPM unrecoverable errors remained at 3135.

**IOS**

| | | |
|---|---|---|
| Start IOS | Mon Dec 05 2022 | IOS001085 |
| End IOS | Sun Dec 11 2022 | IOS001087 |

**SWAP detector temperature**

The SWAP Cold Finger Temperature globally varied between -3.53 and -1.53 °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 42632 to 42693) 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 2022 Dec 05 00:00 UT and 2022 Dec 12 00:00 UT: 4522
Highest cadence in this period: 29 seconds
Average cadence in this period: 133.77 seconds
Number of image gaps larger than 300 seconds: 142
Largest data gap: 29.88 minutes

### Data coverage LYRA

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

- None
- Data gap due to LYRA size packet issue (pass 42674), 2022-Dec-10, between 01:49-03:25 UT
- LYRA pass 42685 is possibly corrupted on-board, resulting in data gap on 2022-Dec-11 between 02:36-04:13

## 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)