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|---|---|---|
| P2SC-ROB-WR-424- 20180507 Weekly report #424 | P2SC Weekly report |  |
| Period covered: Date: Written by: Approved by: | Mon May 07 to Sun May 13, 2018 14 May 2018 Jennifer O'Hara Matthew West | Royal Observatory of Belgium - PROBA2 Science Center |
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| cc: | ROB DIR, ronald@oma.be ESA Redu, Etienne.Tilmans@esa.int ESA D/SRE, Joe.Zender@esa.int ESA D/TEC, Juha-Pekka.Luntama@esa.int | |

1. Science

Solar & Space weather events

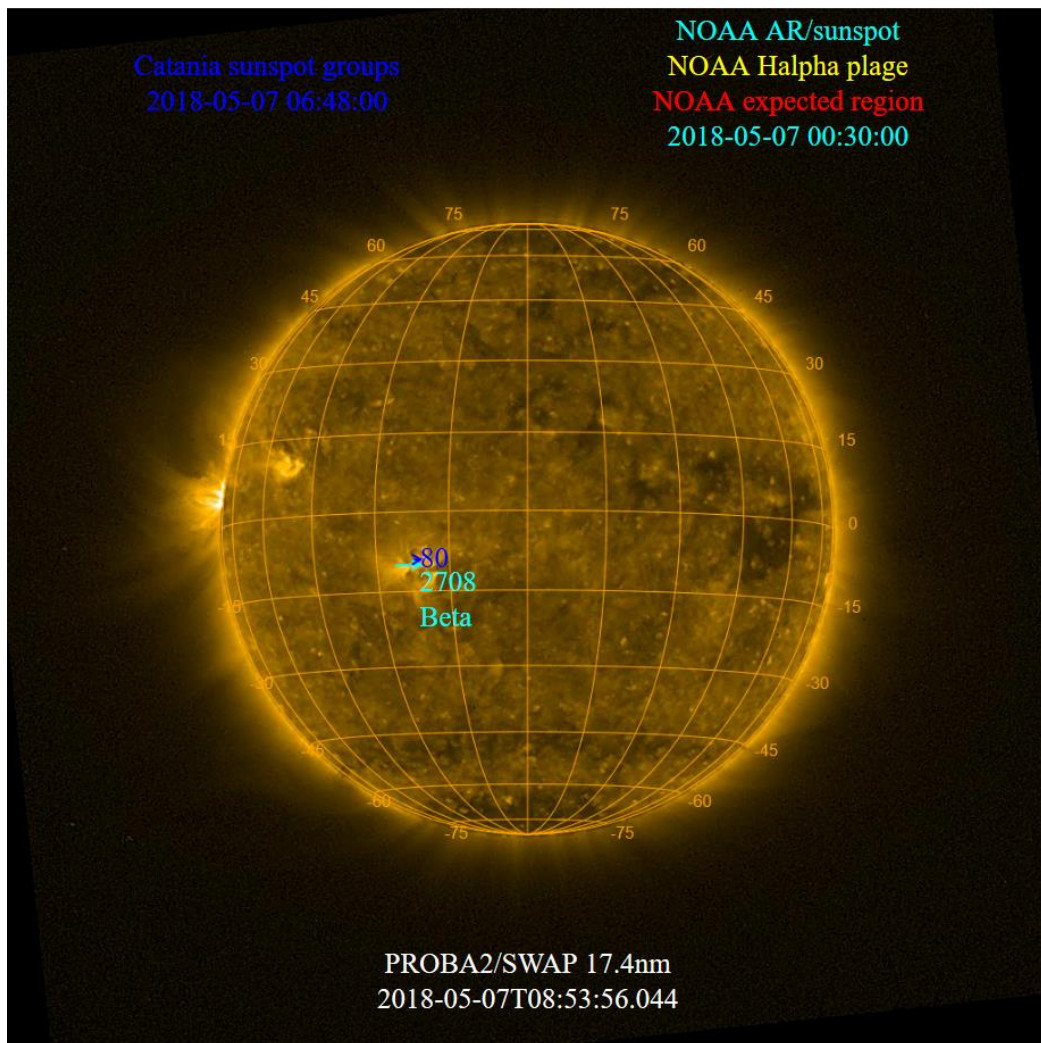
The level of solar activity¹ remained **very low** this week.

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

| | Monday 07 May | Tuesday 08 May | Wednesday 09 May | Thursday 10 May | Friday 11 May | Saturday 12 May | Sunday 13 May |
|----------|------------------|-------------------|---------------------|--------------------|------------------|--------------------|------------------|
| Activity | very low | very low | very low | very low | very low | very low | very low |
| Flares | - | - | - | - | - | - | - |

¹ See appendix. All timings are given in UT.

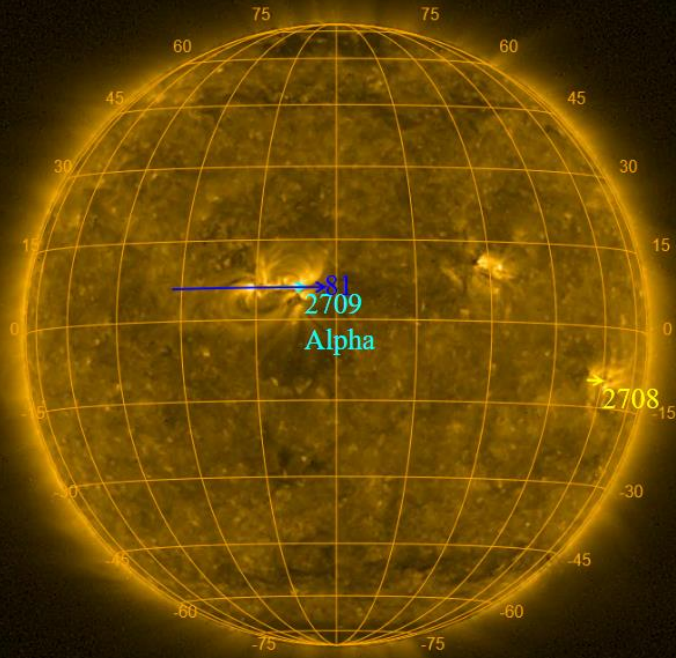
The SWAP images of May 07 and May 13 are shown below, with annotated active regions.



<http://sidc.be/soteria/soteria.php>

Catania sunspot groups
2018-05-11 08:06:00

NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2018-05-13 00:30:00



PROBA2/SWAP 17.4nm
2018-05-13T08:52:45.107

Solar Activity

Solar flare activity remained very 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: <http://proba2.oma.be/ssa>

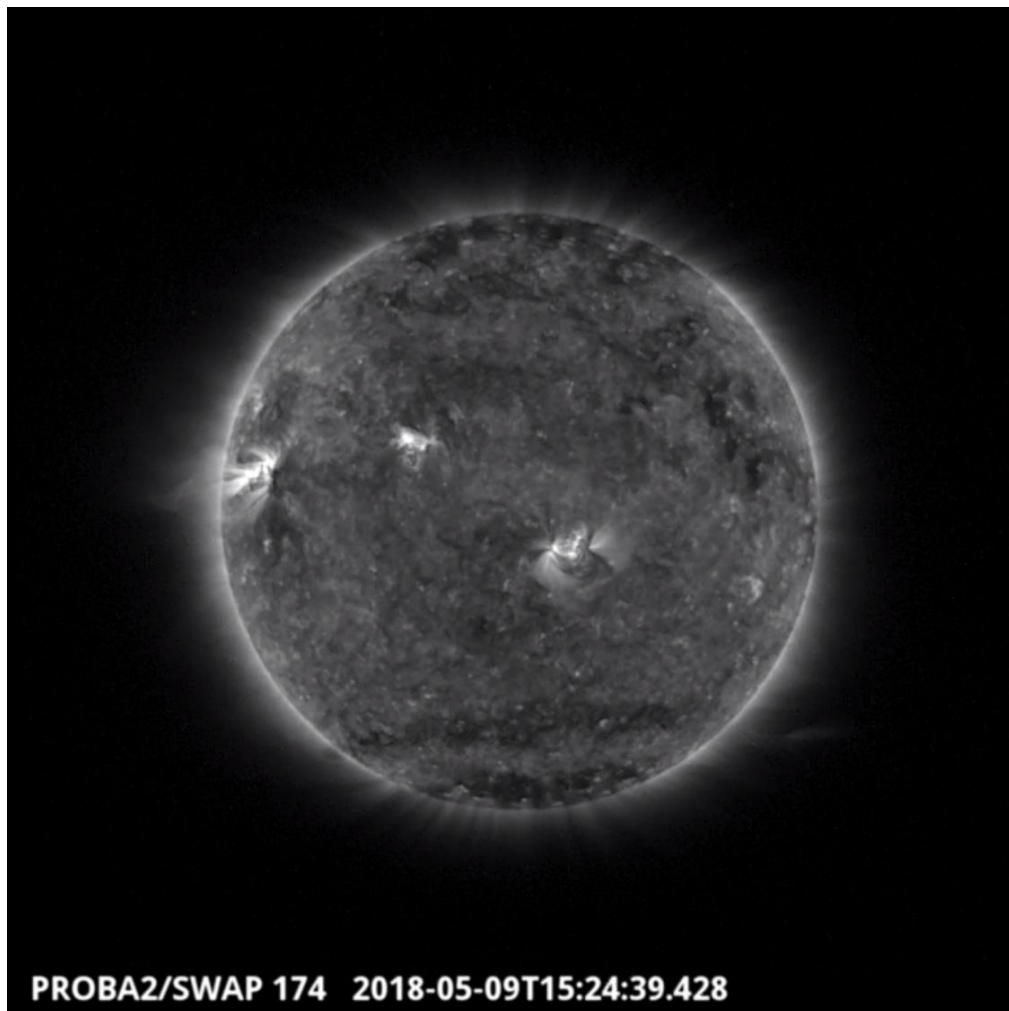
This page also lists the recorded flaring events.

A weekly overview movie can be found [here](#) (SWAP week 424).

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 May 09



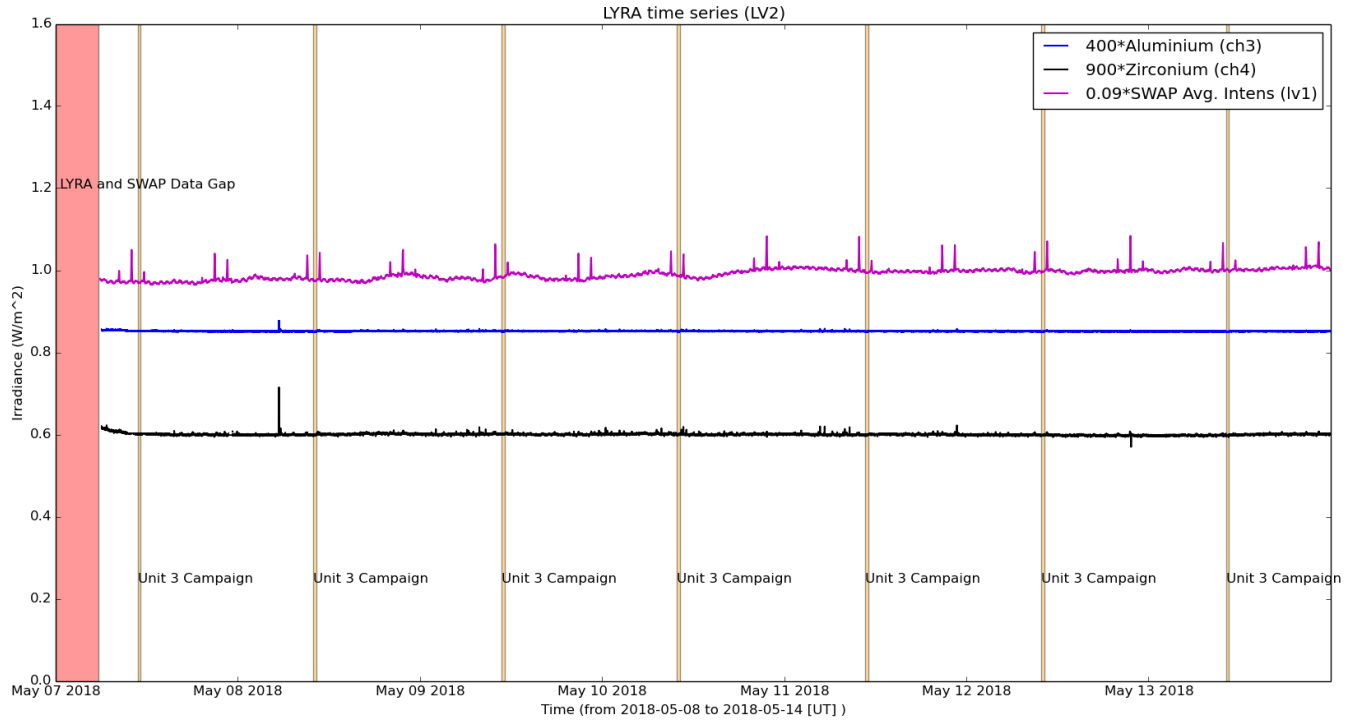
An eruption was observed by SWAP on 2018-May-09. This is visible on south west limb in the SWAP image above at 15:24 UT.

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)



The blue shaded periods related to SWAP, correspond to, from left to right:

- None

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

- Daily Unit 3 campaign, 2018-May-07
- Daily Unit 3 campaign, 2018-May-07
- Daily Unit 3 campaign, 2018-May-08
- Daily Unit 3 campaign, 2018-May-09
- Daily Unit 3 campaign, 2018-May-10
- Daily Unit 3 campaign, 2018-May-11
- Daily Unit 3 campaign, 2018-May-12
- Daily Unit 3 campaign, 2018-May-13

The red shaded periods related to other issues corresponds to:

- SWAP and LYRA switched off for OBET wrap around, until 05:40 UT 2018-May-07

Outreach, papers, presentations, etc.

Please consult <http://proba2.oma.be/science/publications> for a list of interesting articles using SWAP & LYRA data, as well as a link to the complete article list.

The science section of this weekly report is also published in the weekly STCE newsletter (<http://www.stce.be/newsletter/newsletter.php>).

Guest Investigator Program

- None

2. LYRA instrument status

Calibration

No calibration campaign this week.

IOS & operations

| Monday 07 May | Tuesday 08 May | Wednesday 09 May | Thursday 10 May | Friday 11 May | Saturday 12 May | Sunday 13 May |
|--------------------------------------|--------------------------------------|-------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| Nominal acquisition + daily U3 | Nominal acquisition + daily U3 | Nominal acquisition + daily U | Nominal acquisition + daily U3 | Nominal acquisition + daily U3 | Nominal acquisition + daily U3 | Nominal acquisition + daily U3 |
| LYIOS00695 | LYIOS00695 | LYIOS00695 | LYIOS00695 | LYIOS00695 | LYIOS00696 | LYIOS00696 |

The following science campaigns were performed by LYRA:

- daily U3 observations campaign

LYRA detector temperature

LYRA detector 2 temperature globally varied between 38.32 and 49.34 °C.

3. SWAP instrument status

Calibration

No calibration campaign this week.

MCPM errors

The number of MCPM recoverable errors increased from 4537 to 4585.

The number of MCPM unrecoverable errors remained at 0.

IOS & operations

| Monday 07 May | Tuesday 08 May | Wednesday 09 May | Thursday 10 May | Friday 11 May | Saturday 12 May | Sunday 13 May |
|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| Nominal acquisition | Nominal acquisition | Nominal acquisition | Nominal acquisition | Nominal acquisition | Nominal acquisition | Nominal acquisition |
| IOS00771 538 images | IOS00771 737 images | IOS00771 725 images | IOS00771 742 images | IOS00772 701 images | IOS00772 706 images | IOS00772 606 images |

Special operations for SWAP, this week:

- None

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -7.45 and 0.07 °C.

4. PROBA2 Science Center Status

The main operator is Laurence Wauters.

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 27387 to 27453) was nominal, except for:

- 27387, 27388, 27389

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:

- 27387, 27388, 27389 due to instruments still being off after OBET wrap around

Total number of images between 2018 May 07 00:00 UT and 2018 May 14 00:00 UT: 4801

Highest cadence in this period: 110 seconds

Average cadence in this period: 121.57 seconds

Number of image gaps larger than 300 seconds: 91

Largest data gap: 9.17 minutes

Data coverage LYRA

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

- 27387, 27388, 27389 due to instruments still being off after OBET wrap around

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)