


P2SC-ROB-WR-455 - 20181210 Weekly report #455	P2SC Weekly report	
Period covered: Date: Written by: Approved by:	Mon Dec 10 to Sun Dec 16, 2018 18 Dec 2018 Jennifer O'Hara Matthew West	Royal Observatory of Belgium - PROBA2 Science Center
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1. Science

Solar & Space weather events

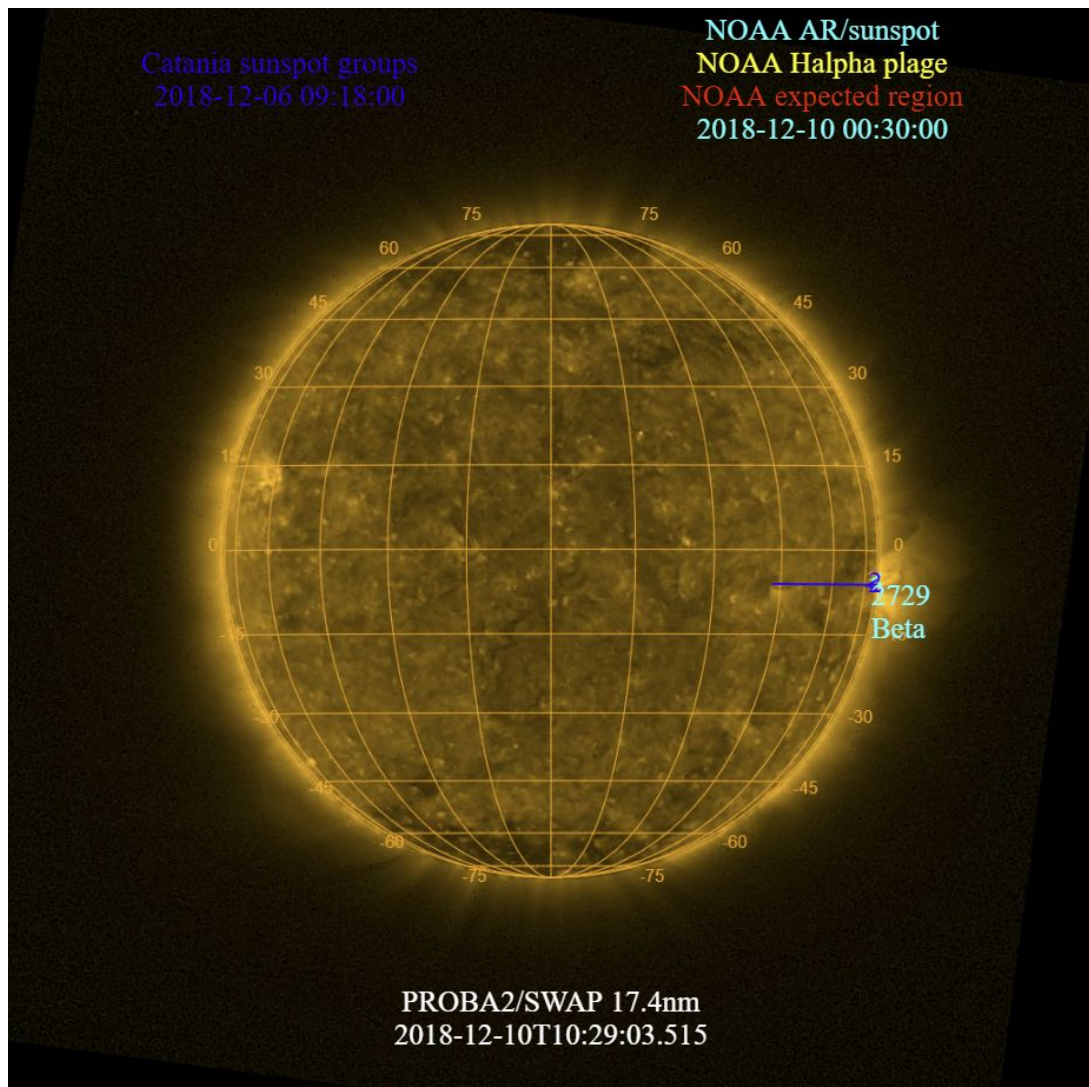
The level of solar activity¹ remained **very low** this week.

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

	Monday 10 Dec	Tuesday 11 Dec	Wednesday 12 Dec	Thursday 13 Dec	Friday 14 Dec	Saturday 15 Dec	Sunday 16 Dec
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.

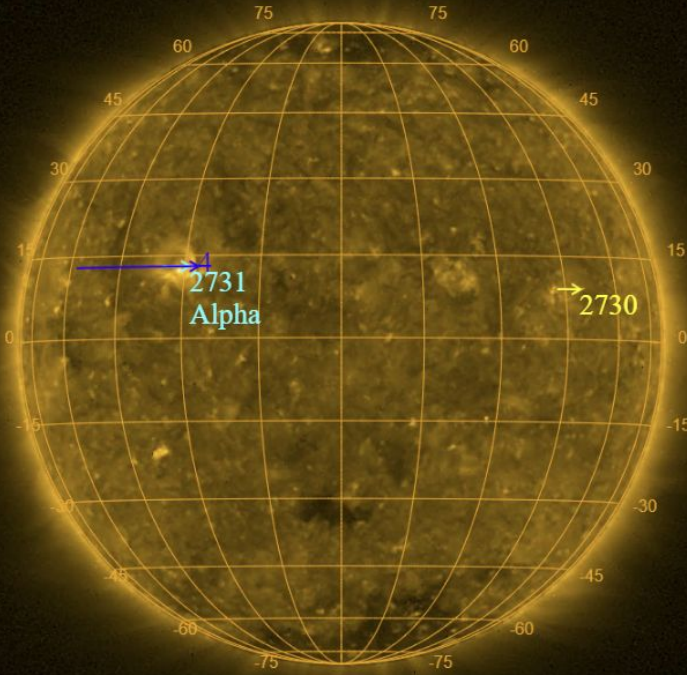
The SWAP images of Dec 10 and Dec 16 are shown below, with annotated active regions.



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

Catania sunspot groups
2018-12-14 07:30:00

NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2018-12-16 00:30:00



PROBA2/SWAP 17.4nm
2018-12-16T10:29:45.736

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>

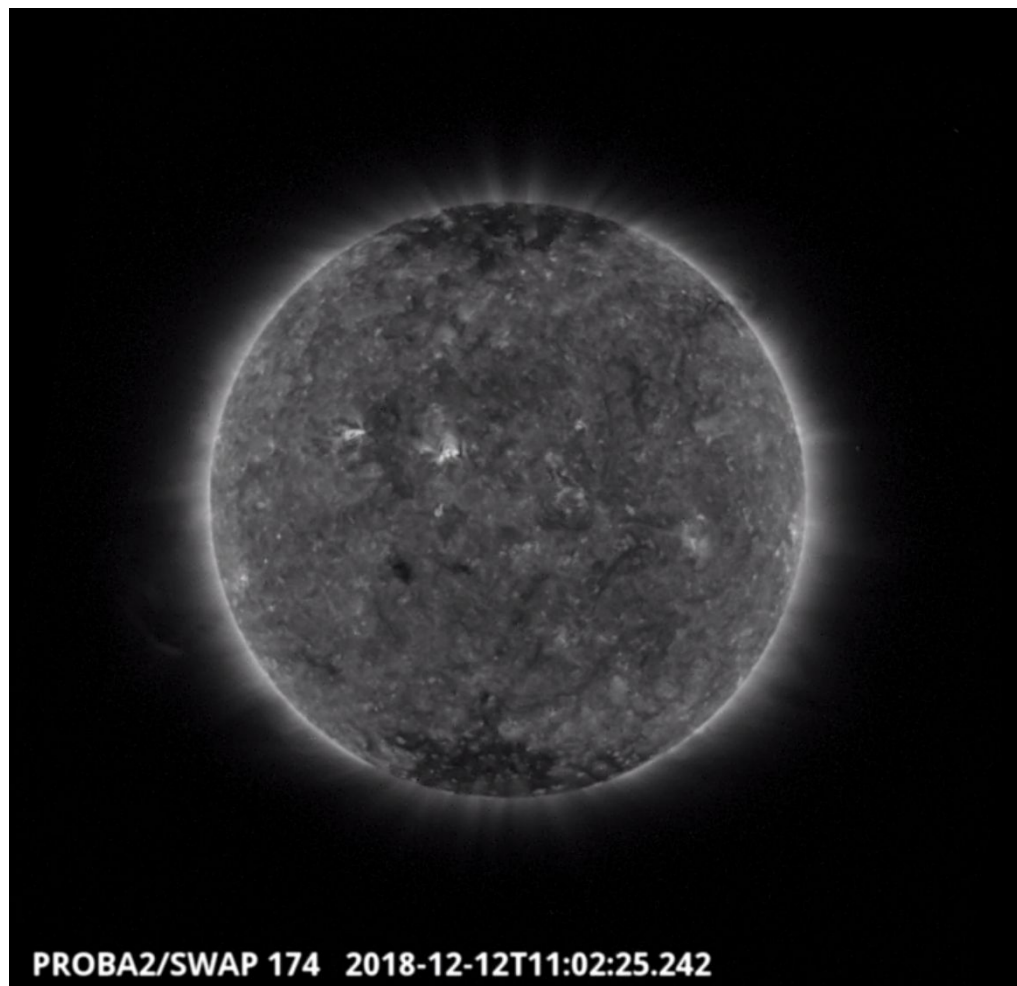
This page also lists the recorded flaring events.

A weekly overview movie can be found [here](#) (SWAP week 455).

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](#)

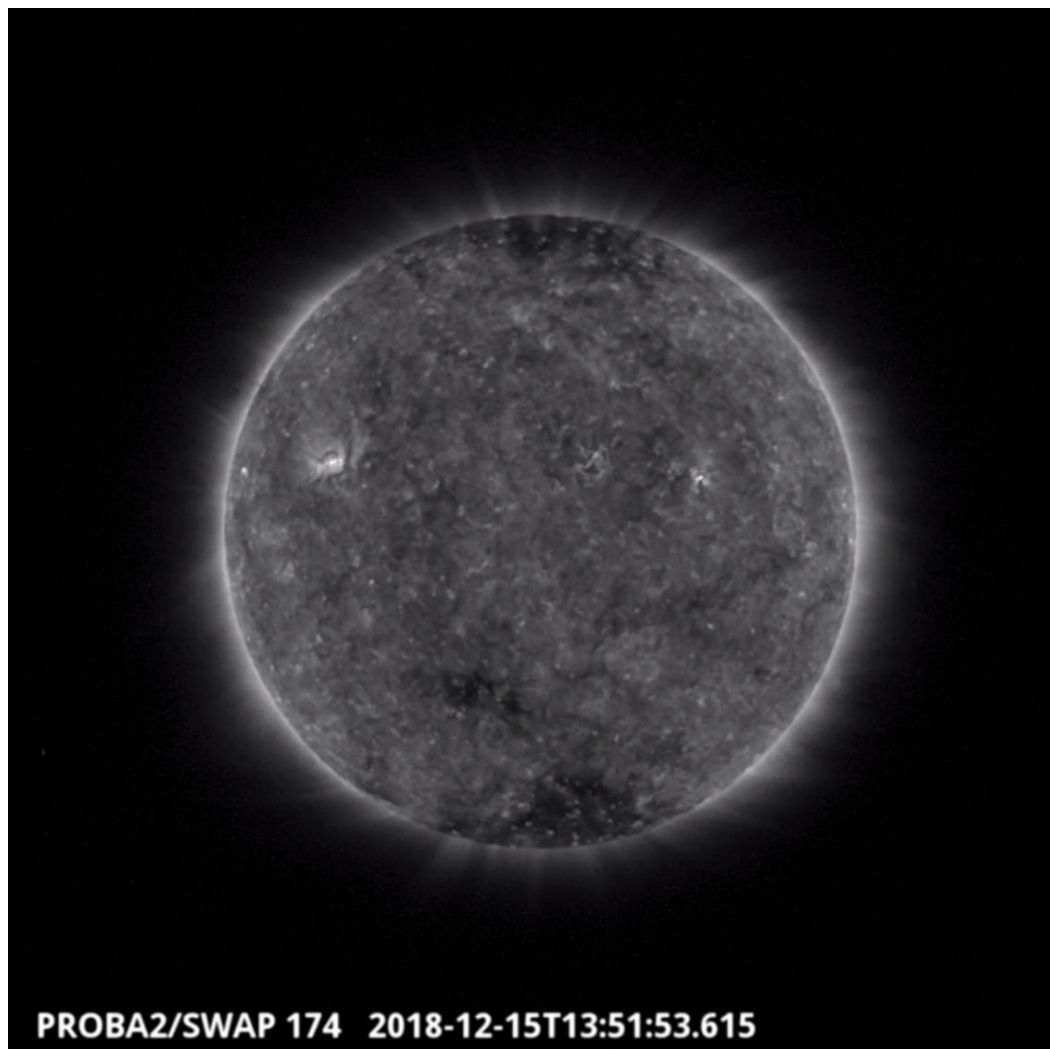
Wednesday Dec 12



Flows on the eastern limb of the Sun were observed by SWAP on 2018-Dec-12, shown in the SWAP image above taken at 11:02 UT.

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

Saturday Dec 15



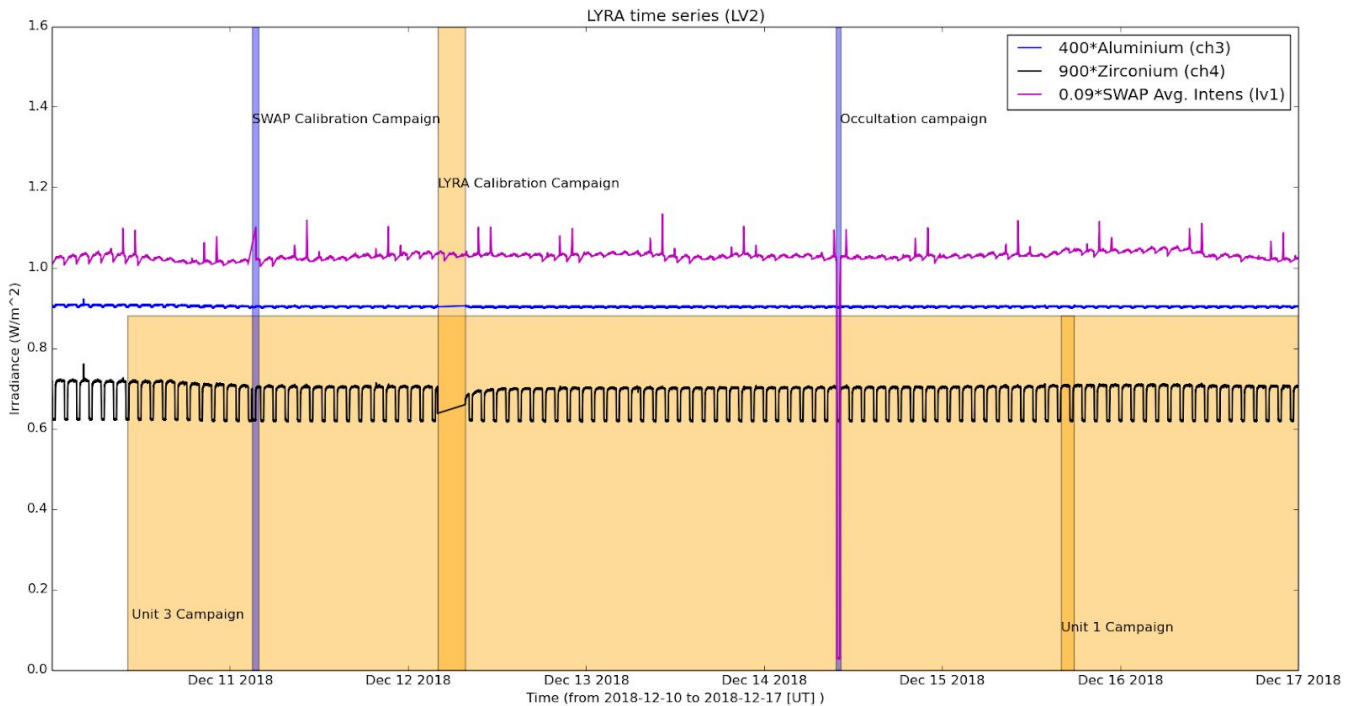
The largest flare of the week (B1.0), which was associated with NOAA AR2731, was observed by SWAP on 2018-Dec-15 and is visible in the north-east quadrant of the solar disk in the SWAP image above taken at 13:51 UT.

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:

- Bi-weekly calibration campaign on, 2018-Dec-11
- Parallel occultation, 2018-Dec-14

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

- Continuous Unit 3 campaign, from 2018-Dec-10 to 2018-Dec-16
- Bi-weekly calibration, 2018-Dec-12
- Monthly unit 1 campaign, 2018-Dec-15

The red shaded periods related to other issues corresponds to:

- None

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>).

Matthew West presented a poster on Epoch Analysis of Post Flare Loop Systems featuring PROBA2-SWAP data at the AGU fall meeting in Washington D.C. on 2018-Dec-11.

Guest Investigator Program

- None

2. LYRA instrument status

Calibration

Calibration campaign on Wednesday this week.

IOS & operations

Monday 10 Dec	Tuesday 11 Dec	Wednesday 12 Dec	Thursday 13 Dec	Friday 14 Dec	Saturday 15 Dec	Sunday 16 Dec
Nominal acquisition + U3 LYIOS00741 LYIOS00742 LYIOS00743	Nominal acquisition + U3 LYIOS00743	Nominal acquisition + U3 + calibration LYIOS00743	Nominal acquisition + U3 LYIOS00743	Nominal acquisition + daily U3 LYIOS00743	Nominal acquisition + U3 + Monthly U1 LYIOS00744	Nominal acquisition + U3 LYIOS00744

The following science campaigns were performed by LYRA:

- Continual U3 observations campaign

On 2018-Dec-12

- LYRA Bi-weekly calibration

On 2018-Dec-15

- Monthly Unit 1 campaign

LYRA detector temperature

LYRA detector 2 temperature globally varied between 39.86 and 44.79 °C.

3. SWAP instrument status

Calibration

Calibration campaign on Tuesday this week.

MCPM errors

The number of MCPM recoverable errors increased from 278 to 292.

The number of MCPM unrecoverable errors remained at 0.

IOS & operations

Monday 10 Dec	Tuesday 11 Dec	Wednesday 12 Dec	Thursday 13 Dec	Friday 14 Dec	Saturday 15 Dec	Sunday 16 Dec
Nominal acquisition	Nominal acquisition + calibration	Nominal acquisition	Nominal acquisition	Nominal acquisition + Parallel occultation with LYRA	Nominal acquisition	Nominal acquisition
IOS00814 685 images	IOS00814 692 images	IOS00815 724 images	IOS00815 681 images	IOS00815 747 images	IOS00816 718 images	IOS00816 665 images

Special operations for SWAP, this week:

On 2018-Dec-11:

- SWAP Bi-weekly calibration.

On 2018-Dec-14:

- SWAP parallel occultation with LYRA.

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -5.21 and -2.49 °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 29430 to 29493) 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 2018 Dec 10 00:00 UT and 2018 Dec 17 00:00 UT: 4989

Highest cadence in this period: 0 seconds

Average cadence in this period: 121.25 seconds

Number of image gaps larger than 300 seconds: 103

Largest data gap: 34.37 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)