


P2SC-ROB-WR-442 -20180910 Weekly report #442	<b>P2SC Weekly report</b>	
Period covered: Date:  Written by: Approved by:	Mon Sep 10 to Sun Sep 16, 2018 17 Sep 2018  Jennifer O'Hara Matthew West	Royal Observatory of Belgium - PROBA2 Science Center
To:	LYRA PI, marie.dominique@sidc.be SWAP PI, david.berghmans@sidc.be	<a href="http://proba2.sidc.be">http://proba2.sidc.be</a> ++ 32 (0) 2 3730559
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## 1. Science

### Solar & Space weather events

The level of solar activity<sup>1</sup> remained **very low** this week.

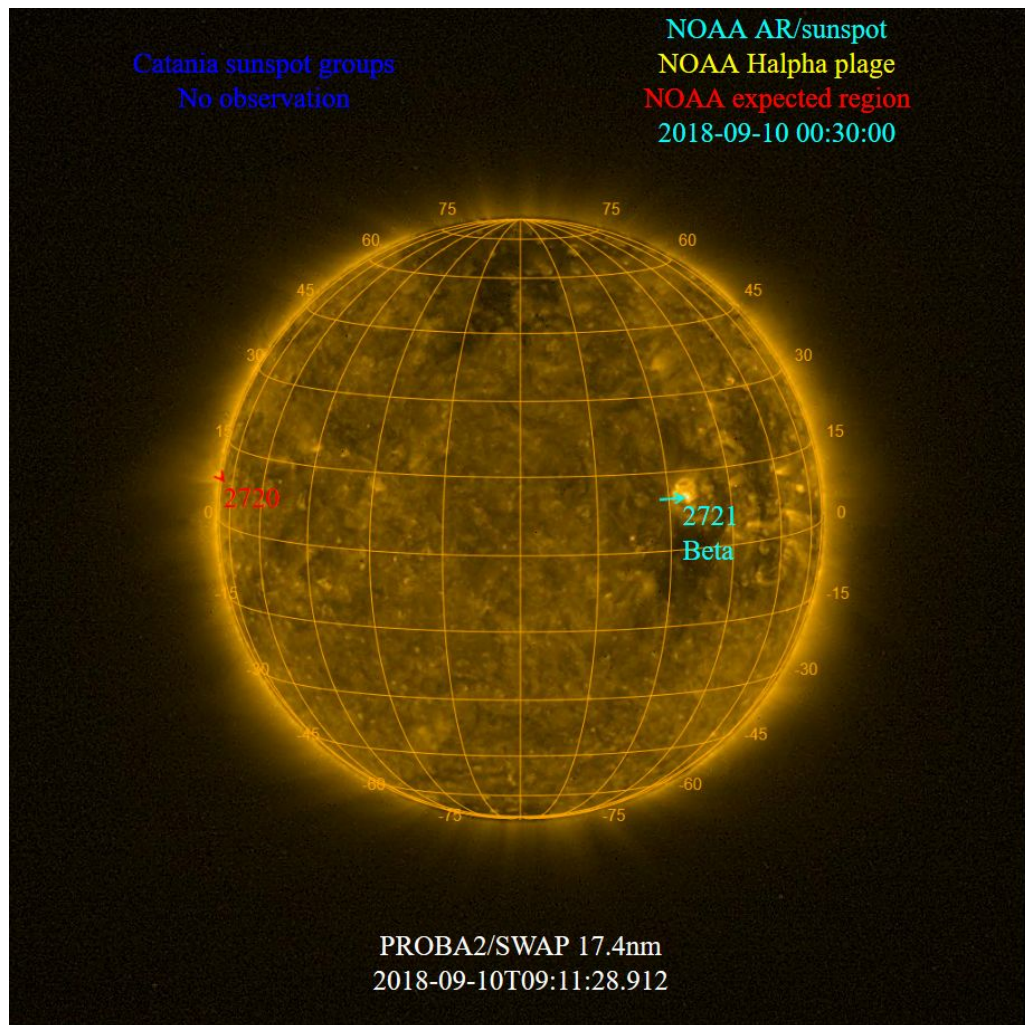
Only M- and X-flares are mentioned, the most energetic one(s) per day are presented in **bold**:

	Monday 10 Sep	Tuesday 11 Sep	Wednesday 12 Sep	Thursday 13 Sep	Friday 14 Sep	Saturday 15 Sep	Sunday 16 Sep
Activity	very low	very low	very low	very low	very low	very low	very low
Flares	-	-	-	-	-	-	-

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<sup>1</sup> See appendix. All timings are given in UT.

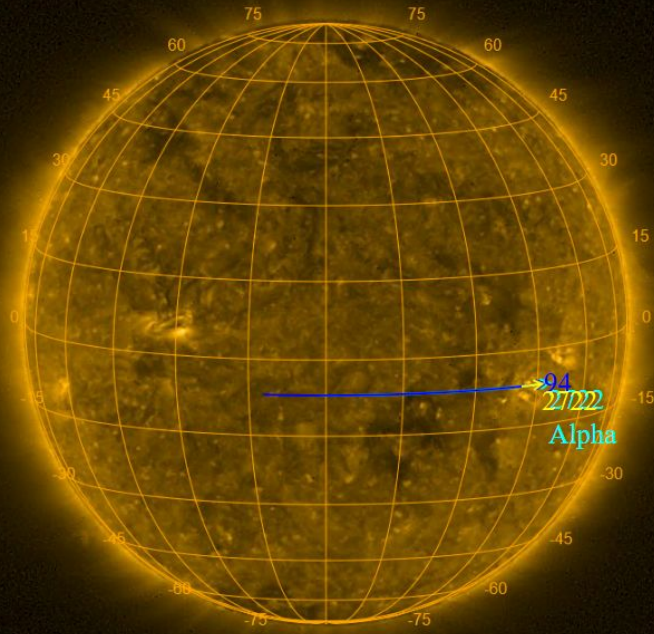
The SWAP images of Sep 10 and Sep 16 are shown below, with annotated active regions.



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

Catania sunspot groups  
2018-09-12 08:48:00

NOAA AR/sunspot  
NOAA Halpha plage  
NOAA expected region  
2018-09-13 00:30:00



PROBA2/SWAP 17.4nm  
2018-09-16T09:13:42.083

## 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>

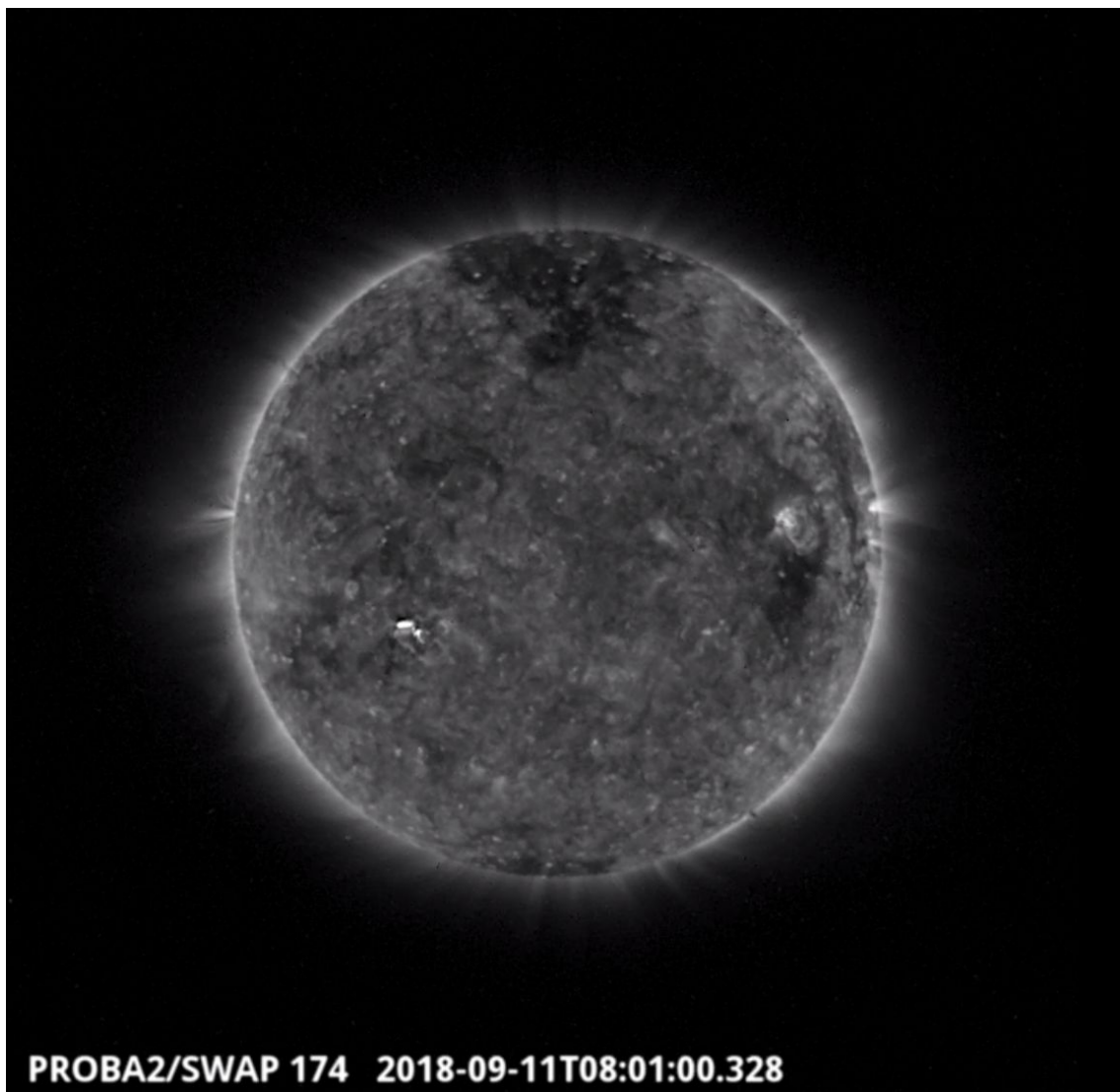
This page also lists the recorded flaring events.

A weekly overview movie can be found [here](#) (SWAP week 442).

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](#)

Tuesday Sep 11



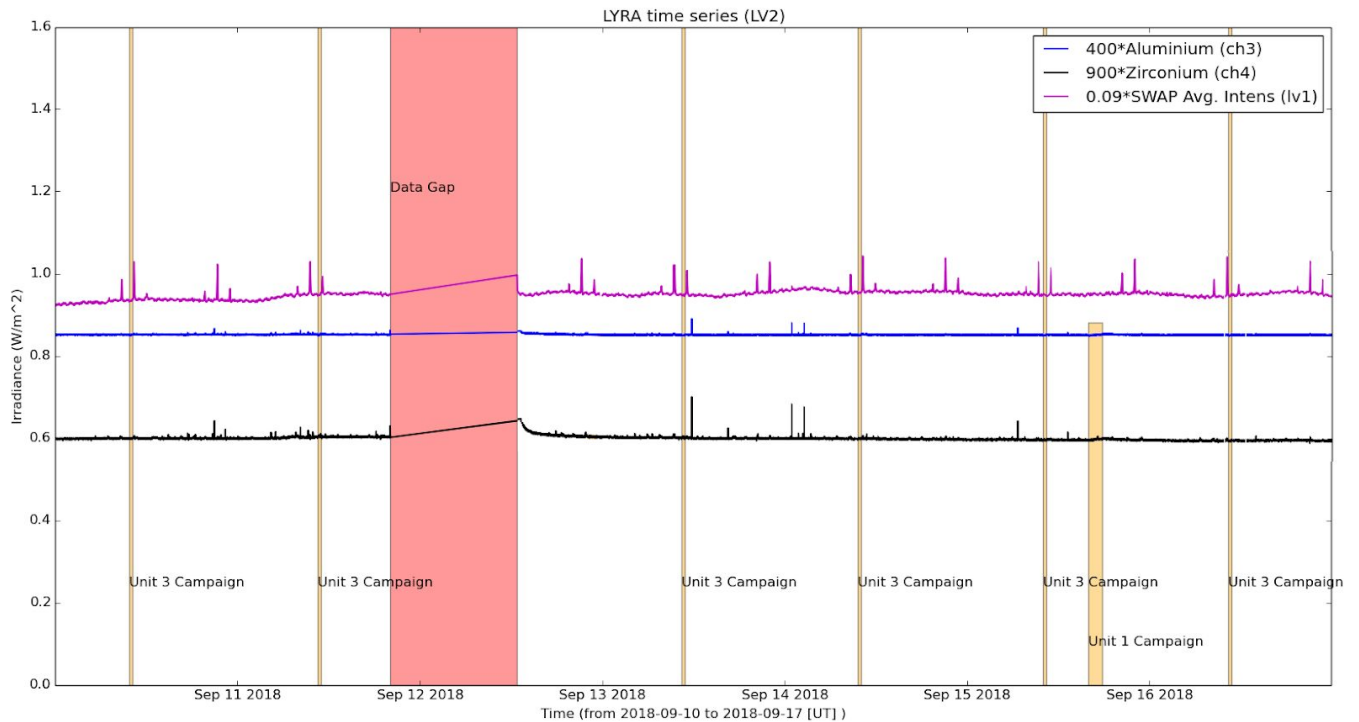
**The largest flare of the week (B1.0) was observed by SWAP on 2018-Sep-11. The flare is visible in the south-east quadrant of the solar disk in the SWAP image above at 08:01 UT.**

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-Sep-10
- Daily Unit 3 campaign, 2018-Sep-11
- Daily Unit 3 campaign, 2018-Sep-13
- Daily Unit 3 campaign, 2018-Sep-14
- Daily Unit 3 campaign, 2018-Sep-15
- Monthly Unit 1 campaign, 2018-Sep-15
- Daily Unit 3 campaign, 2018-Sep-16

The red shaded periods related to other issues corresponds to:

- SWAP and LYRA data gap due to unplanned satellite reboot, 2018-Sep-11 20:09:27 UT to 2018-Sep-12 12:48:10 UT.

**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 10 Sep	Tuesday 11 Sep	Wednesday 12 Sep	Thursday 13 Sep	Friday 14 Sep	Saturday 15 Sep	Sunday 16 Sep
Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3 + monthly U1	Nominal acquisition + daily U3
LYIOS00723	LYIOS00723 LYIOS00724	LYIOS00725	LYIOS00725	LYIOS00725	LYIOS00725	LYIOS00725

The following science campaigns were performed by LYRA:

- Daily U3 observations campaigns

On 2018-Sep-15

- Monthly Unit 1 campaign

### LYRA detector temperature

LYRA detector 2 temperature globally varied between 40.84 and 50.94 °C.

### 3. SWAP instrument status

#### Calibration

No calibration campaign on this week.

#### MCPM errors

The number of MCPM recoverable errors decreased from 2114 to 0. (Due to satellite reboot)

The number of MCPM unrecoverable errors decreased from 14 to 0.

#### IOS & operations

Monday 10 Sep	Tuesday 11 Sep	Wednesday 12 Sep	Thursday 13 Sep	Friday 14 Sep	Saturday 15 Sep	Sunday 16 Sep
Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition
IOS00787 647 images	IOS00787 IOS00788 456 images	IOS00789 359 images	IOS00789 758 images	IOS00789 724 images	IOS00789 692 images	IOS00789 606 images

Special operations for SWAP, this week:

- None

#### SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -8.41 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 28562 to 28625) was nominal, except for:

- Passes 28579 to 28584 due to satellite reboot and entered bdot mode

### 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:

- Passes 28579 to 28584 due to satellite reboot and entered bdot mode

Total number of images between 2018 Sep 10 00:00 UT and 2018 Sep 17 00:00 UT: 4283

Highest cadence in this period: 110 seconds

Average cadence in this period: 141.16 seconds

Number of image gaps larger than 300 seconds: 113

Largest data gap: 1000.73 minutes

### Data coverage LYRA

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

- Passes 28579 to 28584 due to satellite reboot and entered bdot mode

## 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)