


P2SC-ROB-WR-337 - 20160905 Weekly report #337	<b>P2SC Weekly report</b>	
Period covered: Date:  Written by: Approved by:	Mon Sep 05 to Sun Sep 11, 2016 14 Sep 2016  Robbe Vansintjan Matthew West	Royal Observatory of Belgium  - PROBA2 Science Center
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## 1. Science

### Solar & Space weather events

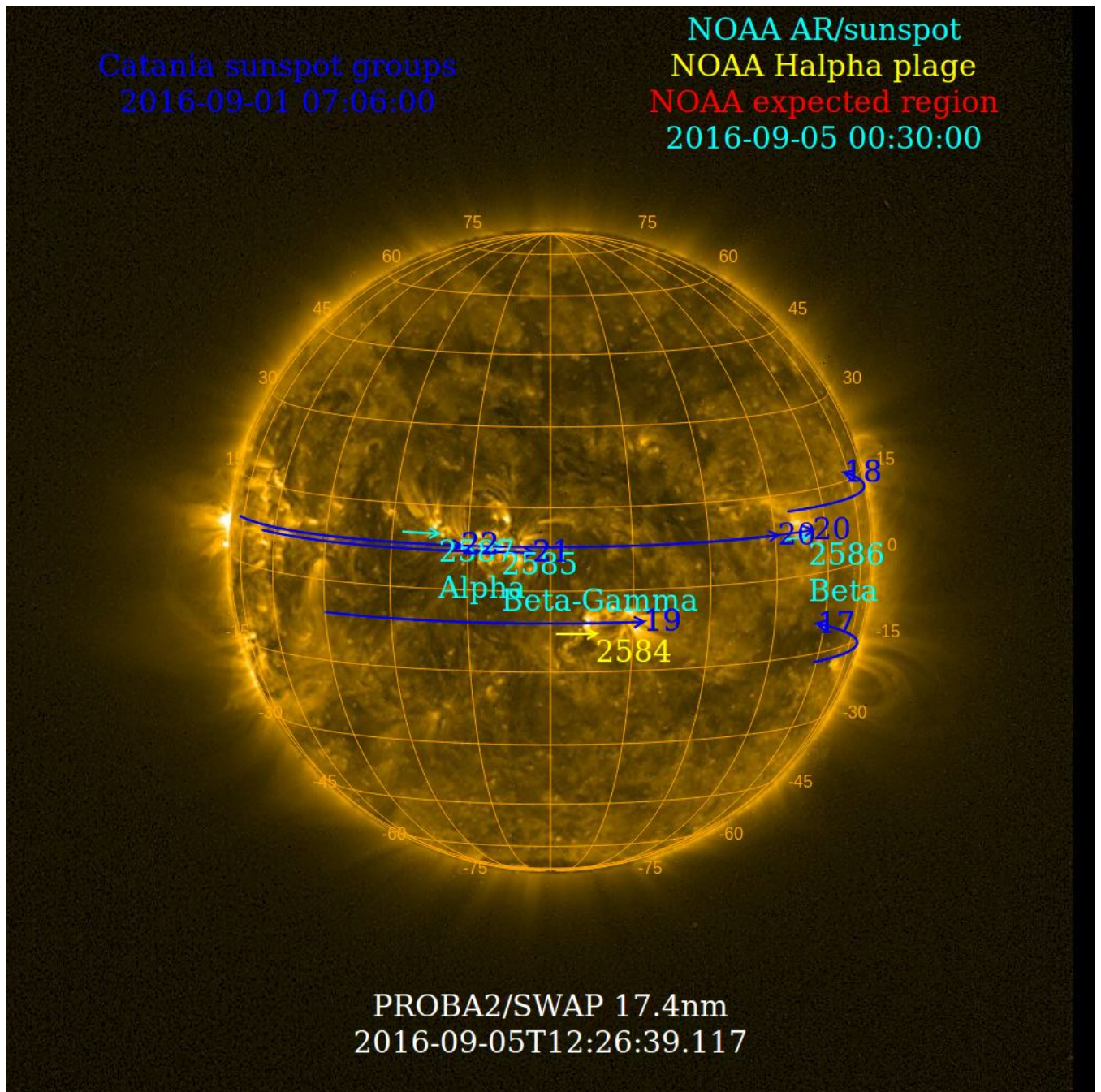
The level of solar activity<sup>1</sup> remained **very low** this week.

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

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

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

The SWAP images of Sep 05 and Sep 11 are shown below, with annotated active regions.

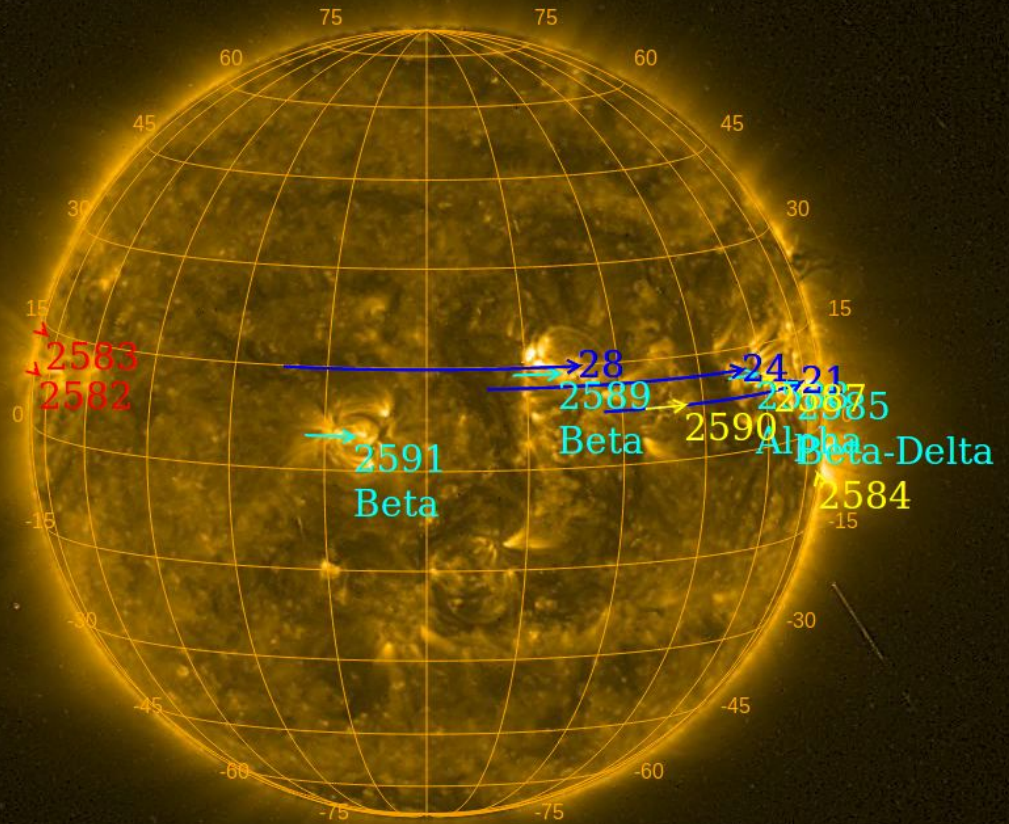


<http://sidc.be/soteria/soteria.php>



Catania sunspot groups  
2016-09-08 08:48:00

NOAA AR/sunspot  
NOAA Halpha plage  
NOAA expected region  
2016-09-11 00:30:00



PROBA2/SWAP 17.4nm  
2016-09-11T12:25:57.850

## **Solar Activity**

Solar flare activity 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>

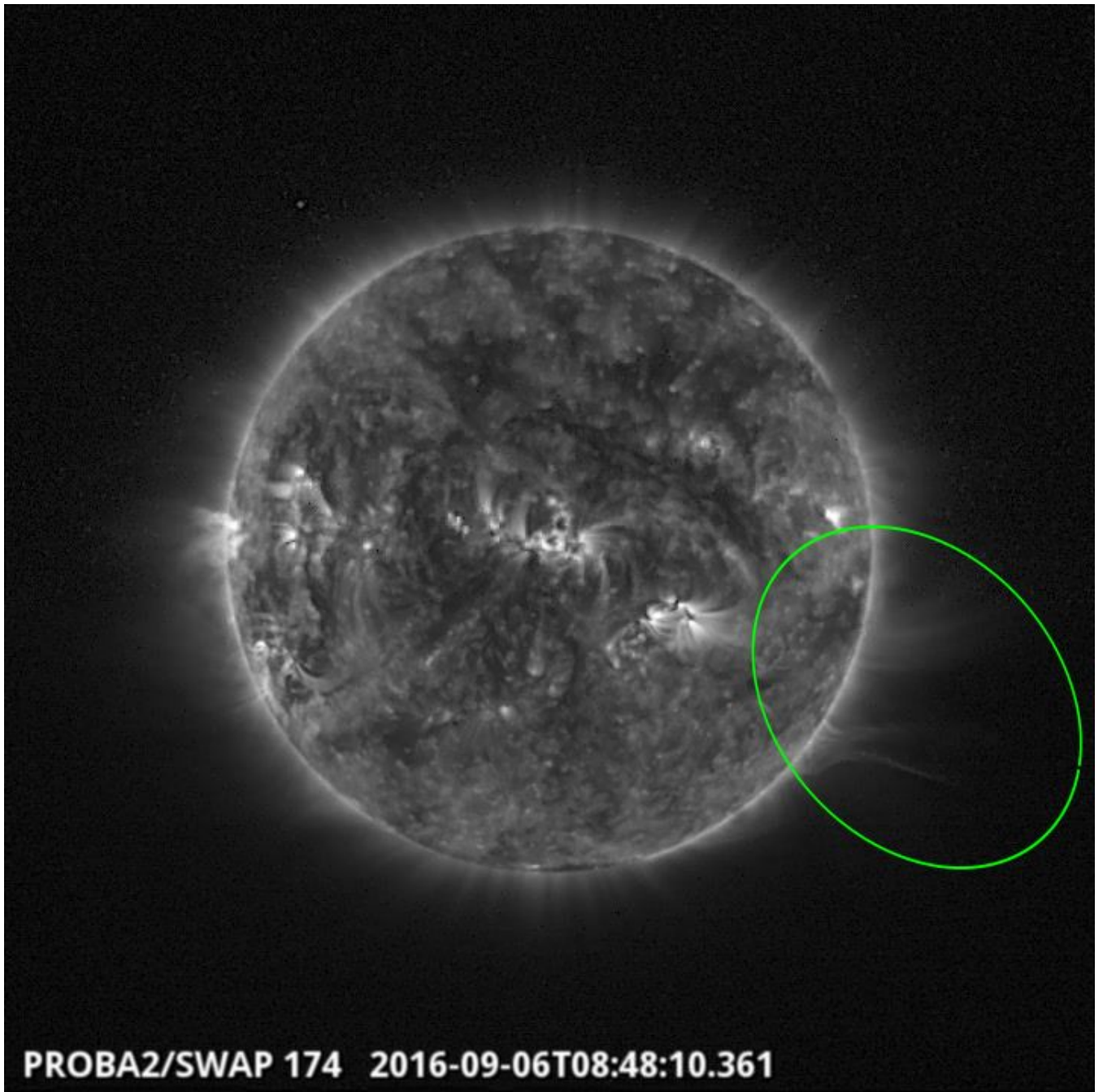
This page also lists the recorded flaring events.

A weekly overview movie can be found [here](#) (SWAP week 337).

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 06

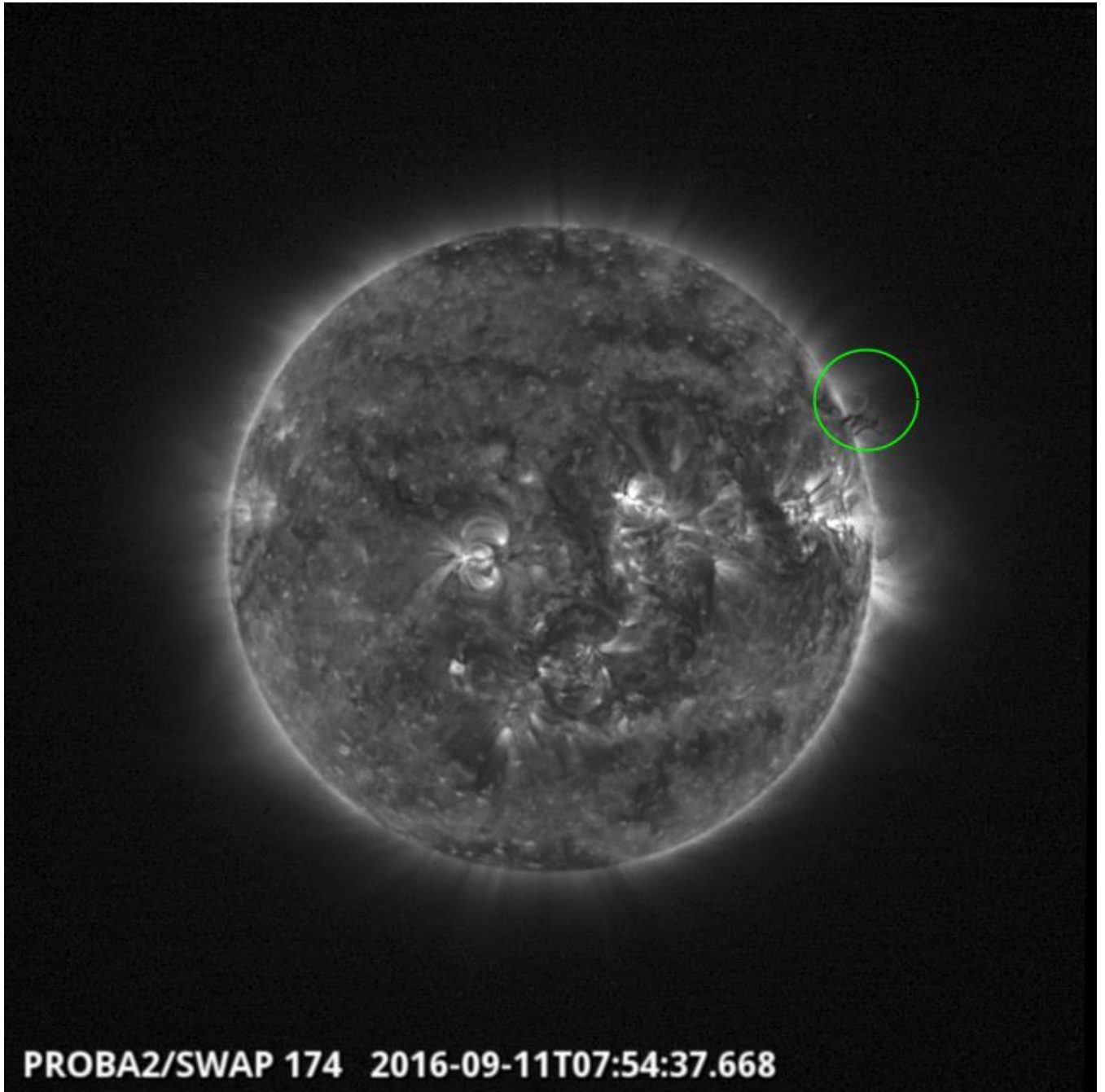


An eruption was observed by SWAP on the south west limb of the Sun on 2016-Sep-06 at 08:48  
UT

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



Sunday Sep 11

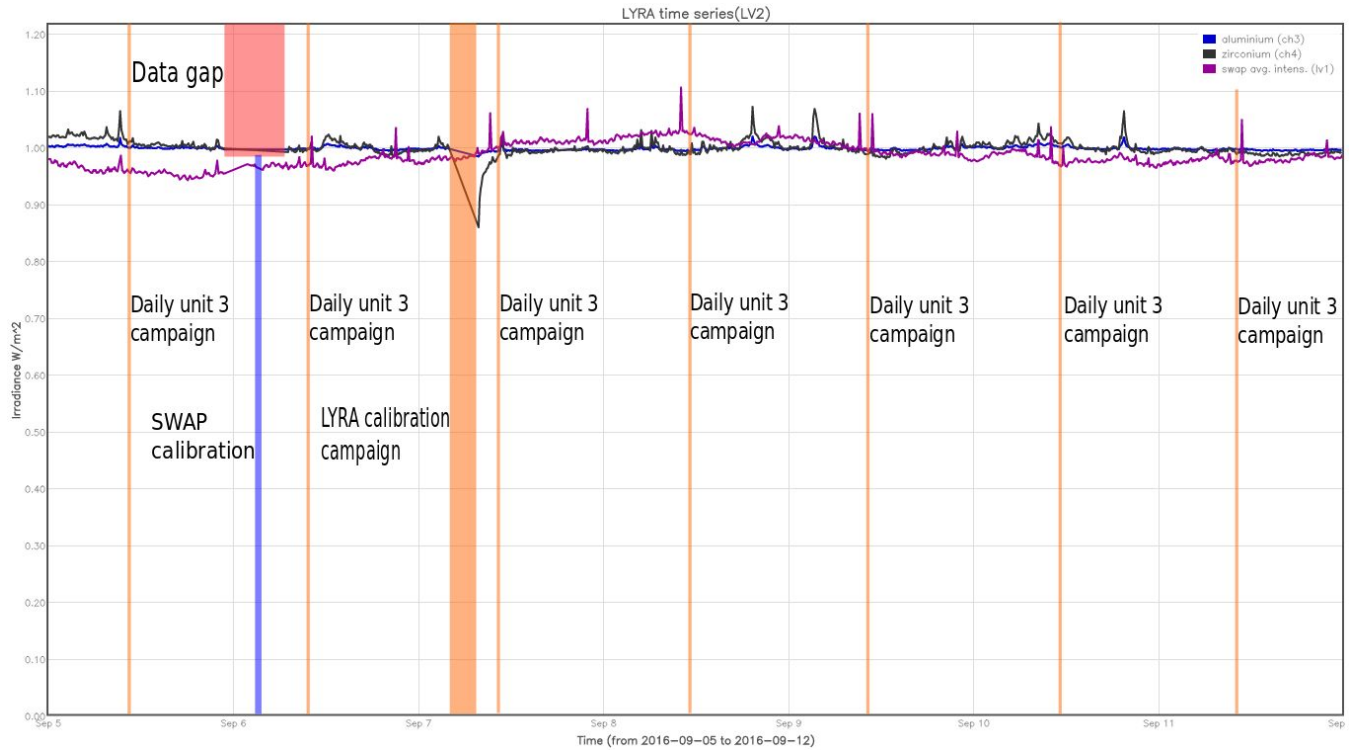


An eruption was observed by SWAP in the western limb of the Sun on 2016-Sep-11 at 07:54 UT  
Find a movie of the event [here](#) (SWAP movie)

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 correspond to, from left to right:

- SWAP bi-weekly calibration, 2016-Sep-06

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

- Daily unit 3 campaign, 2016-Sep-05
- Daily unit 3 campaign, 2016-Sep-06
- LYRA bi-weekly campaign, 2016-Sep-07
- Daily unit 3 campaign, 2016-Sep-07
- Daily unit 3 campaign, 2016-Sep-08
- Daily unit 3 campaign, 2016-Sep-09
- Daily unit 3 campaign, 2016-Sep-10
- Daily unit 3 campaign, 2016-Sep-11

The red shaded period corresponds to:

- A data gap in the LYRA data and partially in the SWAP data, 2016-Sep-05/06

Explanation: see section 5 Data reception

## **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>).

- L. Hayes gave a presentation at ROB with the title “Soft X-ray Quasi-Periodic Pulsations in Solar Flares” which included LYRA data.

## **Guest Investigator Program**

- L. Hayes has visited the P2SC on the GI program working on a LYRA study “Nature of red noise processes in solar flares and effect on observations of QPP.”
- F. Goryaev and V. Slemzin have been visiting the P2SC on the GI program working on a “SWAP Study of properties of the inner corona and search of solar wind flows by illumination from backside solar flares.”



## 2. LYRA instrument status

### Calibration

Calibration campaign on Wednesday this week.

### IOS & operations

Monday 05 Sep	Tuesday 06 Sep	Wednesday 07 Sep	Thursday 08 Sep	Friday 09 Sep	Saturday 10 Sep	Sunday 11 Sep
Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3 + calibration	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3
LYIOS00578	LYIOS00578	LYIOS00578	LYIOS00578	LYIOS00578	LYIOS00578	LYIOS00578

The following science campaigns were performed by LYRA:

- daily U3 observations campaign

On 07-Sep-2016

- Bi-weekly calibration campaign

### LYRA detector temperature

LYRA detector 2 temperature globally varied between 46.6 and 49.2 °C.

### 3. SWAP instrument status

#### Calibration

Calibration campaign on Tuesday this week.

#### MCPM errors

The number of MCPM recoverable errors increased from 3653 to 3663.

The number of MCPM unrecoverable errors remained at 0.

#### IOS & operations

Monday 05 Sep	Tuesday 06 Sep	Wednesday 07 Sep	Thursday 08 Sep	Friday 09 Sep	Saturday 10 Sep	Sunday 11 Sep
Nominal acquisition	Nominal acquisition + calibration	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition
IOS00659 537 images	IOS00659 615 images	IOS00659 669 images	IOS00659 682 images	IOS00659 611 images	IOS00659 574 images	IOS00659 636 images

Special operations for SWAP, this week:

On 06-Sep-2016

- Bi-weekly calibration campaign.

#### SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -0.96 and 0 °C.

#### **4. PROBA2 Science Center Status**

The main operator is Robbe Vansintjan.

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 21685 to 21747) was nominal, except for:

- 21694 and 21695 .

The passes were lost due to an issue with the Svalbard ground segment, where the BBE unit 20 was reset and took longer than usual (more than 200 sec instead of less than 170 sec). Therefore, the configuration and the start recording commands failed. No data has been recorded for these 2 passes. As a consequence stores 5, 6 & 7 were dumped during the pass 21696. The BBE Unit 20 has been replaced by the spare BBE unit 1.

Housekeeping data was recovered in pass 21696. However, no LYRA data is available for this period and SWAP data is at severely reduced cadence between 23:00 UT on 05-Sep-2016 and 03:45 on 06-Sep-2016

### 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:

- 21694 and 21695 .

Total number of images between 2016 Sep 05 00:00 UT and 2016 Sep 12 00:00 UT: 4333

Highest cadence in this period: 100 seconds

Average cadence in this period: 139.59 seconds

Number of image gaps larger than 300 seconds: 175

Largest data gap: 161.33 minutes

### Data coverage LYRA

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

- 21694 and 21695



## 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)