


P2SC-ROB-WR-194- 20131209 Weekly report #194	<b>P2SC Weekly report</b>	
Period covered: Date:  Written by: Approved by:	Mon Dec 09 to Sun Dec 15, 2013 18 Dec 2013  Robbe Vansintjan Matthew West	Royal Observatory of Belgium - PROBA2 Science Center
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## 1. Science

### Solar & Space weather events

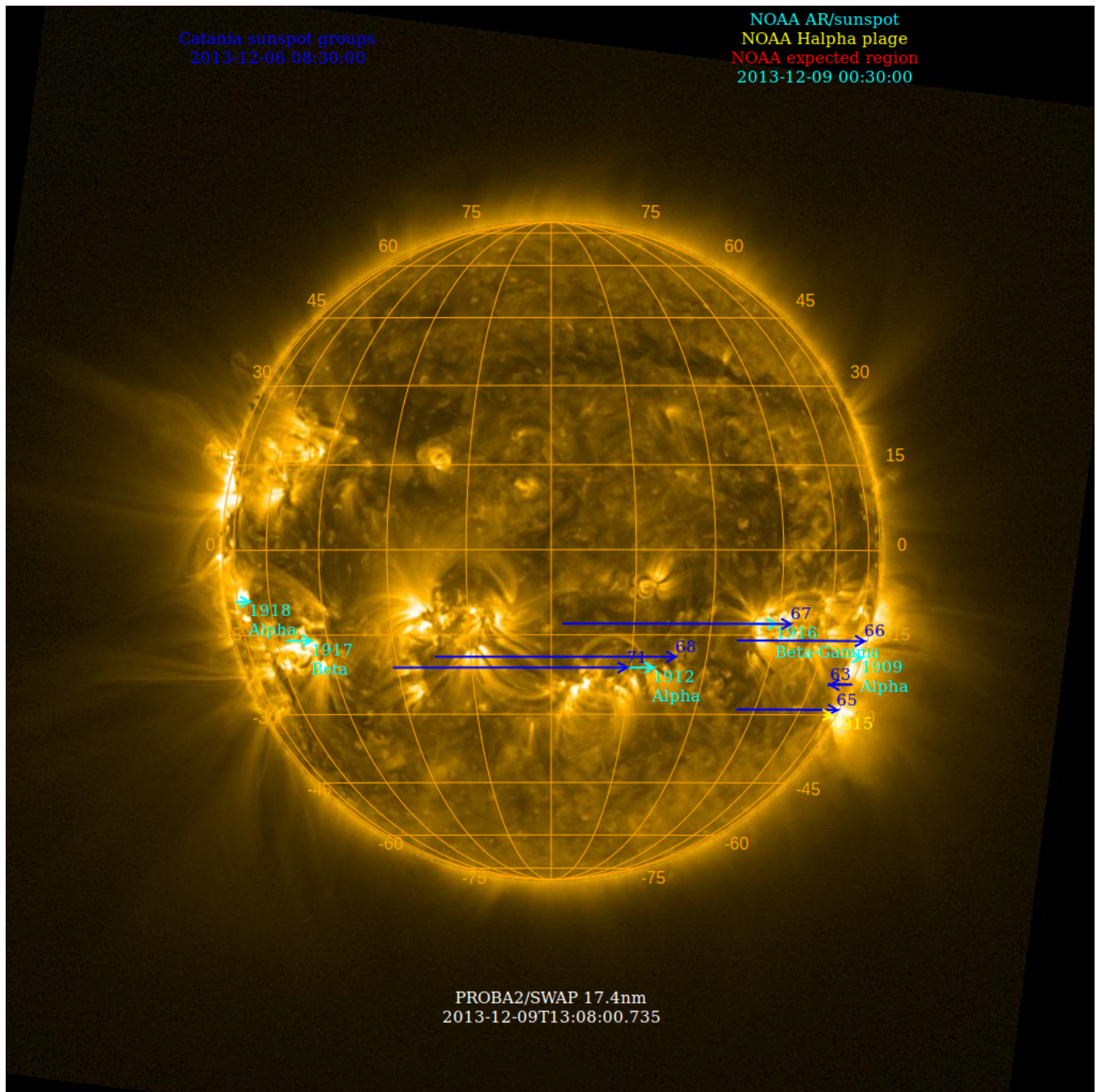
The level of solar activity<sup>1</sup> stayed **low** this week.

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

	Monday 09 Dec	Tuesday 10 Dec	Wednesday 11 Dec	Thursday 12 Dec	Friday 13 Dec	Saturday 14 Dec	Sunday 15 Dec
Activity	low	low	low	low	low	low	low
Flares	-	-	-	-	-	-	-

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

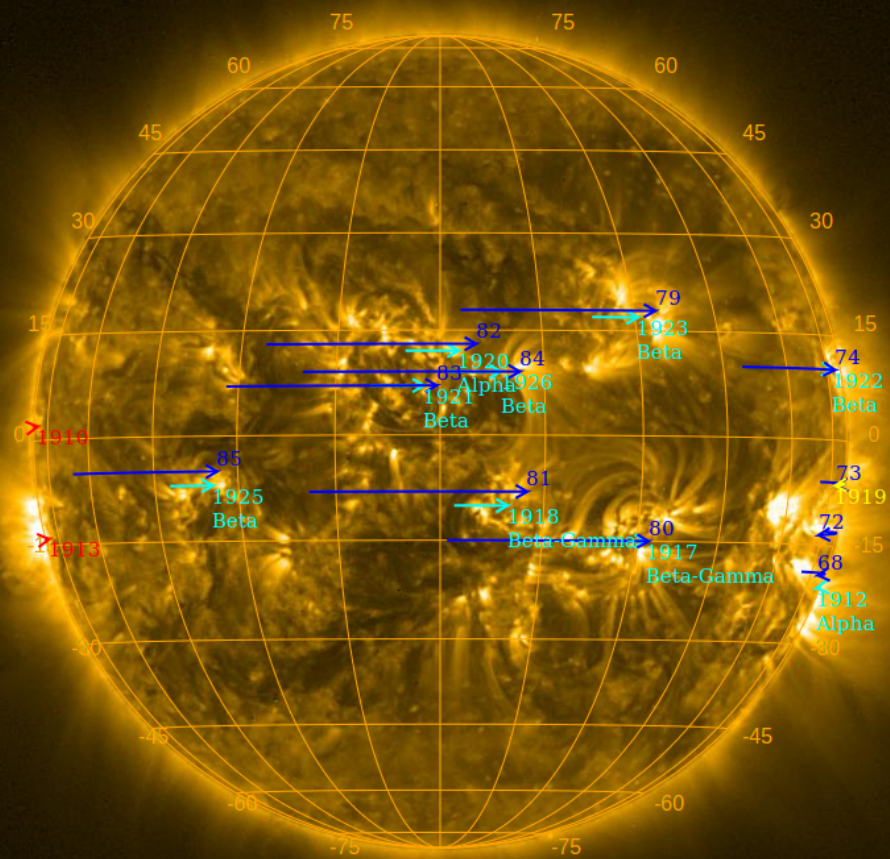
The SWAP images of Dec 09 and Dec 15 are shown below, with annotated active regions.



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

Catania sunspot groups  
2013-12-13 09:30:00

NOAA AR/sunspot  
NOAA Halpha plage  
NOAA expected region  
2013-12-15 00:30:00



PROBA2/SWAP 17.4nm  
2013-12-15T13:07:50.708

**Solar Activity**

Solar flare activity stayed 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 194).

Details about some of this week's events, can be found further below.



Monday Dec 09:

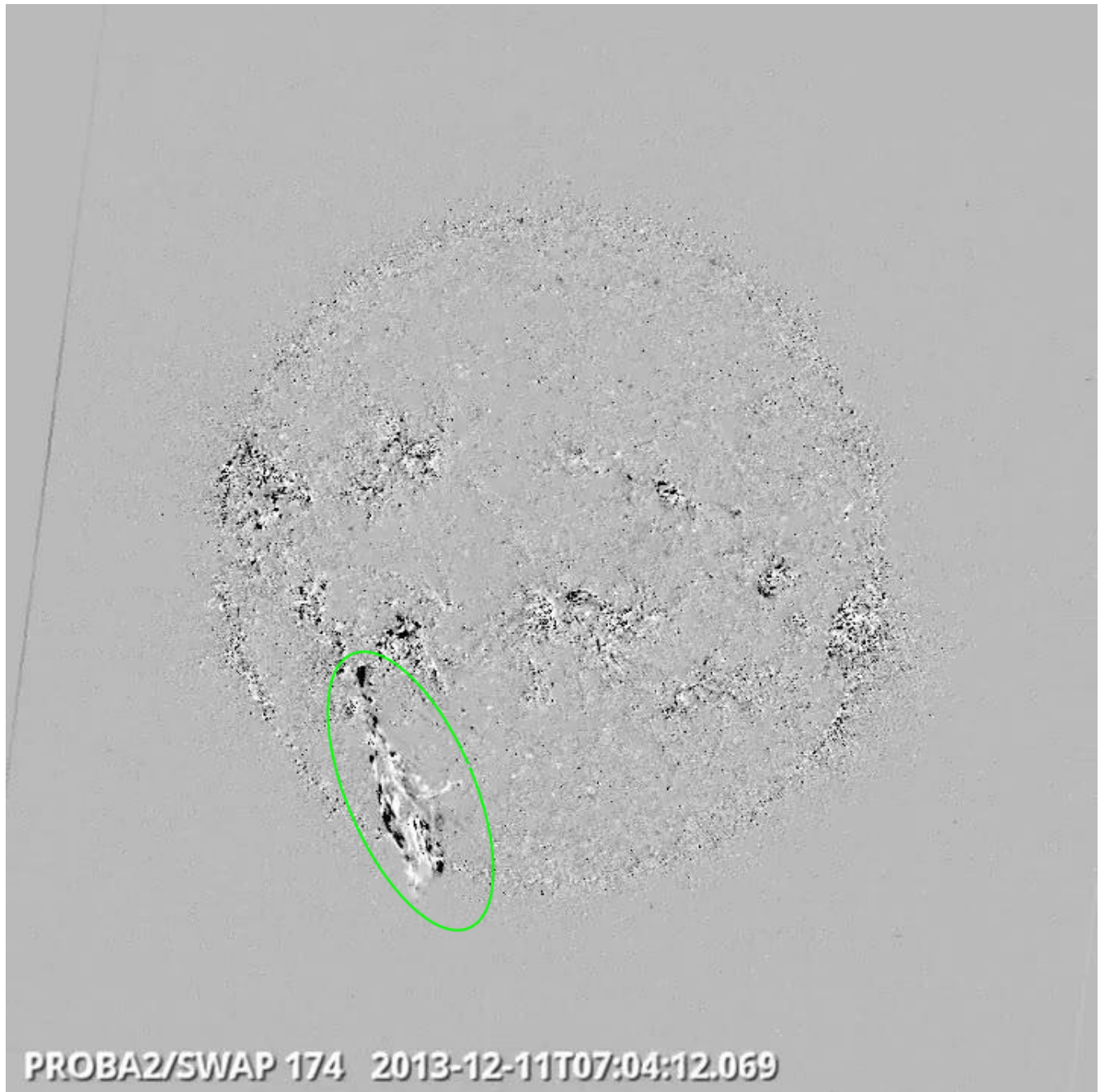


**Outflow in South East Quadrant @ 11:31 - SWAP difference image**

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

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

Wednesday Dec 11:

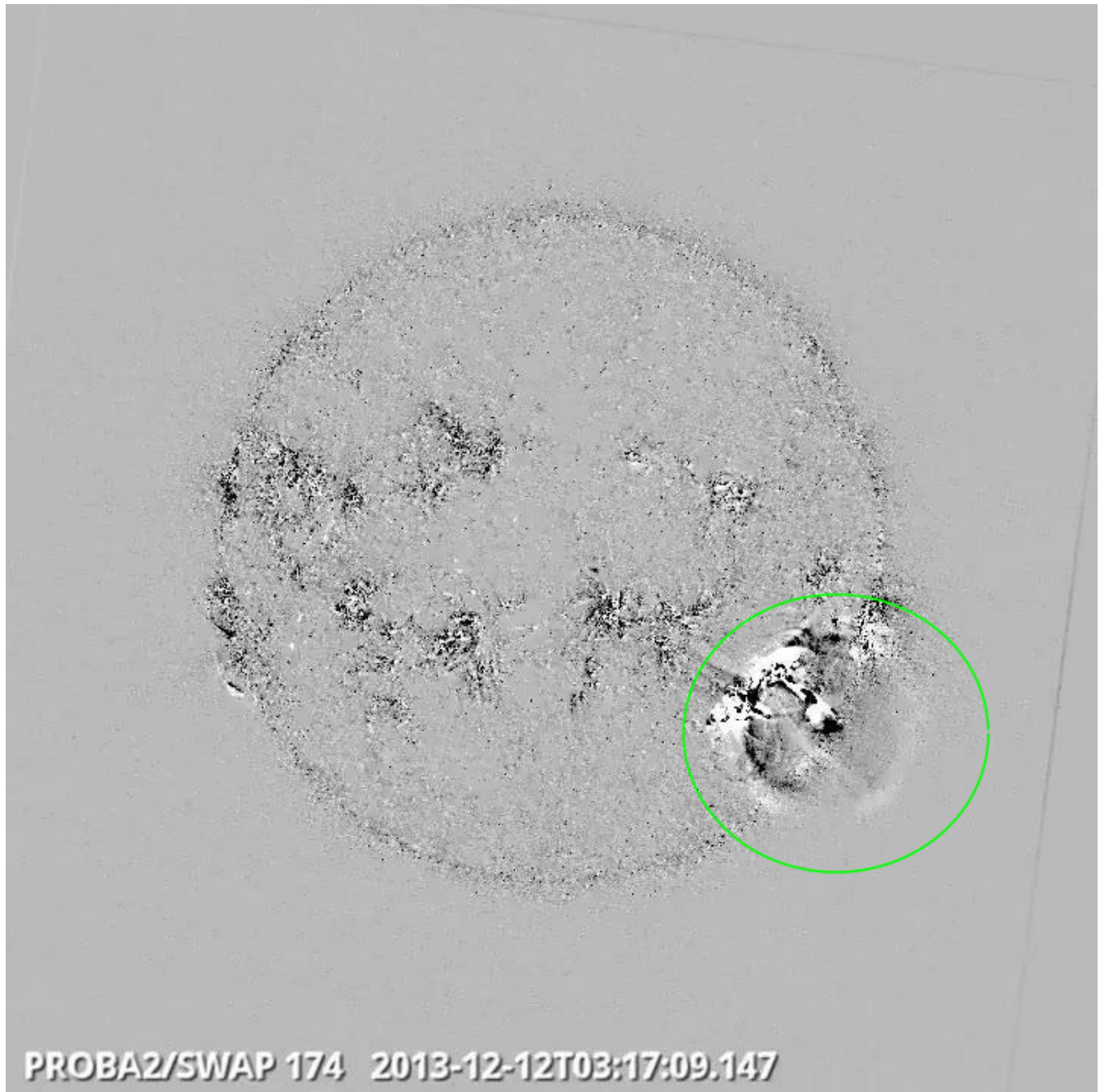


**Eruption on South East Quad @ 07:04 - SWAP difference image**

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

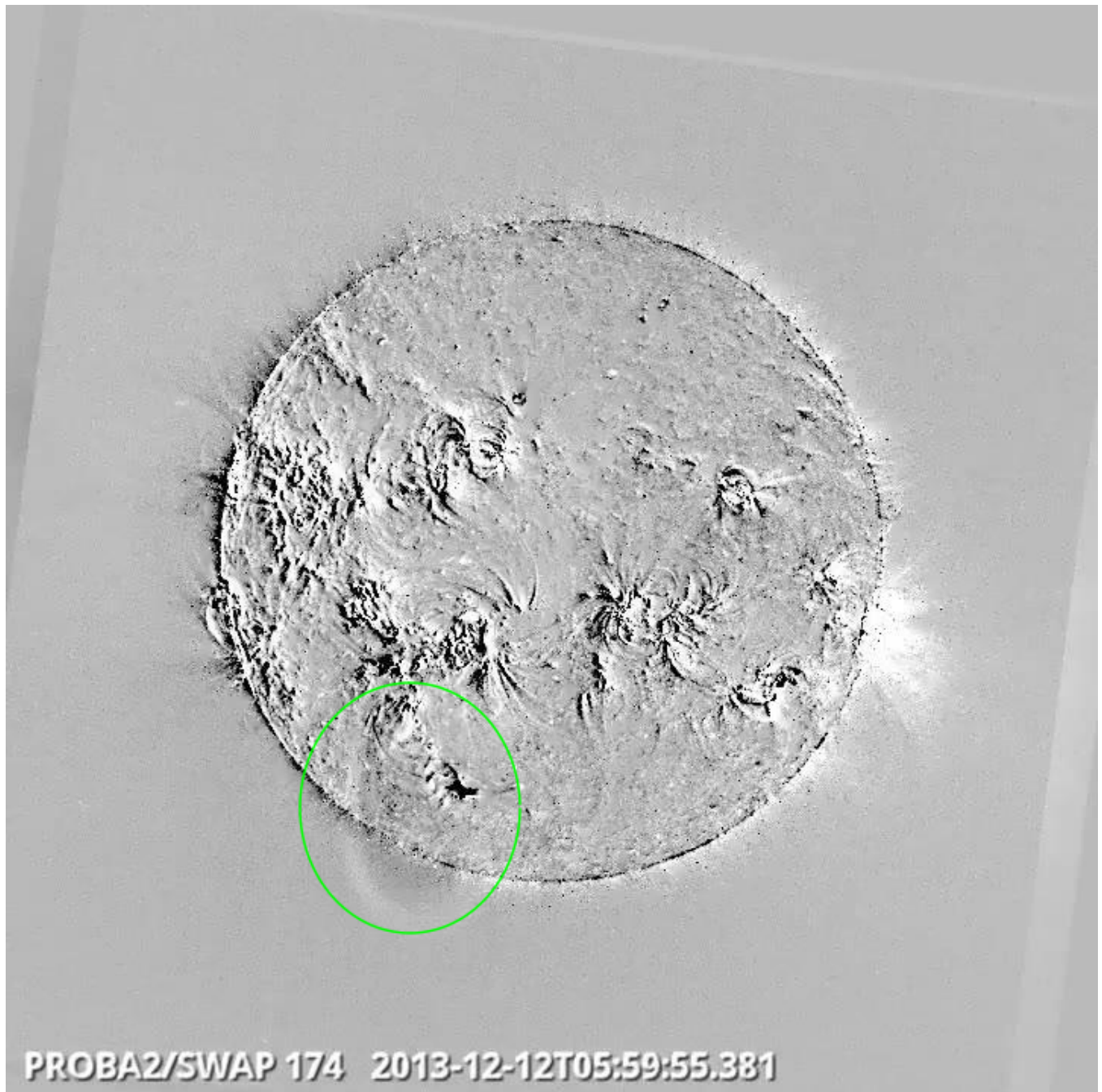
Find a movie of the event [here](#) (SWAP movie)

Thursday Dec 12:



**Eruption on South West Quad @ 03:17 - SWAP difference image**  
Find a movie of the event [here](#) (SWAP difference movie)





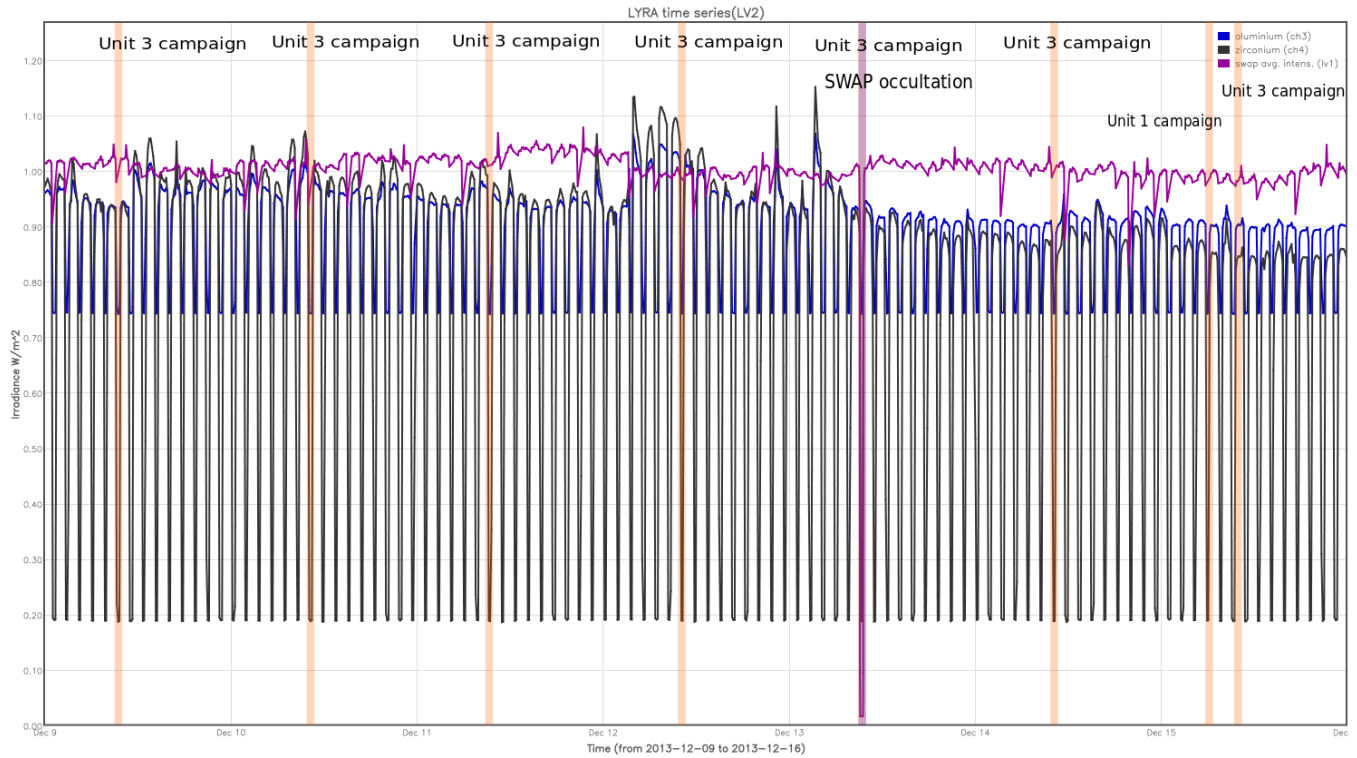
**Eruption on South East Quad @ 05:59 - SWAP difference image**  
Find a movie of the event [here](#) (SWAP difference movie)



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:

- Unit 3 occultation campaign, 6 times
- Unit 1 occultation campaign
- Unit 3 occultation campaign

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

- SWAP parallel occultation campaign with LYRA

**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 gave the presentation "Space Weather Effects on the orbital environment of PROBA2" at the RAS meeting: "Space weather: a dialogue between scientists and forecasters"

**Guest Investigator Program**

- A. Kobelski currently visiting on the GI program and is working with Dan Seaton. Studying AR-AR Reconnection after Flux Emergence.

## 2. LYRA instrument status

### Calibration

No calibration this week.

### IOS & operations

Monday 09 Dec	Tuesday 10 Dec	Wednesday 11 Dec	Thursday 12 Dec	Friday 13 Dec	Saturday 14 Dec	Sunday 15 Dec
Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3 + backup U3
LYIOS00355	LYIOS00356	LYIOS00356	LYIOS00356	LYIOS00356	LYIOS00356	LYIOS00356

The following science campaigns were performed by LYRA:

- daily U3 observations campaign
- Unit 3 backup campaign

### LYRA detector temperature

LYRA detector 2 temperature globally varied between 39.1 and 41.8 °C, taking into account the daily U3 activation periods; the latter result in a temperature increase of about 1.1 °C.

### To be explored

- None



### 3. SWAP instrument status

#### Calibration

No calibration this week.

#### MCPM errors

The number of MCPM recoverable errors increased from 14480 to 14630.

The number of MCPM unrecoverable errors remained at 1127.

#### IOS & operations

Monday 09 Dec	Tuesday 10 Dec	Wednesday 11 Dec	Thursday 12 Dec	Friday 13 Dec	Saturday 14 Dec	Sunday 15 Dec
Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition + parallel occultation	Nominal acquisition	Nominal acquisition
IOS00490 562 images	IOS00491 547 images	IOS00491 564 images	IOS00491 547 images	IOS00491 613 images	IOS00491 548 images	IOS00491 559 images

Special operations for SWAP, this week:

- parallel occultation campaign with LYRA

#### SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -4.8 and -2.9 °C.

#### To be explored

- None

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

The main operator is Koen Stegen.

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 12810 to 12868) 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 2013 Dec 09 0UT and 2013 Dec 16 0UT: 3940

Highest cadence in this period: 29 seconds

Average cadence in this period: 153.45 seconds

Number of image gaps larger than 300 seconds: 101

Largest data gap: 31.05 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
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
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)