


P2SC-ROB-WR-240 - 20141027 Weekly report #240	<b>P2SC Weekly report</b>	
Period covered: Date:  Written by: Approved by:	Mon Oct 27 to Sun Nov 02, 2014 05 Nov 2014  Robbe Vansintjan Matthew West	Royal Observatory of Belgium - PROBA2 Science Center
To:	LYRA PI, marie.dominique@sidc.be SWAP PI, dseaton@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

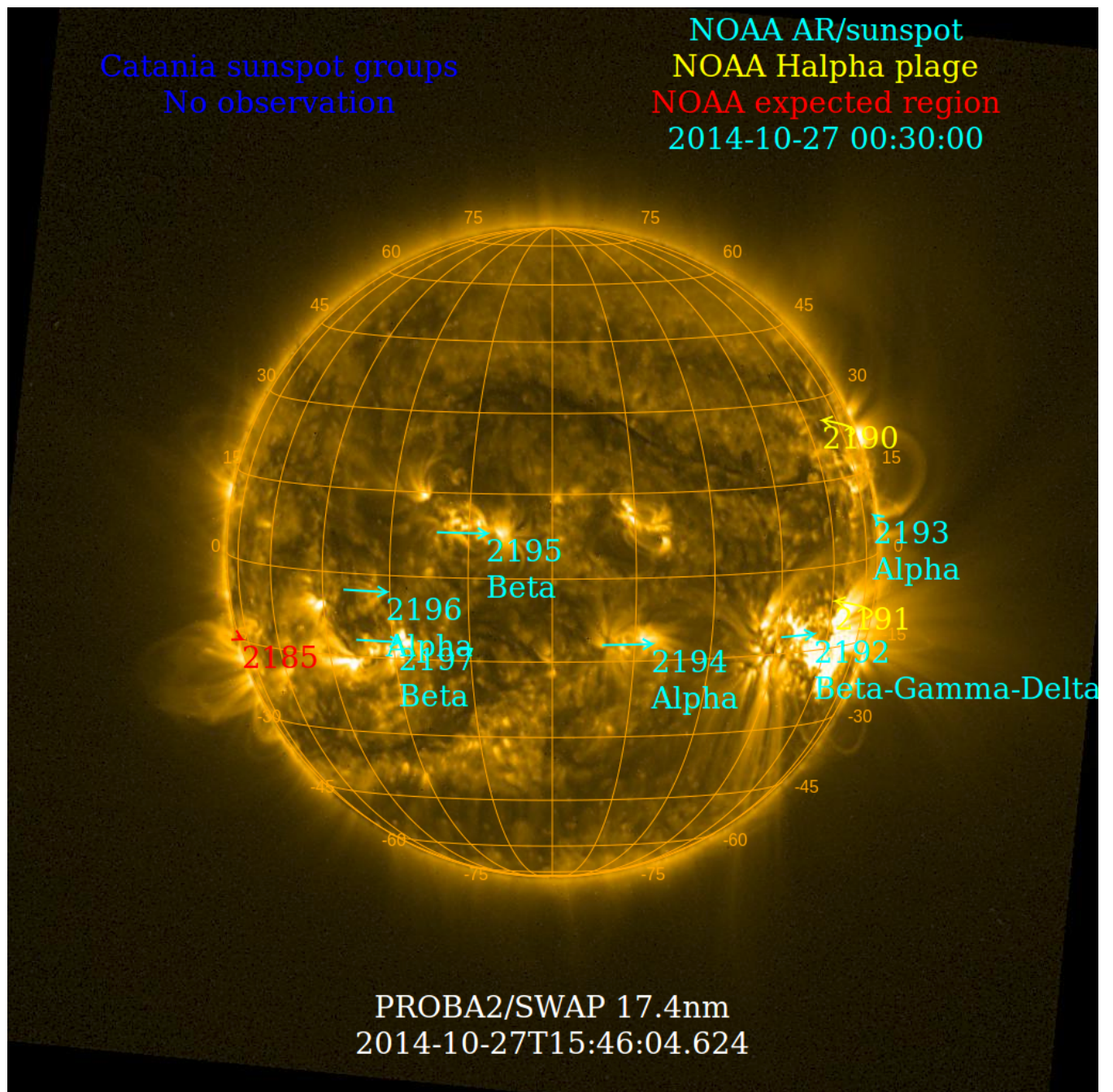
The level of solar activity<sup>1</sup> fluctuated between **low** and **high** this week.

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

	Monday 27 Oct	Tuesday 28 Oct	Wednesday 29 Oct	Thursday 30 Oct	Friday 31 Oct	Saturday 01 Nov	Sunday 02 Nov
Activity	high	moderate	moderate	moderate	low	low	low
Flares	M1.4@17:40 <b>X2.0@14:47</b> <b>M6.7@10:09</b> M1.3@03:41 M1.0@02:02 <b>M7.1@00:34</b>	<b>M1.6@14:06</b> <b>M6.6@03:32</b> <b>M3.4@02:42</b>	<b>M2.3@21:22</b> <b>M1.3@18:50</b> M1.0@16:20 <b>M1.4@14:33</b> M1.2@10:01 M1.0@08:20	<b>M1.2@04:28</b> <b>M3.5@01:35</b> <b>M1.3@00:37</b>	-	-	-

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

The SWAP images of Oct 27 and Nov 02 are shown below, with annotated active regions.

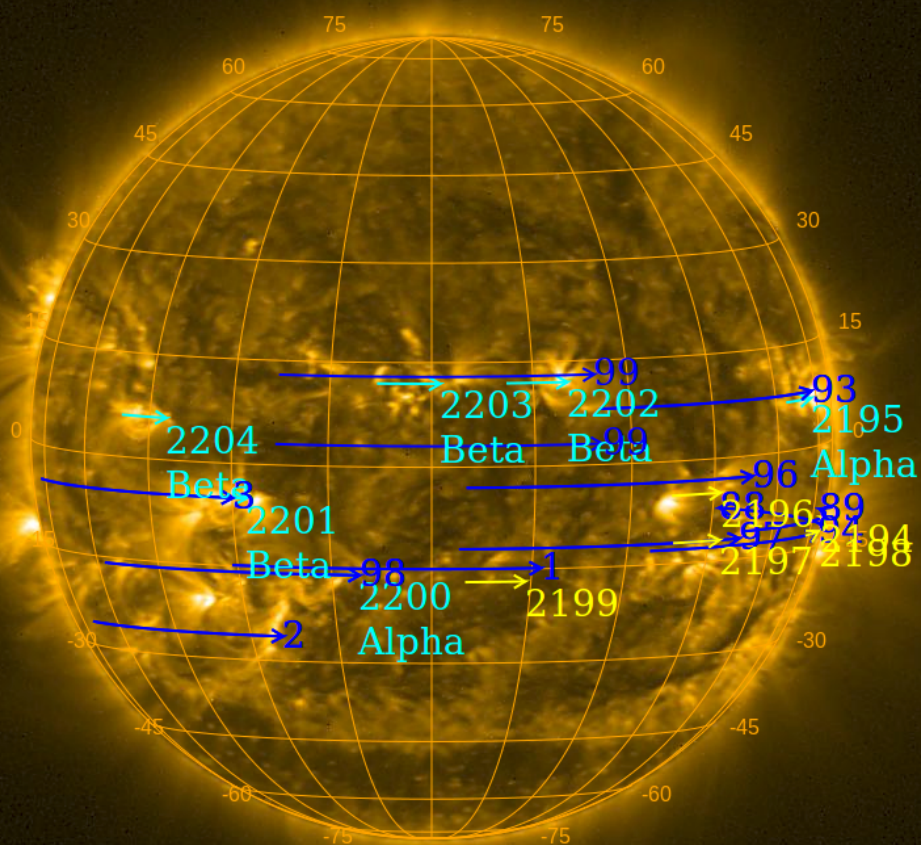


<http://sidc.be/soteria/soteria.php>



Catania sunspot groups  
2014-10-30 09:00:00

NOAA AR/sunspot  
NOAA Halpha plage  
NOAA expected region  
2014-11-02 00:30:00



PROBA2/SWAP 17.4nm  
2014-11-02T15:46:30.700

## **Solar Activity**

Solar flare activity fluctuated between low and high during the week.

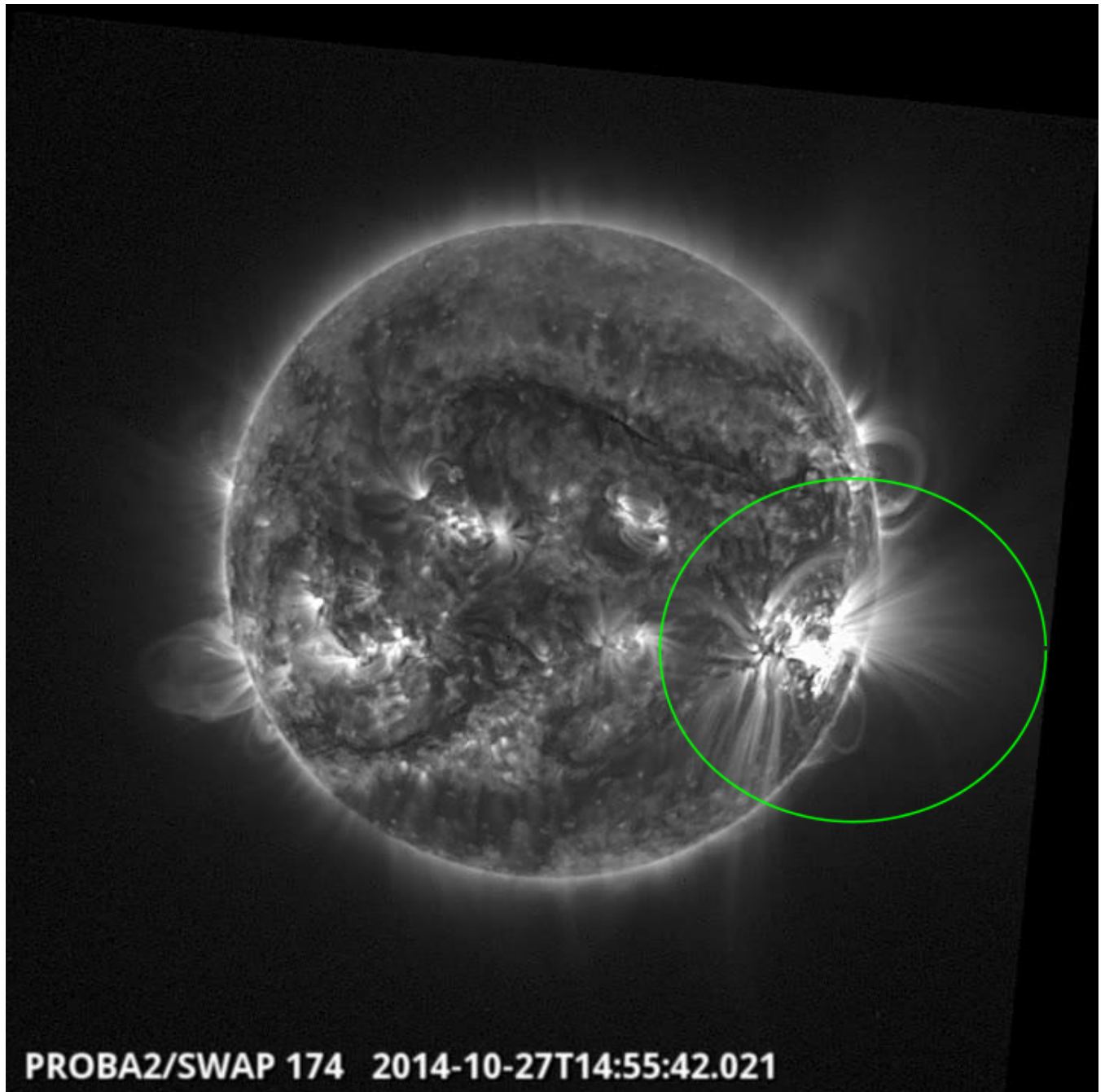
In order to view the activity of this week in more detail, we suggest to go to the following website from which all the daily (normal and difference) movies can be accessed: <http://proba2.oma.be/ssa>

This page also lists the recorded flaring events.

A weekly overview movie can be found [here](#) (SWAP week 240).

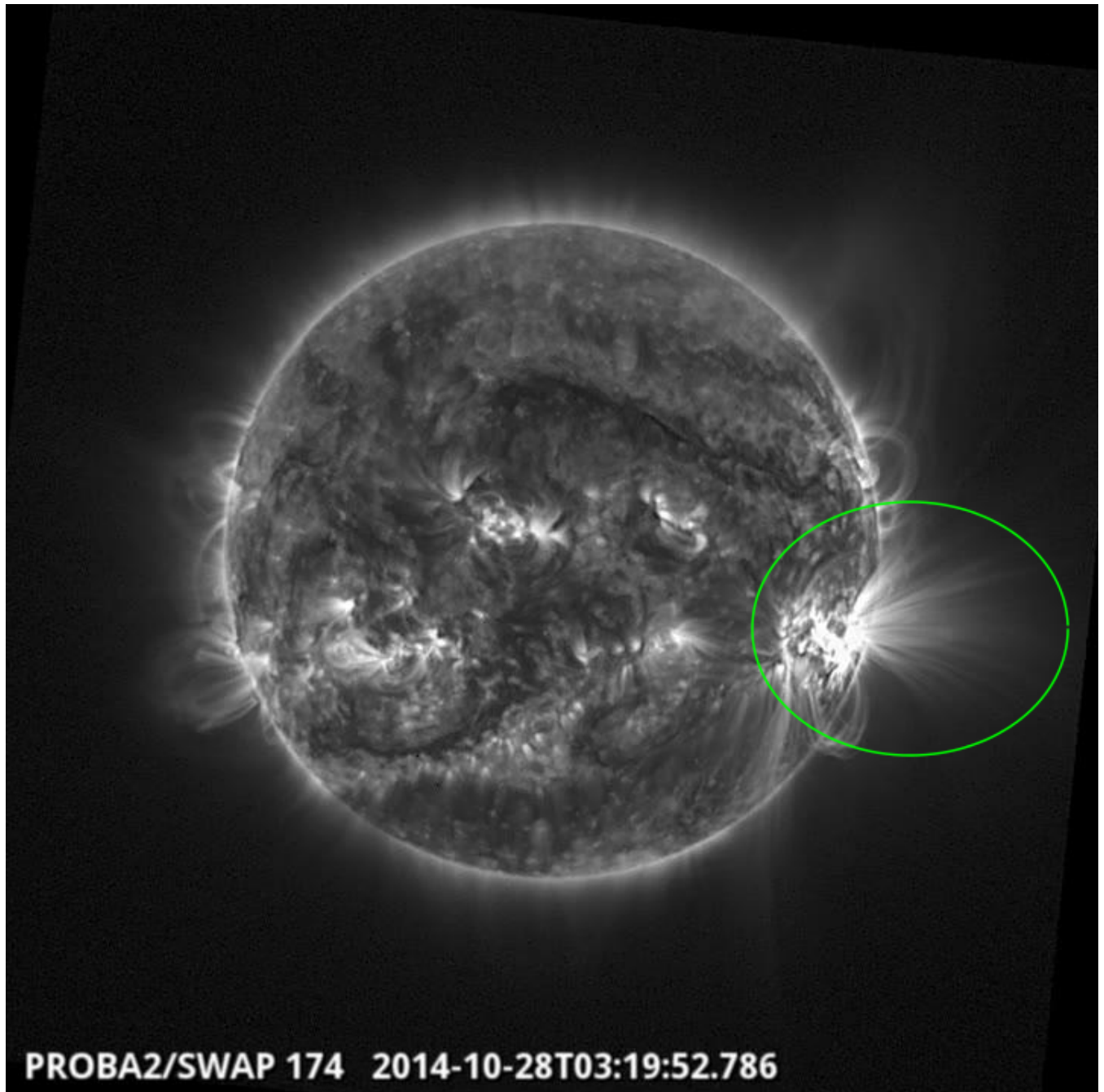
Details about some of this week's events, can be found further below.

Monday Oct 27



**X-flare on the south west quad@ 14:55 - SWAP image**  
Find a movie of the events [here](#) (SWAP movie)

Tuesday Oct 28

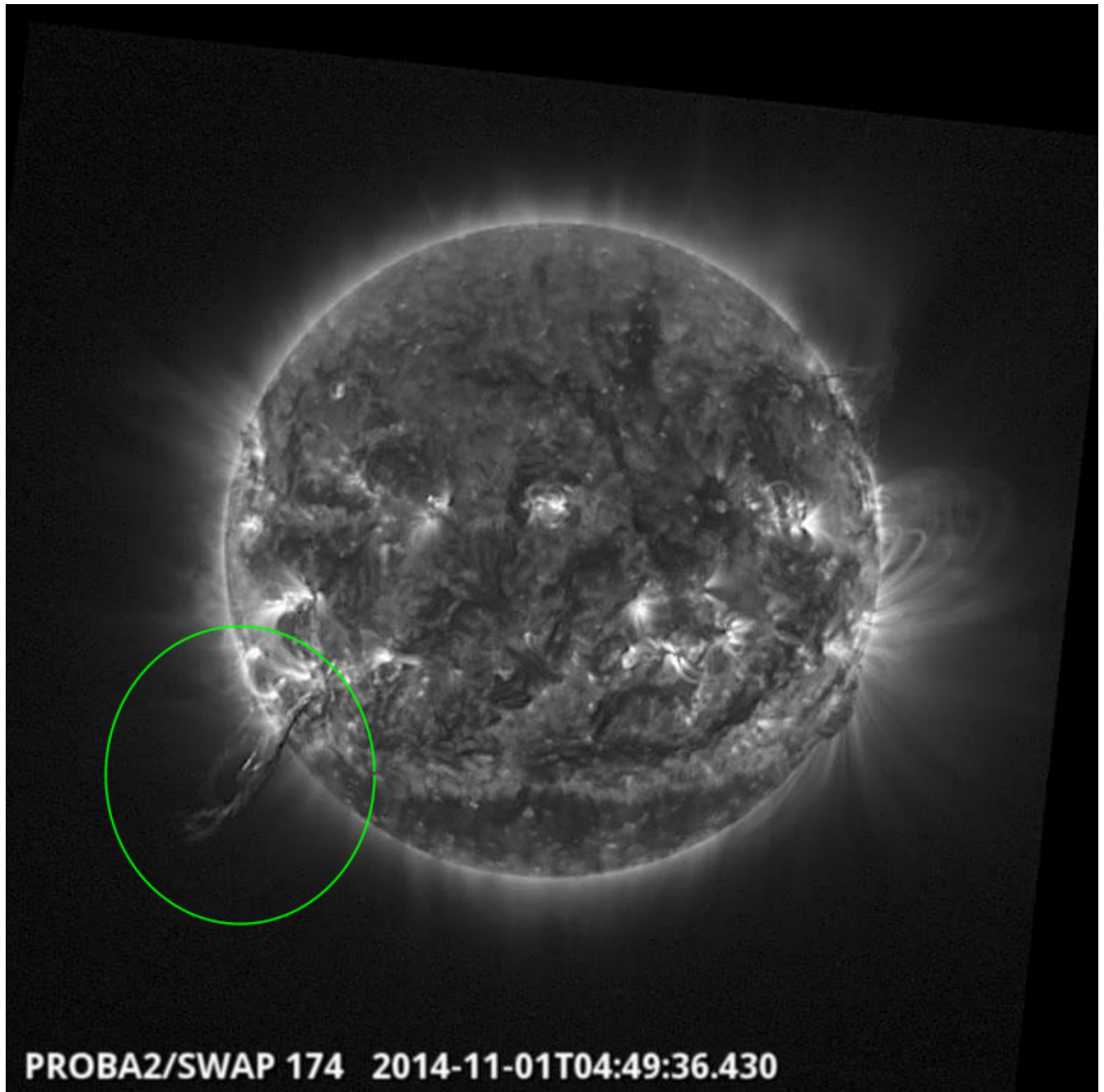


**PROBA2/SWAP 174 2014-10-28T03:19:52.786**

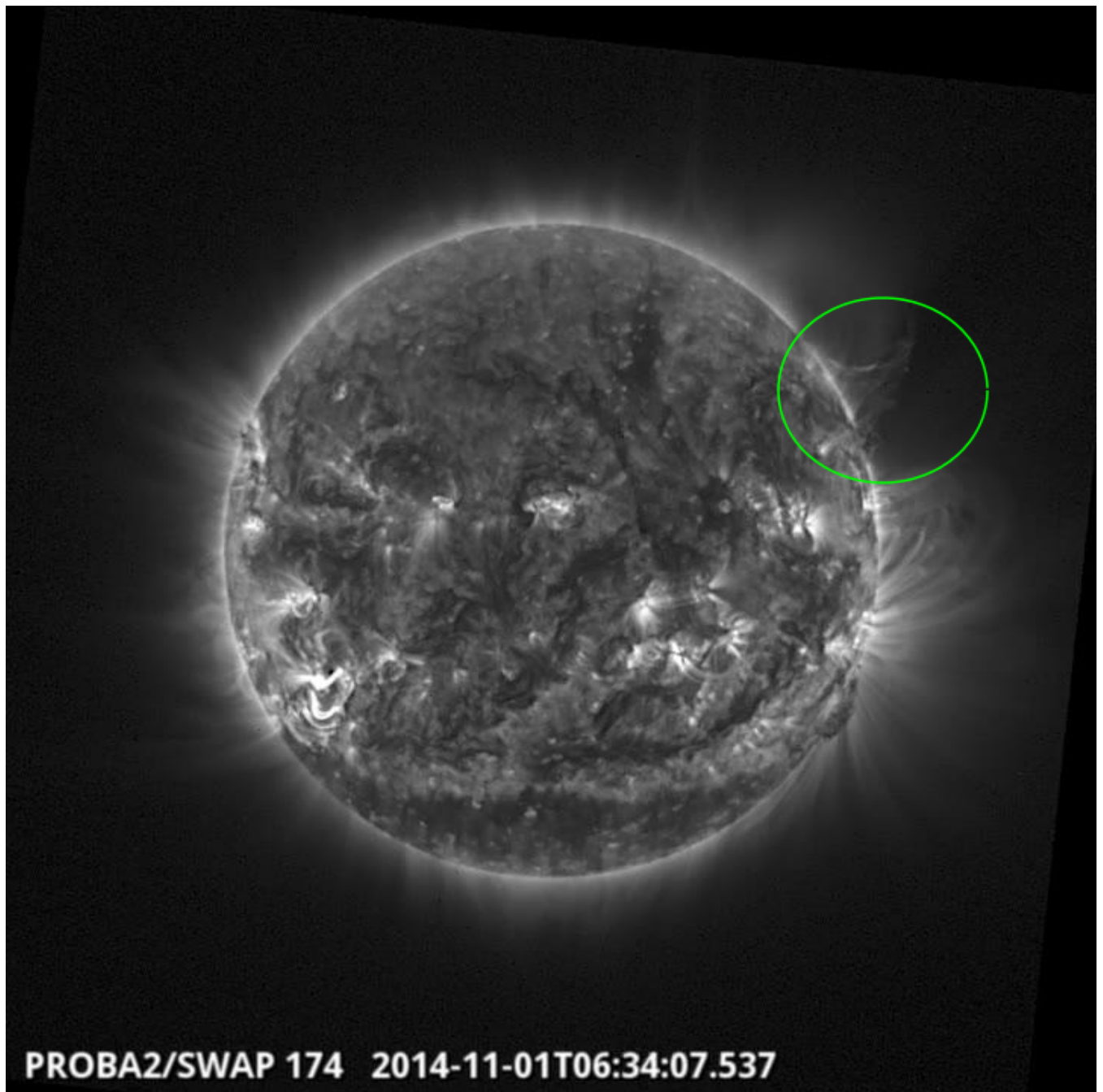
**M-flare on the south west quad @ 03:19 - SWAP image**  
Find a movie of the event [here](#) (SWAP movie)



Saturday Nov 01



**Eruption on the south east quad @ 04:49 - SWAP image**  
Find a movie of the event [here](#) (SWAP movie)



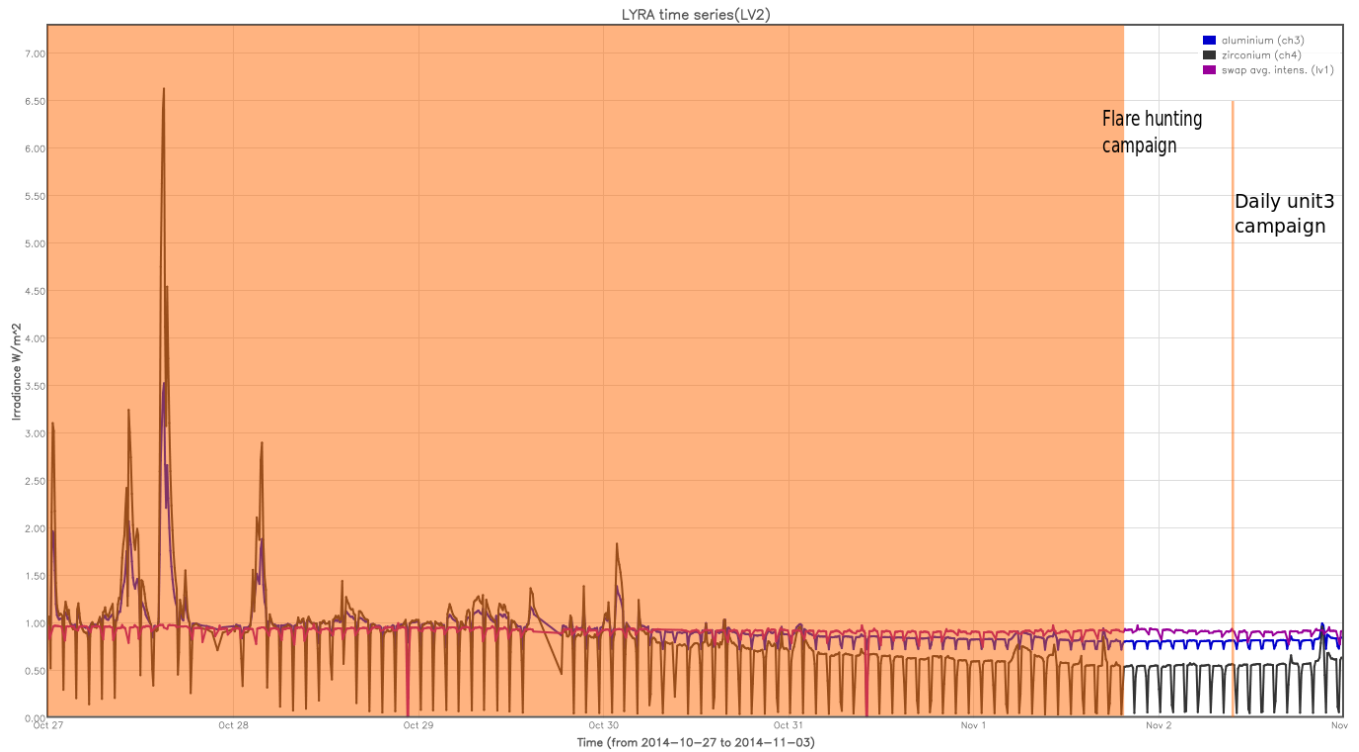
Failed eruption on the north west limb @ 06:34 - SWAP image  
Find a movie of the event [here](#) (SWAP movie)



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 orange shaded periods correspond to, from left to right:

- Flare hunting campaign
- Daily unit 3 campaign

## **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>).

- ESA press release on the 5 year anniversary of Proba2 ([http://www.esa.int/Our\\_Activities/Operations/Space\\_Situational\\_Awareness/Five\\_years\\_in\\_space\\_one\\_satellite\\_three\\_missions](http://www.esa.int/Our_Activities/Operations/Space_Situational_Awareness/Five_years_in_space_one_satellite_three_missions) )
- STCE press release on the 5 year anniversary of Proba 2 (<http://www.astro.oma.be/nl/de-proba2-satelliet-werd-gelanceerd-op-2-november-2009-zijn-vijf-de-verjaardag-de-ruimte-vieren/> )
- Proba 2 news item on the 5 year anniversary of Proba 2 (<http://proba2.sidc.be/birthday> )

## **Guest Investigator Program**

- None

## 2. LYRA instrument status

### Calibration

No calibration this week.

### IOS & operations

Monday 27 Oct	Tuesday 28 Oct	Wednesday 29 Oct	Thursday 30 Oct	Friday 31 Oct	Saturday 01 Nov	Sunday 02 Nov
Nominal acquisition + Flare hunting  LYIOS00429 -> LYIOS00430	Nominal acquisition + Flare hunting  LYIOS00430	Nominal acquisition + Flare hunting  LYIOS00430 -> LYIOS00431	Nominal acquisition + Flare hunting  LYIOS00431	Nominal acquisition + Flare hunting  LYIOS00431 -> LYIOS00432	Nominal acquisition + Flare hunting  LYIOS00432	Nominal acquisition + daily unit 3  LYIOS00432

The following science campaigns were performed by LYRA:

- Flare hunting campaign
- dark current measurements with unit 3
- daily U3 observations campaign

### LYRA detector temperature

LYRA detector 2 temperature globally varied between 53.4 and 54.2 °C, taking into account the flare hunting campaign and the daily U3 activation periods.

### 3. SWAP instrument status

#### Calibration

No calibration this week.

#### MCPM errors

The number of MCPM recoverable errors increased from 23122 to 23396.

The number of MCPM unrecoverable errors increased from 1901 to 2069.

#### IOS & operations

Monday 27 Oct	Tuesday 28 Oct	Wednesday 29 Oct	Thursday 30 Oct	Friday 31 Oct	Saturday 01 Nov	Sunday 02 Nov
Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition
IOS00542 524 images	IOS00542 540 images	IOS00542 508 images	IOS00542 483 images	IOS00542 523 images	IOS00543 518 images	IOS00543 509 images

Special operations for SWAP, this week:

- occultation jumps

#### SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between 2.56 and 3.58 °C.



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

The main operator is Katrien Bonte.

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 15611 to 15671) was nominal, except for:

- 15641 .

### **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:

- 15641 .

Total number of images between 2014 Oct 27 0UT and 2014 Nov 03 0UT: 3605

Highest cadence in this period: 130 seconds

Average cadence in this period: 167.81 seconds

Number of image gaps larger than 300 seconds: 110

Largest data gap: 34.37 minutes

The data gap is caused by the occultation jumps.

### **Data coverage LYRA**

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

- 15641

## 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)