


P2SC-ROB-WR-293 - 20151102 Weekly report #293	P2SC Weekly report	
Period covered: Date: Written by: Approved by:	Mon Nov 02 to Sun Nov 08, 2015 11 Nov 2015 Robbe Vansintjan D.B. Seaton	Royal Observatory of Belgium - PROBA2 Science Center
To:	LYRA PI, marie.dominique@sidc.be SWAP PI, david.berghmans@sidc.be	http://proba2.sidc.be ++ 32 (0) 2 3730559
cc:	ROB DIR, ronald@oma.be ESA Redu, Etienne.Tilmans@esa.int ESA D/SRE, Joe.Zender@esa.int ESA D/TEC, Juha-Pekka.Luntama@esa.int	

1. Science

Solar & Space weather events

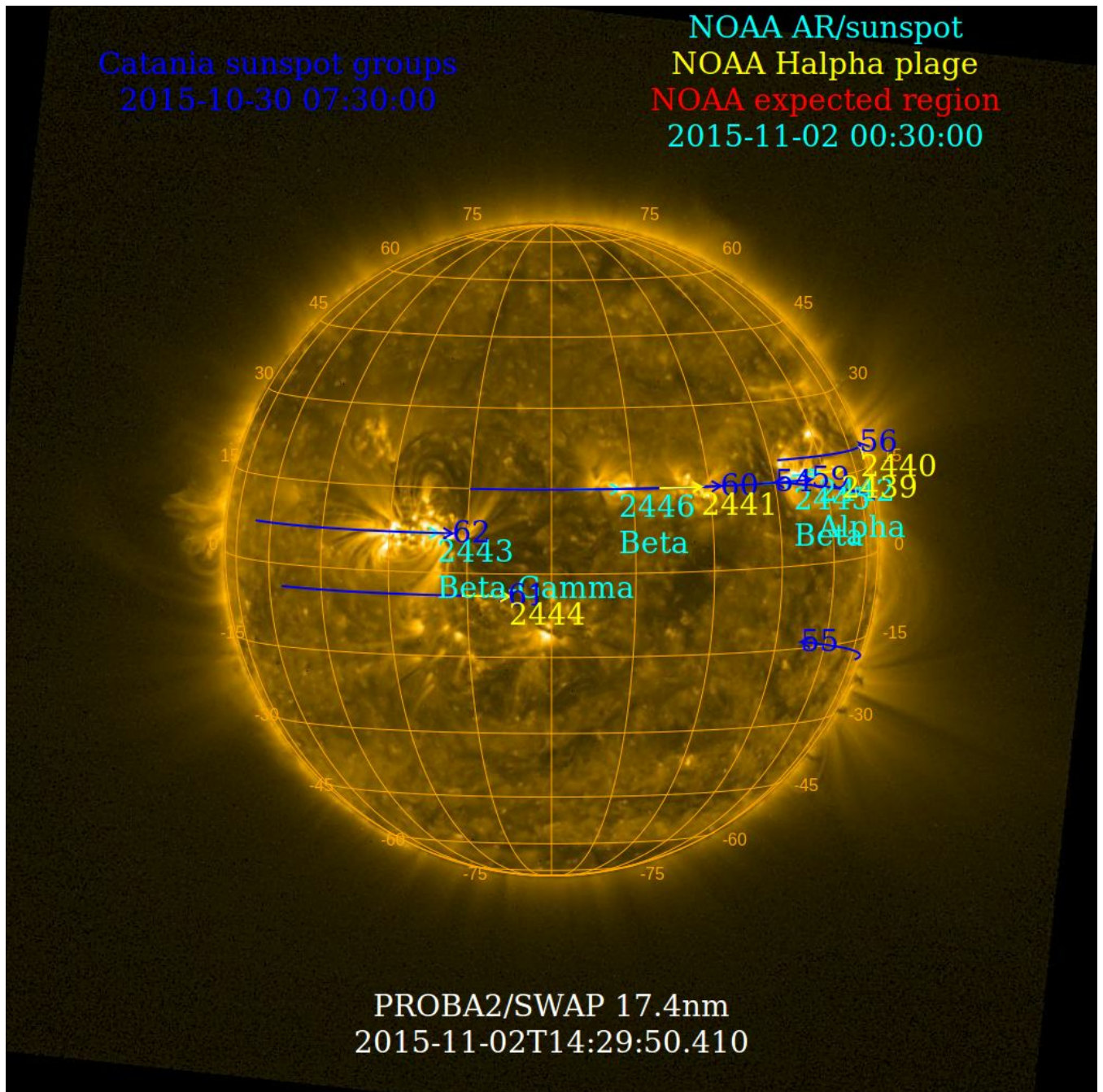
The level of solar activity¹ fluctuated between **very low** and **moderate** this week.

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

	Monday 02 Nov	Tuesday 03 Nov	Wednesday 04 Nov	Thursday 05 Nov	Friday 06 Nov	Saturday 07 Nov	Sunday 08 Nov
Activity	low	low	moderate	very low	low	low	very low
Flares	-	-	M3.7@13:52 M2.5@12:03 M1.9@03:26	-	-	-	-

¹ See appendix. All timings are given in UT.

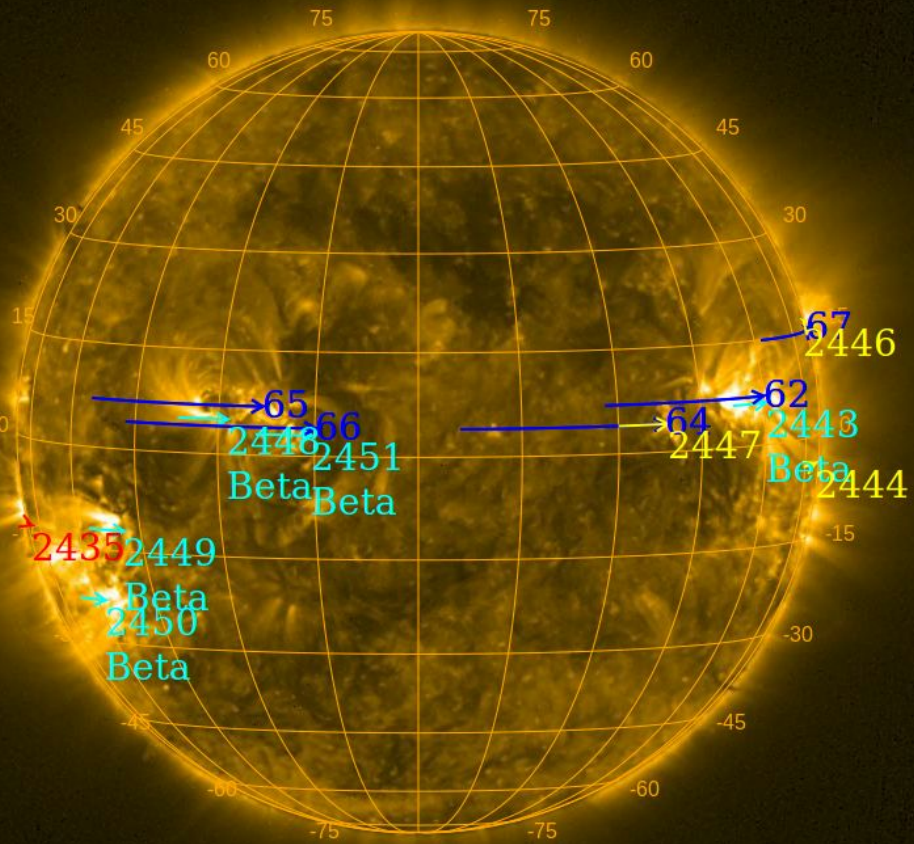
The SWAP images of Nov 02 and Nov 08 are shown below, with annotated active regions.



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

Catania sunspot groups
2015-11-06 10:00:00

NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2015-11-08 00:30:00



PROBA2/SWAP 17.4nm
2015-11-08T14:28:42.504

Solar Activity

Solar flare activity fluctuated between very low and moderate during the week.

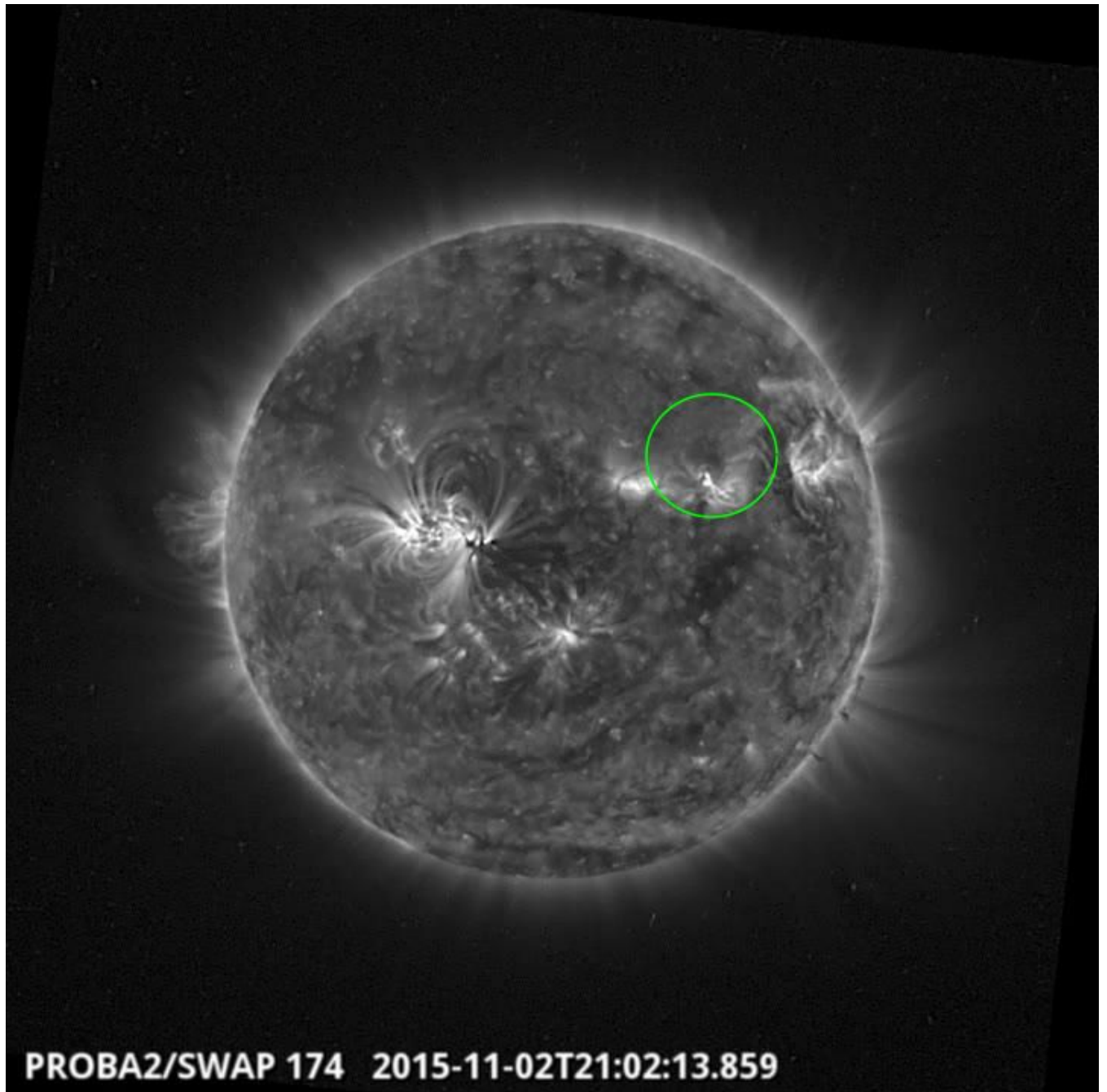
In order to view the activity of this week in more detail, we suggest to go to the following website from which all the daily (normal and difference) movies can be accessed: <http://proba2.oma.be/ssa>

This page also lists the recorded flaring events.

A weekly overview movie can be found [here](#) (SWAP week 293).

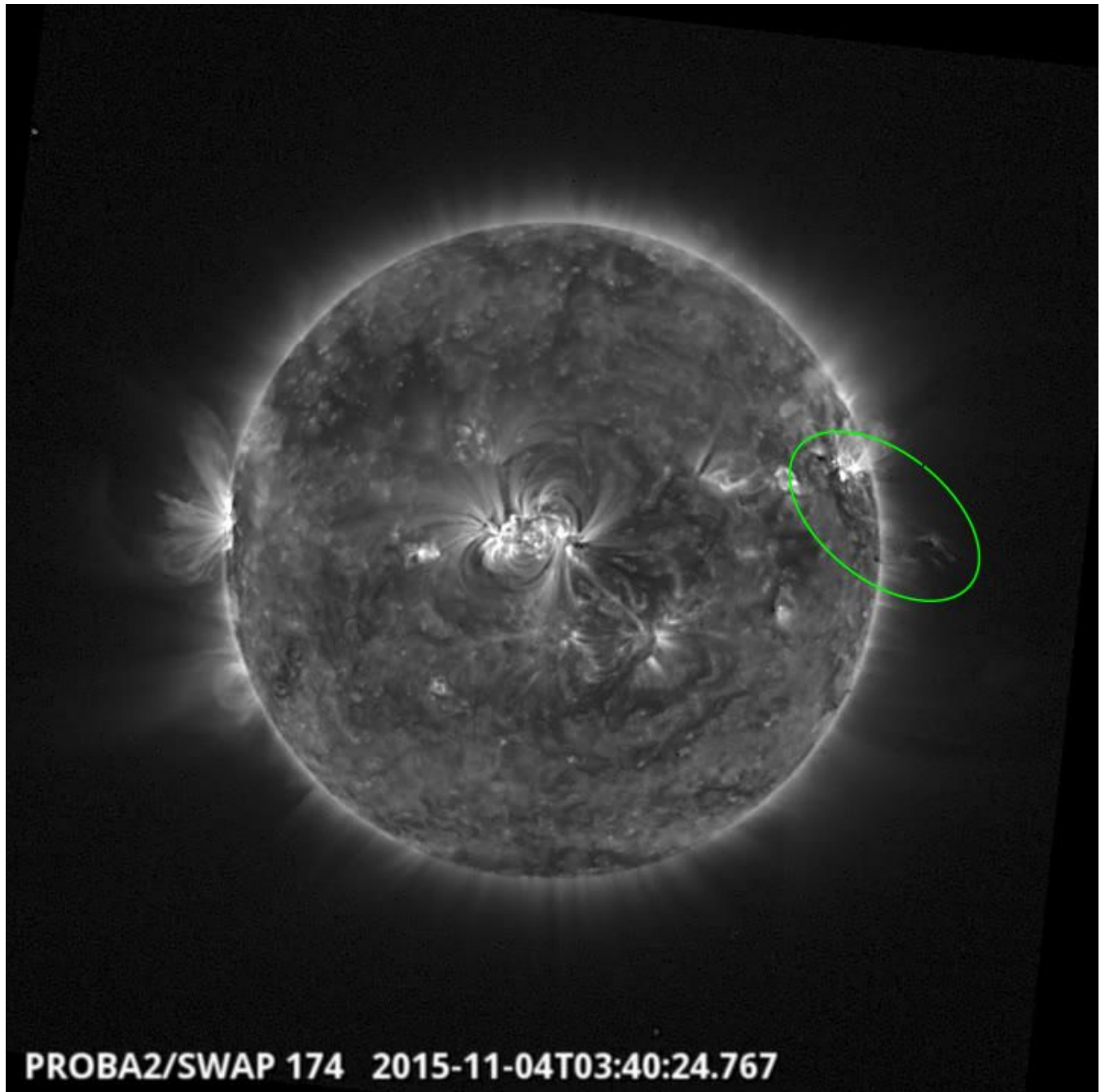
Details about some of this week's events, can be found further below.

November Nov 02

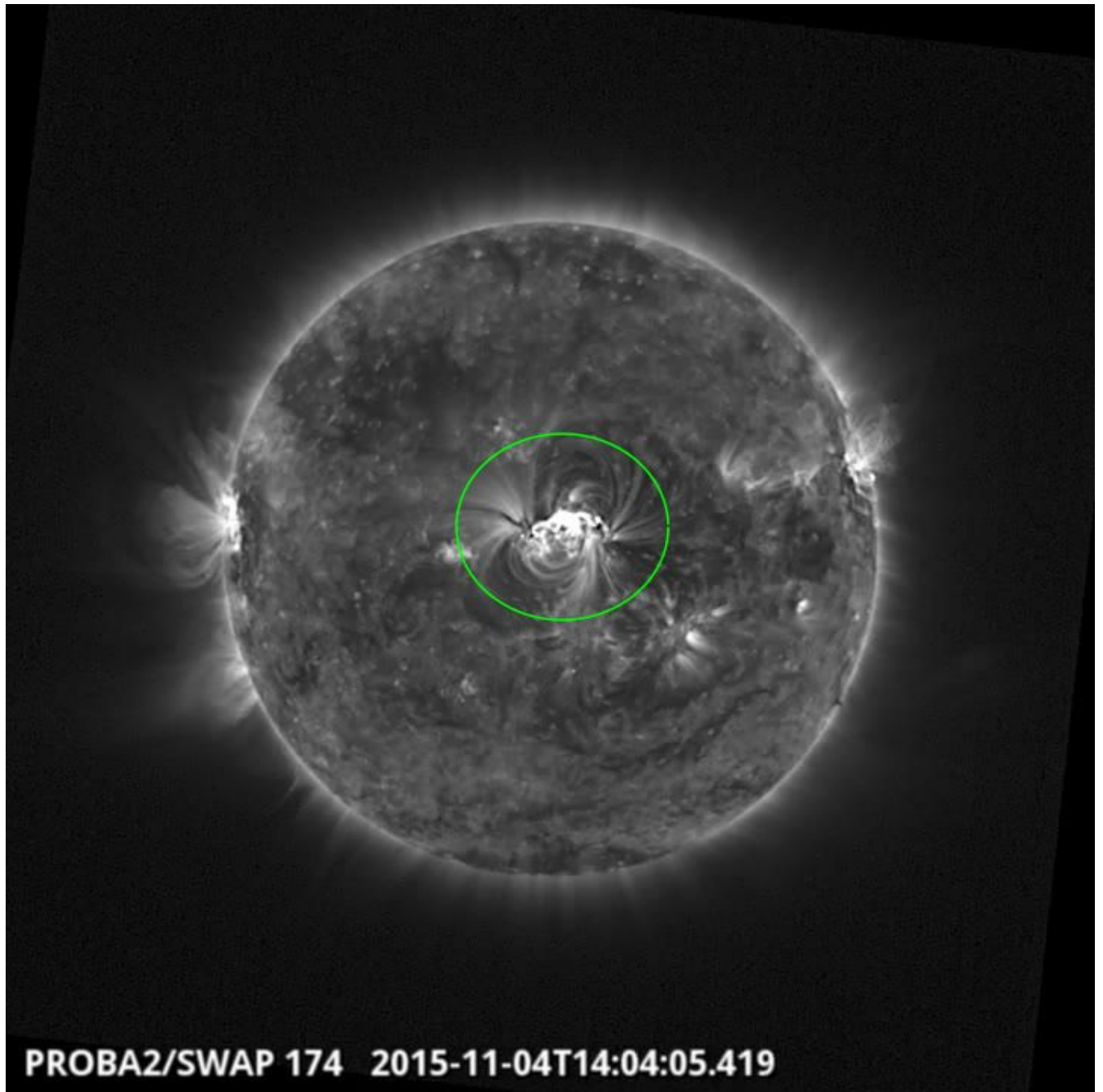


Eruption on the north west quadrant @ 21:02 - SWAP image
Find a movie of the event [here](#) (SWAP movie)

Wednesday Nov 04

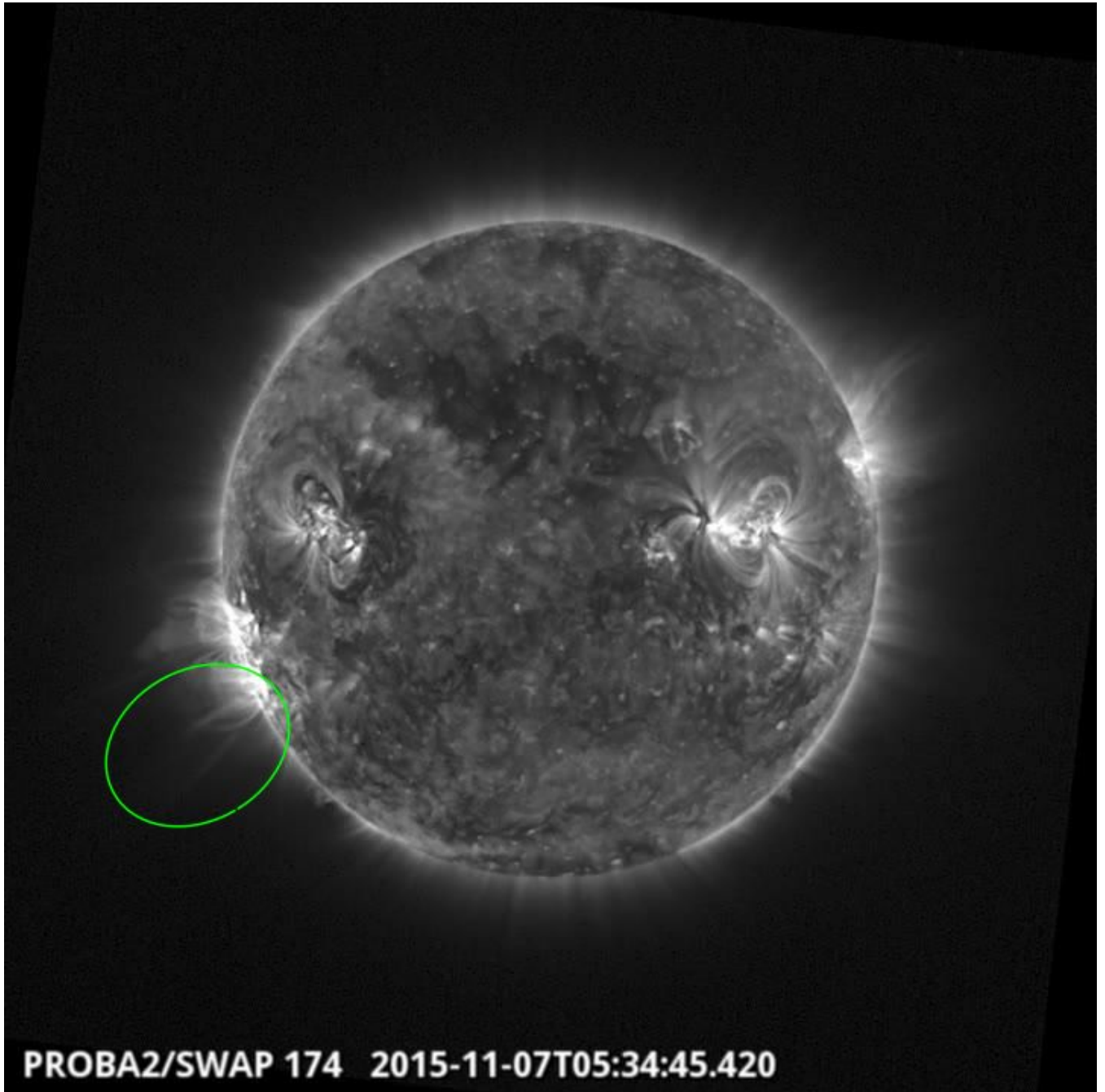


Eruption on the west limb @ 03:40 - SWAP image
Find a movie of the event [here](#) (SWAP movie)



M-flare on the centre @ 14:04 - SWAP image
Find a movie of the event [here](#) (SWAP movie)

Saturday Nov 07

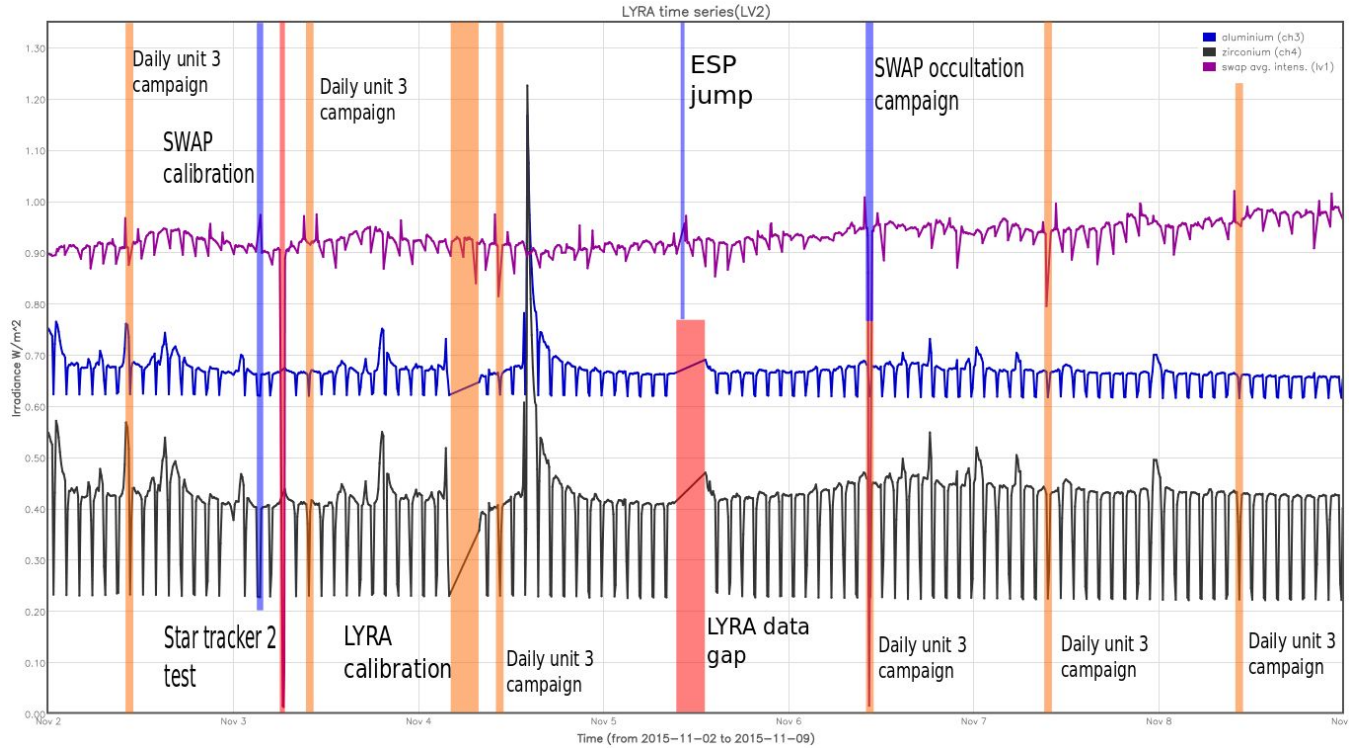


Eruption on the east limb @ 05:34 - SWAP image
Find a movie of the event [here](#) (SWAP movie)

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 blue shaded periods correspond to, from left to right:

- SWAP calibration, 2015-11-03
- ESP jump, 2015-11-05
- SWAP occultation campaign, 2015-11-06

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

- Daily unit 3 campaign, 2015-11-02
- Daily unit 3 campaign, 2015-11-03
- LYRA bi-weekly calibration, 2015-11-04
- Daily unit 3 campaign, 2015-11-04
- Daily unit 3 campaign, 2015-11-06
- Daily unit 3 campaign, 2015-11-07
- Daily unit 3 campaign, 2015-11-08

The red shaded period corresponds to:

- Star tracker 2, 2015-11-03

Both LYRA and SWAP were put into IDLE mode to start the star tracker campaign.

- LYRA data gap, 2015-11-05

The LYRA data gap was caused because at the start of the daily campaign LYRA went into recovery mode. An IOS was sent to put LYRA into off mode and back to acquisition.

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

- J. Carlyle LYRA "Column Density Determination of Erupting Filament Material in Proba-2 Images".

2. LYRA instrument status

Calibration

Calibration campaign on Wednesday this week.

IOS & operations

Monday 02 Nov	Tuesday 03 Nov	Wednesday 04 Nov	Thursday 05 Nov	Friday 06 Nov	Saturday 07 Nov	Sunday 08 Nov
Nominal acquisition + daily U3	Nominal acquisition + daily U3 + Star tracker 2 test	Nominal acquisition + daily U3 + calibration	Nominal acquisition	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3
LYIOS00505	LYIOS00505	LYIOS00505	LYIOS00505 -> LYIOS00506	LYIOS00507	LYIOS00507	LYIOS00507

The following science campaigns were performed by LYRA:

- daily U3 observations campaign

LYRA detector temperature

LYRA detector 2 temperature globally varied between 46.8 and 53 °C.

3. SWAP instrument status

Calibration

Calibration campaign on Tuesday this week.

MCPM errors

The number of MCPM recoverable errors increased from 488 to 790.

The number of MCPM unrecoverable errors remained at 0.

IOS & operations

Monday 02 Nov	Tuesday 03 Nov	Wednesday 04 Nov	Thursday 05 Nov	Friday 06 Nov	Saturday 07 Nov	Sunday 08 Nov
Nominal acquisition	Nominal acquisition + Star tracker 2 + calibration	Nominal acquisition	Nominal acquisition + ESP jump	Nominal acquisition + occultation campaign	Nominal acquisition	Nominal acquisition
IOS00605 646 images	IOS00605 648 images	IOS00605 658 images	IOS00605 644 images	IOS00606 695 images	IOS00606 659 images	IOS00606 619 images

Special operations for SWAP, this week:

- Star tracker 2 start up, 2015-11-03
- bi weekly calibration, 2015-11-03
- ESP jump, 2015-11-05
- Occultation campaign, 2015-11-05

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -0.2 and 3.8 °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 18887 to 18949) 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 2015 Nov 02 0UT and 2015 Nov 09 0UT: 4569

Highest cadence in this period: 29 seconds

Average cadence in this period: 132.36 seconds

Number of image gaps larger than 300 seconds: 109

Largest data gap: 33.17 minutes

Data coverage LYRA

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

- 18919

This is because LYRA went into recovery mode at this time.

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
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)