P2SC-ROB-WR-290 - 20151012 Weekly report #290	**P2SC Weekly report**	
Period covered: Date: Written by: Approved by:	Mon Oct 12 to Sun Oct 18, 2015 21 Oct 2015 Robbe Vansintjan Matthew West	Royal Observatory of Belgium - PROBA2 Science Center
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1. Science

Solar & Space weather events

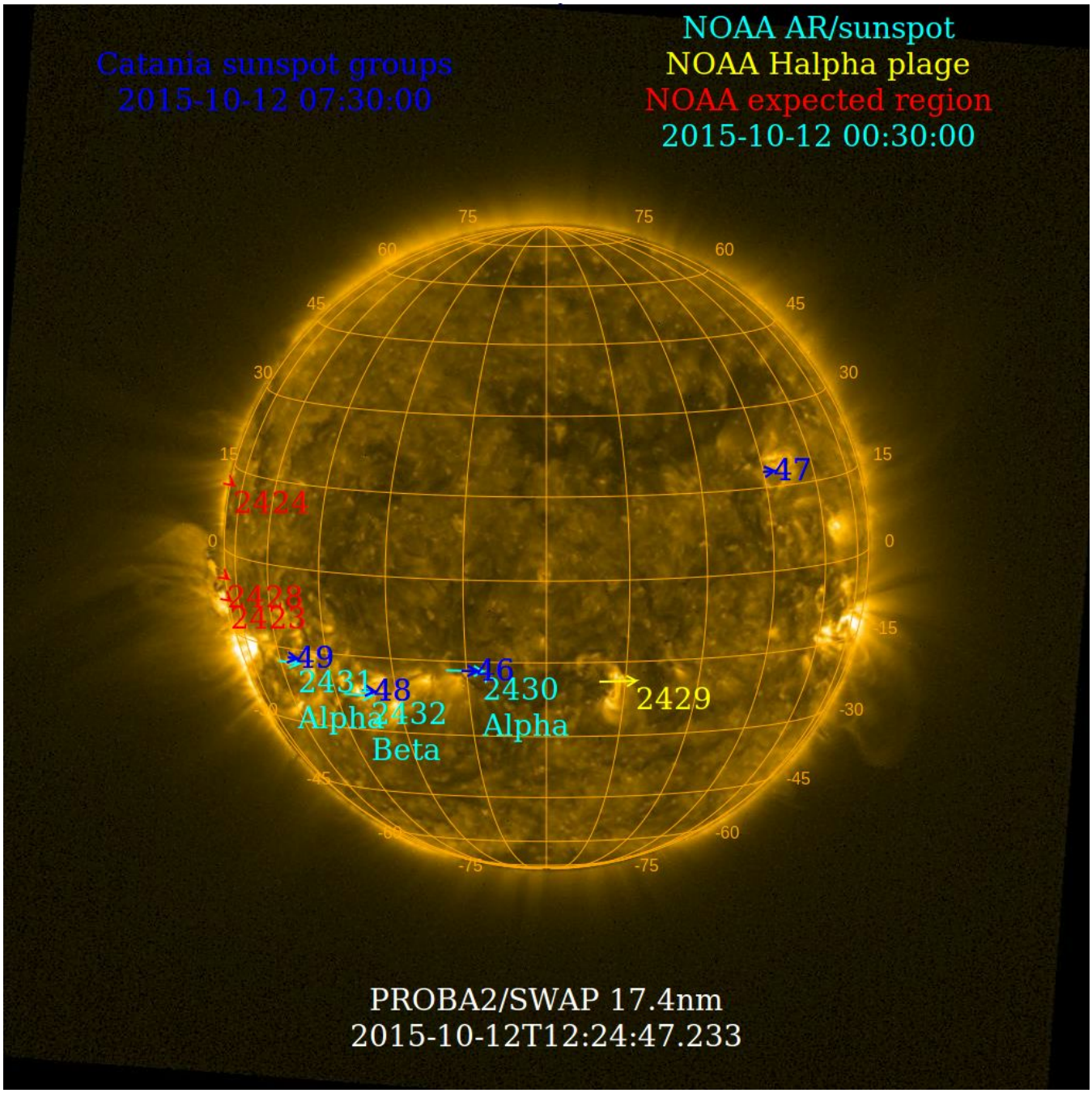
The level of solar activity[1] fluctuated between **low** and **moderate** this week.

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

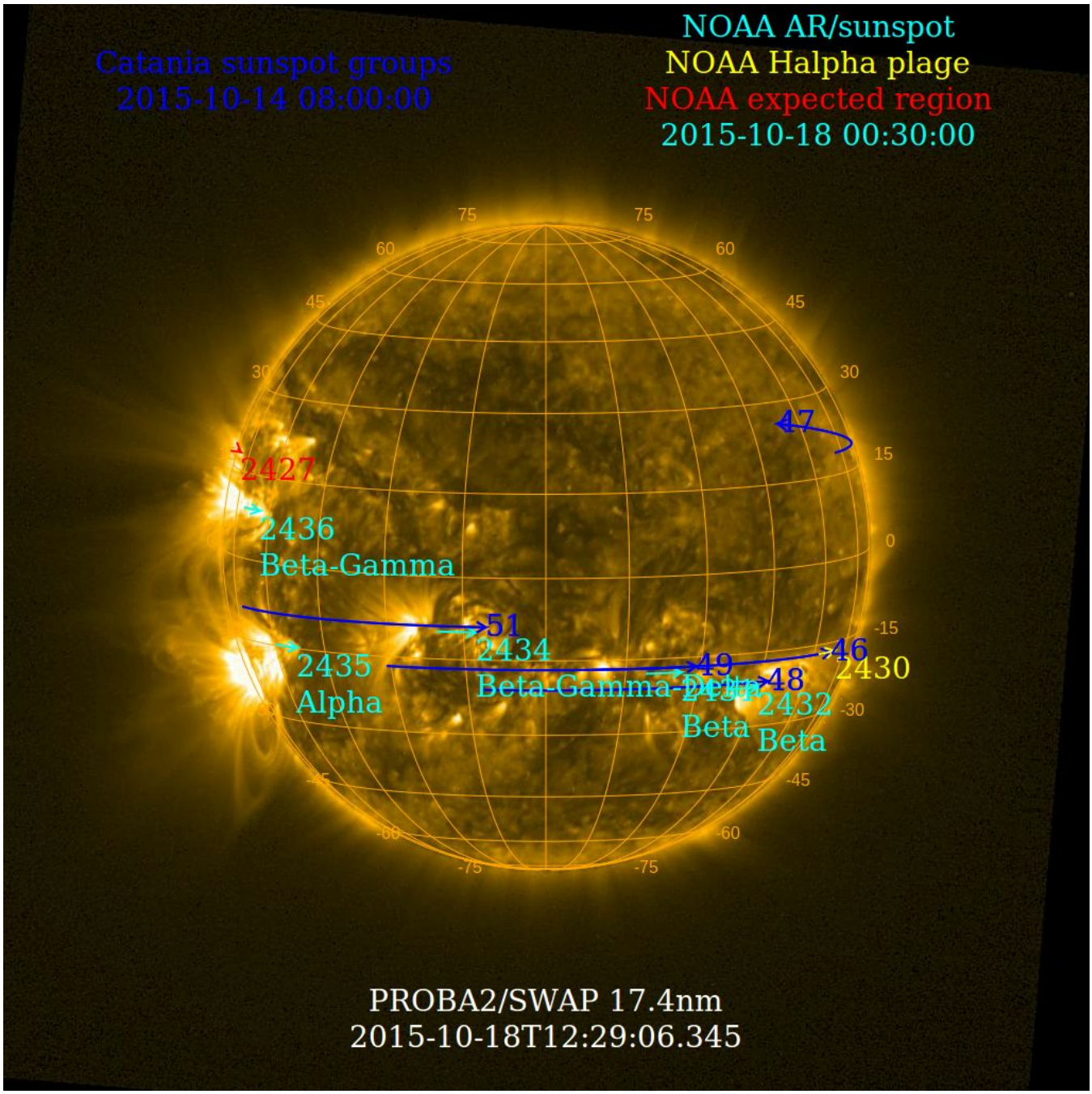
	Monday 12 Oct	Tuesday 13 Oct	Wednesday 14 Oct	Thursday 15 Oct	Friday 16 Oct	Saturday 17 Oct	Sunday 18 Oct
Activity	low	low	low	moderate	moderate	moderate	low
Flares	-	-	-	**M1.1@23:31**	**M1.1@06:16**	**M1.5@20:42** **M1.1@20:23**	-

[1] See appendix. All timings are given in UT.

The SWAP images of Oct 12 and Oct 18 are shown below, with annotated active regions.



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


Catania sunspot groups
2015-10-14 08:00:00
NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2015-10-18 00:30:00
75
60
45
30
15
0
-15
-30
-45
-60
-75
47
2427
2436
Beta-Gamma
51
2434
Beta-Gamma-Delta
2435
Alpha
49
46
2430
48
2432
Beta
Beta
PROBA2/SWAP 17.4nm
2015-10-18T12:29:06.345

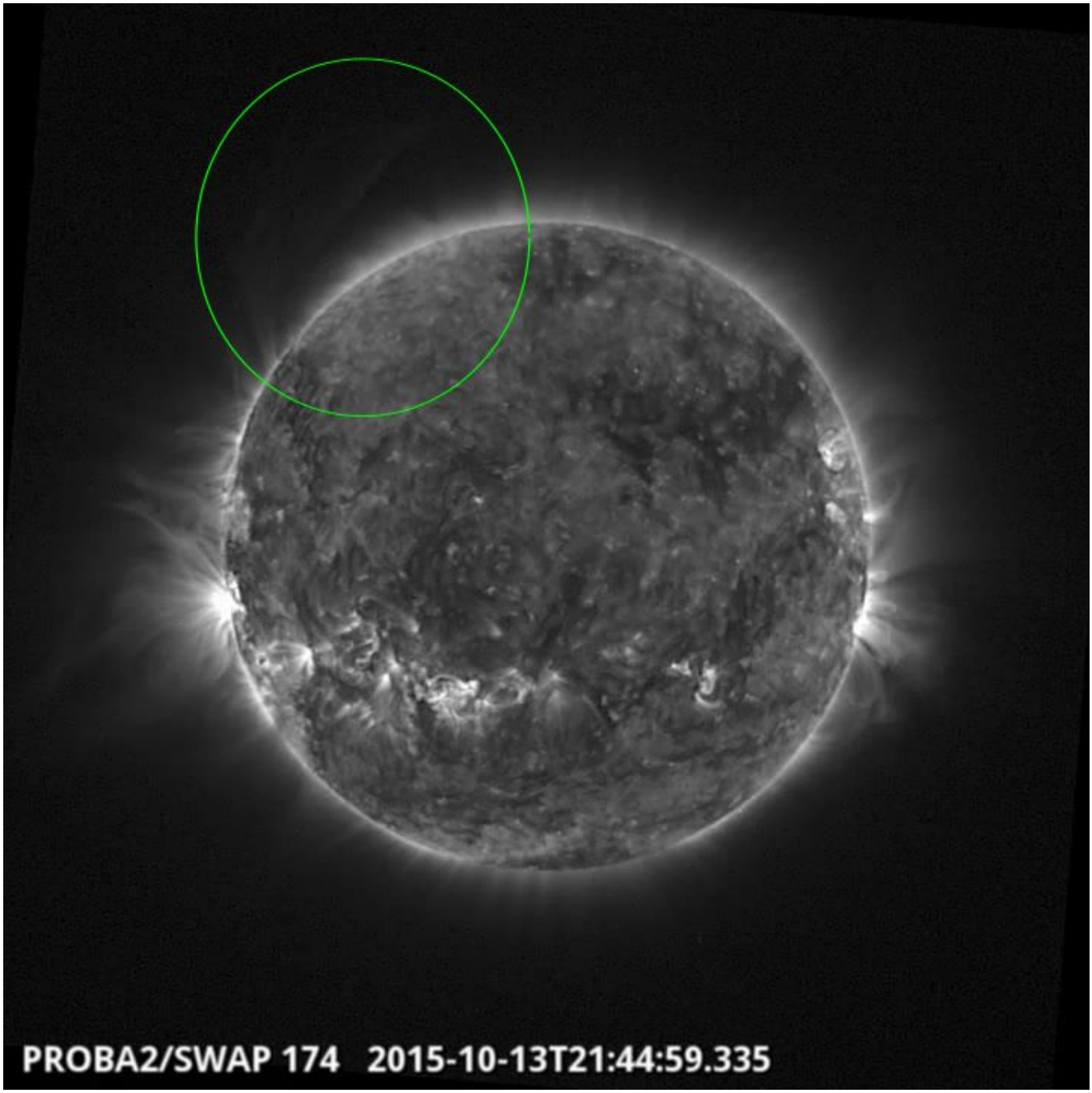
Solar Activity

Solar flare activity fluctuated between 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 290).

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

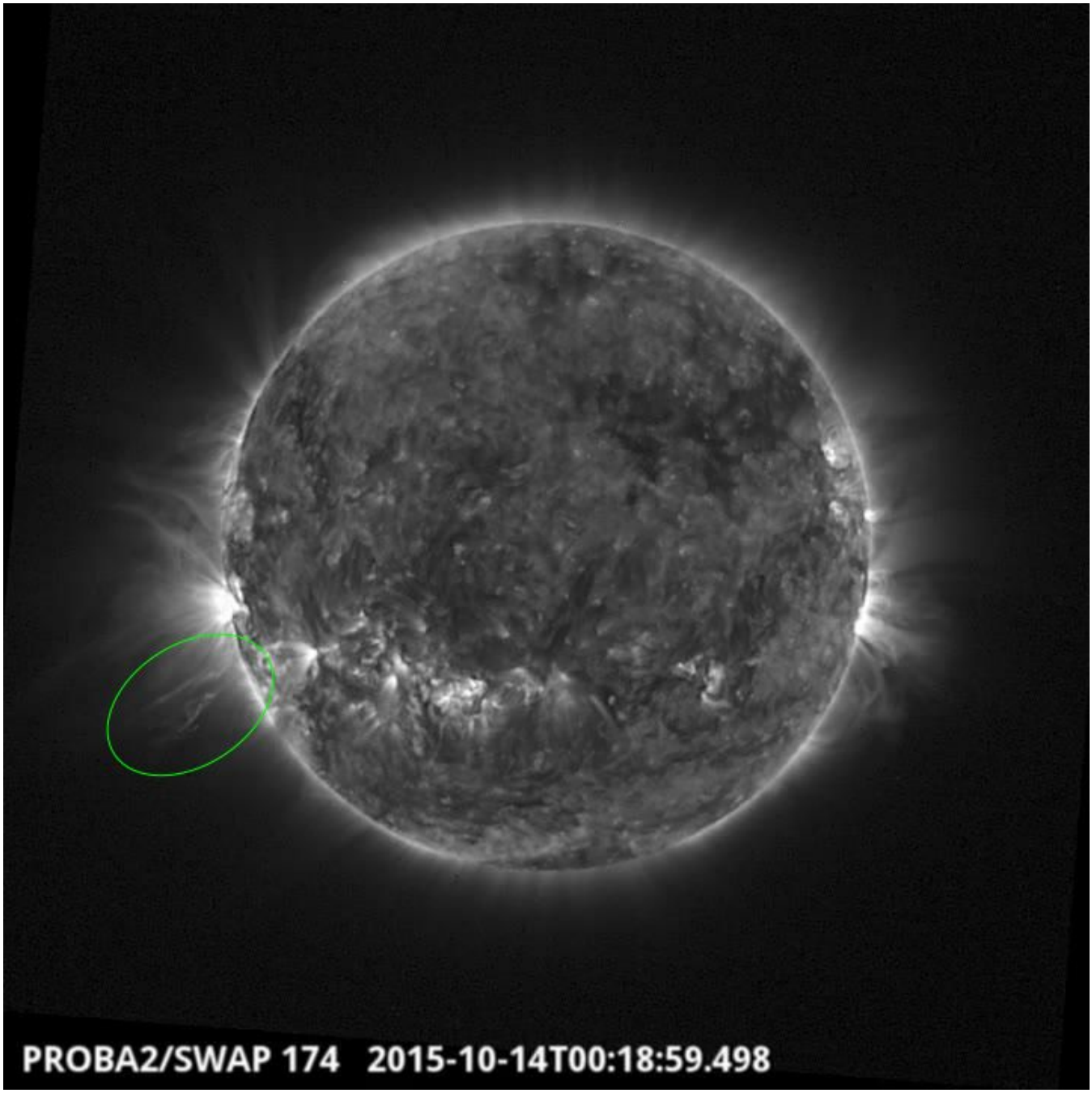
Tuesday Oct 13



Eruption on the east limb @ 21:44 - SWAP image
Find a movie of the event **here** (SWAP movie)

SWAP observed a prominence eruption off of the North-East limb.. Due to SWAPs large Field of View, and the eruption propagating toward the corner of the detector, we were able to track the eruption to over 1.5 Solar Radii, before it passed out of view.

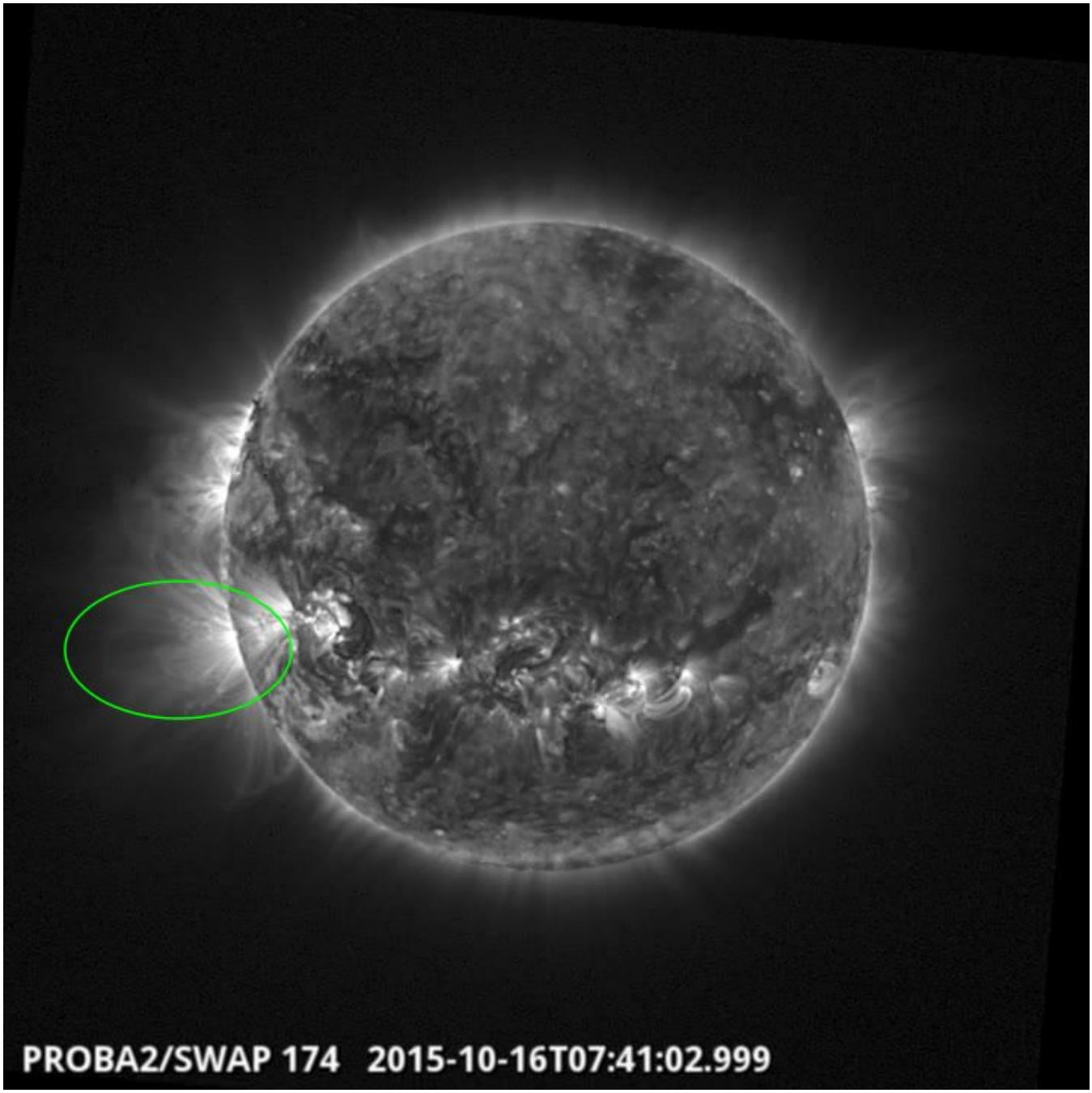
Wednesday Oct 14



Eruption on the east limb @ 00:18 - SWAP image

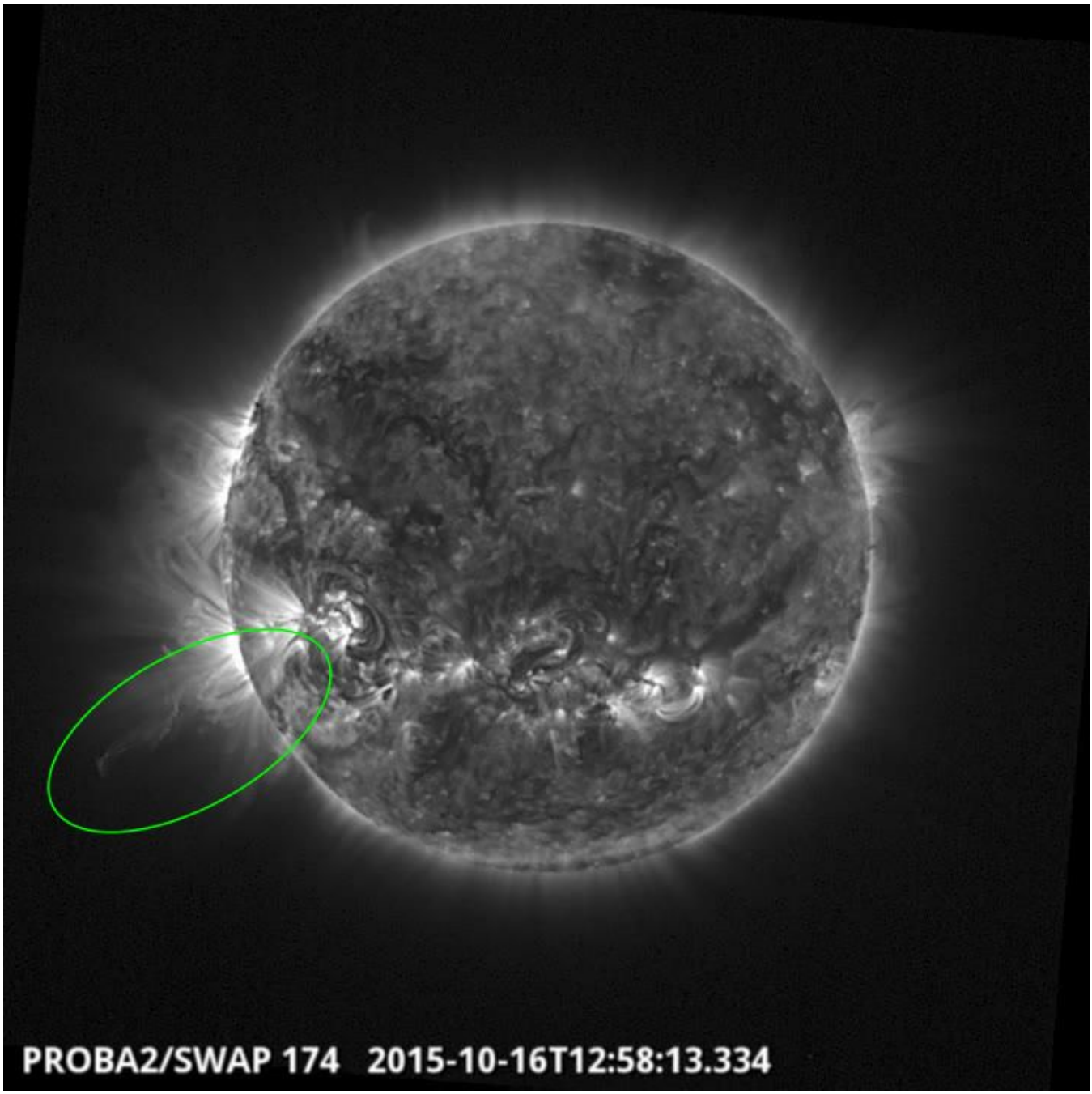
Find a movie of the event **here** (SWAP movie)

Friday Oct 16



Eruption on the east limb @ 07:41 - SWAP image

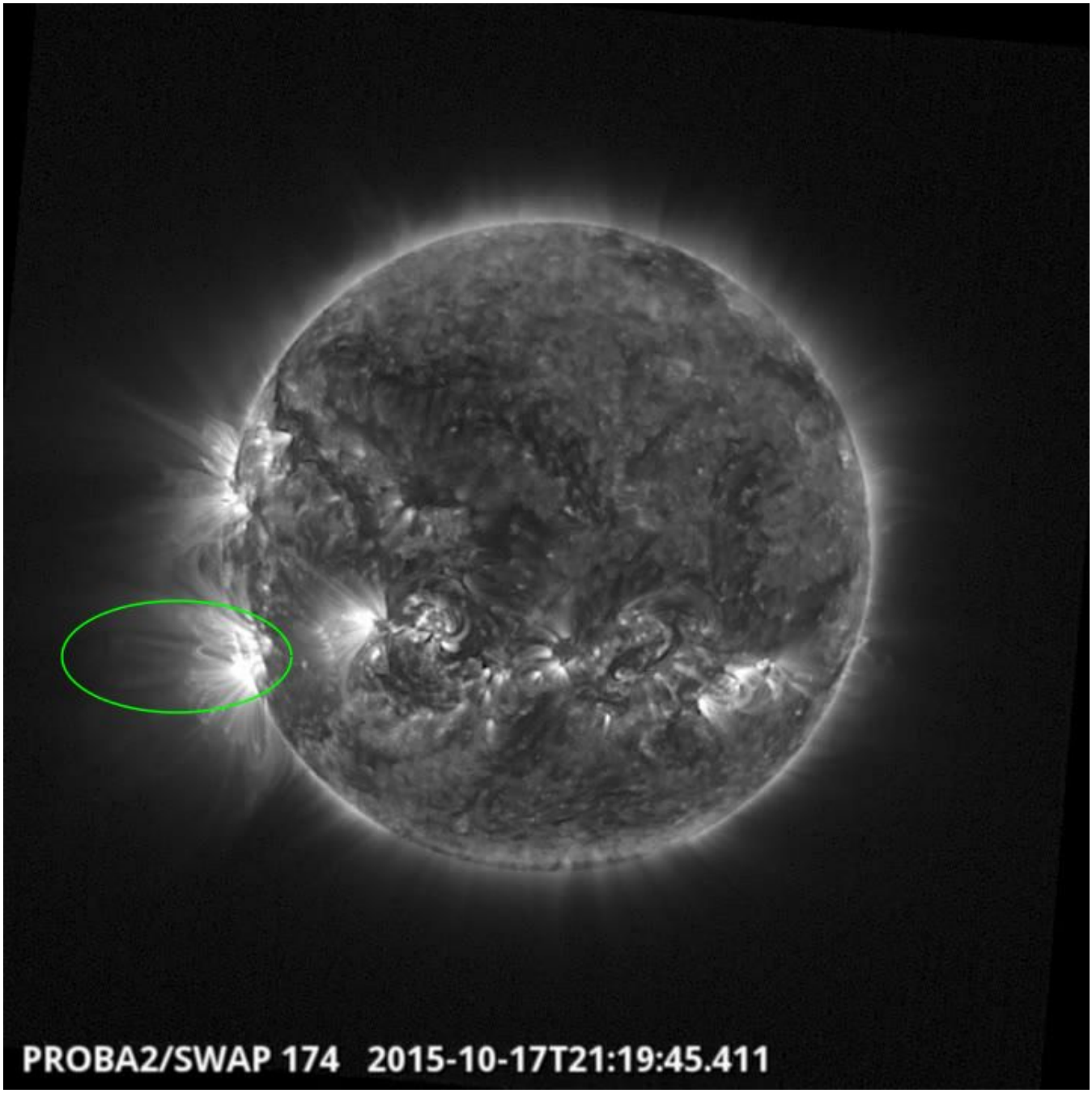
Find a movie of the event **here** (SWAP movie)



Eruption on the east limb @ 12:58 - SWAP image

Find a movie of the event **here** (SWAP movie)

Saturday Oct 17

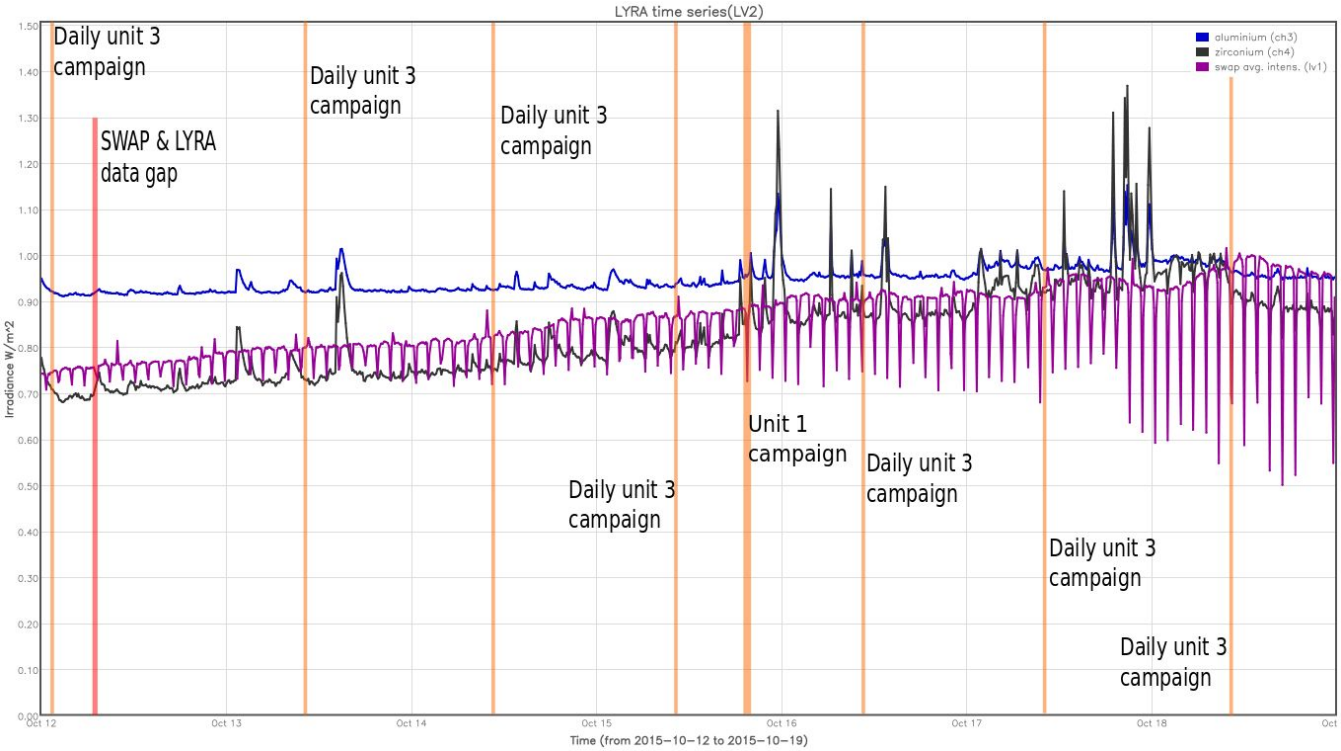


Eruption on the east limb @ 21:18 - SWAP image

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:

- Daily unit 3 campaign, 2015-Oct-12
- Daily unit 3 campaign, 2015-Oct-13
- Daily unit 3 campaign, 2015-Oct-14
- Daily unit 3 campaign, 2015-Oct-15
- Monthly unit 1 campaign, 2015-Oct-15
- Daily unit 3 campaign, 2015-Oct-16
- Daily unit 3 campaign, 2015-Oct-17
- Daily unit 3 campaign, 2015-Oct-18

The red shaded period corresponds to:

- SWAP and LYRA data gap created in preparation for the Star Tracker 2 experiment. 2015-Oct-12

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).

- PROBA2 Guest Investigator M. Kirk gave a presentation of his work on: “Mapping Solar Cycles Through Polar Coronal Holes.” at ROB on 2015-Oct-22
- A joint observation campaign including LYRA and IRIS was performed between 2015-Oct-13 and 2015-Oct-19

Guest Investigator Program

- M. Kirk is currently working at the P2SC on the Guest Investigator program. He is using SWAP to perform research on: “Mapping Solar Cycles Through Polar Coronal Holes.”

2. LYRA instrument status

Calibration

No calibration this week.

IOS & operations

Monday 12 Oct	Tuesday 13 Oct	Wednesday 14 Oct	Thursday 15 Oct	Friday 16 Oct	Saturday 17 Oct	Sunday 18 Oct
Nominal acquisition + daily U3 LYIOS00501	Nominal acquisition + daily U3 + data gap LYIOS00501	Nominal acquisition + daily U3 LYIOS00501	Nominal acquisition + daily U3 + monthly U1 LYIOS00501	Nominal acquisition + daily U3 LYIOS00502	Nominal acquisition + daily U3 LYIOS00502	Nominal acquisition + daily U3 LYIOS00502

The following science campaigns were performed by LYRA:

- daily U3 observations campaign
- LYRA data gap because the instrument was put in IDLE mode in preparation for the Star Tracker 2 experiment

LYRA detector temperature

LYRA detector 2 temperature globally varied between 49.3 and 51.9 °C.

3. SWAP instrument status

Calibration

No calibration this week.

MCPM errors

The number of MCPM recoverable errors increased from 144 to 174.
The number of MCPM unrecoverable errors remained at 0.

IOS & operations

Monday 12 Oct	Tuesday 13 Oct	Wednesday 14 Oct	Thursday 15 Oct	Friday 16 Oct	Saturday 17 Oct	Sunday 18 Oct
Nominal acquisition IOS00601 658 images	Nominal acquisition + Star tracker 2 IOS00601 665 images	Nominal acquisition IOS00601 545 images	Nominal acquisition IOS00601 643 images	Nominal acquisition IOS00602 632 images	Nominal acquisition IOS00602 535 images	Nominal acquisition IOS00602 628 images

Special operations for SWAP, this week:

- SWAP data gap because the, instrument was put in IDLE mode in preparation for the Star Tracker 2 experiment.

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between 1.13 and 2.5 °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 18701 to 18762) 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-Oct-12 00:00 UT and 2015-Oct-19 00:00 UT: 4306
Highest cadence in this period: 110 seconds
Average cadence in this period: 140.45 seconds
Number of image gaps larger than 300 seconds: 208
Largest data gap: 23.47 minutes

The data gap was generated due to SWAP being put in IDLE mode in order to safely start up Star Tracker 2.

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
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)