


P2SC-ROB-WR-299 - 20151214 Weekly report #299	P2SC Weekly report	
Period covered: Date: Written by: Approved by:	Mon Dec 14 to Sun Dec 20, 2015 23 Dec 2015 Robbe Vansintjan Matthew West	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

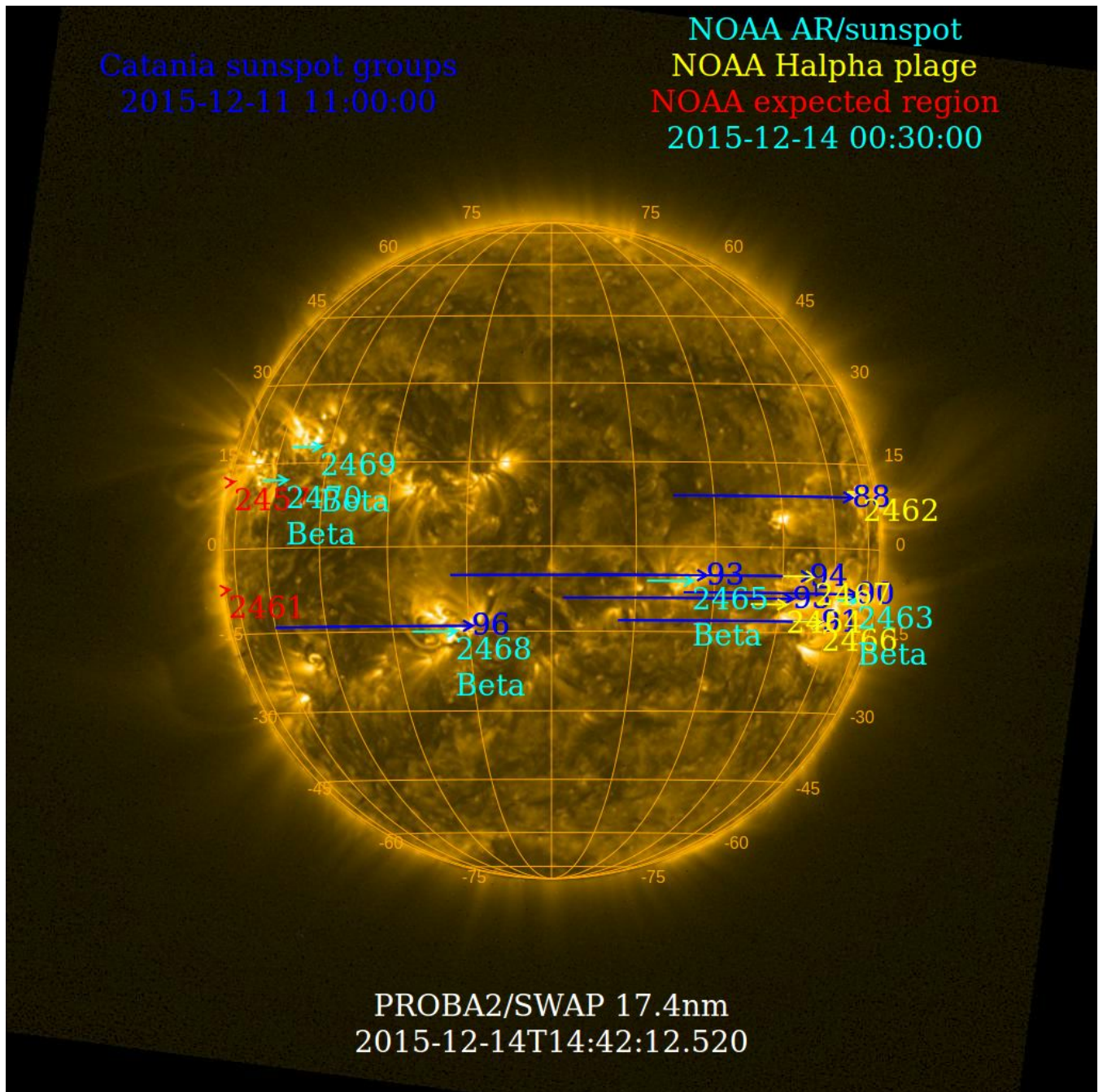
The level of solar activity¹ remained **low** this week.

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

	Monday 14 Dec	Tuesday 15 Dec	Wednesday 16 Dec	Thursday 17 Dec	Friday 18 Dec	Saturday 19 Dec	Sunday 20 Dec
Activity	low	low	low	low	low	low	low
Flares	-	-	-	-	-	-	-

¹ See appendix. All timings are given in UT.

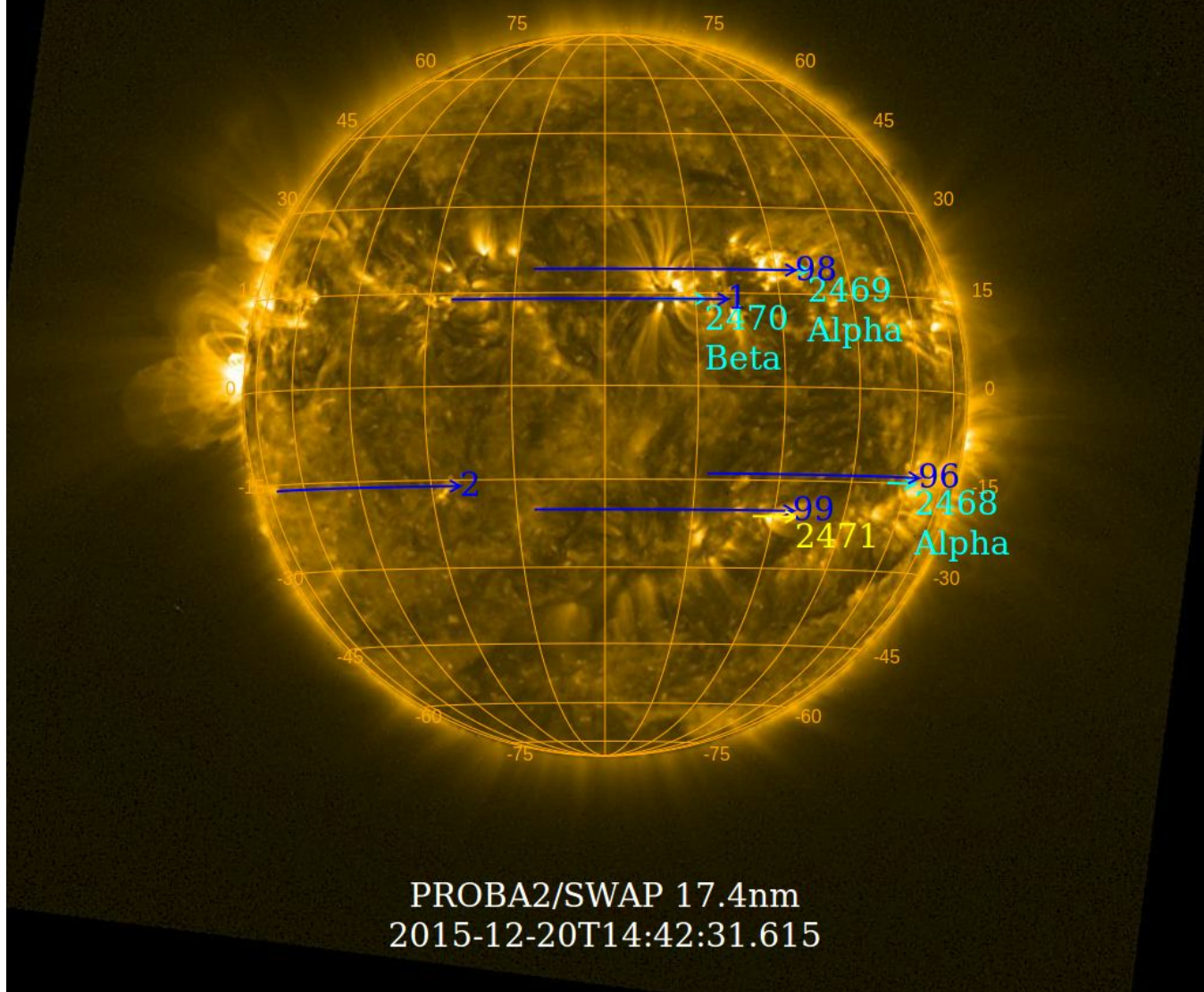
SWAP images from Dec 14 and Dec 20 are shown below, with annotated active regions.



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

Catania sunspot groups
2015-12-17 09:30:00

NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2015-12-20 00:30:00



Solar Activity

Solar flare activity remained low during the week.

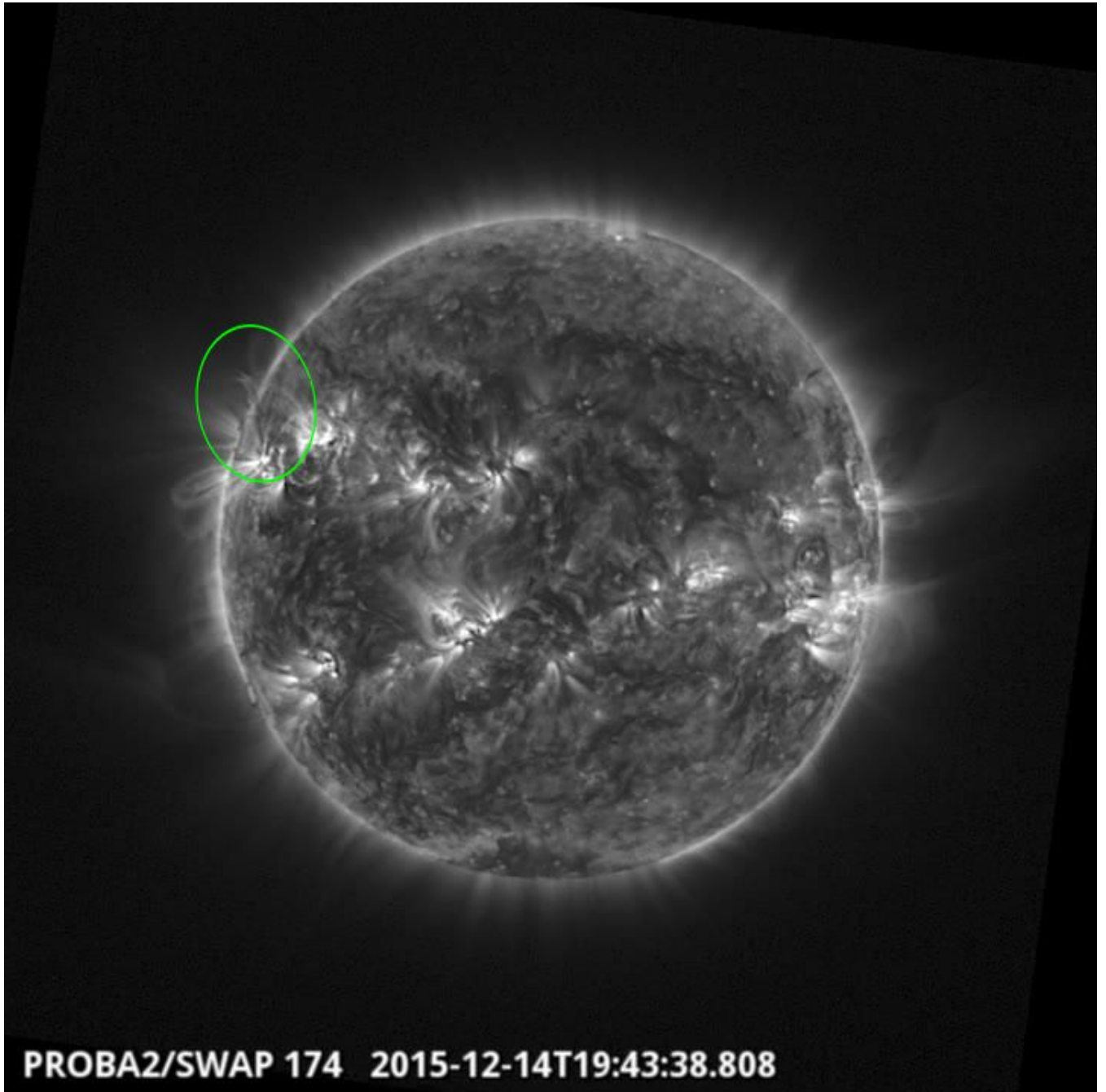
In order to view the activity of this week in more detail, we suggest to go to the following website from which all the daily (normal and difference) movies can be accessed: <http://proba2.oma.be/ssa>

This page also lists the recorded flaring events.

A weekly overview movie can be found [here](#) (SWAP week 299).

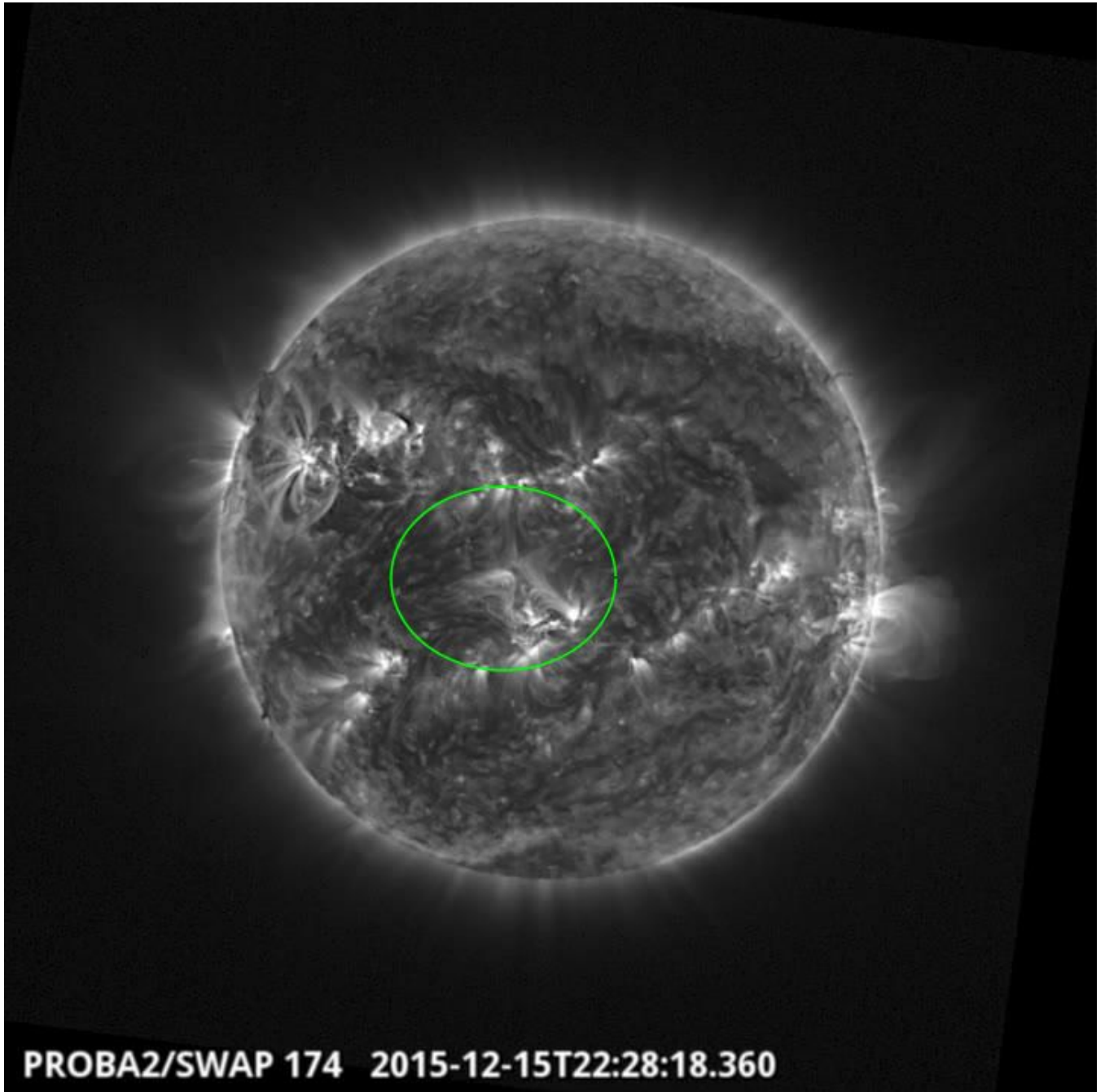
Details about some of this week's events, can be found further below.

Monday Dec 14



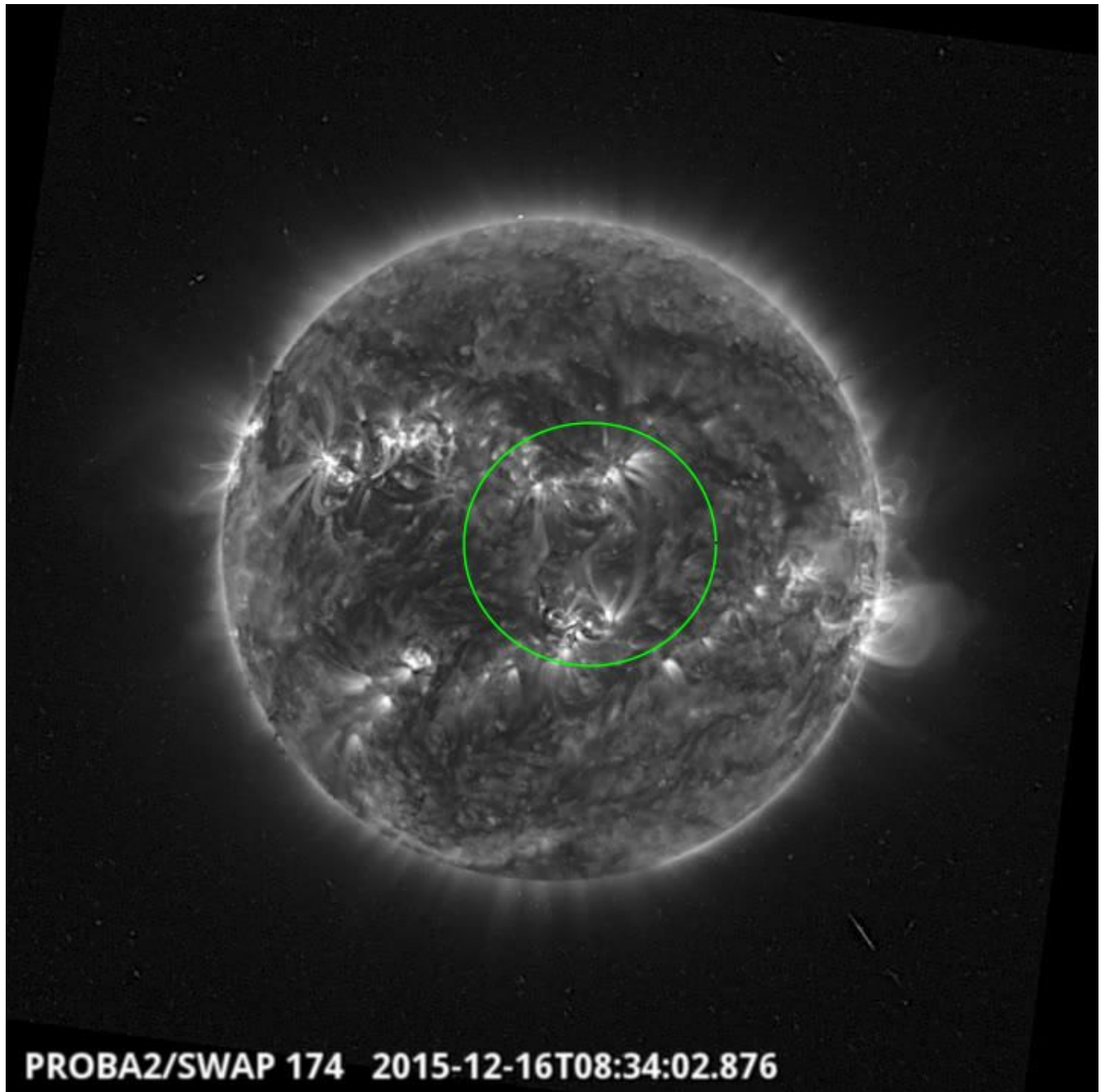
Surge at the east limb @ 19:43 - SWAP image
Find a movie of the events [here](#) (SWAP movie)

Tuesday Dec 15



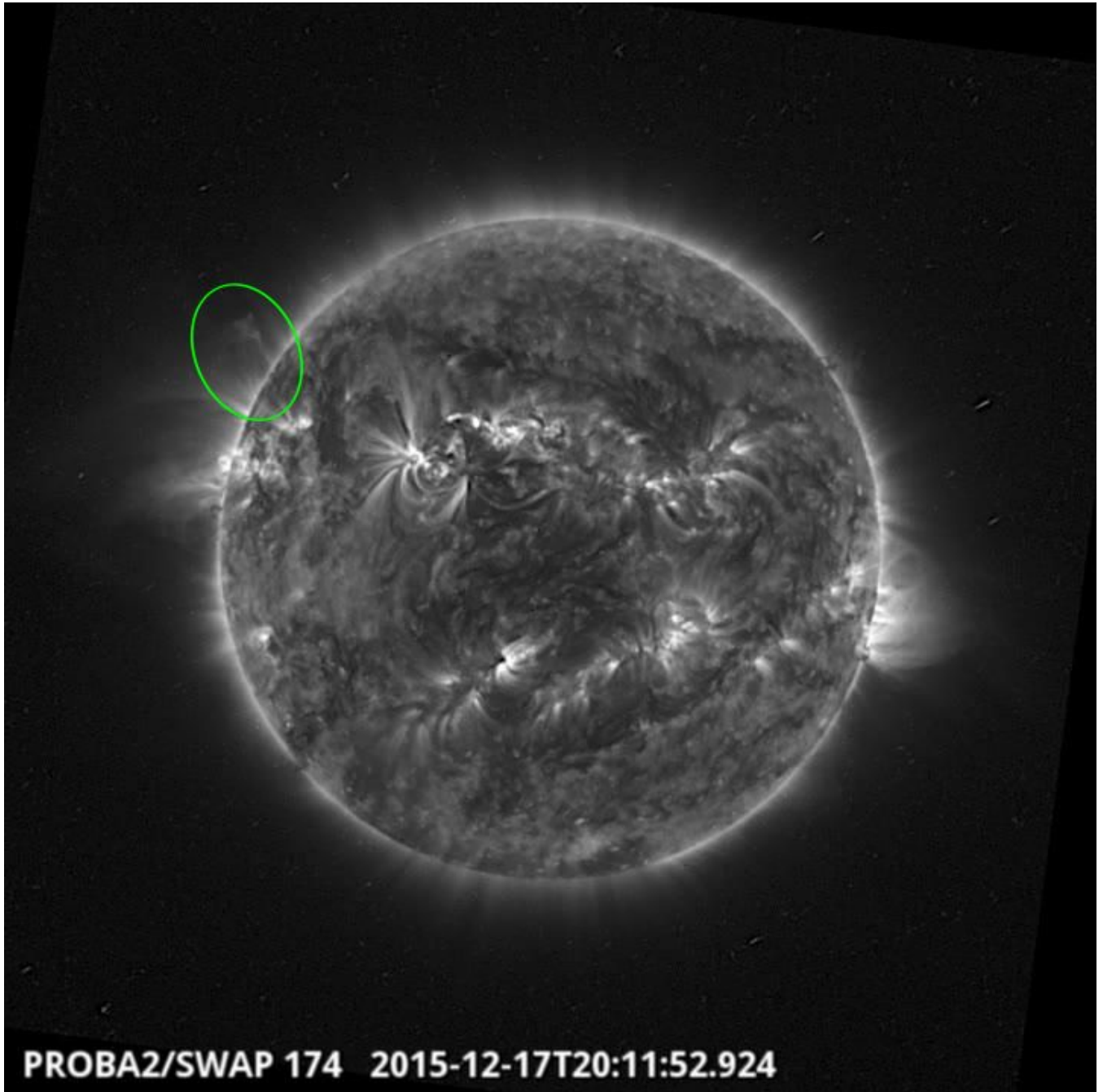
Plasma dynamics in the Sun's centre @ 22:28 - SWAP image
Find a movie of the events [here](#) (SWAP movie)

Wednesday Dec 16



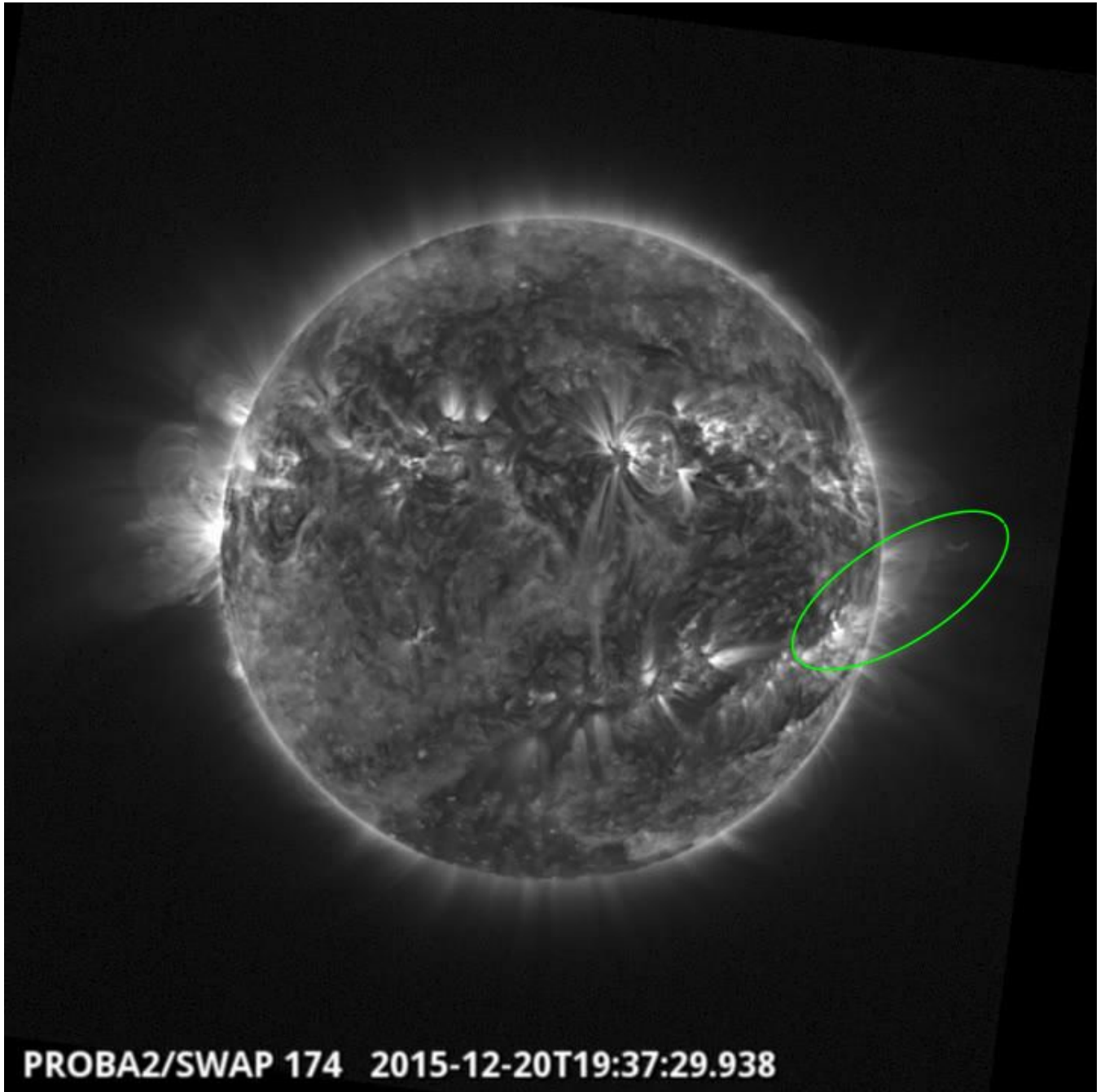
Moving field lines in the Sun's centre @ 08:34 - SWAP image
Find a movie of the events [here](#) (SWAP movie)

Thursday Dec 17



Plasma dynamics on the east limb @ 20:11 - SWAP image
Find a movie of the events [here](#) (SWAP movie)

Sunday Dec 20

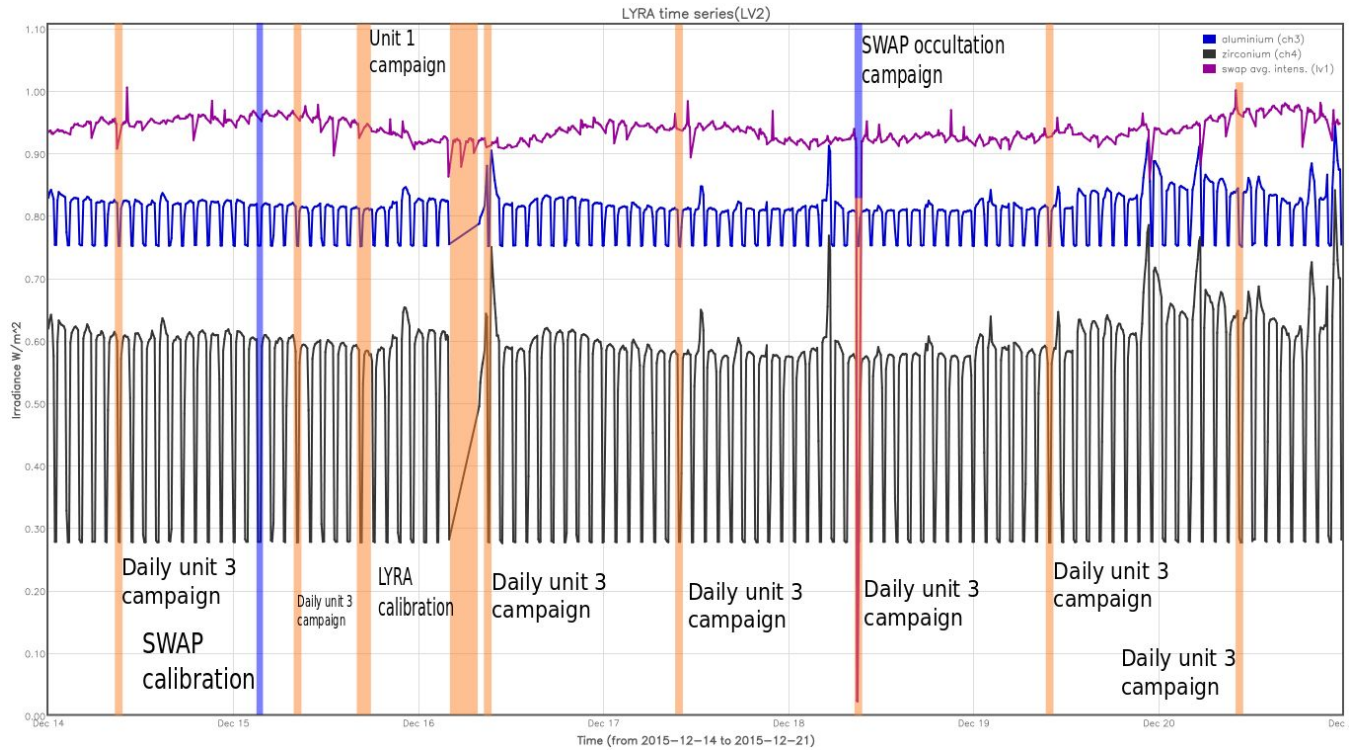


Eruption on the west limb @ 19:37 - SWAP image
Find a movie of the events [here](#) (SWAP movie)

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 campaign, 2015-12-15
- SWAP occultation campaign, 2015-12-18

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

- Daily unit 3 campaign, 2015-12-14
- Daily unit 3 campaign, 2015-12-15
- Unit 1 campaign, 2015-12-15
- LYRA calibration, 2015-12-16
- Daily unit 3 campaign, 2015-12-16
- Daily unit 3 campaign, 2015-12-17
- Daily unit 3 campaign, 2015-12-18
- Daily unit 3 campaign, 2015-12-19
- Daily unit 3 campaign, 2015-12-20

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

- None

2. LYRA instrument status

Calibration

Calibration campaign on Wednesday this week.

IOS & operations

Monday 14 Dec	Tuesday 15 Dec	Wednesday 16 Dec	Thursday 17 Dec	Friday 18 Dec	Saturday 19 Dec	Sunday 20 Dec
Nominal acquisition + daily U3	Nominal acquisition + daily U3 + monthly U1	Nominal acquisition + daily U3 + calibration	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3
LYIOS00515	LYIOS00515	LYIOS00515	LYIOS00515	LYIOS00516	LYIOS00516	LYIOS00516

The following science campaigns were performed by LYRA:

- daily U3 observations campaign
- monthly unit 1 campaign
- bi-weekly calibration

LYRA detector temperature

LYRA detector 2 temperature globally varied between 38.7 and 42.6 °C.

3. SWAP instrument status

Calibration

Calibration campaign on Tuesday this week.

MCPM errors

The number of MCPM recoverable errors remained 1092.

The number of MCPM unrecoverable errors remained at 0.

IOS & operations

Monday 14 Dec	Tuesday 15 Dec	Wednesday 16 Dec	Thursday 17 Dec	Friday 18 Dec	Saturday 19 Dec	Sunday 20 Dec
Nominal acquisition	Nominal acquisition + calibration	Nominal acquisition	Nominal acquisition	Nominal acquisition + occultation	Nominal acquisition	Nominal acquisition
IOS00475 606 images	IOS00475 724 images	IOS00475 699 images	IOS00475 761 images	IOS00475 713 images	IOS00475 592 images	IOS00475 662 images

Special operations for SWAP, this week:

- bi-weekly calibration campaign
- occultation campaign parallel with LYRA

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -4.8 and -3 °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 19269 to 19332) 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 Dec 14 0UT and 2015 Dec 21 0UT: 4757

Highest cadence in this period: 0 seconds

Average cadence in this period: 126.82 seconds

Number of image gaps larger than 300 seconds: 109

Largest data gap: 33.42 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
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)