P2SC-ROB-WR-301 - 20151228 Weekly report #301	**P2SC Weekly report**	
Period covered: Date: Written by: Approved by:	Mon Dec 28, 2015 to Sun Jan 03, 2016 13 Jan 2016 Robbe Vansintjan Matthew West	Royal Observatory of Belgium - PROBA2 Science Center
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1. Science

Solar & Space weather events

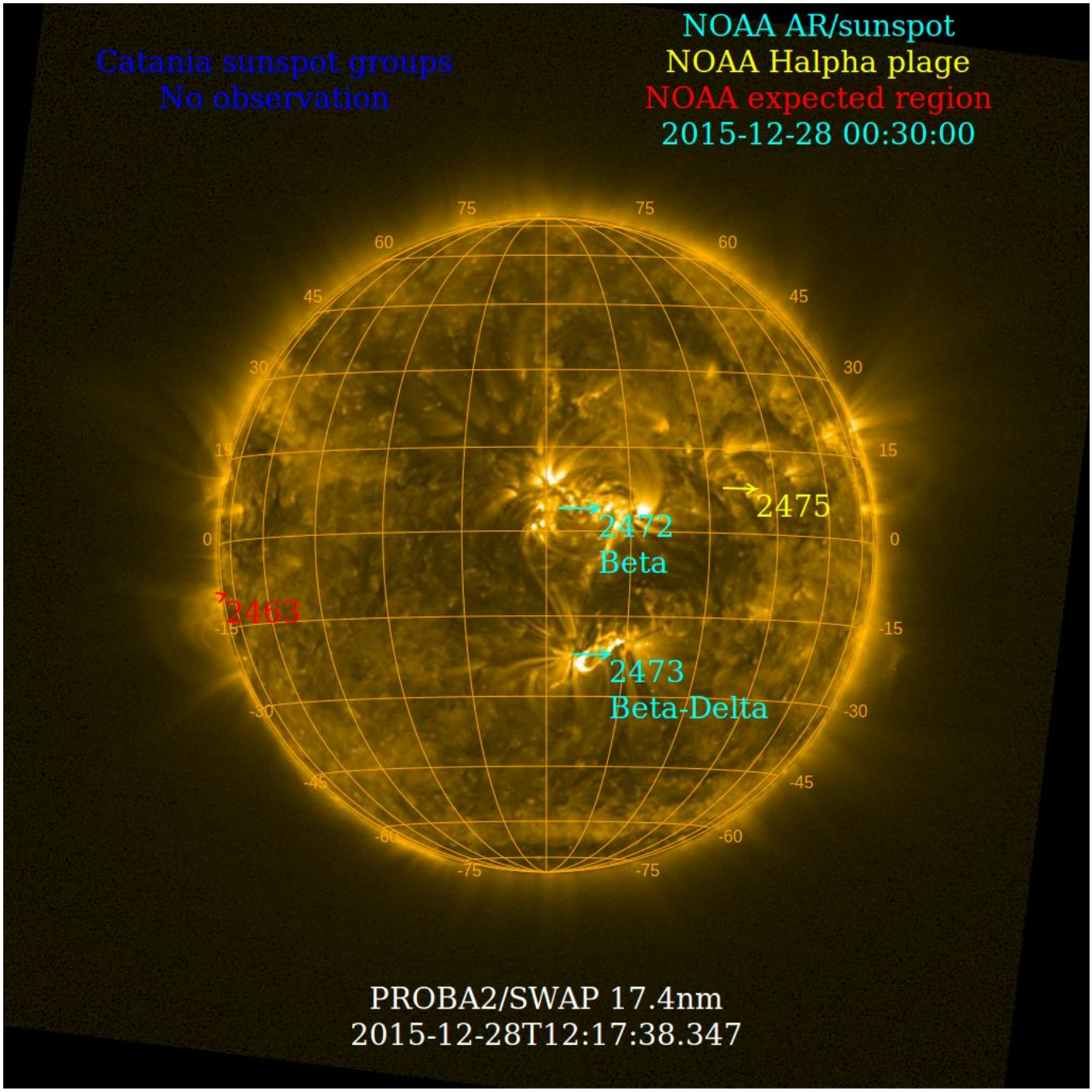
The level of solar activity[1] fluctuated between **very low** and **moderate** this week.

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

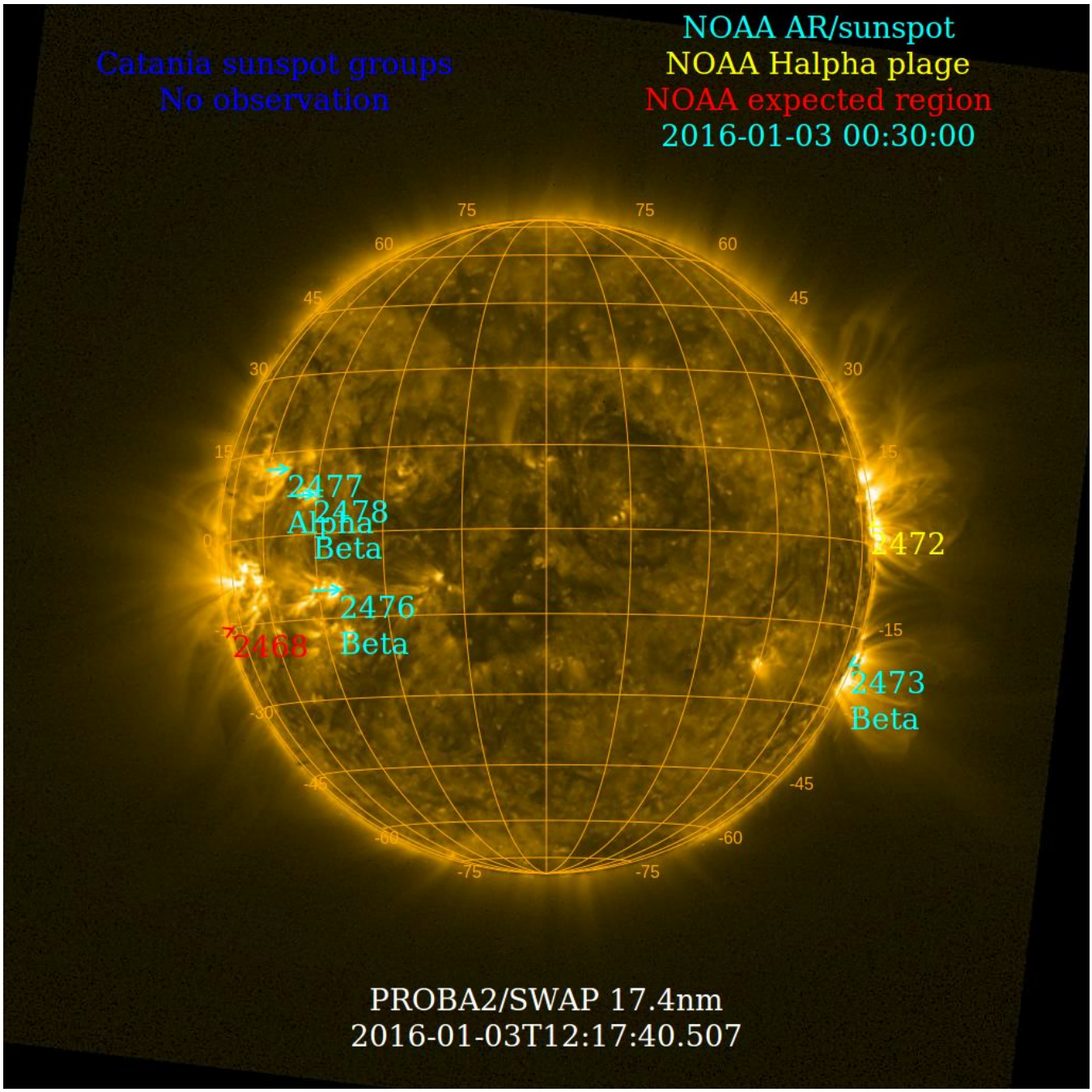
	Monday 28 Dec	Tuesday 29 Dec	Wednesday 30 Dec	Thursday 31 Dec	Friday 01 Jan	Saturday 02 Jan	Sunday 03 Jan
Activity	moderate	low	low	low	low	moderate	very low
Flares	**M1.8@12:45**	-	-	-	-	**M2.3@00:11**	-

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

The SWAP images of Dec 28 and Jan 03 are shown below, with annotated active regions.



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


Catania sunspot groups
No observation
NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2016-01-03 00:30:00
75
75
60
60
45
45
30
30
15
15
0
-15
-30
-45
-45
-60
-60
-75
-75
2477
2478
Alpha
Beta
2472
2476
Beta
2468
2473
Beta
PROBA2/SWAP 17.4nm
2016-01-03T12:17:40.507

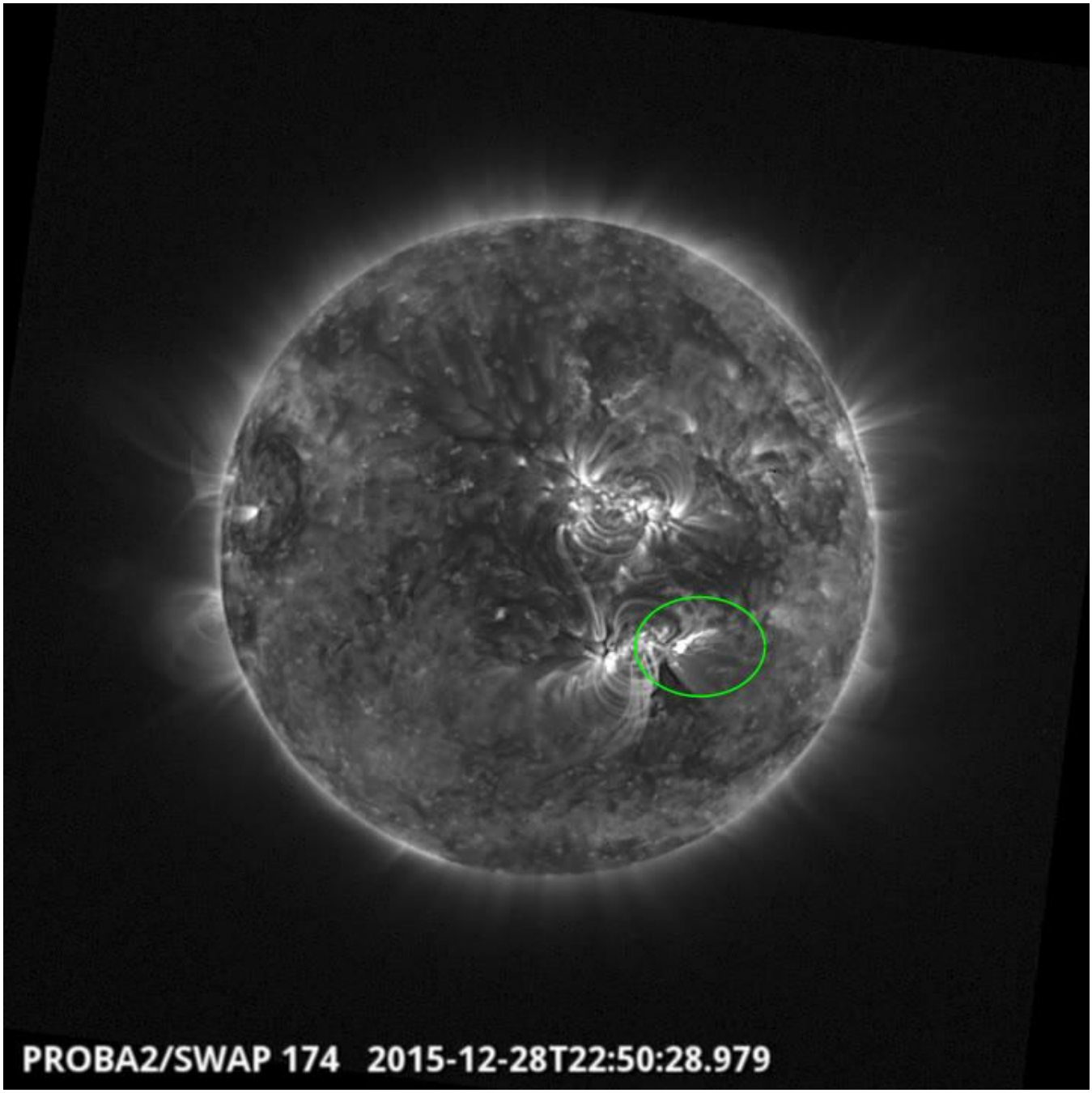
Solar Activity

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 301).

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

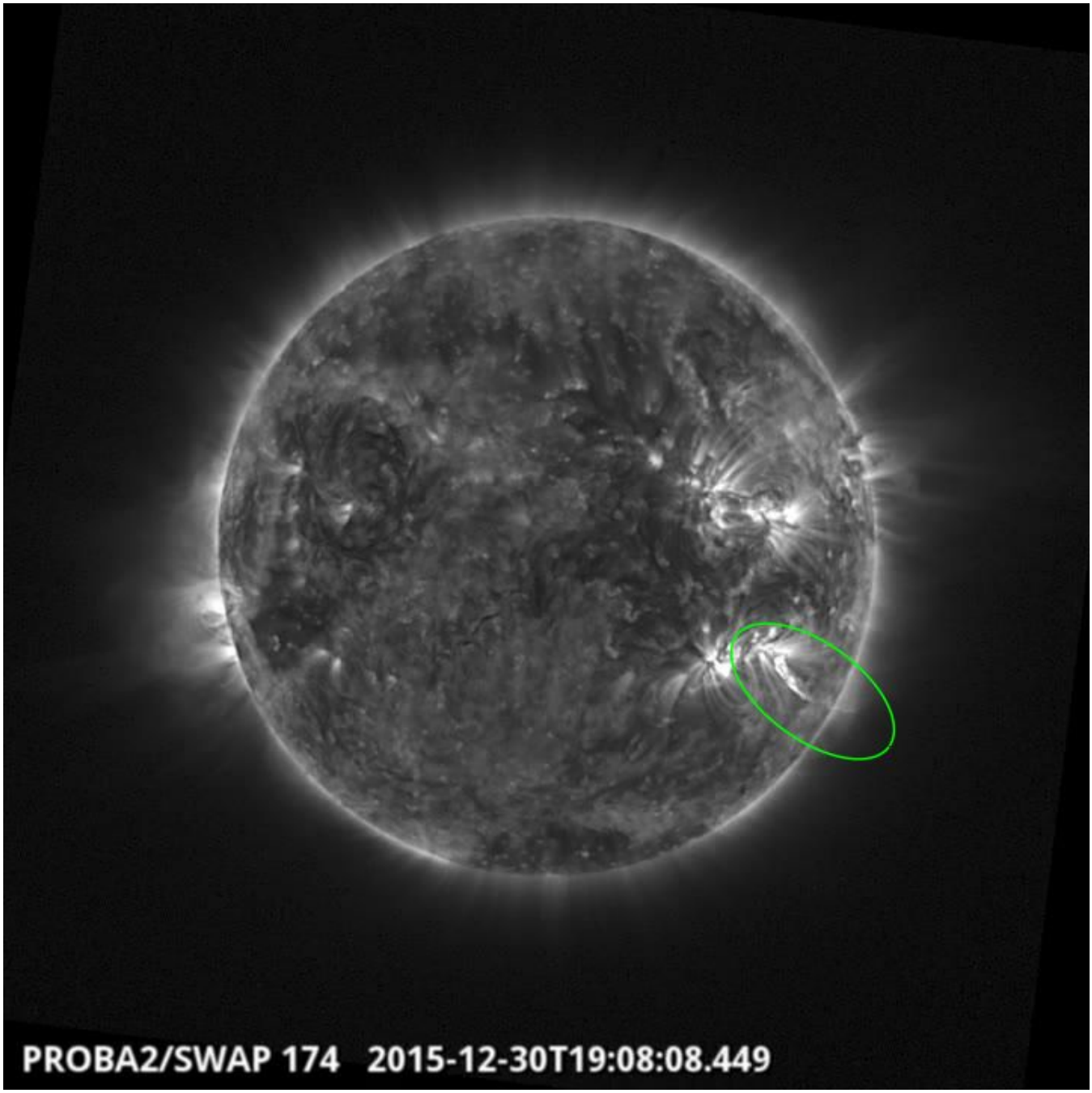
Monday Dec 28



A small eruption was observed in SWAP from AR 2473 in the south west quadrant at 22:50 UT on 2015-Dec-28 - see above SWAP image

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

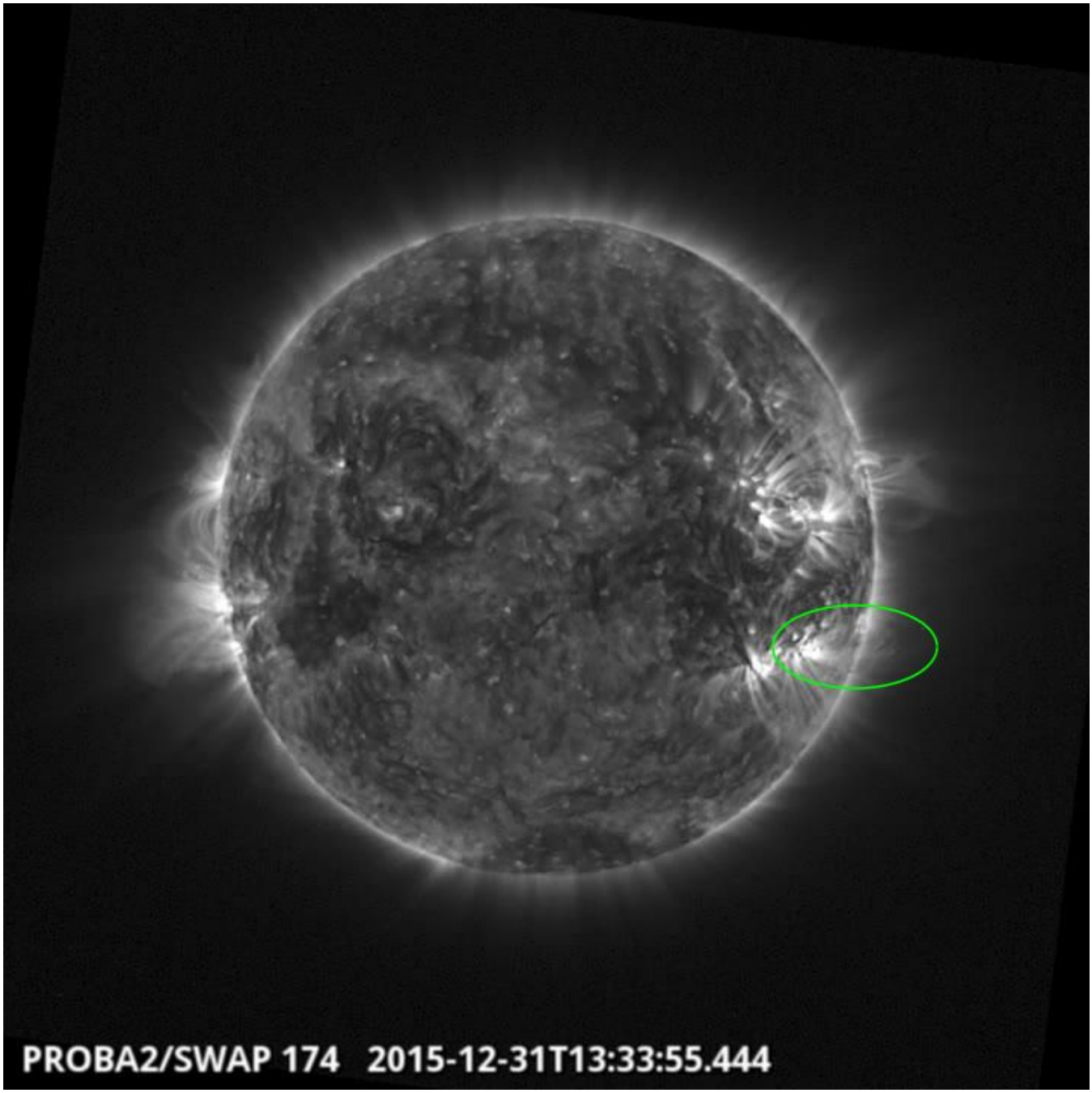
Wednesday Dec 30



A small eruption was observed in SWAP observations on 2015-Dec-30 at 19:08 UT from AR 2473 in the south west quadrant - See the above SWAP image

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

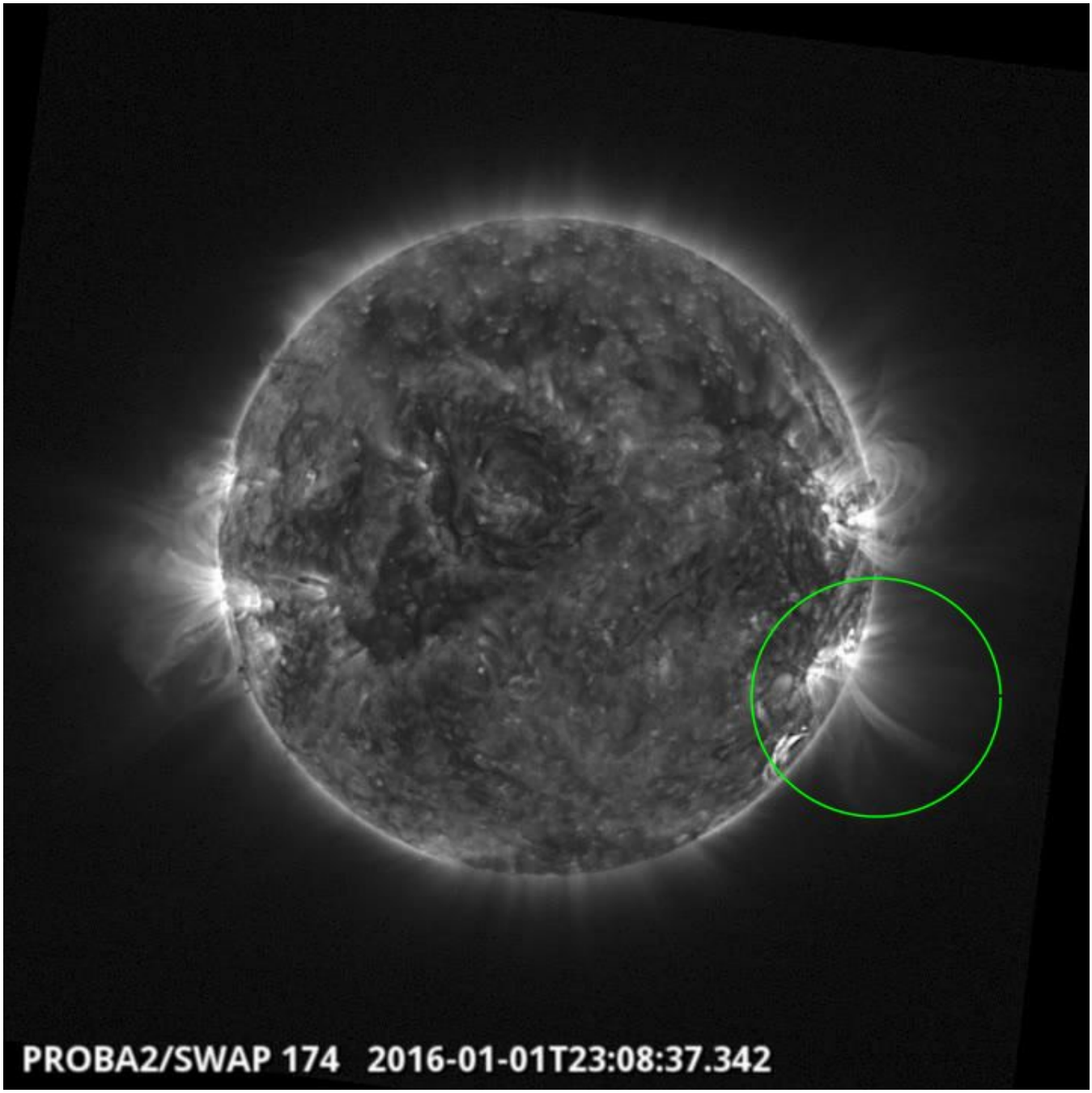
Thursday Dec 31



A failed eruption was observed in SWAP on 2015-Dec-31 at 13:33 UT from AR 2473 from the south west quadrant - See the above SWAP image

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

Friday Jan 01

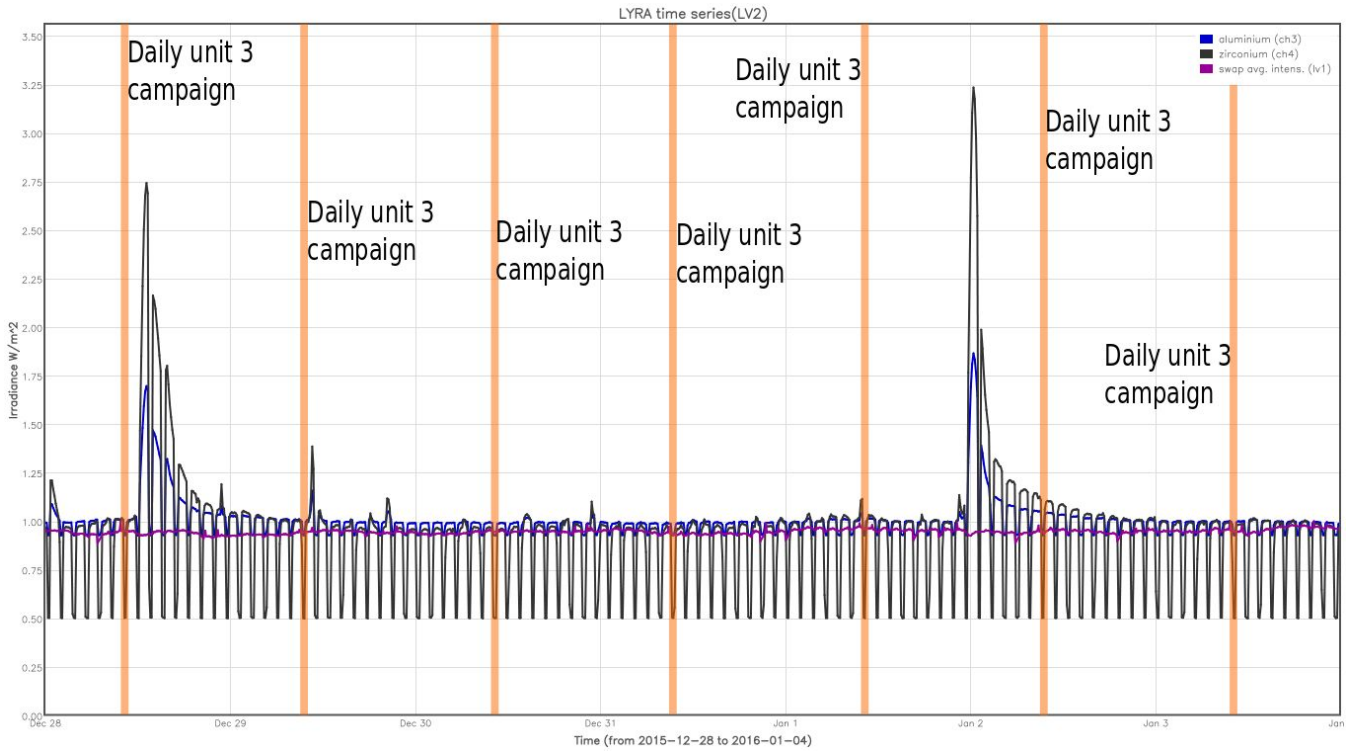


A large eruption was seen in SWAP observations off of west limb at 23:08 UT on 2016-Jan-01 - See the above SWAP image for context

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-Dec-28
- Daily unit 3 campaign, 2015-Dec-29
- Daily unit 3 campaign, 2015-Dec-30
- Daily unit 3 campaign, 2015-Dec-31
- Daily unit 3 campaign, 2015-Jan-01
- Daily unit 3 campaign, 2015-Jan-02
- Daily unit 3 campaign, 2015-Jan-03

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

No calibration this week.

IOS & operations

Monday 28 Dec	Tuesday 29 Dec	Wednesday 30 Dec	Thursday 31 Dec	Friday 01 Jan	Saturday 02 Jan	Sunday 03 Jan
Nominal acquisition + daily U3 LYIOS00518	Nominal acquisition + daily U3 LYIOS00518	Nominal acquisition + daily U3 LYIOS00518	Nominal acquisition + daily U3 LYIOS00518	Nominal acquisition + daily U3 LYIOS00518	Nominal acquisition + daily U3 LYIOS00518	Nominal acquisition + daily U3 LYIOS00518

The following science campaigns were performed by LYRA:

- daily U3 observations campaign

LYRA detector temperature

LYRA detector 2 temperature globally varied between 40.23 and 42.8 °C.

3. SWAP instrument status

Calibration

No calibration this week.

MCPM errors

The number of MCPM recoverable errors remained at 1092.
The number of MCPM unrecoverable errors remained at 0.

IOS & operations

Monday 28 Dec	Tuesday 29 Dec	Wednesday 30 Dec	Thursday 31 Dec	Friday 01 Jan	Saturday 02 Jan	Sunday 03 Jan
Nominal acquisition IOS00617 694 images	Nominal acquisition IOS00617 702 images	Nominal acquisition IOS00617 686 images	Nominal acquisition IOS00617 707 images	Nominal acquisition IOS00617 700 images	Nominal acquisition IOS00617 701 images	Nominal acquisition IOS00617 673 images

Special operations for SWAP, this week:

- None

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -4.3 and -2.6 °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 19396 to 19457) 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 28 0:00 0UT and 2016 Jan 04 00:00 UT: 4863
Highest cadence in this period: 80 seconds
Average cadence in this period: 124.36 seconds
Number of image gaps larger than 300 seconds: 106
Largest data gap: 31.93 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)