


P2SC-ROB-WR-243 - 20141117 Weekly report #243	P2SC Weekly report	
Period covered: Date: Written by: Approved by:	Mon Nov 17 to Sun Nov 23, 2014 26 Nov 2014 Robbe Vansintjan Matthew West	Royal Observatory of Belgium - PROBA2 Science Center
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1. Science

Solar & Space weather events

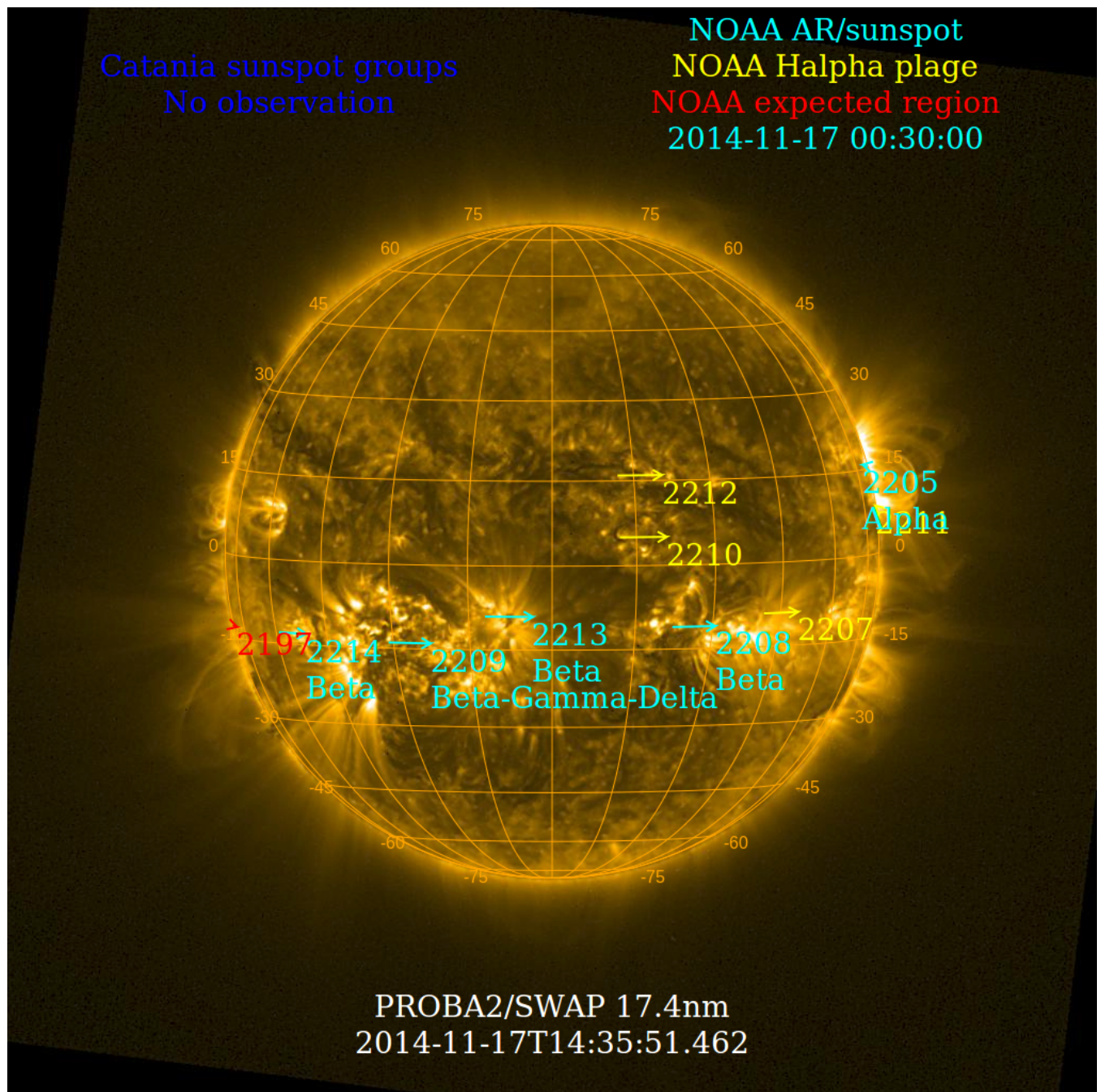
The level of solar activity¹ remained **low** this week.

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

	Monday 17 Nov	Tuesday 18 Nov	Wednesday 19 Nov	Thursday 20 Nov	Friday 21 Nov	Saturday 22 Nov	Sunday 23 Nov
Activity	low	low	low	low	low	low	low
Flares	-	-	-	-	-	-	-

¹ See appendix. All timings are given in UT.

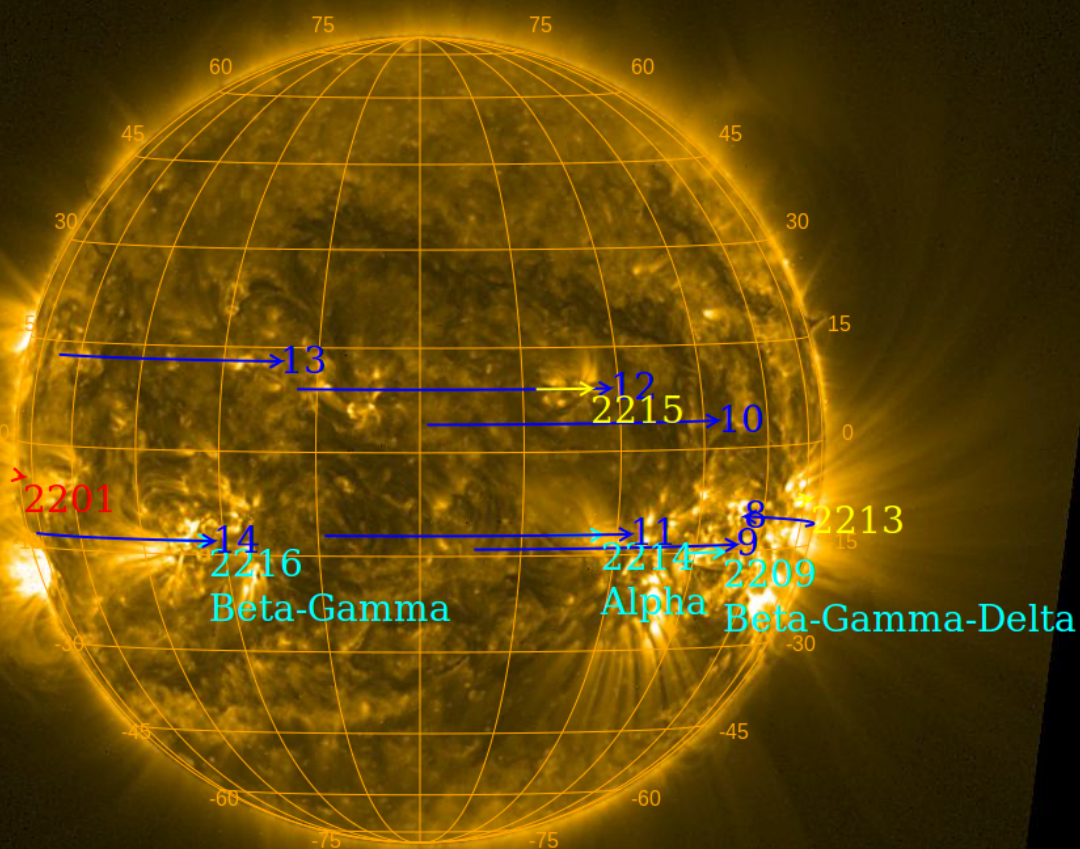
The SWAP images of Nov 17 and Nov 23 are shown below, with annotated active regions.



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

Catania sunspot groups
2014-11-20 10:00:00

NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2014-11-23 00:30:00



PROBA2/SWAP 17.4nm
2014-11-23T14:32:41.733

Solar Activity

Solar flare activity remained low during the week.

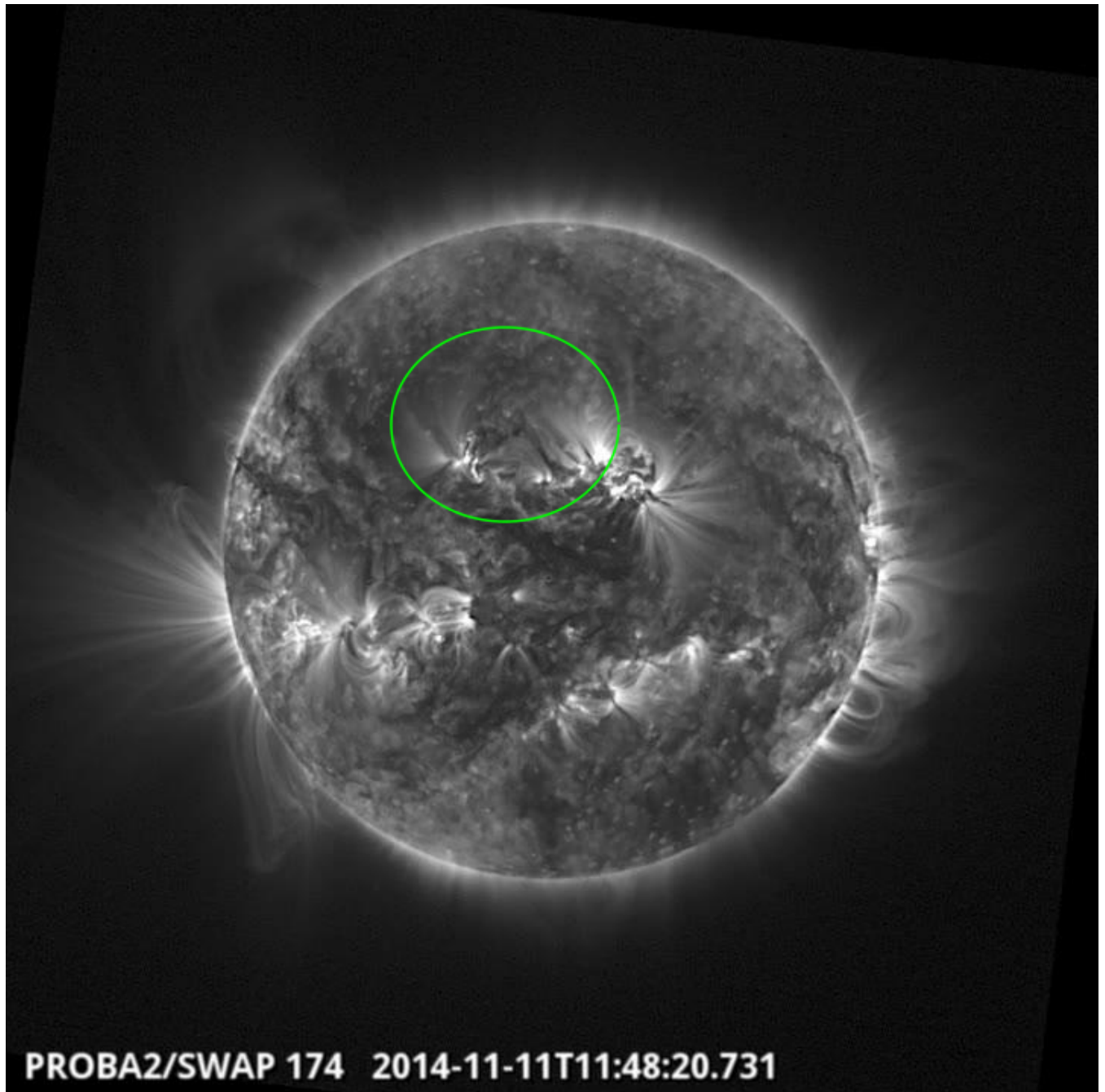
In order to view the activity of this week in more detail, we suggest to go to the following website from which all the daily (normal and difference) movies can be accessed: <http://proba2.oma.be/ssa>

This page also lists the recorded flaring events.

A weekly overview movie can be found [here](#) (SWAP week 243).

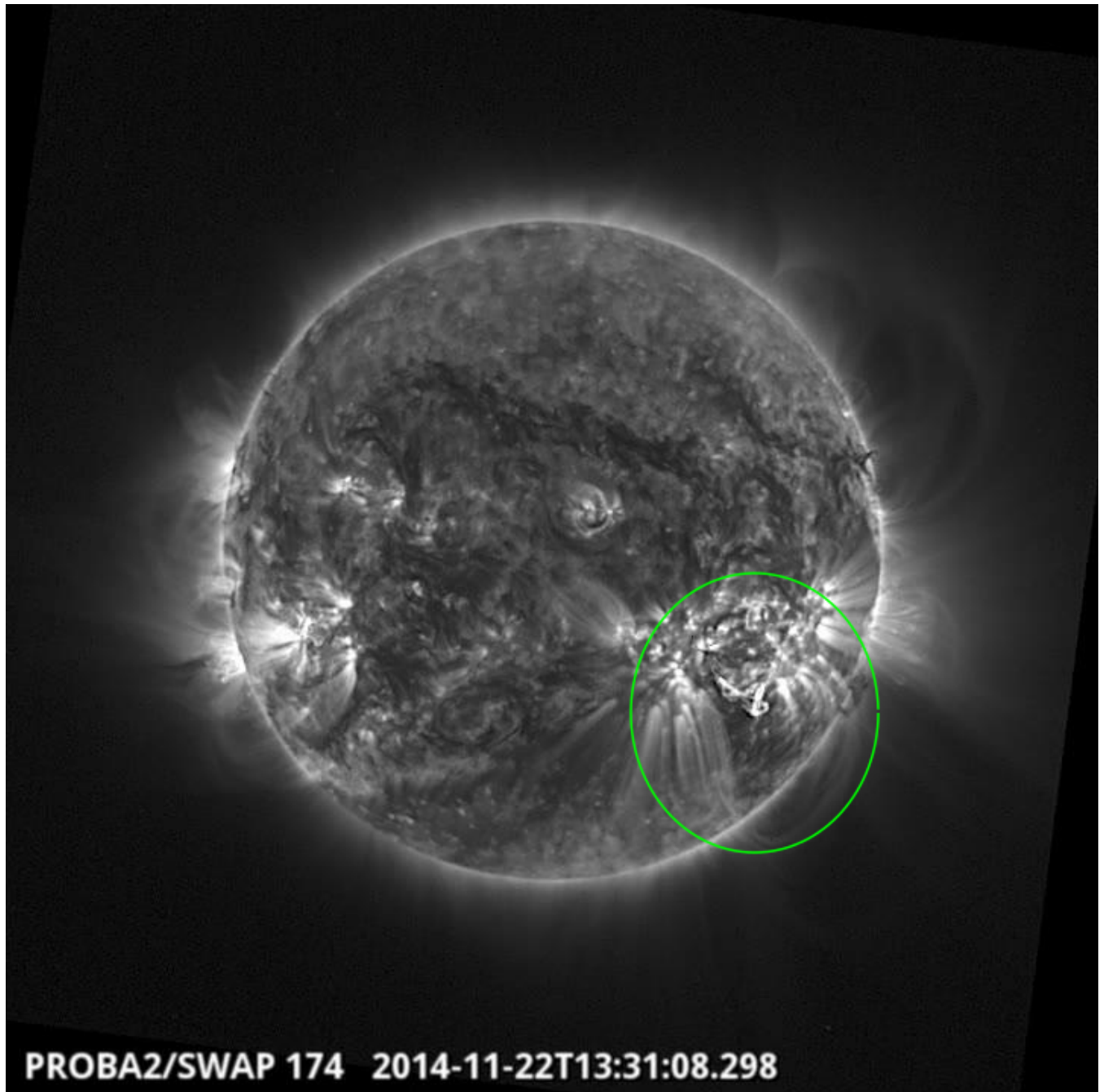
Details about some of this week's events, can be found further below.

Tuesday Nov 18



Eruption on north half @ 11:48 - SWAP image
Find a movie of the event [here](#) (SWAP movie)

Saturday Nov 22



PROBA2/SWAP 174 2014-11-22T13:31:08.298

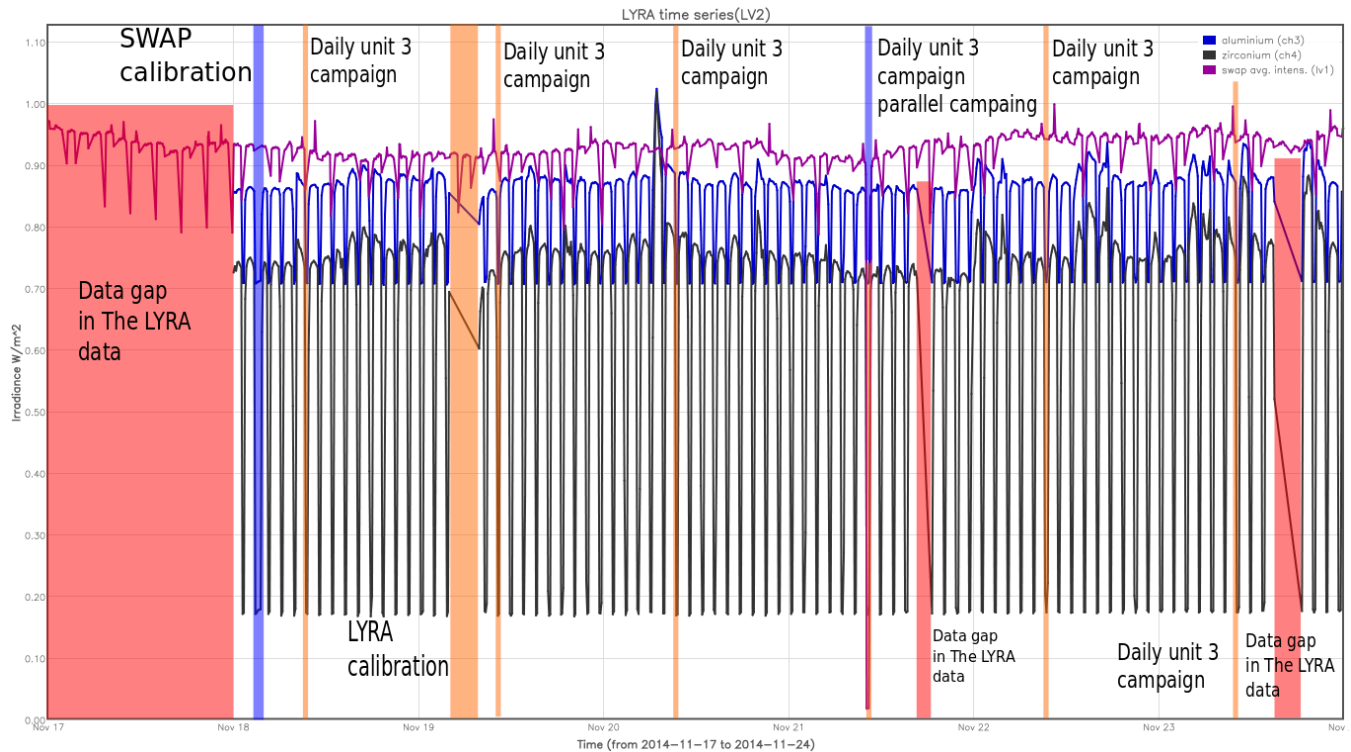
Flare on the south west quad @ 13:31 - SWAP image

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 plus half an hour of extra darks
- A parallel occultation campaign between SWAP and LYRA

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

- daily unit 3 campaign
- LYRA bi-weekly calibration
- daily unit 3 campaign, five times

The red shaded period corresponds to:

- A data gap in the LYRA data due to BINLYRA files that were corrupted on-board
- A data gap in the LYRA data due to a corrupted BINLYRA file caused by a bad signal between the satellite and the antenna, two times

The missing data shown in red on the figure might be recovered in the future.

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>).

The following workshops, talks and posters were presented at The European space weather week 11th edition

- Proba 2 workshop on data access
- Talk by Dammasch, I.; Dominique, M.; Wauters, L.; Katsiyannis, A.; Ryan, D. "Five years of EUV Solar Irradiance Evolution, from Short to Long Timescales as Observed by PROBA2/LYRA"
- Poster by *Dominique, M; Dolla, L; Zhukov, A* "High-Frequency Quasi-Periodic Pulsations (QPP) in Solar Flares, as Observed by PROBA2/LYRA"
- Poster by *Ryan, D; Dominique, M; Stegen, K; Dammasch, I; Katsiyannis, A* "New Flare Detection Algorithm And Flare List for PROBA2/LYRA "
- Highlighted poster by *Katsiyannis, T et al.* "In Situ Detections of Space Weather by the LYRA Radiometer on Board the PROBA2 Satellite"
- Talk by *Dominique, M.; Zigman, V.* "How using the spectral response of instruments in flaring conditions affects the modelling of the impact of flares on the ionization rate in the ionospheric D-region"
- Presentation of PROBA2 by L. Rachmeler during the tutorial at CSL
- Presentation of PROBA2 during the fair

Guest Investigator Program

- None

2. LYRA instrument status

Calibration

Calibration campaign on Wednesday this week.

IOS & operations

Monday 17 Nov	Tuesday 18 Nov	Wednesday 19 Nov	Thursday 20 Nov	Friday 21 Nov	Saturday 22 Nov	Sunday 23 Nov
Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3 + calibration	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3
LYIOS00437	LYIOS00437	LYIOS00437	LYIOS00437	LYIOS00437	LYIOS00438	LYIOS00438

The following science campaigns were performed by LYRA:

- daily U3 observations campaign
- bi weekly calibration

LYRA detector temperature

LYRA detector 2 temperature globally varied between 41.3 and 45.6 °C, taking into account the daily U3 activation periods and the calibration period.

Corrupted data

Several BINLYRA files between 2014-11-12T21:46:46Z and 2014-11-18T00:00:00Z contained data that were obviously corrupted on-board. Errors were detected in the counters as well as in the data values. These errors resulted in data gaps, erroneous timestamps, and even a few ghosts in the processed LYRA timeseries. We suspect that some bits were corrupted by a single event upset. An ASIC reload performed on November 17 solved the problem. If non-correctable, the corrupted data will likely be removed from the website.

3. SWAP instrument status

Calibration

Calibration campaign on Tuesday this week.

MCPM errors

The number of MCPM recoverable errors increased from 23863 to 24047.

The number of MCPM unrecoverable errors increased from 2406 to 2573.

IOS & operations

Monday 17 Nov	Tuesday 18 Nov	Wednesday 19 Nov	Thursday 20 Nov	Friday 21 Nov	Saturday 22 Nov	Sunday 23 Nov
Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition
IOS00549 564 images	IOS00549 631 images	IOS00549 564 images	IOS00549 578 images	IOS00549 587 images	IOS00550 575 images	IOS00550 548 images

Special operations for SWAP, this week:

- calibration plus half an hour of darks.
- parallel occultation campaign with LYRA

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -1.4 and -3.2 °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 15797 to 15857) 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 2014 Nov 17 0UT and 2014 Nov 24 0UT: 4047

Highest cadence in this period: 30 seconds

Average cadence in this period: 149.44 seconds

Number of image gaps larger than 300 seconds: 103

Largest data gap: 33.20 minutes

The data gap is caused by occultations for which we take no SWAP data

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
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)