P2SC-ROB-WR-193- 20131202 Weekly report #193	**P2SC Weekly report**	
Period covered: Date: Written by: Approved by:	Mon Dec 02 to Sun Dec 08, 2013 11 Dec 2013 Robbe Vansintjan Matthew West	Royal Observatory of Belgium - PROBA2 Science Center
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1. Science

Solar & Space weather events

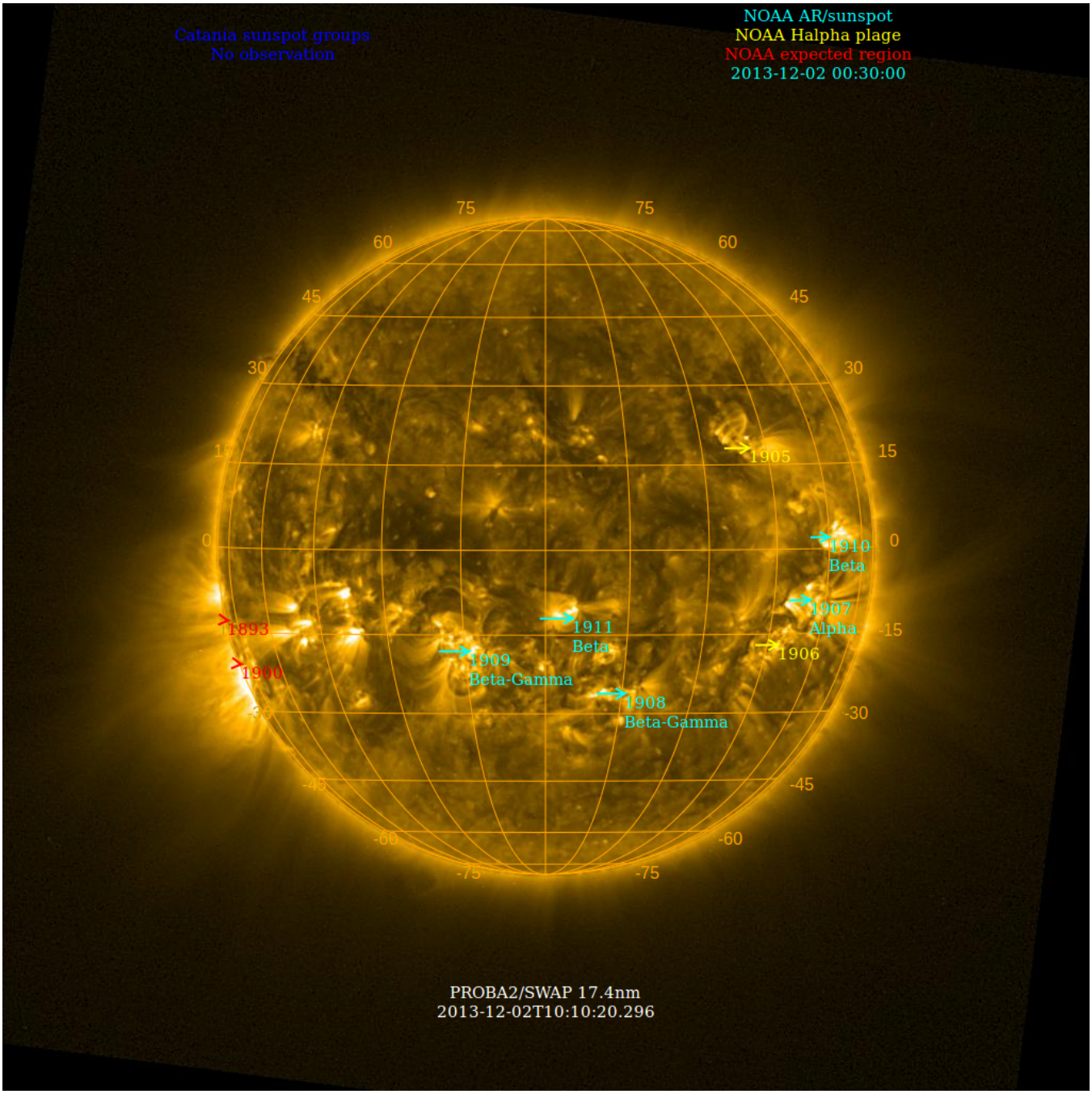
The level of solar activity[1] fluctuated between **low** and **moderate** this week.

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

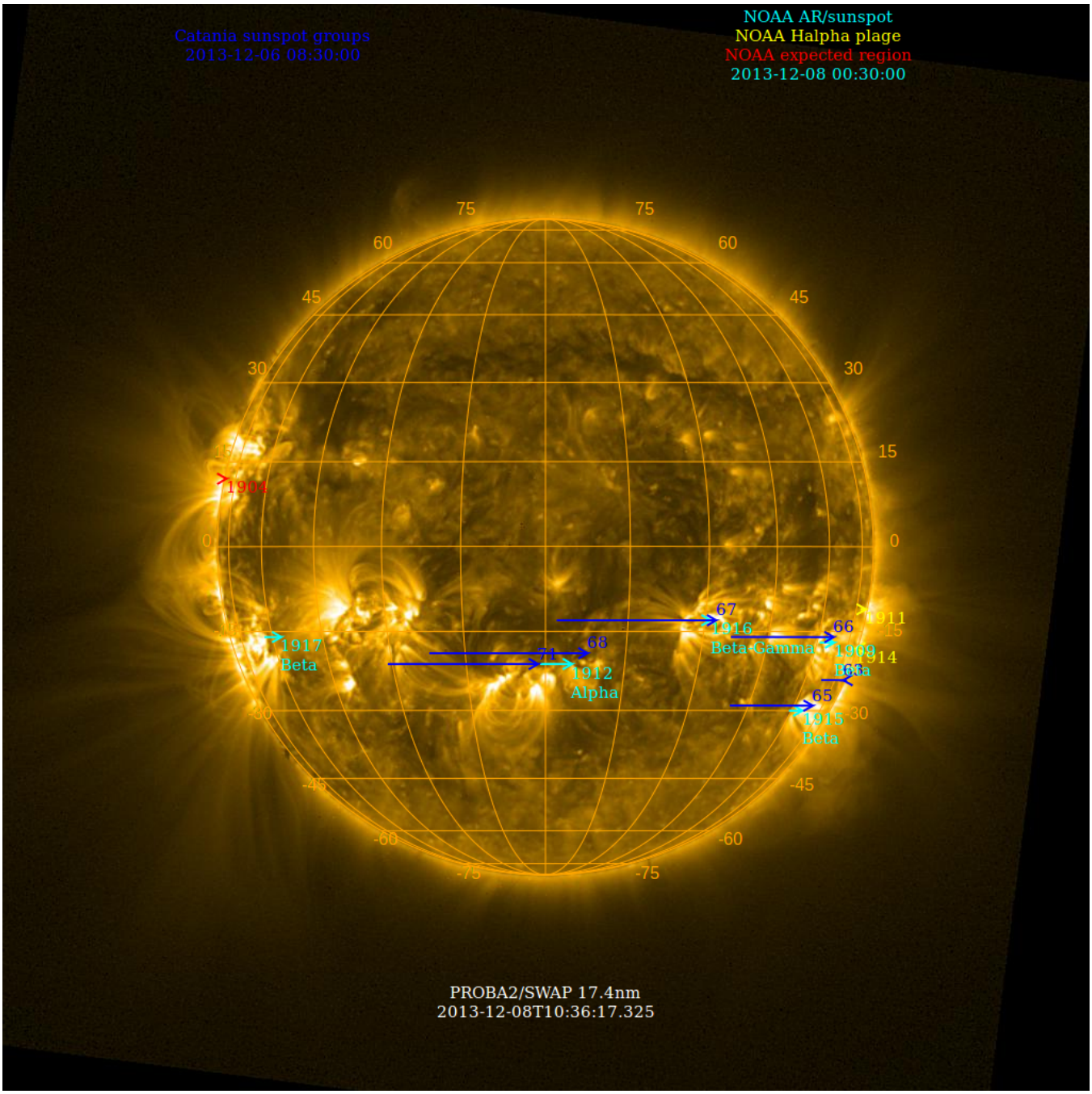
	Monday 02 Dec	Tuesday 03 Dec	Wednesday 04 Dec	Thursday 05 Dec	Friday 06 Dec	Saturday 07 Dec	Sunday 08 Dec
Activity	low	low	low	low	low	moderate	low
Flares	-	-	-	-	-	**M1.2@07:29**	-

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

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



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


Catania sunspot groups
2013-12-06 08:30:00
NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2013-12-08 00:30:00
75
60
45
30
15
0
-30
-45
-60
-75
1904
1917
Beta
67
1916
68
71
1912
Alpha
66
Beta-Gamma
1911
1909
65
1915
Beta
PROBA2/SWAP 17.4nm
2013-12-08T10:36:17.325

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 going 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 193).

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

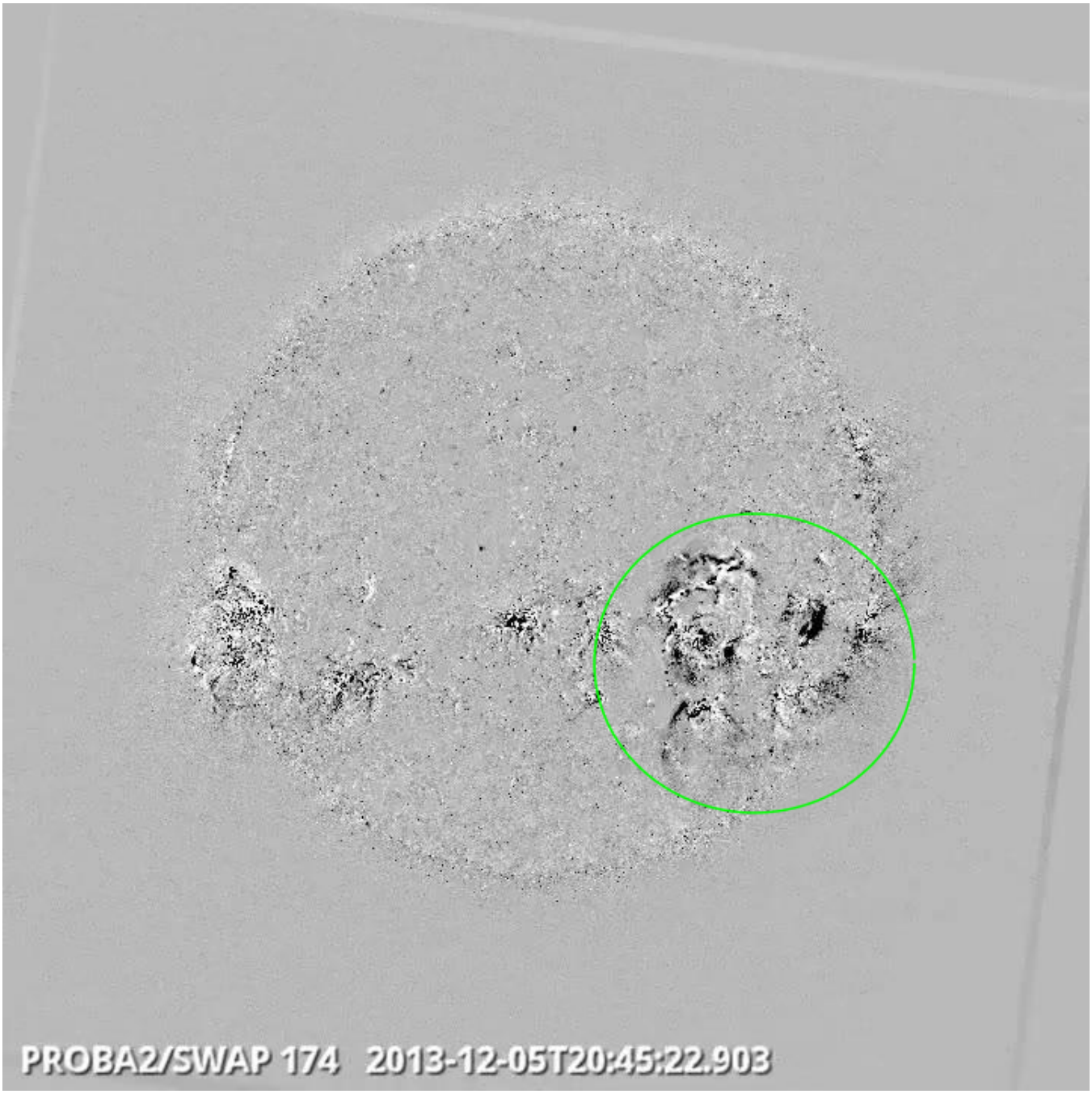
Wednesday Dec 04:

Pair of sympathetic eruptions on West Limb @ 04:35 - SWAP difference image
Find a movie of the events **here** (SWAP difference movie)

Thursday Dec 05:

Eruption on the East Limb @ 02:32 - SWAP difference image
Find a movie of the event **here** (SWAP difference movie)

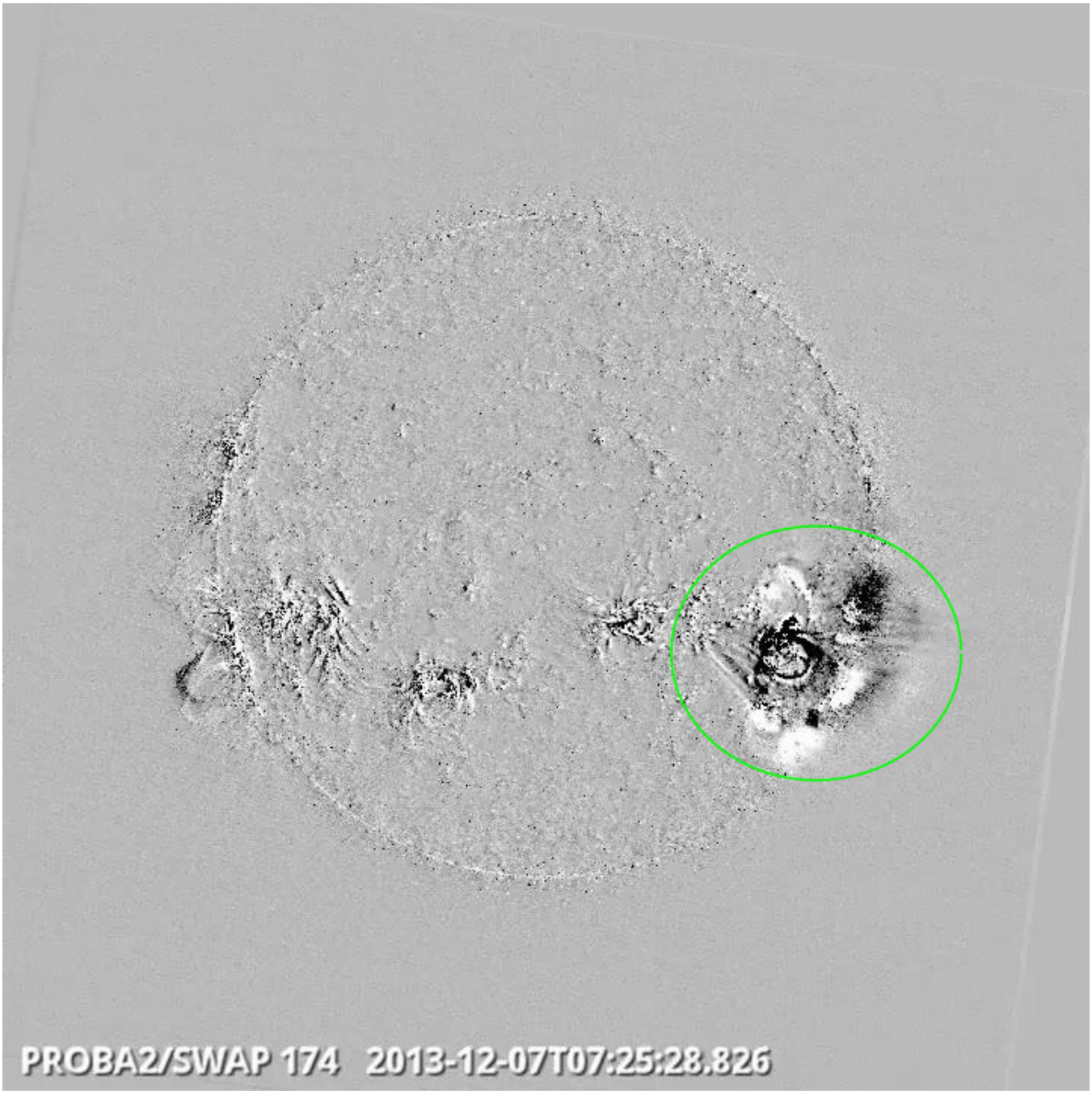
Jets on the East Limb @ 05:50 - SWAP difference image
Find a movie of the event **here** (SWAP difference movie)



Eruption in the South-East Quadrant @ 20:45 - SWAP difference image

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

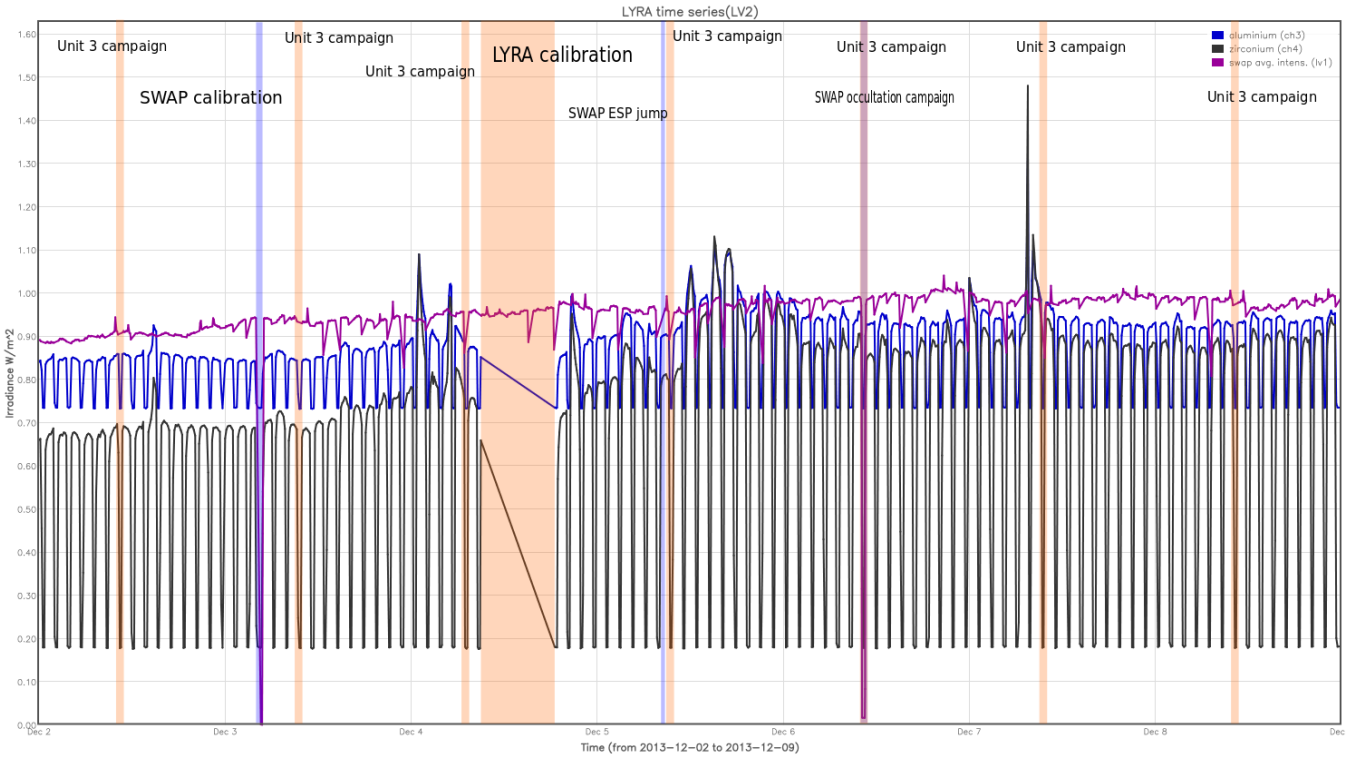
Saturday Dec 07:



Eruption on the South East Quad @ 07:25 - SWAP difference image
Find a movie of the event **here** (SWAP difference 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 bi weekly calibration
- data gap due to the ESP jump
- SWAP and LYRA parallel occultation campaign

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

- Unit 3 occultation campaign, three times
- LYRA calibration
- Unit 3 occultation campaign, four times

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).

- Vida Žigman gave a seminar at ROB on GI activity.

V. Slemzin, 2013 ApJ, "Study of EUV Emission and Properties of a Coronal Streamer from PROBA2/SWAP, Hinode/EIS and Mauna Loa Mk4 Observations" http://arxiv.org/abs/1312.2449

Guest Investigator Program

- Vida Žigman currently visiting on the GI program and is working with Marie Dominique. Dr. Žigman is using a model along with LYRA data to determine the ionisation increase in the Earth's ionosphere during flares.
- A. Kobelski currently visiting on the GI program and is working with Dan Seaton. Studying AR-AR Reconnection after Flux Emergence

2. LYRA instrument status

Calibration

No calibration this week.

IOS & operations

Monday 02 Dec	Tuesday 03 Dec	Wednesday 04 Dec	Thursday 05 Dec	Friday 06 Dec	Saturday 07 Dec	Sunday 08 Dec
Nominal acquisition + daily U3 LYIOS00354	Nominal acquisition + daily U3 LYIOS00355	Nominal acquisition + daily U3 + calibration LYIOS00355	Nominal acquisition + daily U3 LYIOS00355	Nominal acquisition + daily U3 LYIOS00355	Nominal acquisition + daily U3 LYIOS00355	Nominal acquisition + daily U3 LYIOS00355

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 38.6 and 41.7 °C, taking into account the daily U3 activation periods.

To be explored

- None

3. SWAP instrument status

Calibration

No calibration this week.

MCPM errors

The number of MCPM recoverable errors increased from 14349 to 14468.
The number of MCPM unrecoverable errors remained at 1127.

IOS & operations

Monday 02 Dec	Tuesday 03 Dec	Wednesday 04 Dec	Thursday 05 Dec	Friday 06 Dec	Saturday 07 Dec	Sunday 08 Dec
Nominal acquisition IOS00488 550 images	Nominal acquisition + calibration IOS00489 -> IOS00490 605 images	Nominal acquisition IOS00490 550 images	Nominal acquisition + ESP jump IOS00490 549 images	Nominal acquisition + occultation campaign IOS00490 599 images	Nominal acquisition IOS00490 565 images	Nominal acquisition IOS00490 548 images

Special operations for SWAP, this week:

- bi-weekly calibration
- Monthly ESP jump
- Occultation campaign

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -4.6 and -2.5 °C.

To be explored

- None

4. PROBA2 Science Center Status

The main operator is Robbe Vansintjan.

The following changes were made to the P2SC:

- Robbe Vansintjan is taking over operations from Koen Stegen until January.

5. Data reception & discussions with MOC

Passes

The delivery of the passes for this week (passes 12751 to 12809) 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 2013 Dec 02 0UT and 2013 Dec 09 0UT: 3967
Highest cadence in this period: 29 seconds
Average cadence in this period: 152.46 seconds
Number of image gaps larger than 300 seconds: 102
Largest data gap: 31.83 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
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)