P2SC-ROB-WR-198 - 20140106 Weekly report #198	**P2SC Weekly report**	
Period covered: Date: Written by: Approved by:	Mon, Jan 06 to Sun Jan 12, 2014 15 Jan 2014 Robbe Vansintjan Matthew West	Royal Observatory of Belgium - PROBA2 Science Center
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1. Science

Solar & Space weather events

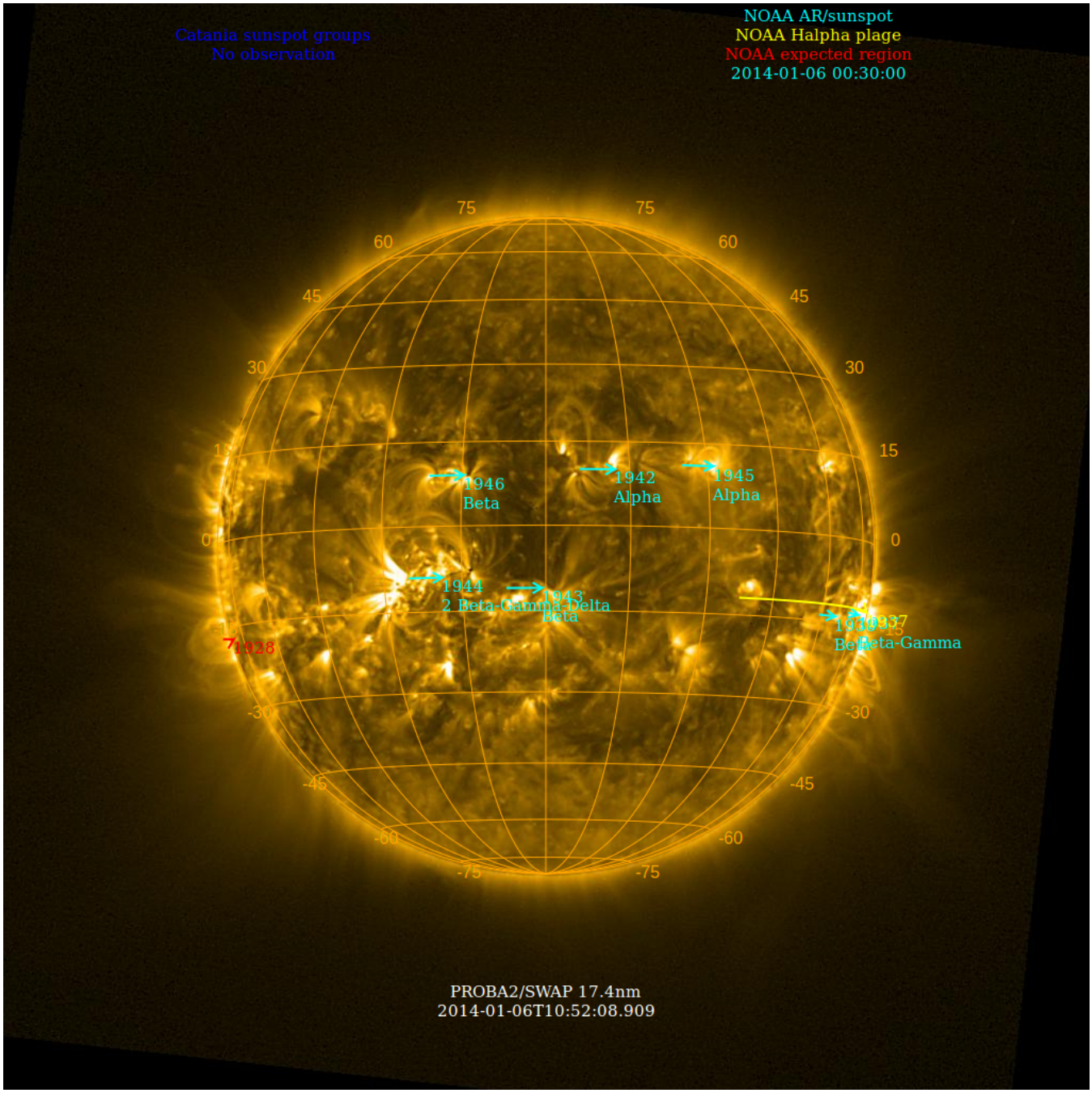
The level of solar activity[1] fluctuated between **low** and **high** this week.

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

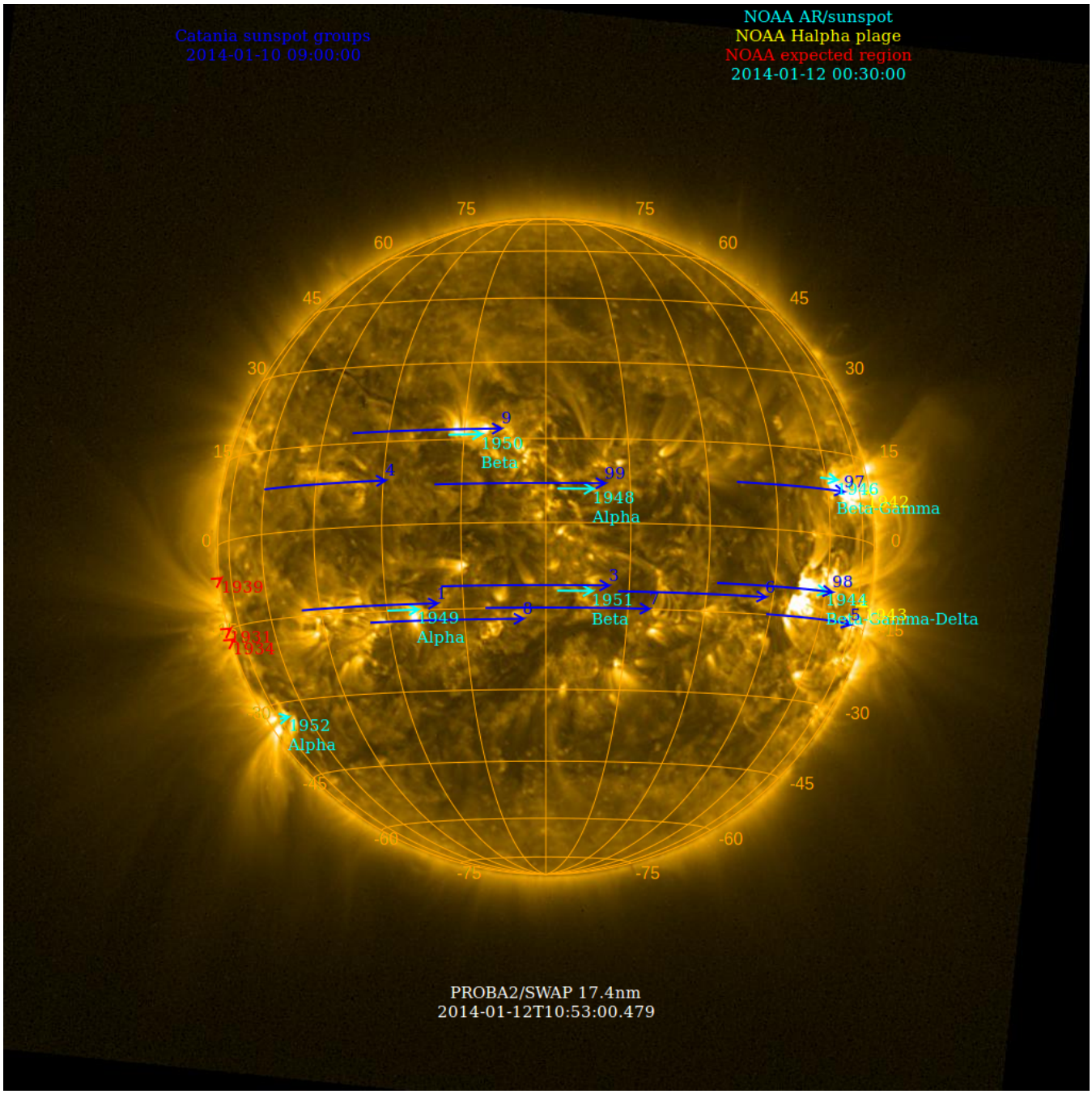
	Monday 06 Jan	Tuesday 07 Jan	Wednesday 08 Jan	Thursday 09 Jan	Friday 10 Jan	Saturday 11 Jan	Sunday 12 Jan
Activity	low	high	moderate	low	low	low	low
Flares	-	**X1.2@18:32** **M7.2@10:13** **M1.0@03:53**	**M3.6@03:47**	-	-	-	-

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

The SWAP images of Jan 06 and Jan 12 are shown below, with annotated active regions.



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


Catania sunspot groups
2014-01-10 09:00:00
NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2014-01-12 00:30:00
75
60
45
30
15
0
-15
-30
-45
-60
-75
9
1950
Beta
4
99
1948
Alpha
97
1946
Beta-Gamma
1939
1931
1934
3
1951
Beta
1949
Alpha
6
7
98
1944
Beta-Gamma-Delta
1952
Alpha
PROBA2/SWAP 17.4nm
2014-01-12T10:53:00.479

Solar Activity
Solar flare activity fluctuated between low and high 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 198).

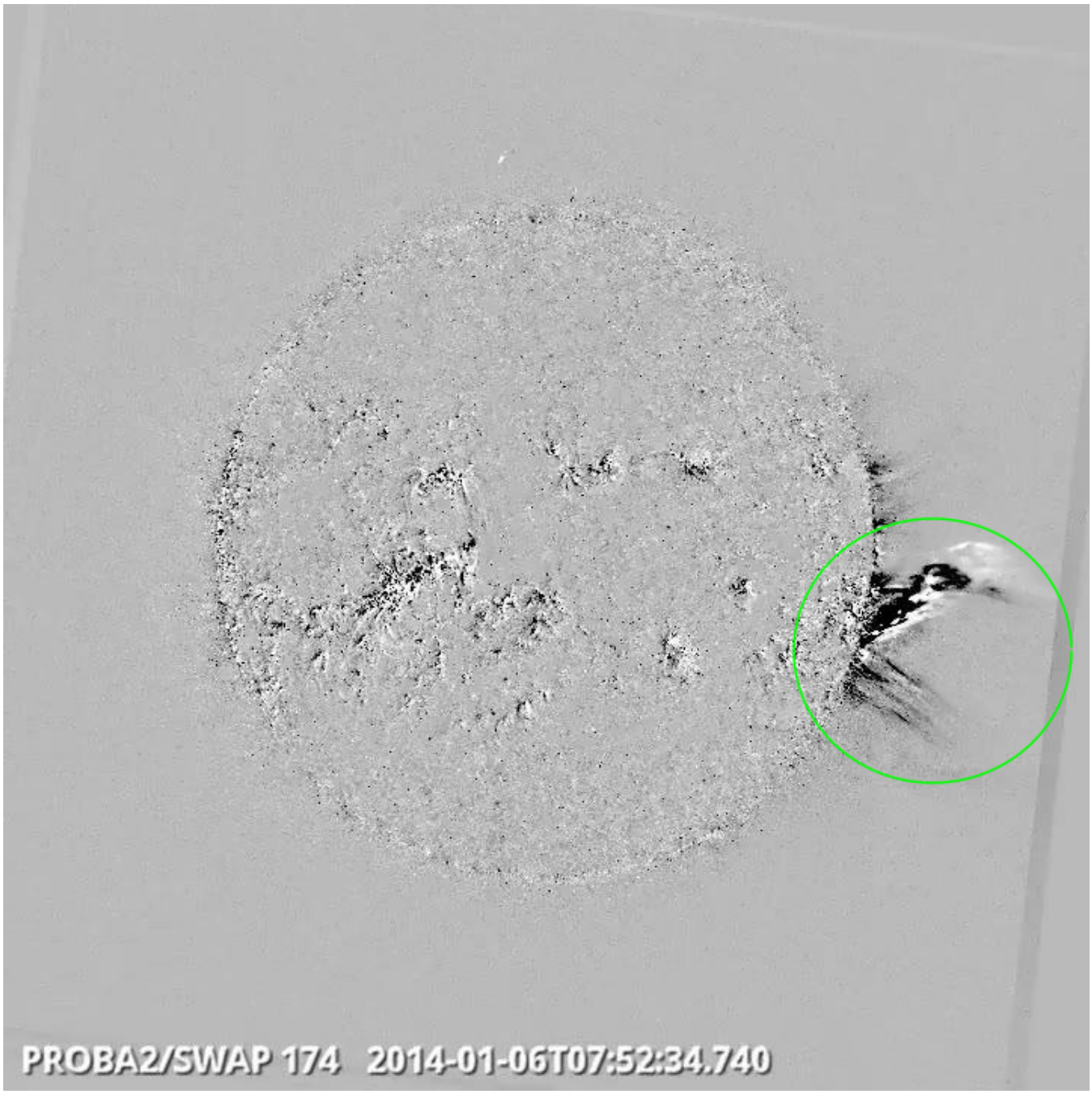
Details about some of this week's events, can be found further below.

Monday Jan 06:

Eruption on the north east limb @ 06:23 - SWAP difference image

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

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

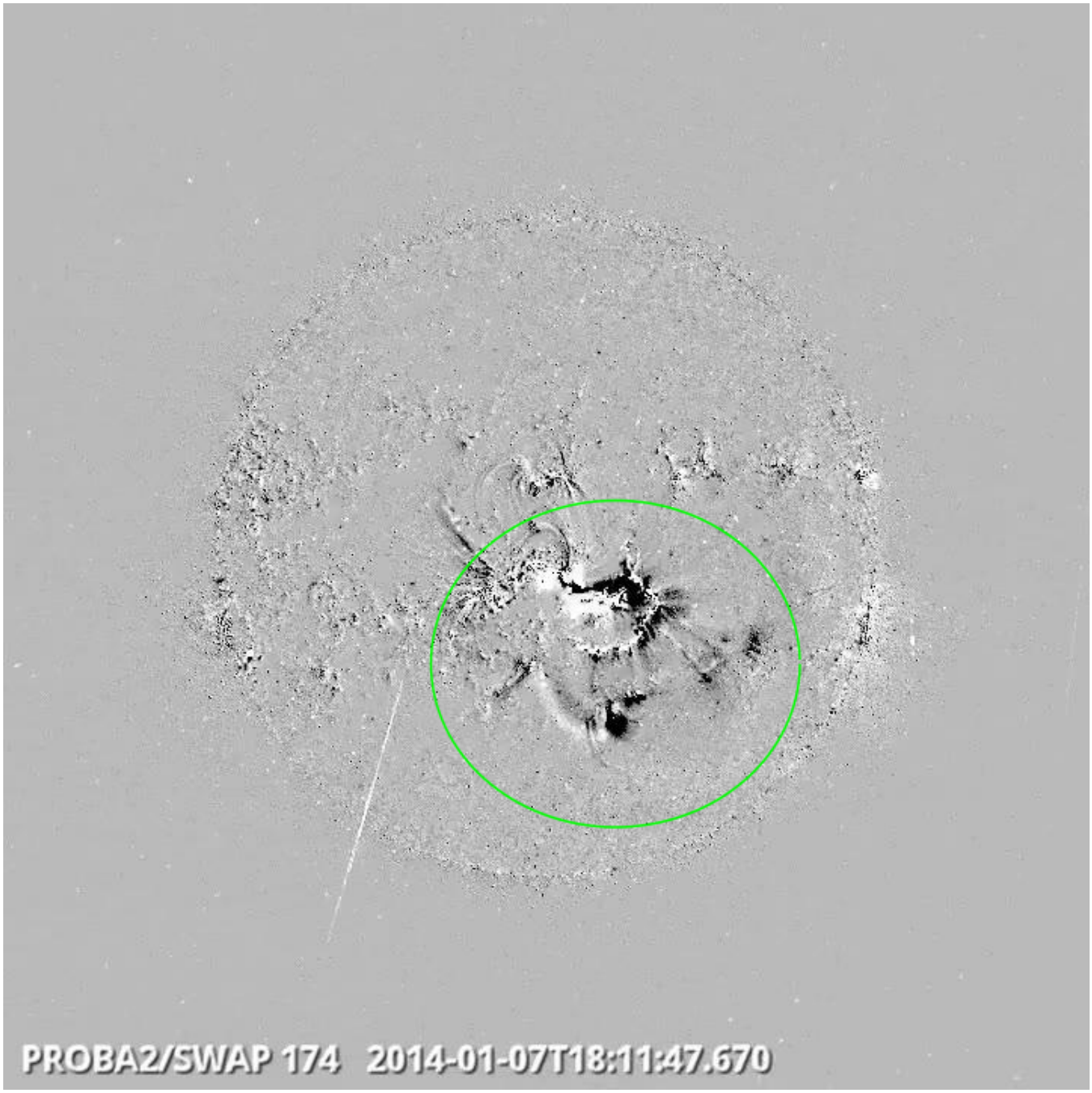


Eruption on the west limb @ 07:52 - SWAP difference image

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

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

Tuesday Jan 07:



X-flare and eit-wave on the south half @ 18:11 - SWAP difference image

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

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

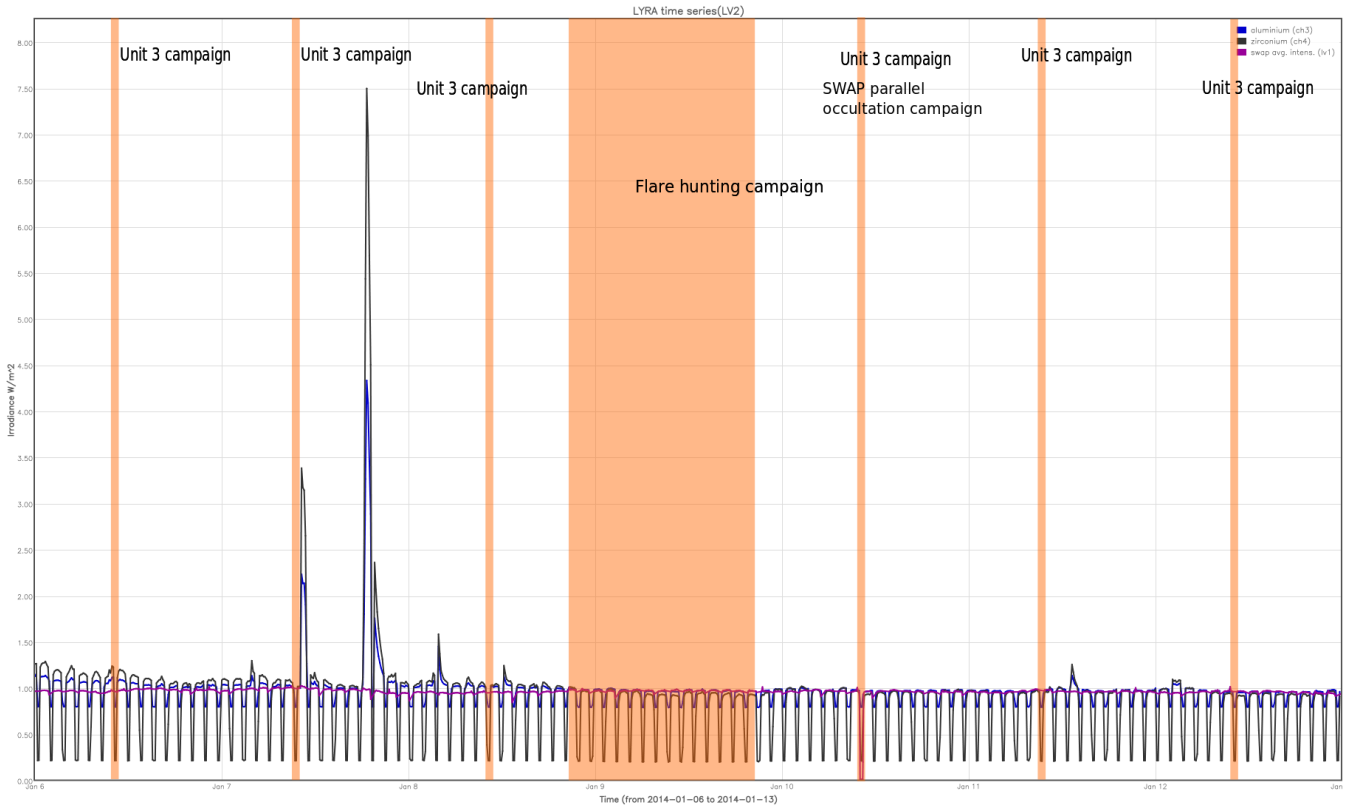
Wednesday Jan 08:

Eruption on the southeast Limb @ 17:16 - 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 orange shaded periods correspond to, from left to right:

- Unit 3 occultation campaign, 3 times
- 24 Hour flare hunting campaign
- Unit 3 occultation campaign in parallel with SWAP
- Unit 3 campaign, 2 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).

Elke D'Huys and Cis Verbeeck gave four classes on space weather and proba 2 at the Catholic University of Leuven and the Catholic University of Leuven Campus Kortrijk. These were aimed towards High school students.

Guest Investigator Program

- None

2. LYRA instrument status

Calibration

No calibration this week.

IOS & operations

Monday 06 Jan	Tuesday 07 Jan	Wednesday 08 Jan	Thursday 09 Jan	Friday 10 Jan	Saturday 11 Jan	Sunday 12 Jan
Nominal acquisition + daily U3 LYIOS00364	Nominal acquisition + daily U3 LYIOS00365	Nominal acquisition + daily U3 + flare hunting campaign LYIOS00366	Nominal acquisition + flare hunting campaign LYIOS00366	Nominal acquisition + daily U3 LYIOS00366	Nominal acquisition + daily U3 LYIOS00366	Nominal acquisition + daily U3 LYIOS00366

The following science campaigns were performed by LYRA:

- daily U3 observations campaign
- flare hunting campaign

LYRA detector temperature

LYRA detector 2 temperature globally varied between 40.6 and 44.9 °C, taking into account the daily U3 activation periods and the flare hunting campaign.

To be explored

- None

3. SWAP instrument status

Calibration

No calibration this week.

MCPM errors

The number of MCPM recoverable errors increased from 15157 to 15328.
The number of MCPM unrecoverable errors remained at 1127.

IOS & operations

Monday 06 Jan	Tuesday 07 Jan	Wednesday 08 Jan	Thursday 09 Jan	Friday 10 Jan	Saturday 11 Jan	Sunday 12 Jan
Nominal acquisition IOS00494 552 images	Nominal acquisition IOS00495 569 images	Nominal acquisition IOS00495 553 images	Nominal acquisition IOS00495 565images	Nominal acquisition + parallel occultation campaign IOS00495 605 images	Nominal acquisition IOS00495 570 images	Nominal acquisition IOS00495 555 images

Special operations for SWAP, this week:

- parallel occultation campaign with LYRA

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -1.9 and -0.64 °C.

To be explored

- None

4. PROBA2 Science Center Status

The main operator is Koen Stegen.

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 13046 to 13104) was nominal

Data coverage HK

All HK data files (LYRA_AD) have been received

Data coverage SWAP

All SWAP Science data files (BINSWAP) have been received,

Total number of images between 2014 Jan 06 0UT and 2014 Jan 13 0UT: 3969
Highest cadence in this period: 29 seconds
Average cadence in this period: 152.39 seconds
Number of image gaps larger than 300 seconds: 102
Largest data gap: 31.57 minutes

Data coverage LYRA

All LYRA Science data files (BINLYRA) have been received.

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)