P2SC-ROB-WR-187- 20131021 Weekly report #184	**P2SC Weekly report**	
Period covered: Date: Written by: Approved by:	Mon Oct 21 to Sun Oct 27, 2013 30 Oct 2013 Robbe Vansintjan Matthew West	Royal Observatory of Belgium - PROBA2 Science Center
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1. Science

Solar & Space weather events

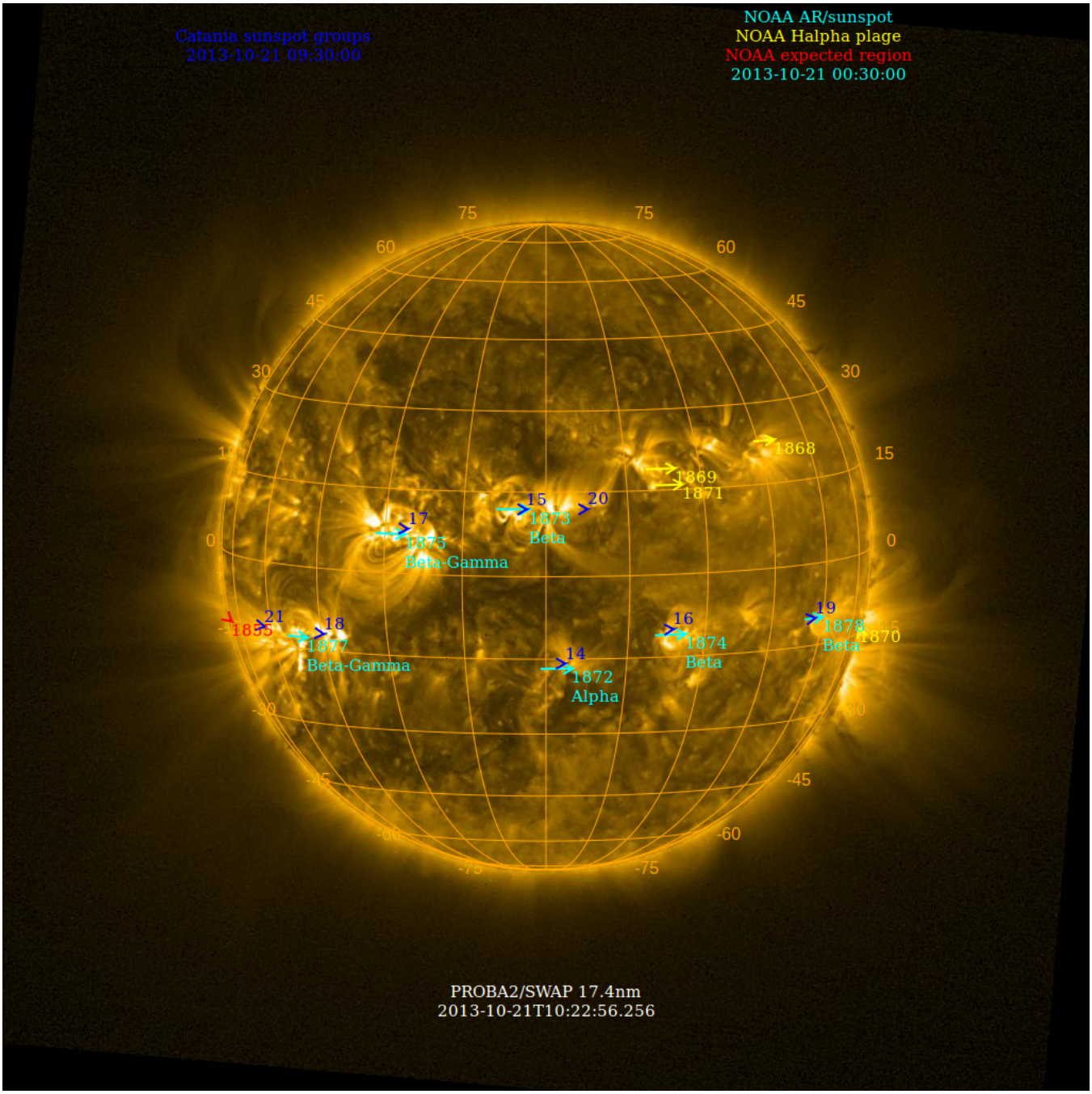
The level of solar activity[1] fluctuated between **low** and **very high** this week.

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

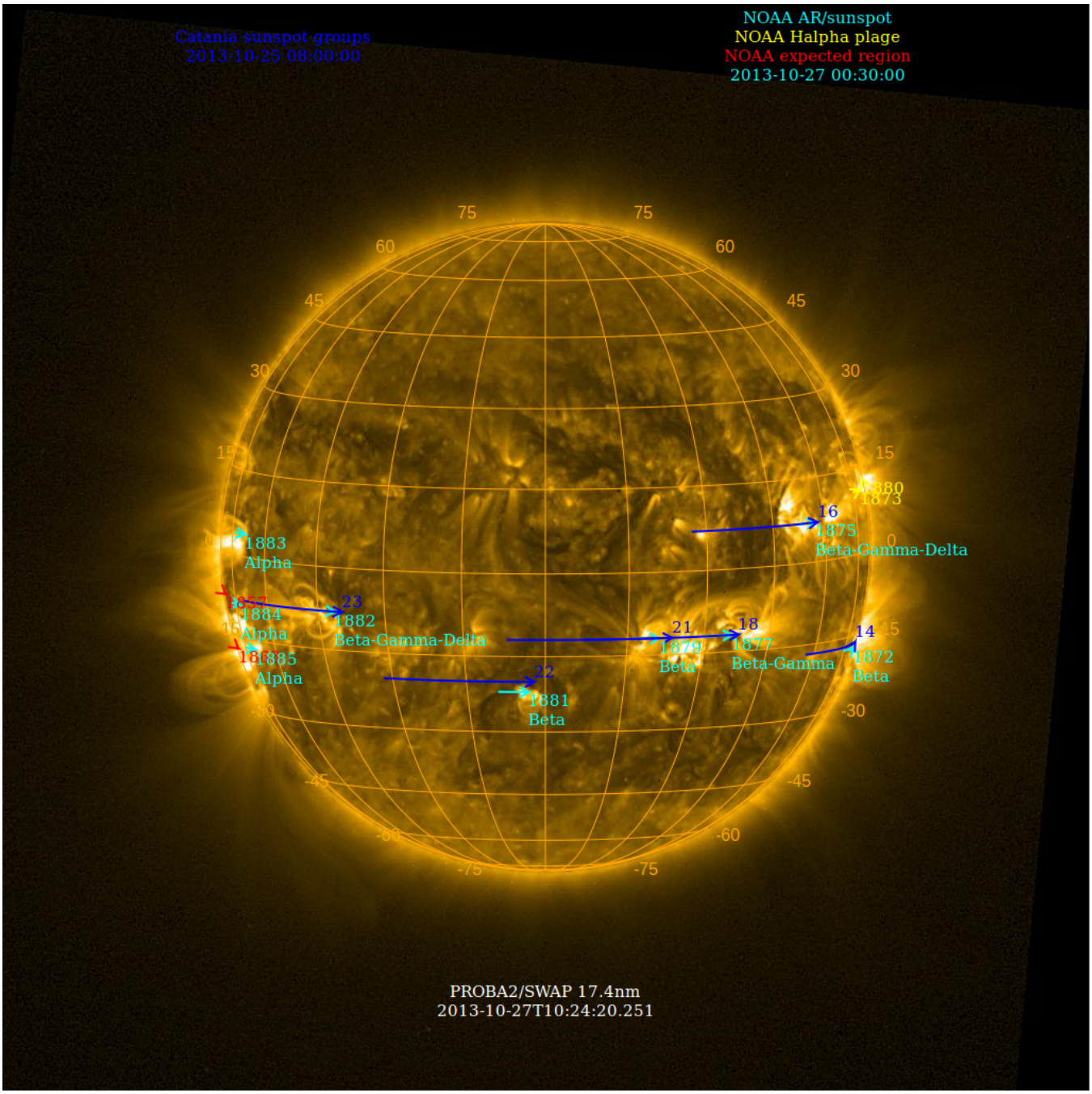
	Monday 21 Oct	Tuesday 22 Oct	Wednesday 23 Oct	Thursday 24 Oct	Friday 25 Oct	Saturday 26 Oct	Sunday 27 Oct
Activity	low	moderate	moderate	moderate	very high	moderate	moderate
Flares	-	**M4.2@21:20** **M1.0@15:20** **M1.0@00:22**	**M1.4@23:43** **M2.7@20:53**	**M3.5@10:33** **M2.5@10:09** **M9.3@00:30** **M3.1@00:08**	**M1.9@20:58** **M2.3@19:21** **M1.3@17:09** **X2.1@15:03** **M1.0@10:12** **X1.7@08:01** **M2.9@03:02**	**M1.0@19:53** **M3.1@19:27** **M1.8@11:17** **M1.5@09:37** **M2.3@06:06**	**M3.5@12:48**

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

The SWAP images of Oct 21 and Oct 27 are shown below, with annotated active regions.



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


Catania sunspot groups
2013-10-25 08:00:00
NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2013-10-27 00:30:00
75
75
60
60
45
45
30
30
15
15
0
-30
-45
-60
-75
1883
Alpha
1884
Alpha
1885
Alpha
23
1882
Beta-Gamma-Delta
22
1881
Beta
21
1879
Beta
18
1877
Beta-Gamma
14
1872
Beta
16
1875
Beta-Gamma-Delta
1873
PROBA2/SWAP 17.4nm
2013-10-27T10:24:20.251

Solar Activity
Solar flare activity fluctuated between low and very 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 187).
Details about some of this week's events, can be found further below.

Tuesday Oct 22:

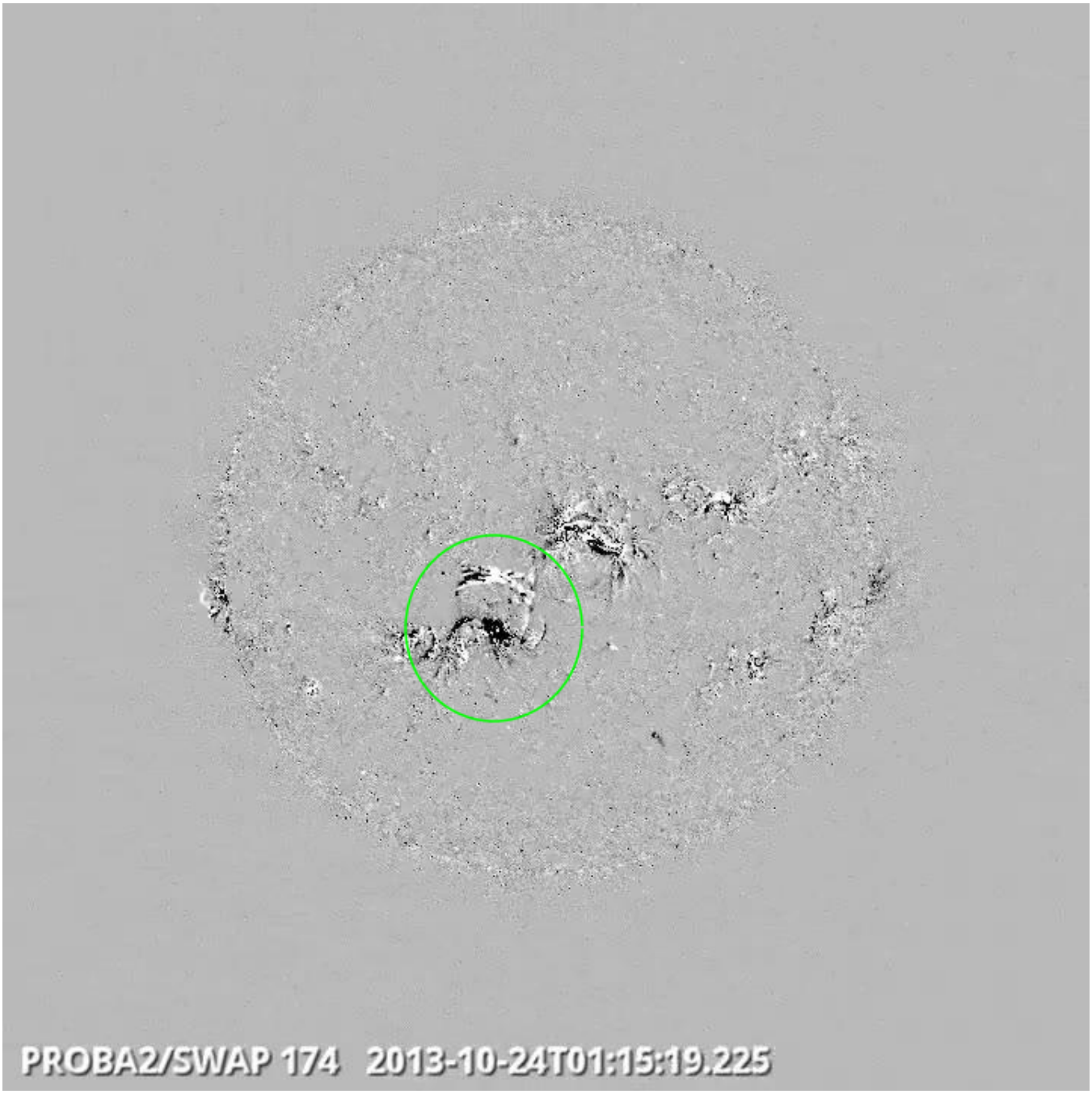
Eruption on the north half @ 03:58 - SWAP difference image
Find a movie of the event **here** (SWAP difference movie)

Surge on the centre @ 18:42 - SWAP difference image

Find a 24 hour movie of the event **here** (SWAP difference movie)

Find a 24 hour movie of the event **here** (SWAP movie)

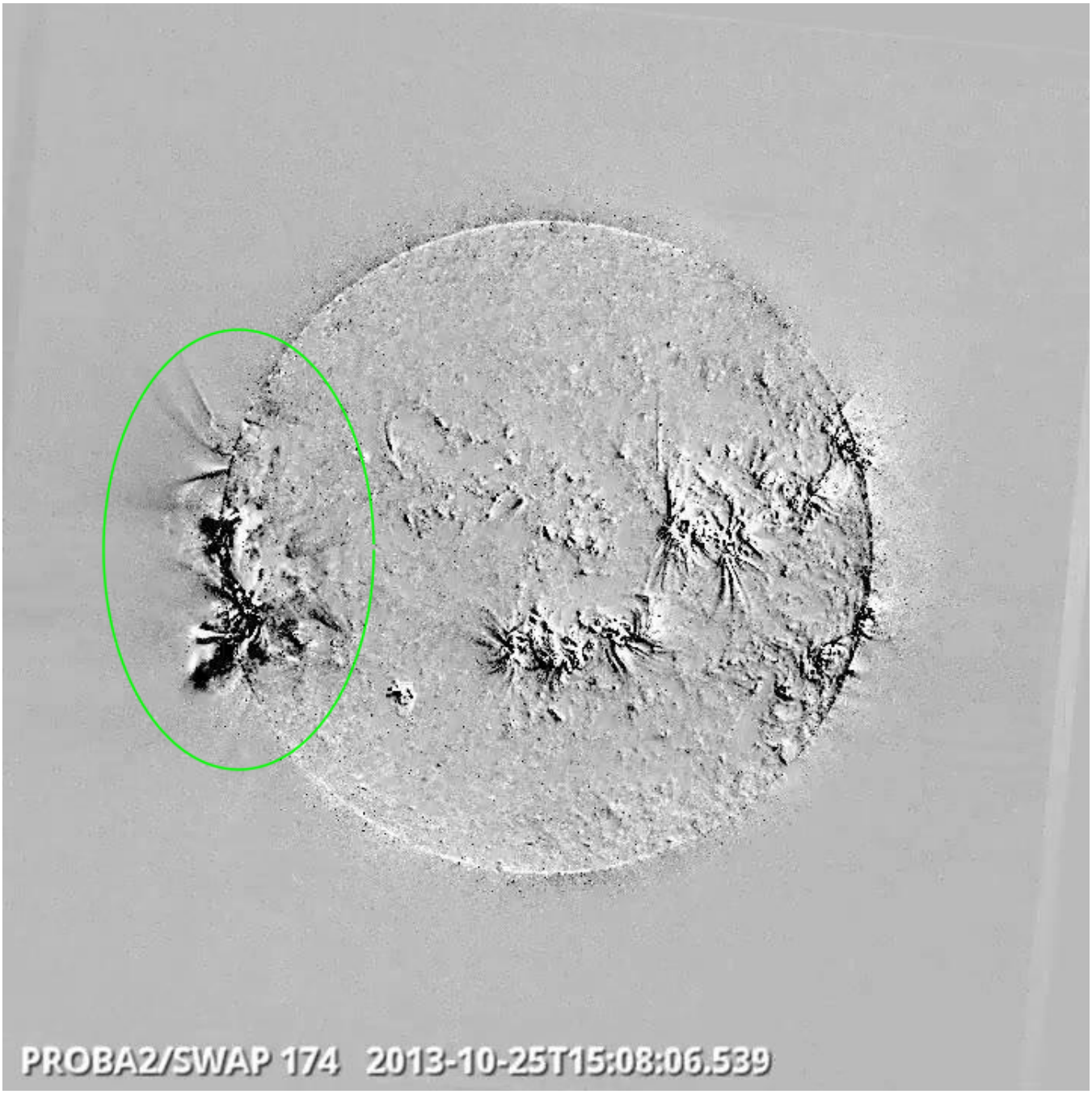
Thursday Oct 24:



Failed filament eruption on south east quad@ 01:15 - SWAP difference image

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

Friday Oct 25:



Eruption and eit-wave on east limb@ 15:08 - SWAP difference image
Find a movie of the event **here** (SWAP difference movie)

Saturday Oct 26:

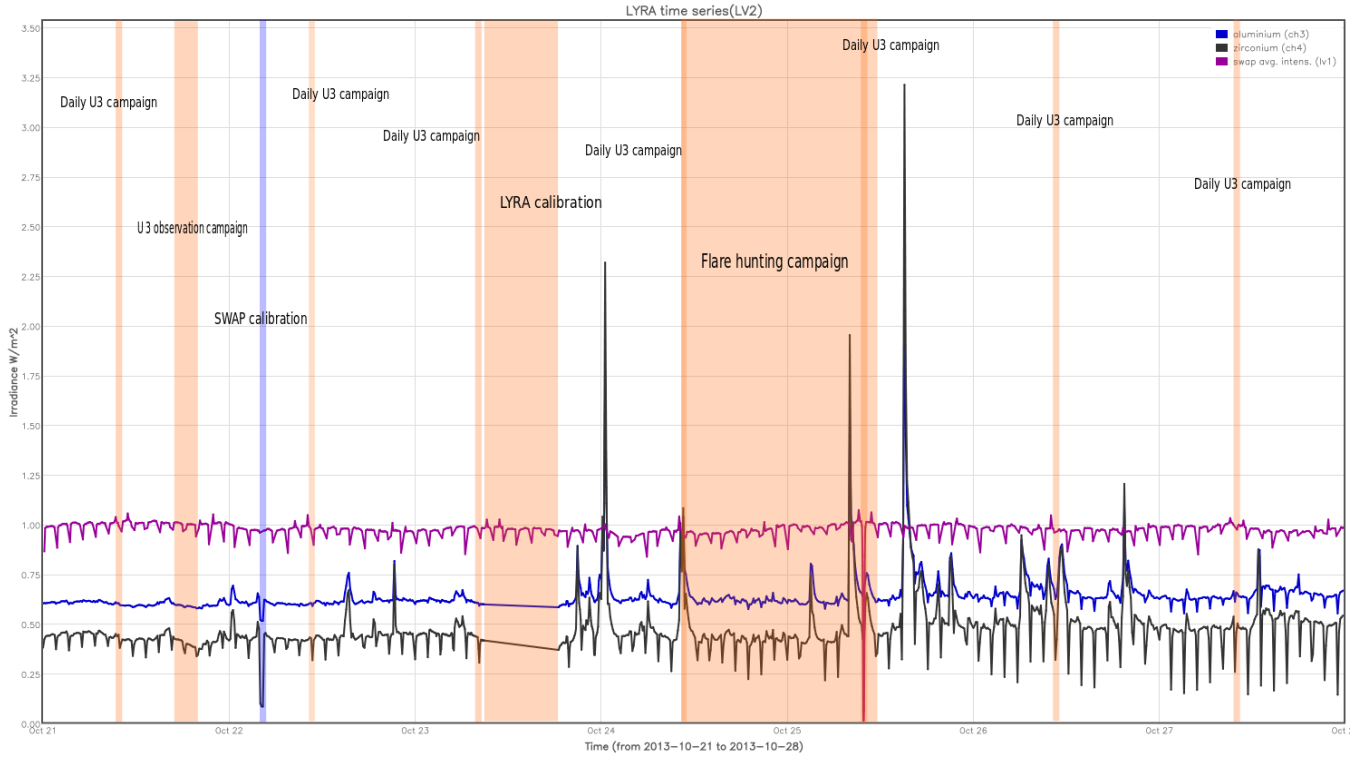
Eruption on east limb@ 19:35 - SWAP difference image
Find a movie of the event **here** (SWAP difference movie)

Sunday Oct 27:

Failed filament eruption on the centre @ 05:30 - SWAP difference image
Find a movie of the event **here** (SWAP difference movie)
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

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

- Daily U3 campaign
- U3 observation campaign
- Two daily U3 campaign
- LYRA calibration
- Daily U3 campaign
- Flare hunting campaign
- Three daily U3 campaign

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).

SWAP presentation Observations of streamers and pseudostreamers at the Kiepenheuer-institut für Sonnenphysic

Guest Investigator Program

- Vida Zigma currently visiting on the GI program. Working with MD. Use a model with LYRA data to determine the ionisation increase in the ionosphere during flares.

2. LYRA instrument status

Calibration

No calibration this week.

IOS & operations

Monday 21 Oct	Tuesday 22 Oct	Wednesday 23 Oct	Thursday 24 Oct	Friday 25 Oct	Saturday 26 Oct	Sunday 27 Oct
Nominal acquisition + daily U3 + U3 observation campaign LYIOS00345	Nominal acquisition + daily U3 + LYIOS00346	Nominal acquisition + daily U3 + calibration LYIOS00346	Nominal acquisition + daily U3 + flare hunting campaign LYIOS00346 -> LYIOS00347	Nominal acquisition + daily U3 + flare hunting campaign LYIOS00347	Nominal acquisition + daily U3 LYIOS00347	Nominal acquisition + daily U3 LYIOS00347

The following science campaigns were performed by LYRA:

- daily U3 observations campaign

LYRA detector temperature

LYRA detector 2 temperature globally varied between 49.9 and 53.1 °C, taking into account the daily U3 activation periods, flare hunting campaign and the U3 observation campaign; the daily U3 resulted in a temperature increase of about 0.7 °C, the flare hunting campaign resulted in a temperature increase of about 3.7 °C and the U3 observation campaign resulted in a temperature increase of about 2 °C.
During calibration, temperature decreased to 49.1 °C.

To be explored

- None

3. SWAP instrument status

Calibration

No calibration this week.

MCPM errors

The number of MCPM recoverable errors increased from 13184 to 13375.
The number of MCPM unrecoverable errors remained at 1127.

IOS & operations

Monday 21 Oct	Tuesday 22 Oct	Wednesday 23 Oct	Thursday 24 Oct	Friday 25 Oct	Saturday 26 Oct	Sunday 27 Oct
Nominal acquisition IOS00478 561 images	Nominal acquisition + calibration IOS00479 591 images	Nominal acquisition IOS00479 644 images	Nominal acquisition IOS00479 642 images	Nominal acquisition IOS00479 691 images	Nominal acquisition IOS00479 630 images	Nominal acquisition IOS00479 627 images

Special operations for SWAP, this week:

- None

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between 1.51 and 2.78 °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 12384 to 12446) 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 Oct 21 0UT and 2013 Oct 28 0UT: 4386
Highest cadence in this period: 29 seconds
Average cadence in this period: 137.78 seconds
Number of image gaps larger than 300 seconds: 99
Largest data gap: 21.78 minutes

The data gap was caused by the earth eclipsing the satellite.

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)