P2SC-ROB-WR-216 - 20140512 Weekly report #216	**P2SC Weekly report**	
Period covered: Date: Written by: Approved by:	Mon May 12, 2014 to Sun May 18, 2014 21 May 2014 Robbe Vansintjan Matthew West	Royal Observatory of Belgium - PROBA2 Science Center
To:	LYRA PI, marie.dominique@sidc.be SWAP PI, dseaton@sidc.be	http://proba2.sidc.be ++ 32 (0) 2 3730559
cc:	ROB DIR, ronald@oma.be ESA Redu, Etienne.Tilmans@esa.int ESA D/SRE, Joe.Zender@esa.int ESA D/TEC, Juha-Pekka.Luntama@esa.int	

1. Science

Solar & Space weather events

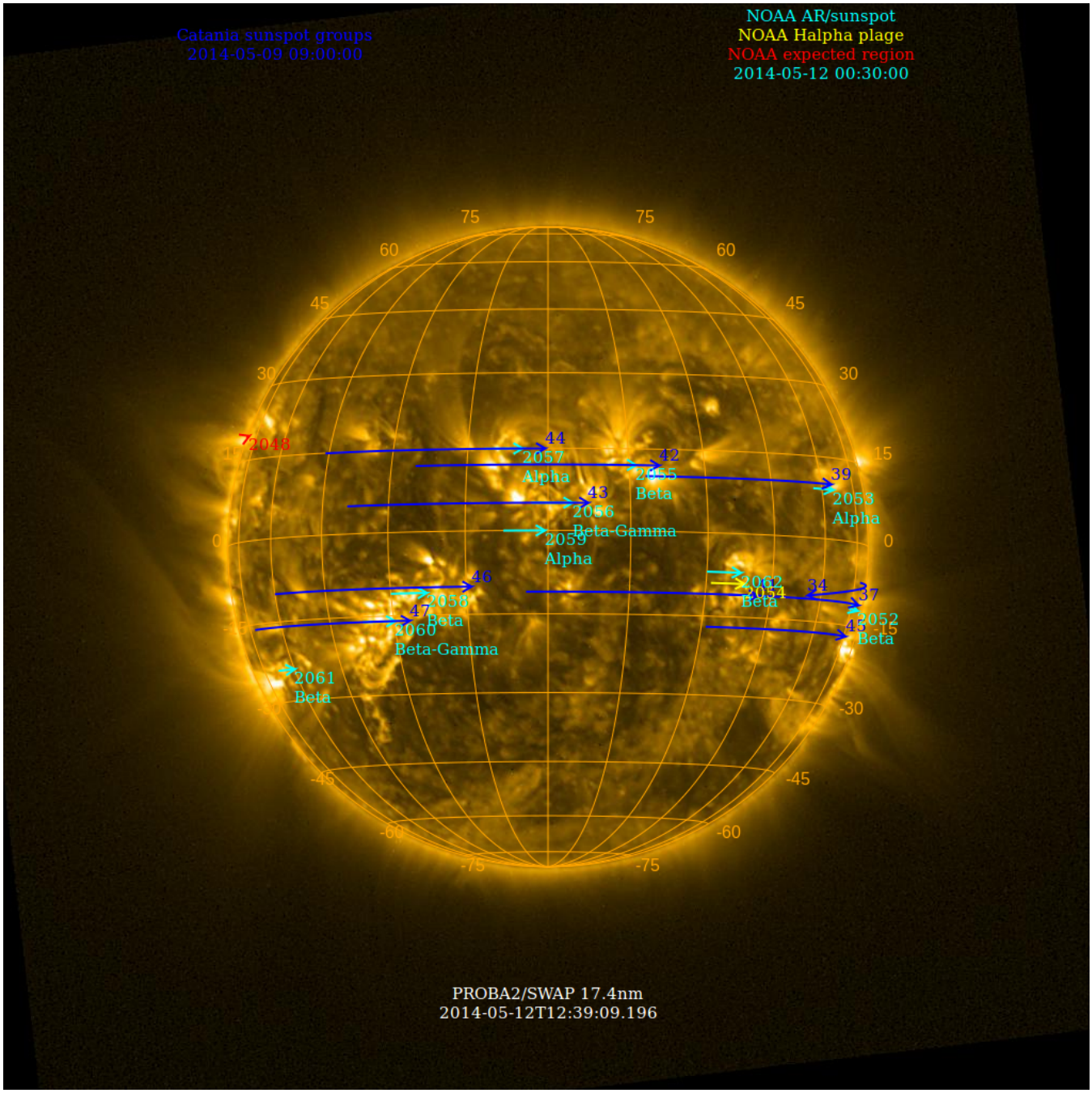
The level of solar activity[1] remained **low** this week.

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

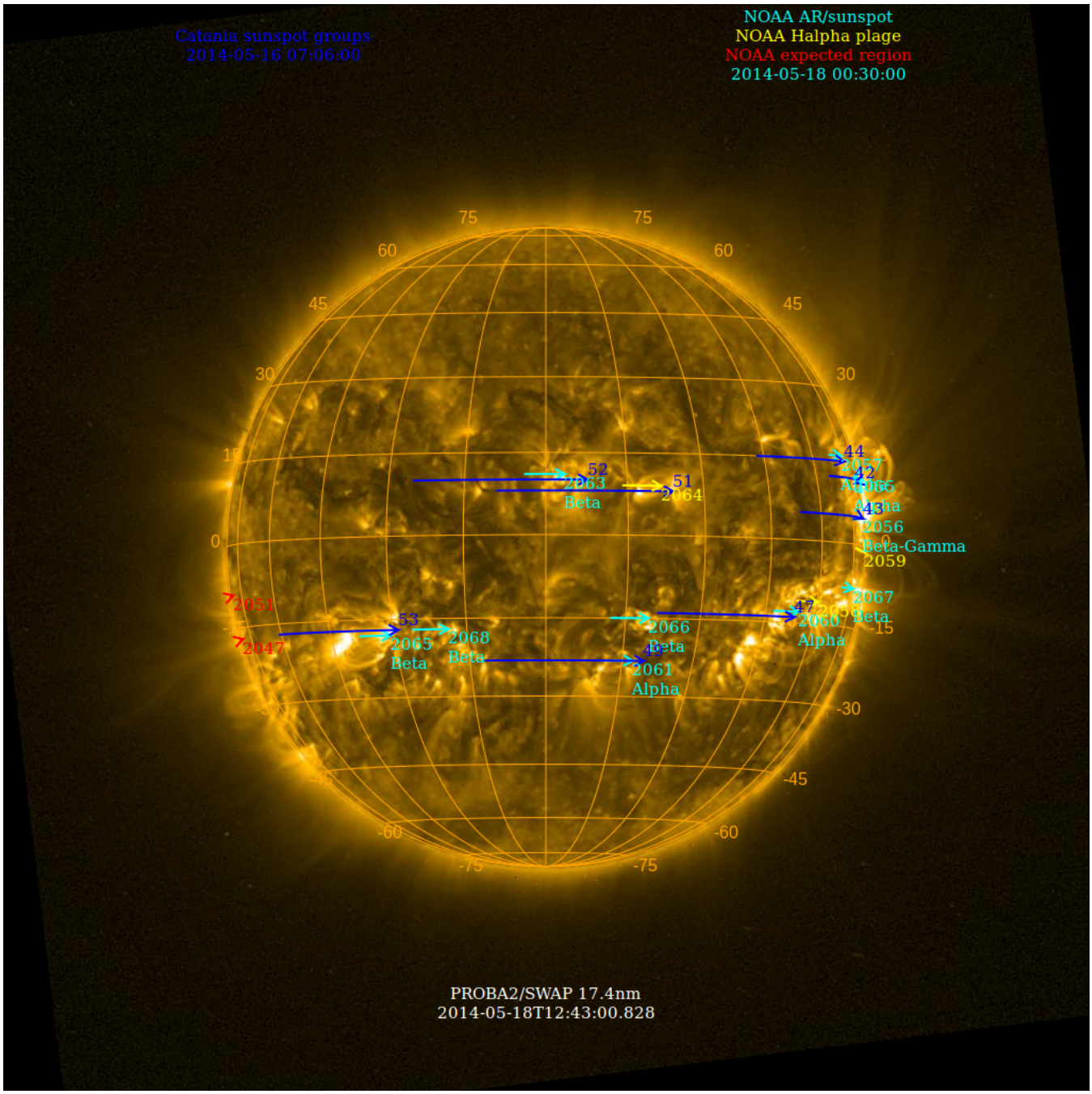
	Monday 12 May	Tuesday 13 May	Wednesday 14 May	Thursday 15 May	Friday 16 May	Saturday 17 May	Sunday 18 May
Activity	low	low	low	low	low	low	low
Flares	-	-	-	-	-	-	-

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

The SWAP images of May 12 and May 18 are shown below, with annotated active regions.



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

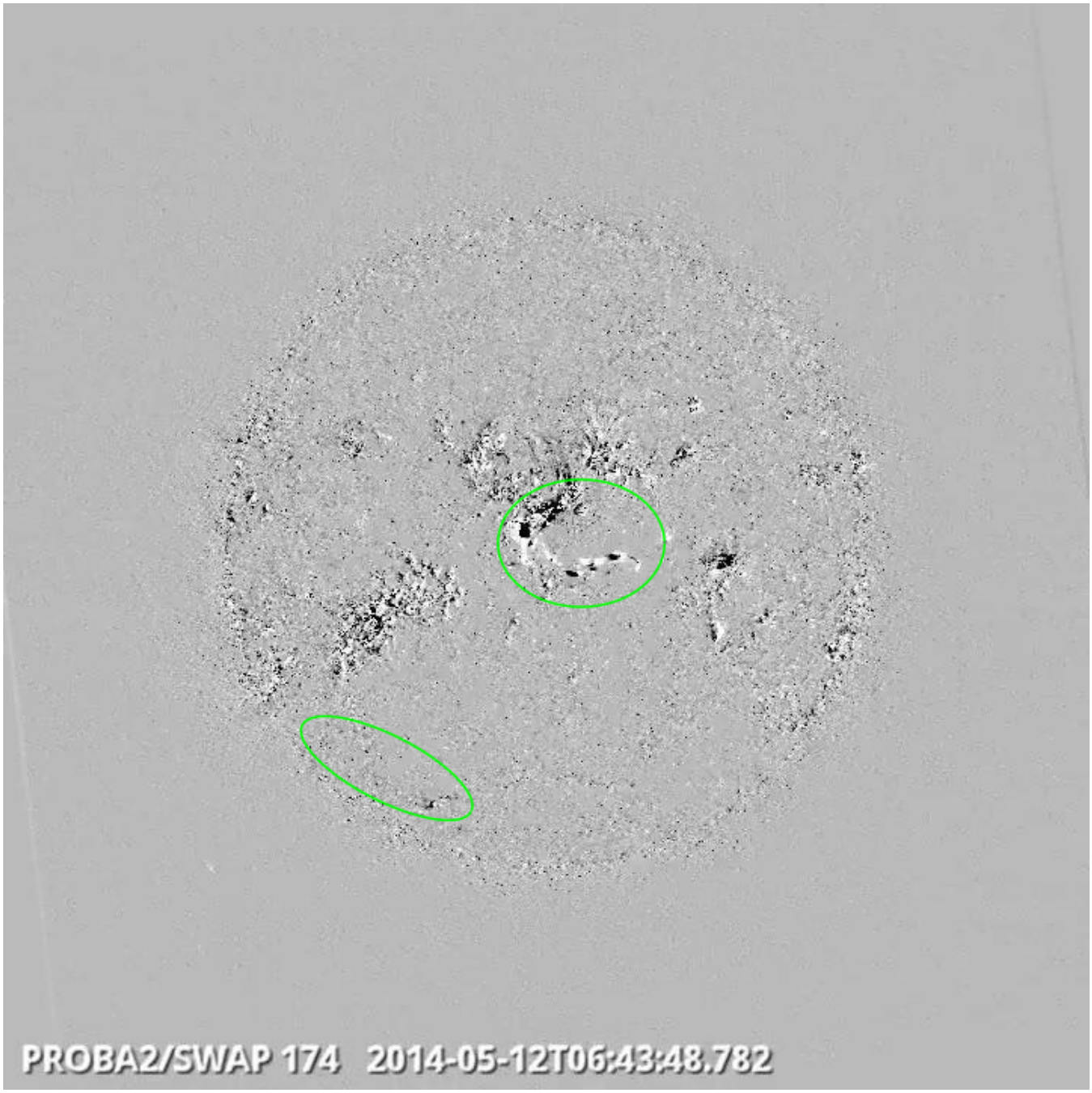

Catania sunspot groups
2014-05-16 07:06:00
NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2014-05-18 00:30:00
75
60
45
30
0
-30
-45
-60
-75
52
2063
Beta
51
2064
44
2057
42
2066
43
2056
Beta-Gamma
2059
2067
Beta
2060
Alpha
2066
Beta
2061
Alpha
53
2065
Beta
2068
Beta
2051
2047
PROBA2/SWAP 17.4nm
2014-05-18T12:43:00.828

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 216).

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

Monday May 12



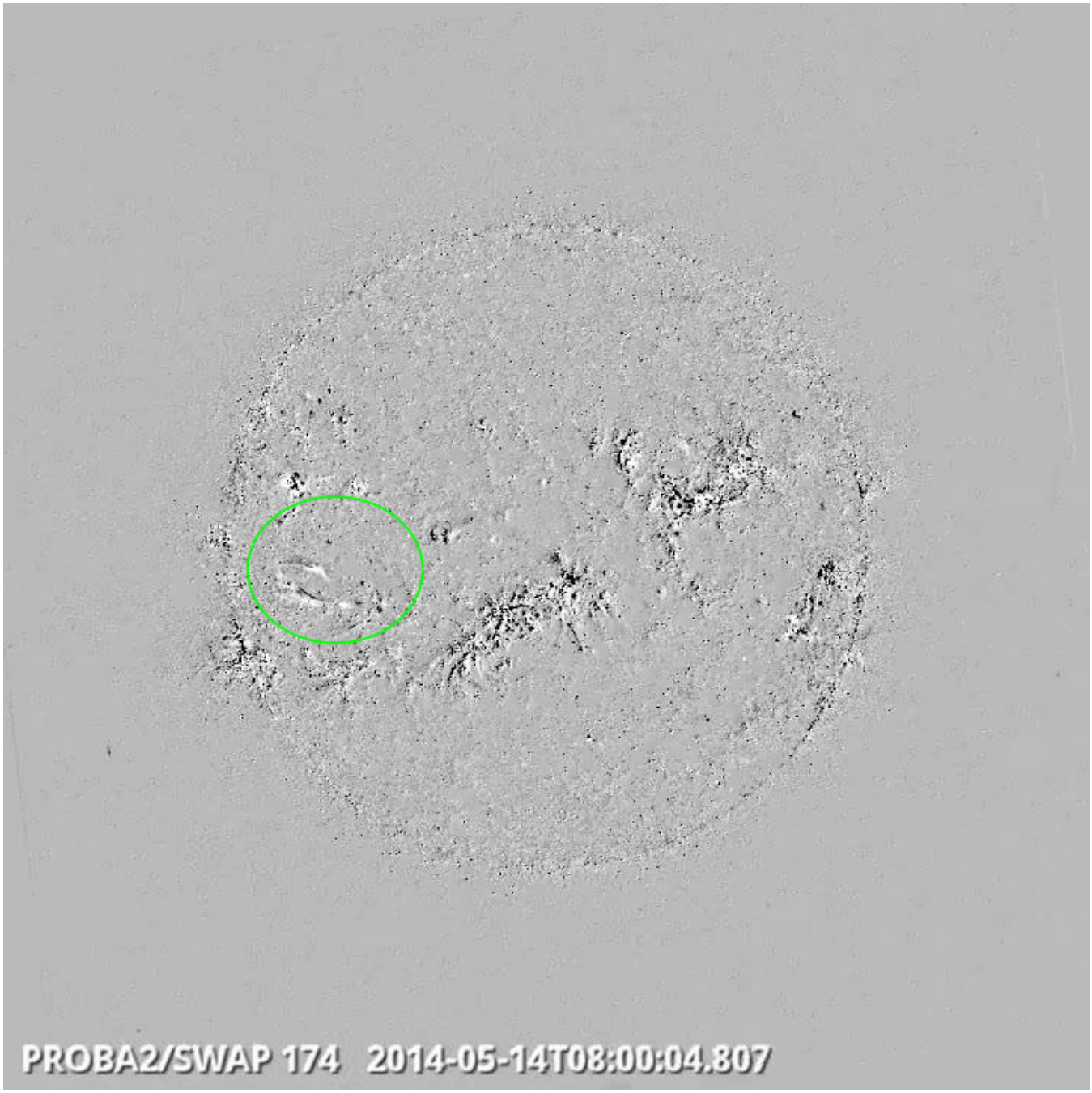
Flows in the centre @ 06:43 - SWAP difference image

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

Eruption on the south east quad @ 11:42 - SWAP difference image

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

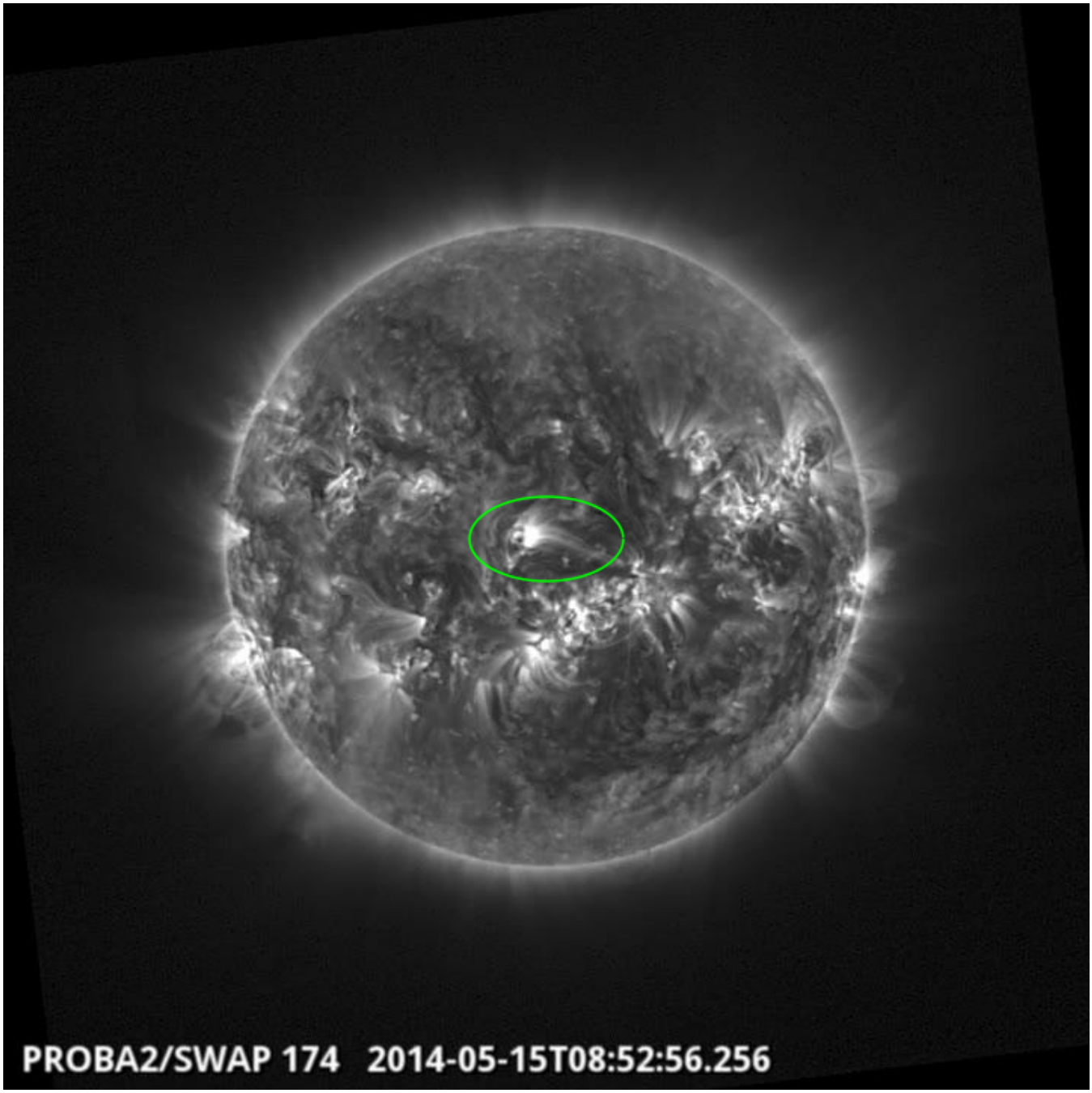
Wednesday May 14



Flow on south east quad @ 08:00 - SWAP difference image

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

Thursday May 15:



Brightening in the centre @ 08:52 - SWAP difference image

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

Eruption on the east limb @ 20:32 - SWAP difference image

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

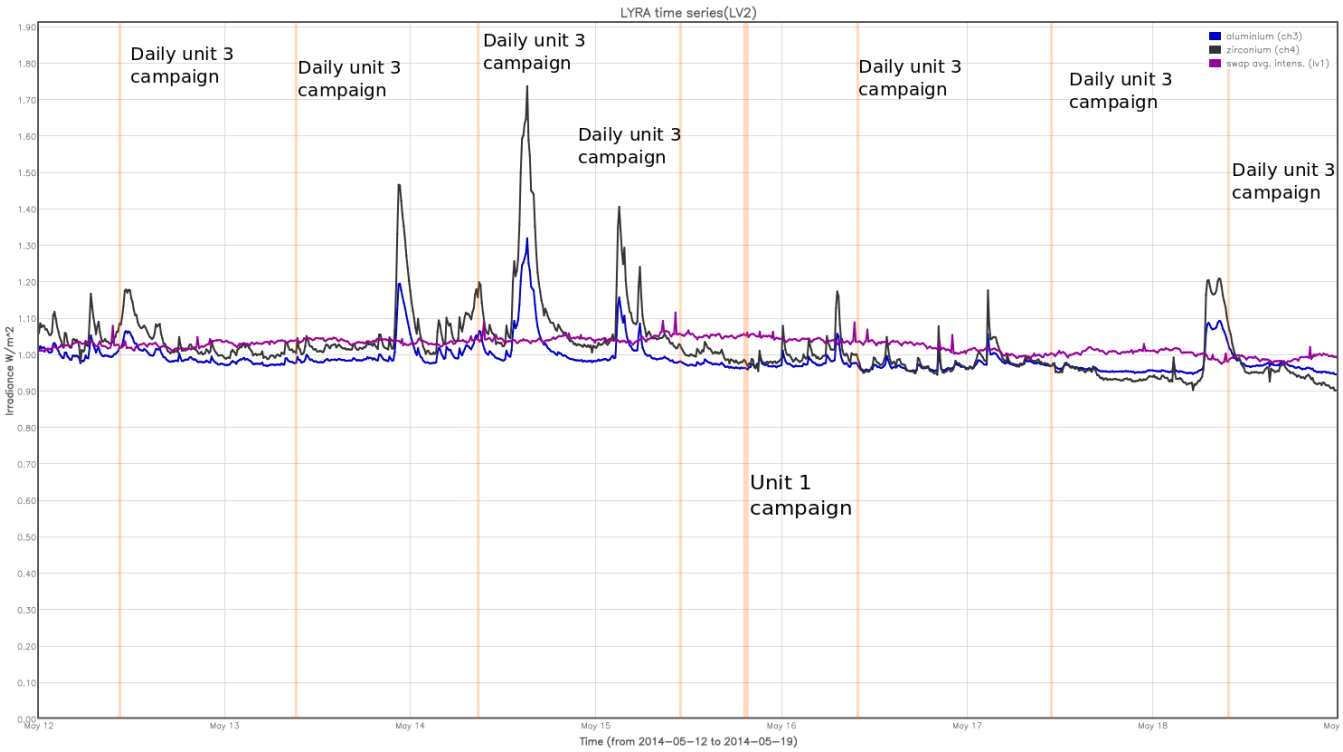
Sunday May 18

Eruption on the west limb @ 07:05 - 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:

- Daily unit 3 campaigns, four times
- Unit 1 campaign
- Daily unit 3 campaigns, three 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).

- Pesnell. W.D *et al*. 2014: "The Time-dependent Chemistry of Cometary Debris in the Solar Corona", *ApJ*, 785, 50, ADS Link
- Temmer. M *et al.* 2014: "Asymmetry in the CME-CME Interaction Process for the Events from 2011 February 14-15", *ApJ,* 785, 85, ADS Link
- Bain, H. M. *et al.* 2014: "Radio Imaging of a Type IVM Radio Burst on the 14th of August 2010", *ApJ*, **782**, 43. ADS Link
- Rachmeler *et al.* 2014: "Observations of a hybrid double-streamer/pseudostreamer in the solar corona", *ApJL* (submitted). arXiv Link

Guest Investigator Program

- V. Zigman LYRA Modelling flare induced ionization enhancements of the lower ionosphere with LYRA data.
- C. Bethge SWAP Combining SWAP and CoMP to study coronal pseudo streamers and their influence on solar wind speeds.

2. LYRA instrument status

Calibration

No calibration this week.

IOS & operations

Monday 12 May	Tuesday 13 May	Wednesday 14 May	Thursday 15 May	Friday 16 May	Saturday 17 May	Sunday 18 May
Nominal acquisition + daily U3 LYIOS00395	Nominal acquisition + daily U3 LYIOS00396	Nominal acquisition + daily U3 LYIOS00396	Nominal acquisition + daily U3 + monthly U1 LYIOS00396	Nominal acquisition + daily U3 LYIOS00396	Nominal acquisition + daily U3 LYIOS00396	Nominal acquisition + daily U3 LYIOS00396

The following science campaigns were performed by LYRA:

- daily U3 observations campaign
- monthly U1 campaign

LYRA detector temperature

LYRA detector 2 temperature globally varied between 47.2 and 49.2 °C, taking into account the daily U3 activation periods; the latter result in a temperature increase of about 0.6 °C.

3. SWAP instrument status

Calibration

No calibration campaign this week.

MCPM errors

The number of MCPM recoverable errors increased from 18640 to 18813.
The number of MCPM unrecoverable errors increased from 1127 to 1294.

Unrecoverable errors started increasing due to two or more bits in the MCPM being stuck. Data and platform are not affected and no action needs to be taken. These errors will stop increasing when that location in memory is overwritten.

IOS & operations

Monday 12 May	Tuesday 13 May	Wednesday 14 May	Thursday 15 May	Friday 16 May	Saturday 17 May	Sunday 18 May
Nominal acquisition IOS00521 476 images	Nominal acquisition IOS00522 660 images	Nominal acquisition IOS00522 664 images	Nominal acquisition IOS00522 663 images	Nominal acquisition IOS00522 665 images	Nominal acquisition IOS00522 658 images	Nominal acquisition IOS00522 599 images

Special operations for SWAP, this week:

- None

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -0.96 and -0.33 °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 14142 to 14202) was nominal, except for:

- 14150, 14151, 14152

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:

- 14150, 14151, 14152

Swap image download blocked during pass 14150 (last BINSWAP received at 02:29:57.)
The unblocking procedure has been performed during the pass 14152 and the first BINSWAP has been received at 05:45:55.
Data of the pass 14150 & 14152 are incomplete and there is not swap data for the pass 14151.

Total number of images between 2014 May 12 0UT and 2014 May 19 0UT: 4419
Highest cadence in this period: 0 seconds
Average cadence in this period: 136.87 seconds
Number of image gaps larger than 300 seconds: 0

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)