P2SC-ROB-WR-203 - 20140210 Weekly report #203	**P2SC Weekly report**	
Period covered: Date: Written by: Approved by:	Mon Feb 10 to Sun Feb 16, 2014 19 Feb 2014 Robbe Vansintjan Matthew West	Royal Observatory of Belgium - PROBA2 Science Center
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1. Science

Solar & Space weather events

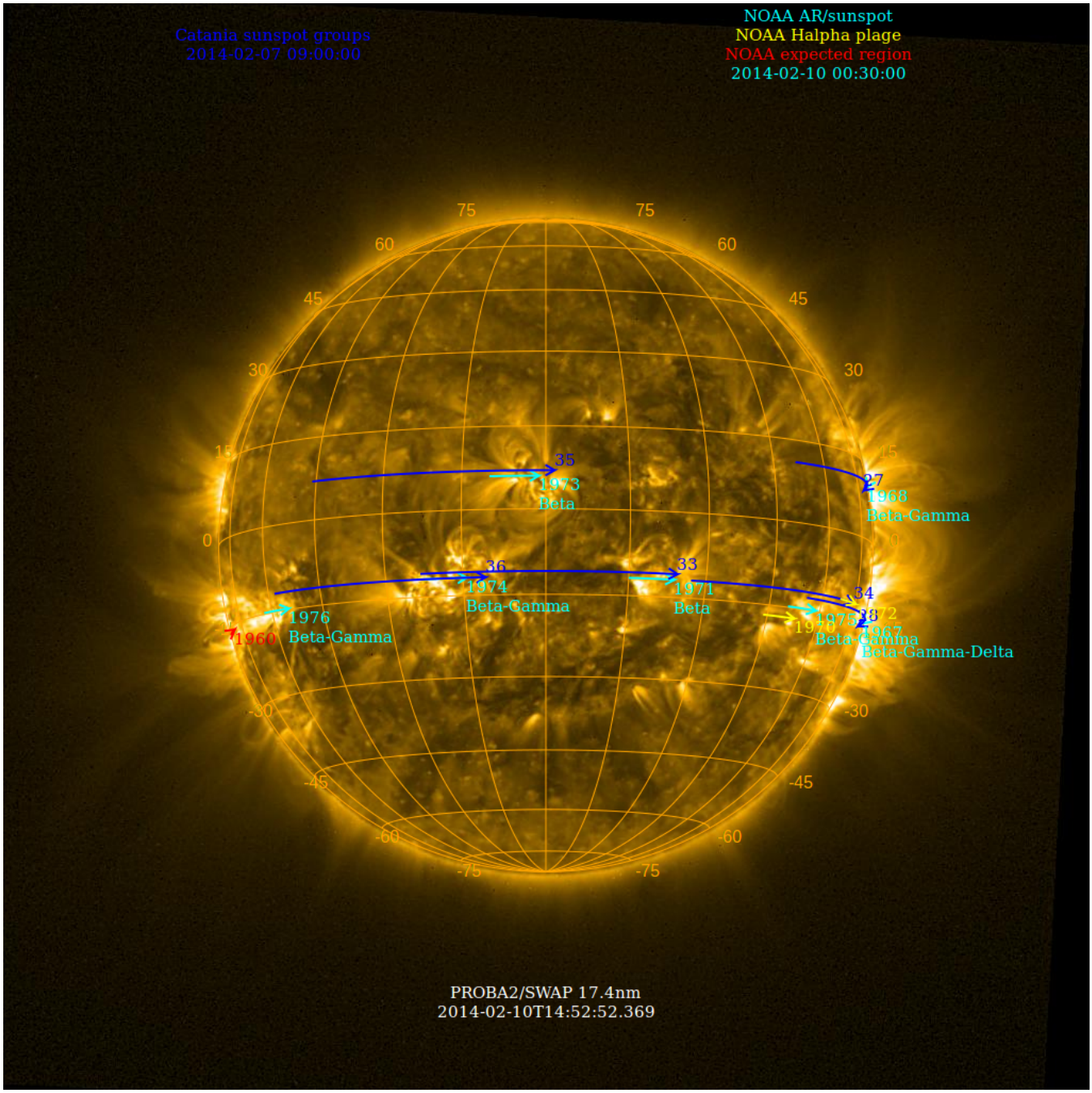
The level of solar activity[1] fluctuated between **low** and **moderate** this week.

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

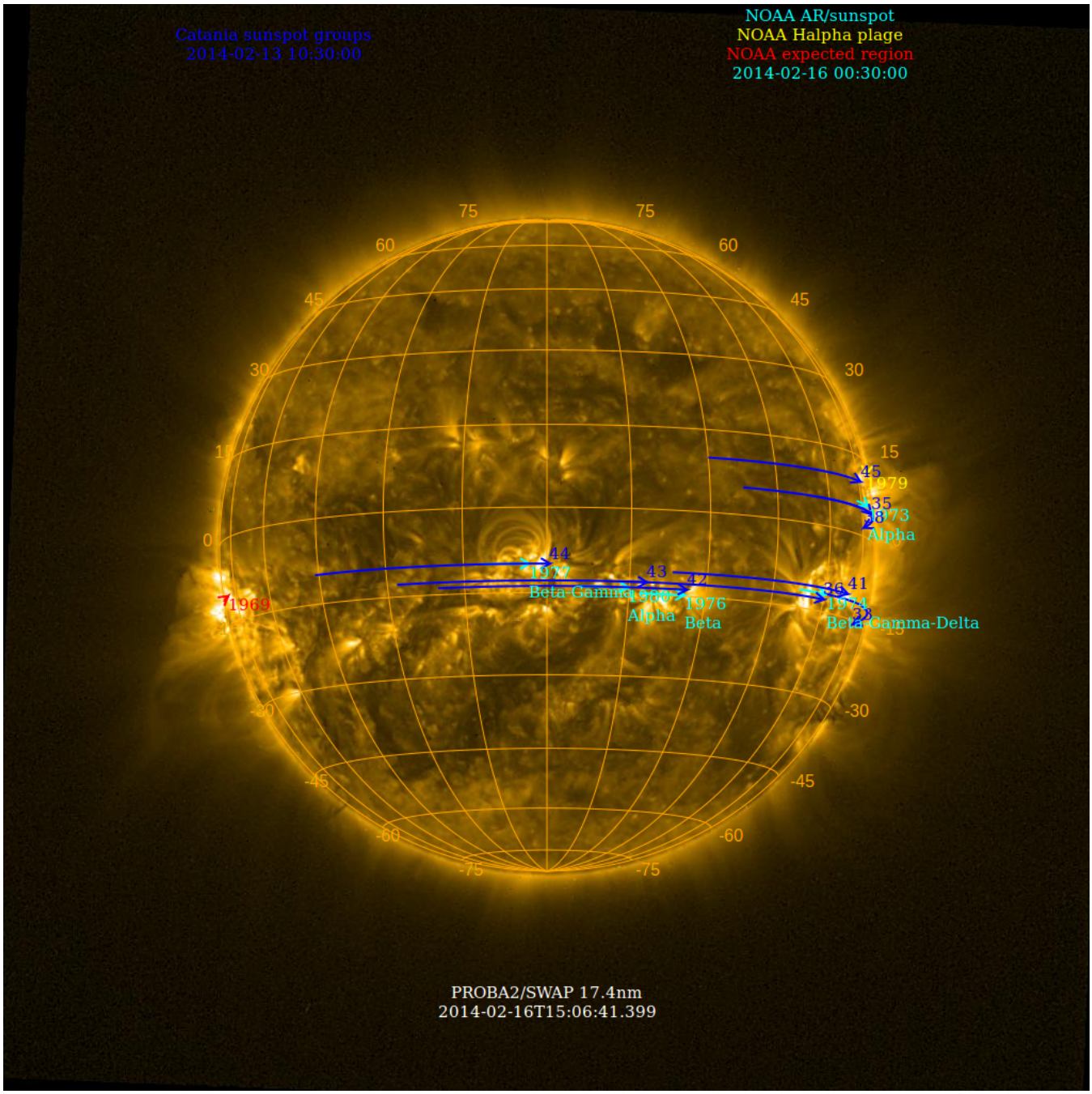
	Monday 10 Feb	Tuesday 11 Feb	Wednesday 12 Feb	Thursday 13 Feb	Friday 14 Feb	Saturday 15 Feb	Sunday 16 Feb
Activity	low	moderate	moderate	moderate	moderate	low	moderate
Flares	-	**M1.8@16:51** **M1.7@03:31**	**M2.1@15:51** **M2.3@06:58**	**M1.4@15:57** **M1.0@08:12** **M1.7@06:07** **M1.0@02:51** **M1.8@01:40**	**M1.0@16:39** **M1.1@13:28** **M1.6@12:40** **M2.3@02:57**	-	**M1.1@09:26**

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

The SWAP images of Feb 10 and Feb 16 are shown below, with annotated active regions.



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

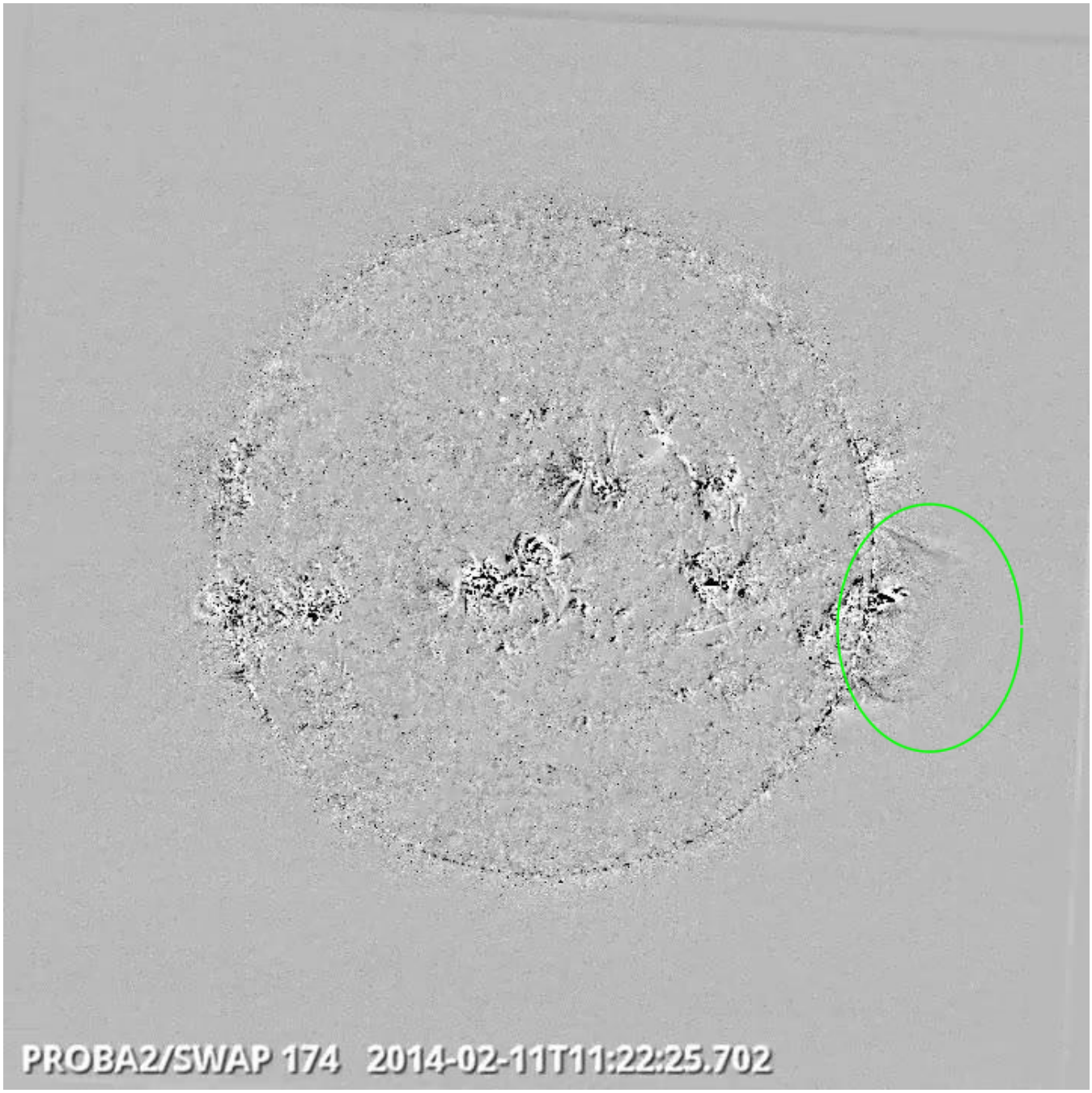

Catania sunspot groups
2014-02-13 10:30:00
NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2014-02-16 00:30:00
75
60
45
30
15
0
-30
-45
-60
-75
45
1979
35
1973
Alpha
44
1977
Beta-Gamma
43
1980
Alpha
42
1976
Beta
1969
38
41
1974
Beta-Gamma-Delta
PROBA2/SWAP 17.4nm
2014-02-16T15:06:41.399

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 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 203).

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

Tuesday Feb 11:



Eruption on the west limb @ 11:22 - SWAP difference image

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

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

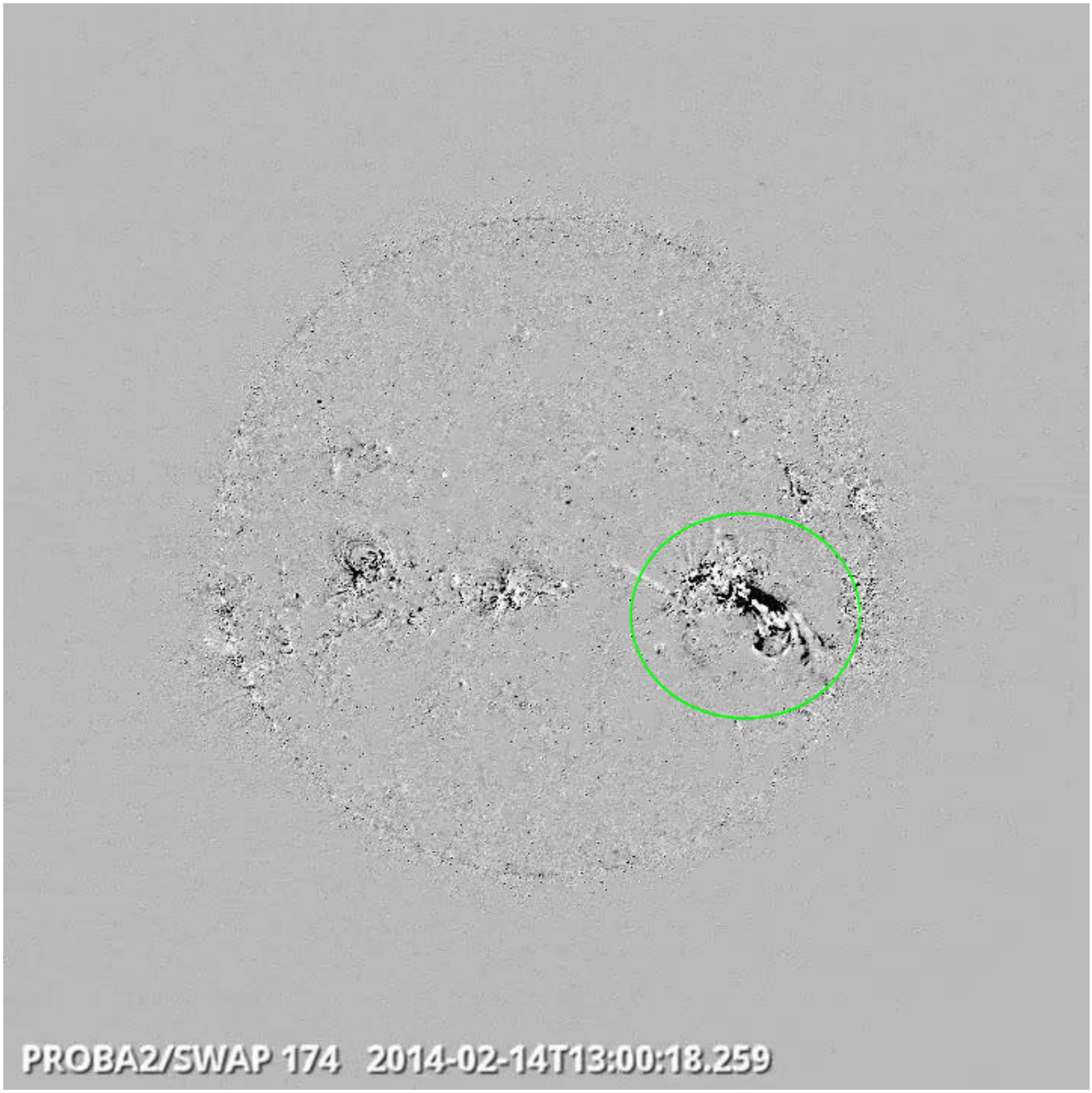
Wednesday Feb 12:

Eruption and dimming in the centre @ 04:36 - SWAP difference image

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

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

Friday Feb 14:



Eruption on the south west quad @ 13:00 - SWAP difference image

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

Loop expansion on the east limb @ 18:02 - SWAP difference image

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

Saturday Feb 15:

Eruption on the west limb @ 21:58 - SWAP difference image

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

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

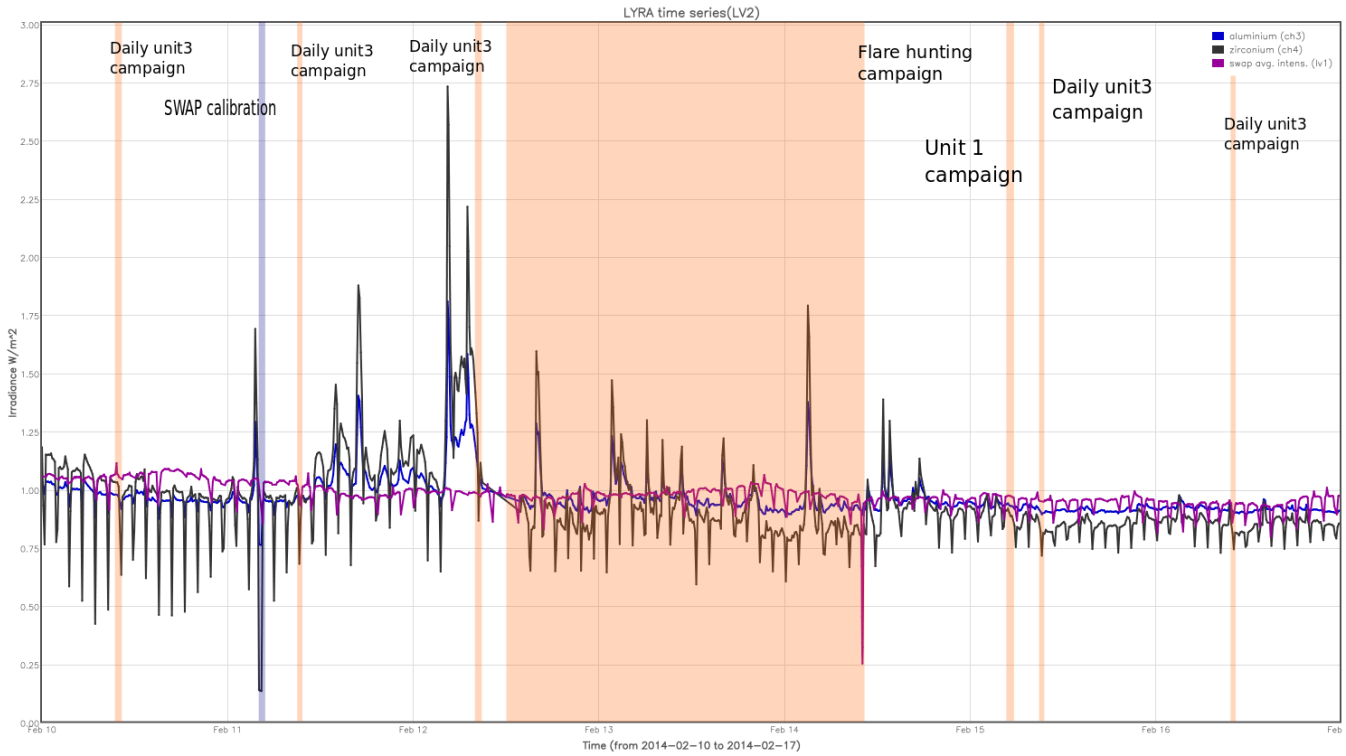
Sunday Feb 16:

Eruption on the west limb @ 02:56 - 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

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

- Daily unit 3 occultation campaigns, three times
- Flare hunting campaign
- Unit 1 campaign
- Daily unit 3 occultation campaign, two 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).

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

D. Seaton & L. Rachmeler, “Doing Solar Science with the PROBA2 Spacecraft” with students from the Cherrington School, Westerville, Ohio, USA (via Skype), 2014-Feb11.

Guest Investigator Program

- None

2. LYRA instrument status

Calibration

Calibration was interrupted this week in favor of the flare hunting campaign.

IOS & operations

Monday 10 Feb	Tuesday 11 Feb	Wednesday 12 Feb	Thursday 13 Feb	Friday 14 Feb	Saturday 15 Feb	Sunday 16 Feb
Nominal acquisition + daily U3 LYIOS00373	Nominal acquisition + daily U3 LYIOS00374	Nominal acquisition + daily U3 + Flare hunting campaign LYIOS00374 -> LYIOS00375	Nominal acquisition + Flare hunting campaign LYIOS00375 -> LYIOS00376	Nominal acquisition + Flare hunting campaign LYIOS00376	Nominal acquisition + daily U3 + U1 back-up LYIOS00376	Nominal acquisition + daily U3 LYIOS00376

The following science campaigns were performed by LYRA:

- daily U3 observations campaign
- Flare hunting campaign
- Unit 1 back-up campaign

LYRA detector temperature

LYRA detector 2 temperature globally varied between 50.4 and 54 °C, taking into account the daily U3 activation periods.

To be explored

- None

3. SWAP instrument status

Calibration

Calibration campaign on Tuesday this week.

MCPM errors

The number of MCPM recoverable errors increased from 16104 to 16312.
The number of MCPM unrecoverable errors remained at 1127.

IOS & operations

Monday 10 Feb	Tuesday 11 Feb	Wednesday 12 Feb	Thursday 13 Feb	Friday 14 Feb	Saturday 15 Feb	Sunday 16 Feb
Nominal acquisition IOS00500 579 images	Nominal acquisition + bi-weekly calibration IOS00501 577 images	Nominal acquisition IOS00501 601 images	Nominal acquisition IOS00501 618 images	Nominal acquisition + occultation campaign IOS00501 644 images	Nominal acquisition IOS00501 605 images	Nominal acquisition IOS00501 577 images

Special operations for SWAP, this week:

- Bi-weekly calibration
- occultation campaign

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between 1.8 and 3.4 °C.

To be explored

- None

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 13348 to 13407) 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 Feb 10 0UT and 2014 Feb 17 0UT: 4208
Highest cadence in this period: 29 seconds
Average cadence in this period: 143.71 seconds
Number of image gaps larger than 300 seconds: 101
Largest data gap: 20.73 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)