P2SC-ROB-WR-313 - 20160321 Weekly report #313	**P2SC Weekly report**	
Period covered: Date: Written by: Approved by:	Mon Mar 21 to Sun Mar 27, 2016 30 Mar 2016 Robbe Vansintjan Matthew West	Royal Observatory of Belgium - PROBA2 Science Center
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1. Science

Solar & Space weather events

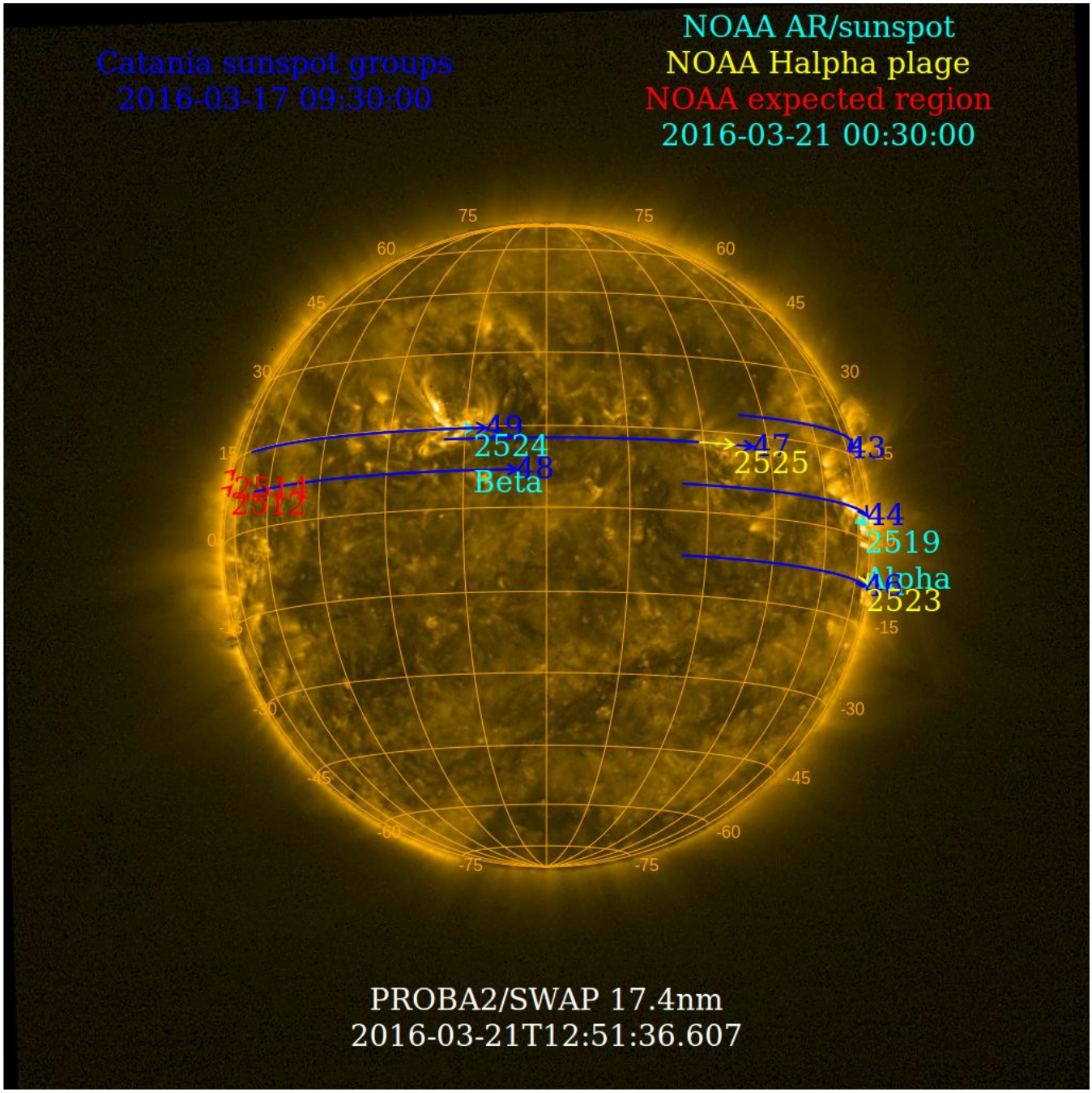
The level of solar activity[1] fluctuated between **very low** and **low** this week.

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

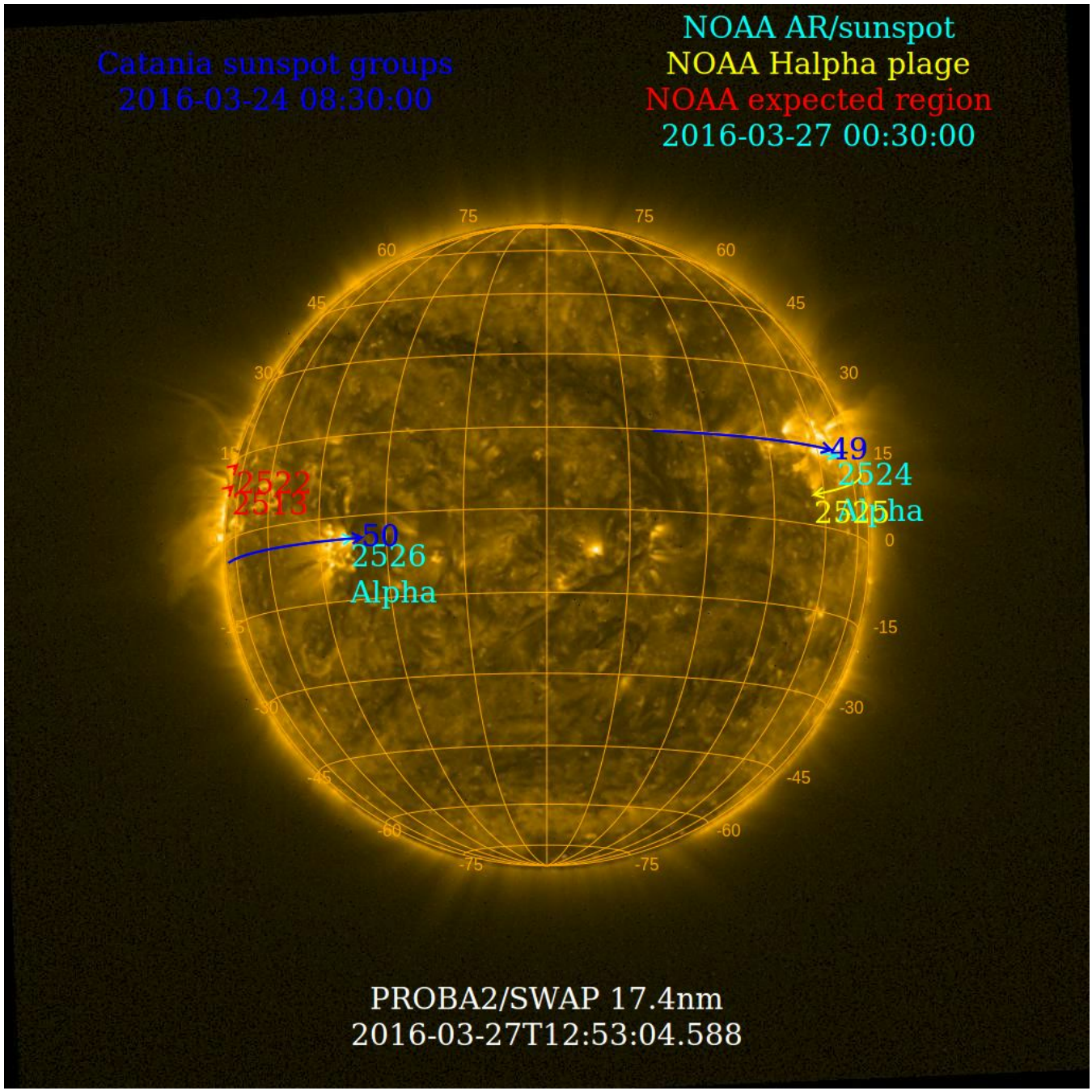
	Monday 21 Mar	Tuesday 22 Mar	Wednesday 23 Mar	Thursday 24 Mar	Friday 25 Mar	Saturday 26 Mar	Sunday 27 Mar
Activity	very low	very low	low	very low	very low	very low	very low
Flares	-	-	-	-	-	-	-

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

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



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


Catania sunspot groups
2016-03-24 08:30:00
NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2016-03-27 00:30:00
75
60
45
30
15
0
-15
-30
-45
-60
-75
49
2524
2522
2513
50
2526
Alpha
PROBA2/SWAP 17.4nm
2016-03-27T12:53:04.588

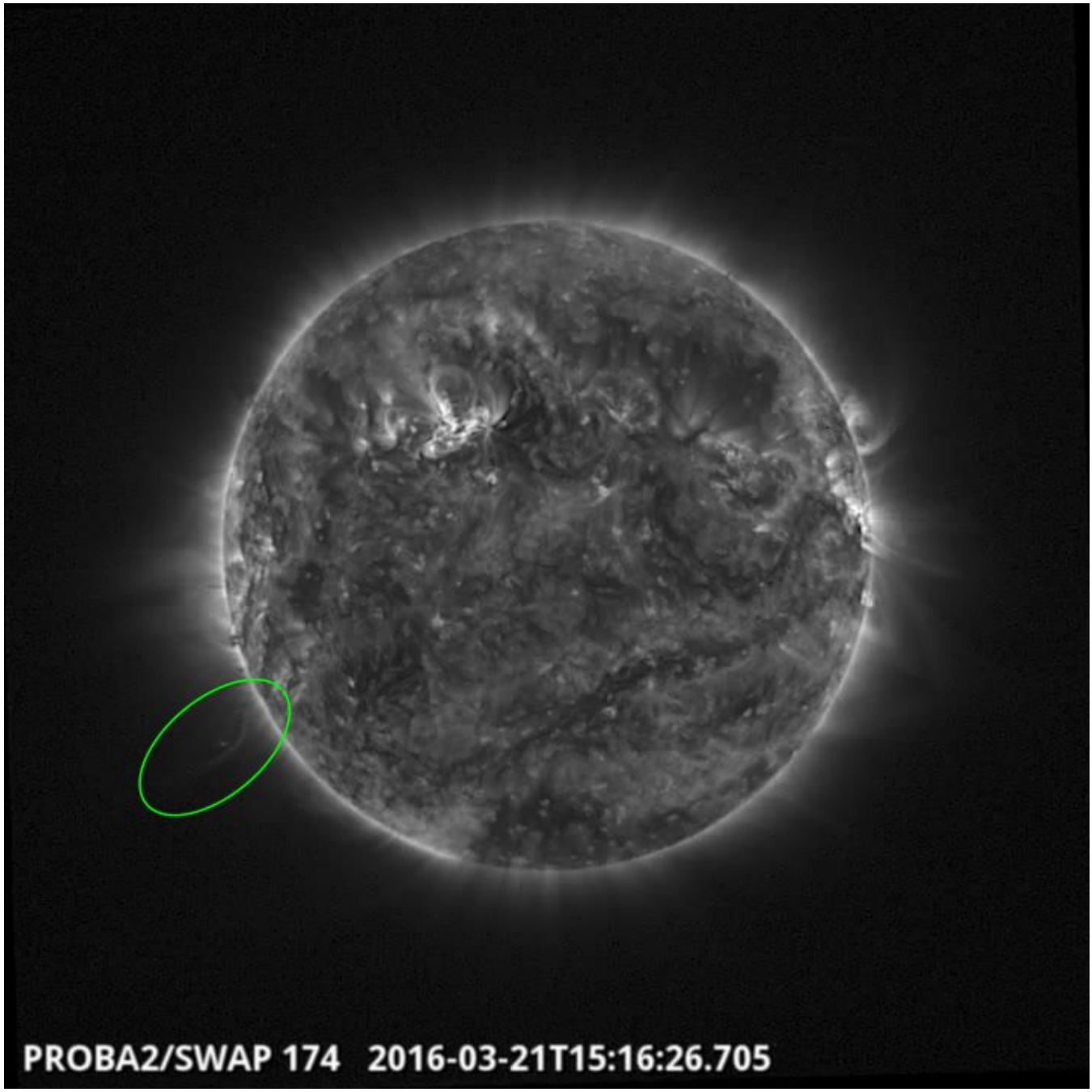
Solar Activity

Solar flare activity fluctuated between very low and 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 313).

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

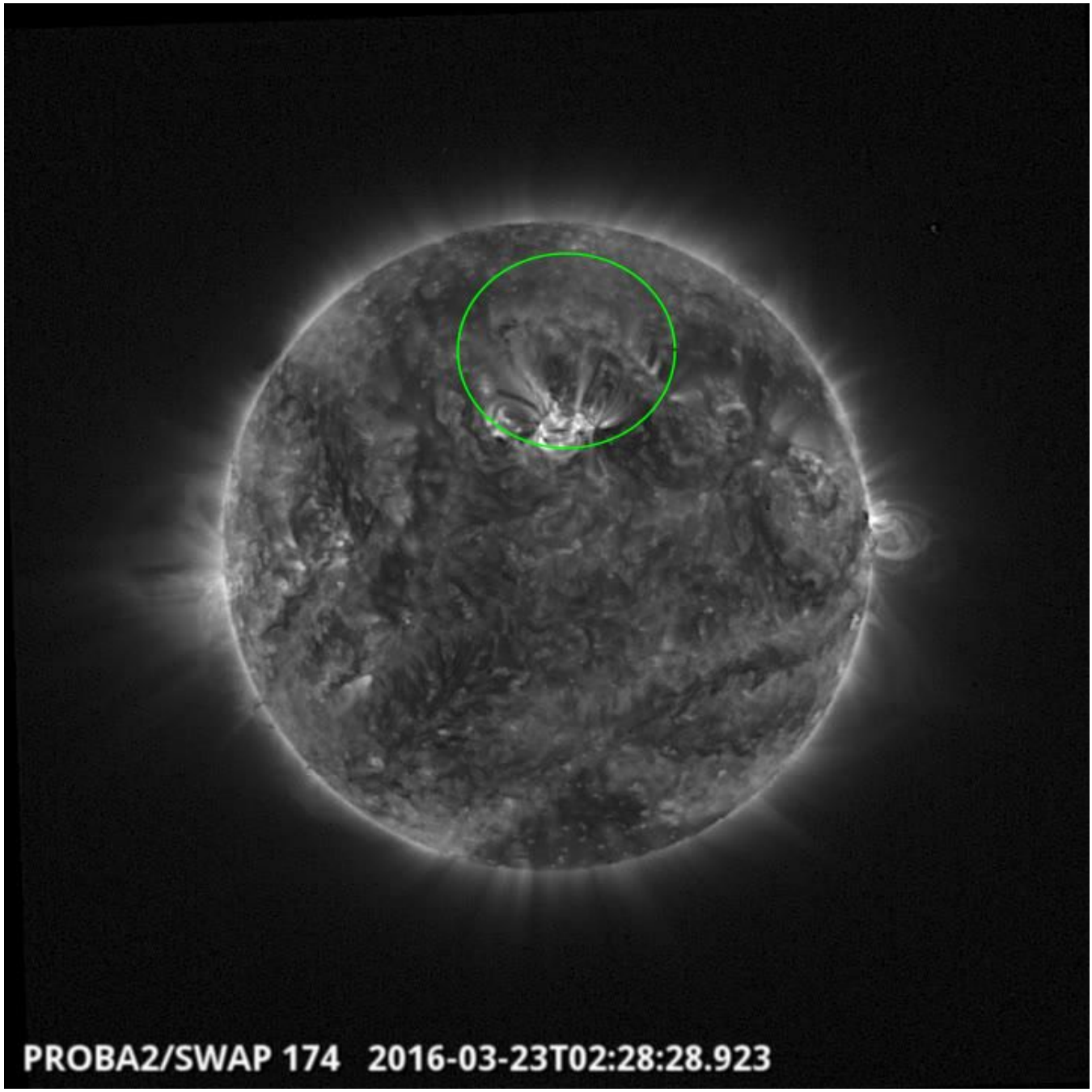
Monday Mar 21



An eruption was observed by SWAP on the east limb at 15:16 UT on 2016-Mar-21

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

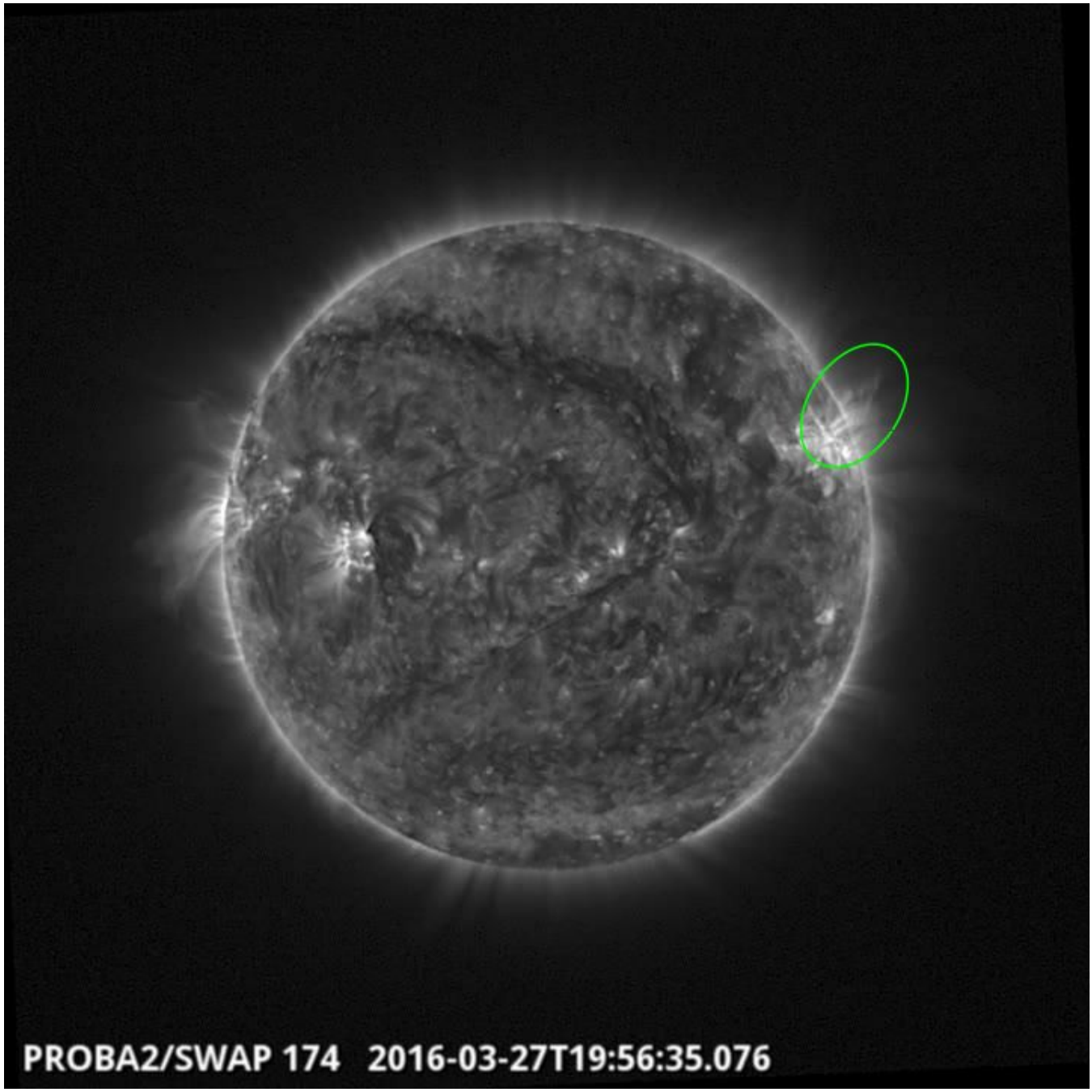
Wednesday Mar 23



An eruption was observed by SWAP in the north at 02:28 UT on 2016-Mar-23

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

Sunday Mar 27

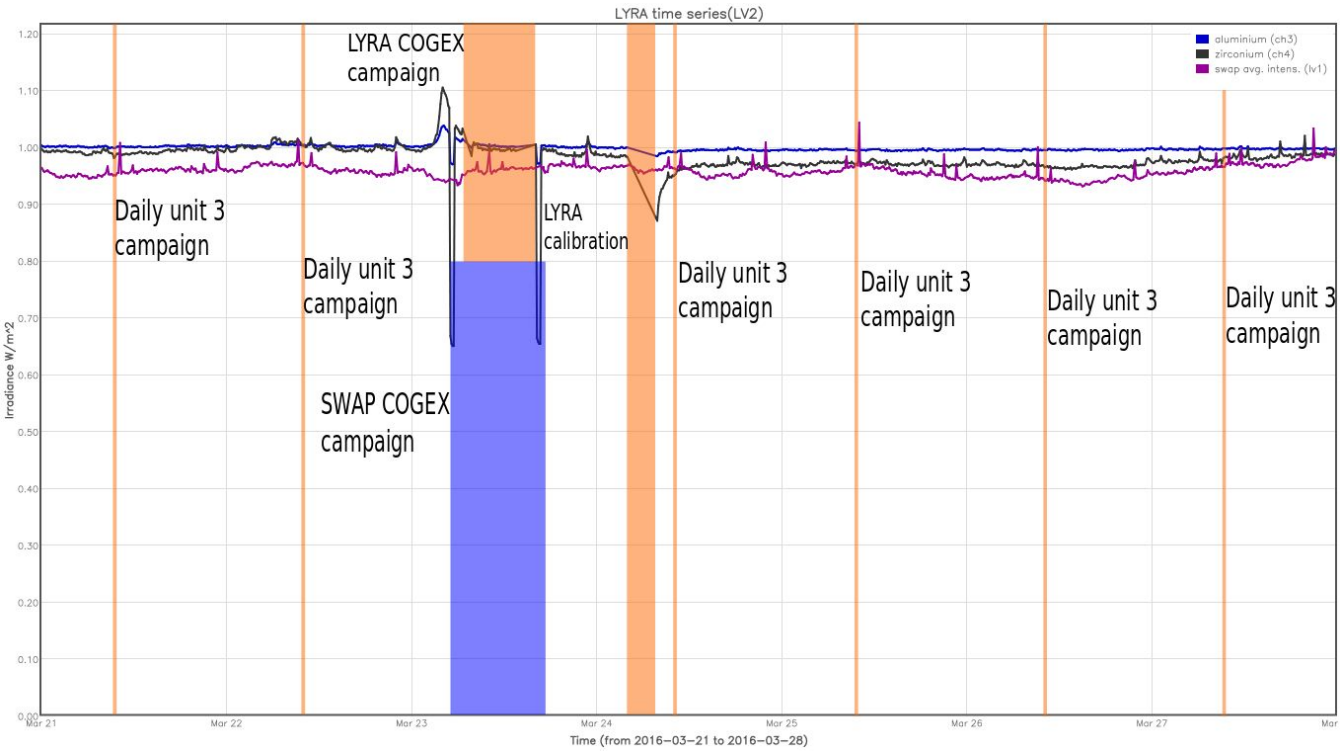


An eruption was observed by SWAP on the at the west limb at 19:56 UT on 2016-Mar-27

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 COGEX campaign, 2016-Mar-23

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

- LYRA Daily unit 3 campaign, 2016-Mar-21
- LYRA Daily unit 3 campaign, 2016-Mar-22
- LYRA COGEX campaign, 2016-Mar-23
- LYRA bi weekly calibration campaign, 2016-Mar-24
- LYRA Daily unit 3 campaign, 2016-Mar-24
- LYRA Daily unit 3 campaign, 2016-Mar-25
- LYRA Daily unit 3 campaign, 2016-Mar-26
- LYRA Daily unit 3 campaign, 2016-Mar-27

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).

- P. Vanlommel and J. Janssens gave a workshop in the framework of PROBA2 at school about space weather, Sunspots and PROBA2

Guest Investigator Program

- M. Kirk visited from 2016 Mar 14 to 2016 Mar 24 on the PROBA2 GI program, using SWAP to investigate Mapping Solar Cycles Through Polar Coronal Holes.

2. LYRA instrument status

Calibration

Calibration campaign on Wednesday this week.

IOS & operations

Monday 21 Mar	Tuesday 22 Mar	Wednesday 23 Mar	Thursday 24 Mar	Friday 25 Mar	Saturday 26 Mar	Sunday 27 Mar
Nominal acquisition + daily U3 LYIOS00535	Nominal acquisition + daily U3 LYIOS00536	Nominal acquisition + COGEX LYIOS00536 -> LYIOS00537	Nominal acquisition + daily U3 + calibration LYIOS00537	Nominal acquisition + daily U3 LYIOS00538	Nominal acquisition + daily U3 LYIOS00538	Nominal acquisition + daily U3 LYIOS00538

The following science campaigns were performed by LYRA:

- daily U3 observations campaign

On 2016-Mar-23

- calibration before COGEX campaign
- LYRA to IDLE for the COGEX campaign

On 2016-Mar-24

- Bi-weekly calibration campaign

LYRA detector temperature

LYRA detector 2 temperature globally varied between 47.5 and 51 °C.

3. SWAP instrument status

Calibration

Calibration campaign on Tuesday this week.

MCPM errors

The number of MCPM recoverable errors increased from 2367 to 2549.
The number of MCPM unrecoverable errors remained at 0.

IOS & operations

Monday 21 Mar	Tuesday 22 Mar	Wednesday 23 Mar	Thursday 24 Mar	Friday 25 Mar	Saturday 26 Mar	Sunday 27 Mar
Nominal acquisition IOS00639 700 images	Nominal acquisition IOS00640 701 images	Nominal acquisition + COGEX IOS00640 737 images	Nominal acquisition IOS00640 697 images	Nominal acquisition IOS00640 651 images	Nominal acquisition IOS00640 586 images	Nominal acquisition IOS00640 626 images

Special operations for SWAP, this week:

On 2016-03-23

- Calibration before COGEX experiment
- High cadence imaging before COGEX experiment
- IDLE mode for COGEX experiment
- Calibration after COGEX experiment
- High cadence imaging after COGEX experiment

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between 0 and 3 °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 20165 to 20229) 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 2016 Mar 21 00:00 UT and 2016 Mar 28 00:00 UT: 4698
Highest cadence in this period: 29 seconds
Average cadence in this period: 128.75 seconds
Number of image gaps larger than 300 seconds: 153
Largest data gap: 39.93 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
SoFAST	Solar Feature Automated Search Tool
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)