


P2SC-ROB-WR-320 - 20160509 Weekly report #320	P2SC Weekly report	
Period covered: Date: Written by: Approved by:	Mon May 09 to Sun May 15, 2016 25 May 2016 Robbe Vansintjan Matthew West	Royal Observatory of Belgium - PROBA2 Science Center
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1. Science

Solar & Space weather events

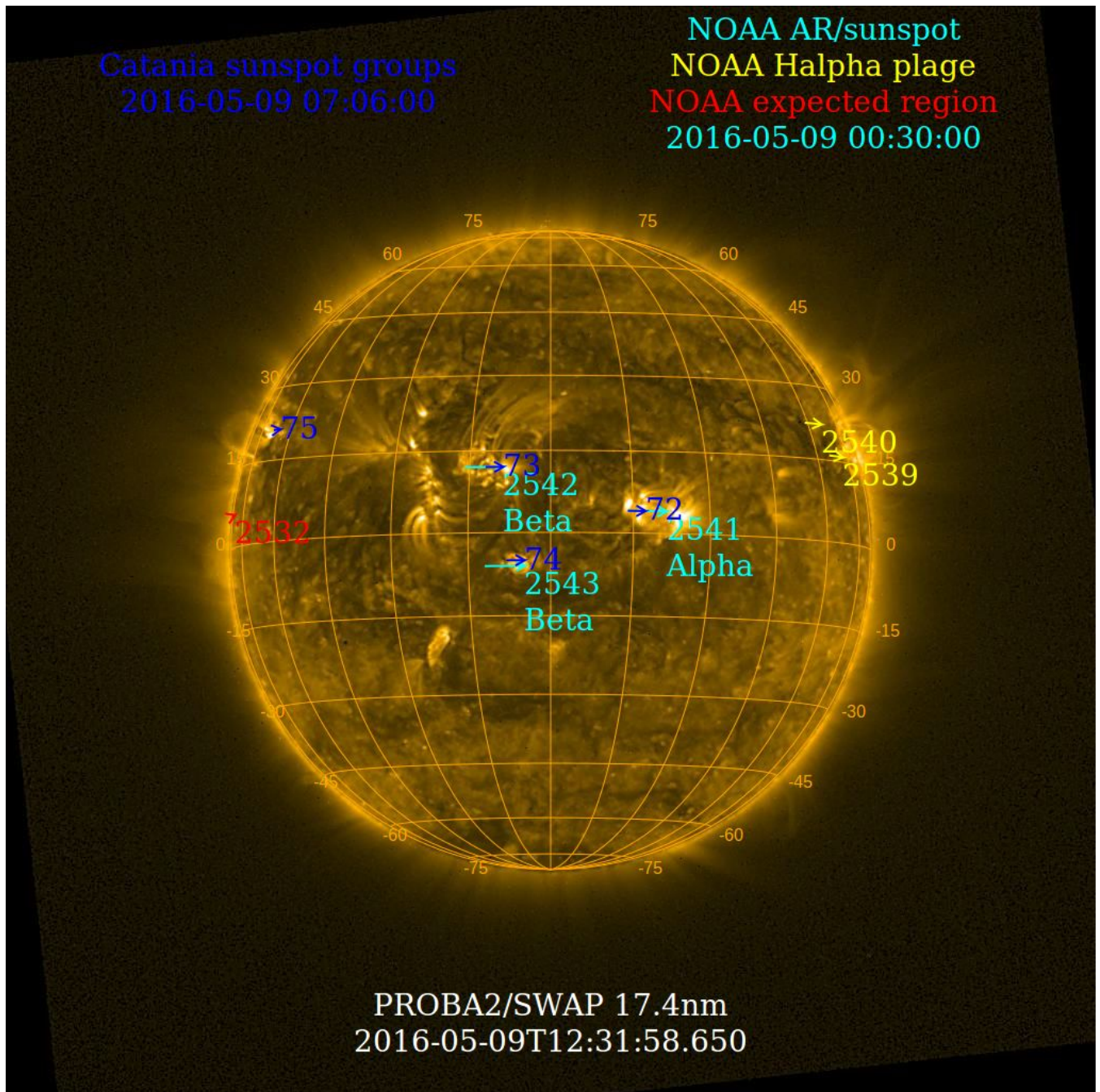
The level of solar activity¹ fluctuated between **very low** and **low** this week.

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

	Monday 09 May	Tuesday 10 May	Wednesday 11 May	Thursday 12 May	Friday 13 May	Saturday 14 May	Sunday 15 May
Activity	very low	very low	very low	very low	very low	low	low
Flares	-	-	-	-	-	-	-

¹ See appendix. All timings are given in UT.

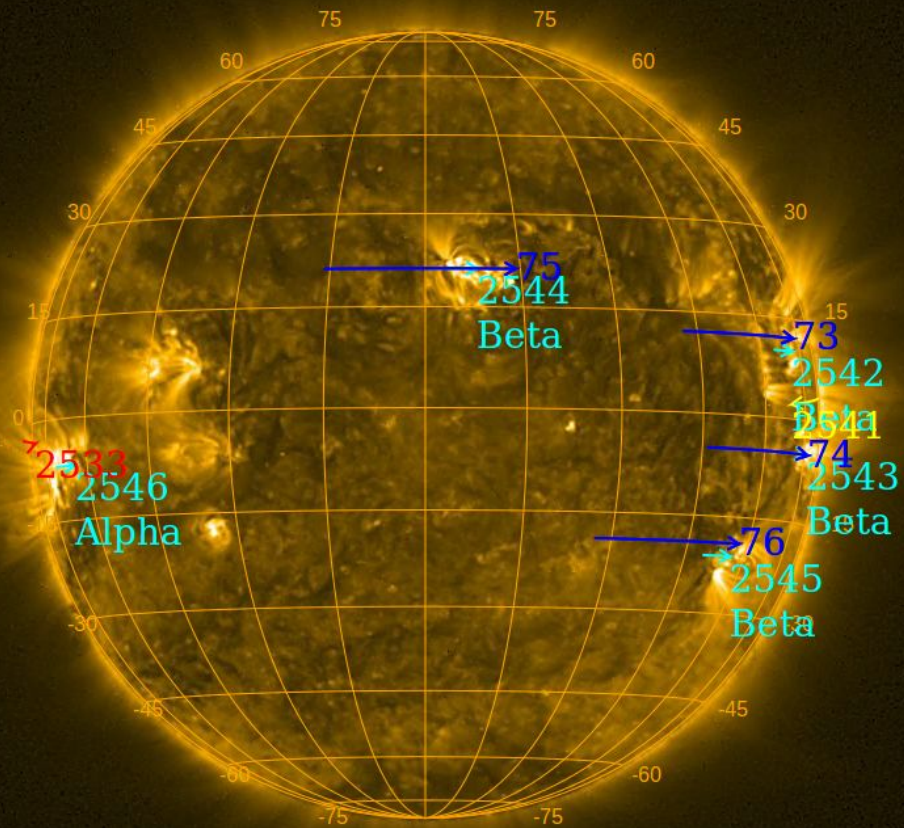
The SWAP images of May 09 and May 15 are shown below, with annotated active regions.



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

Catania sunspot groups
2016-05-13 09:18:00

NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2016-05-15 00:30:00



PROBA2/SWAP 17.4nm
2016-05-15T12:33:57.660

Solar Activity

Solar flare activity fluctuated between very low and low during the week.

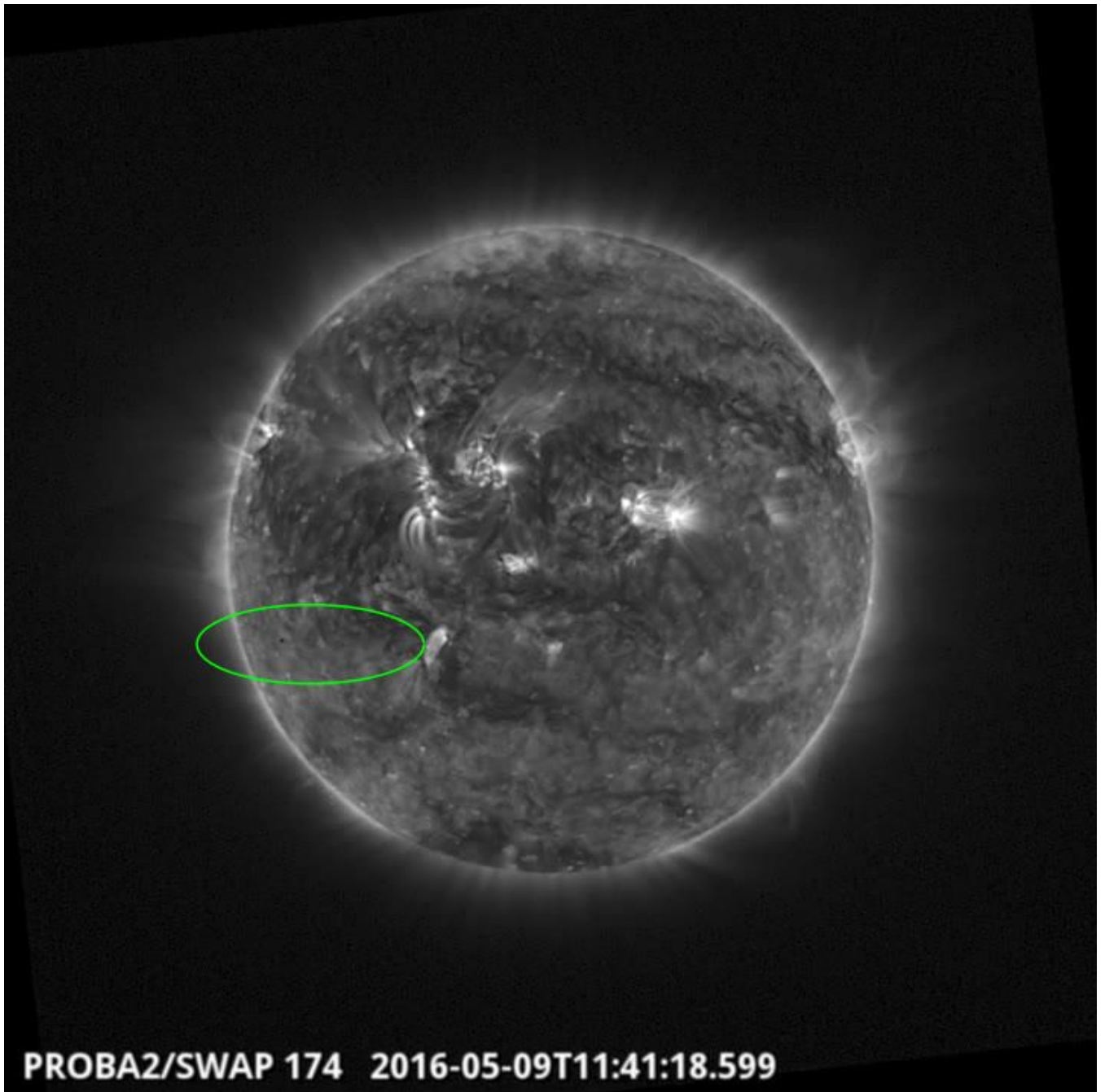
In order to view the activity of this week in more detail, we suggest to go to the following website from which all the daily (normal and difference) movies can be accessed: <http://proba2.oma.be/ssa>

This page also lists the recorded flaring events.

A weekly overview movie can be found [here](#) (SWAP week 320).

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

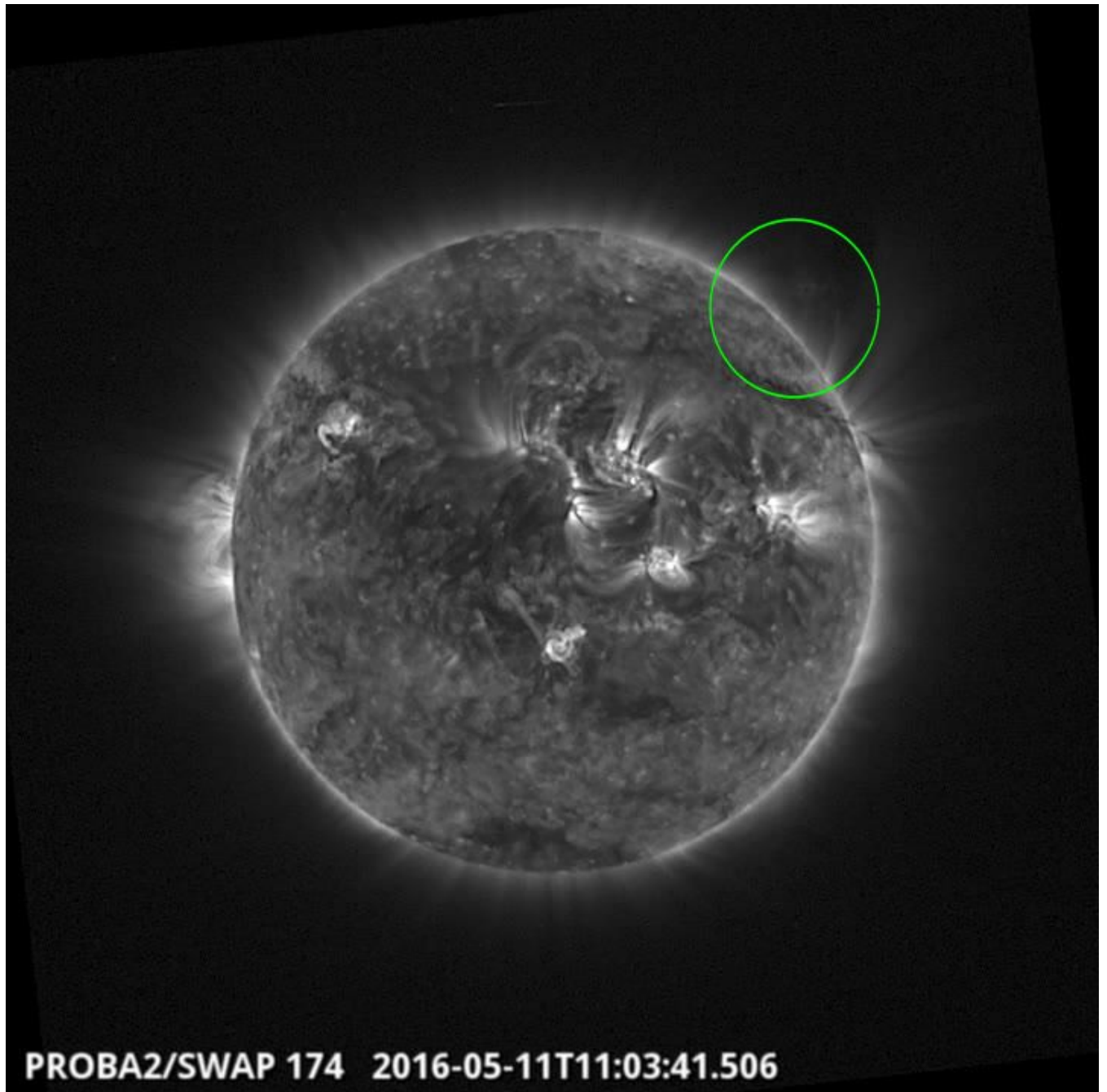
Monday May 09



On May 9, 2016, a Mercury transit of the Sun was seen from Earth and SWAP on PROBA2. The transit starts at 11:13 UT and ended at 18:42 UT. The total transit time was around 7 hours and 30 minutes.

Find a movie of the events [here](#) (SWAP movie)

Wednesday May 11

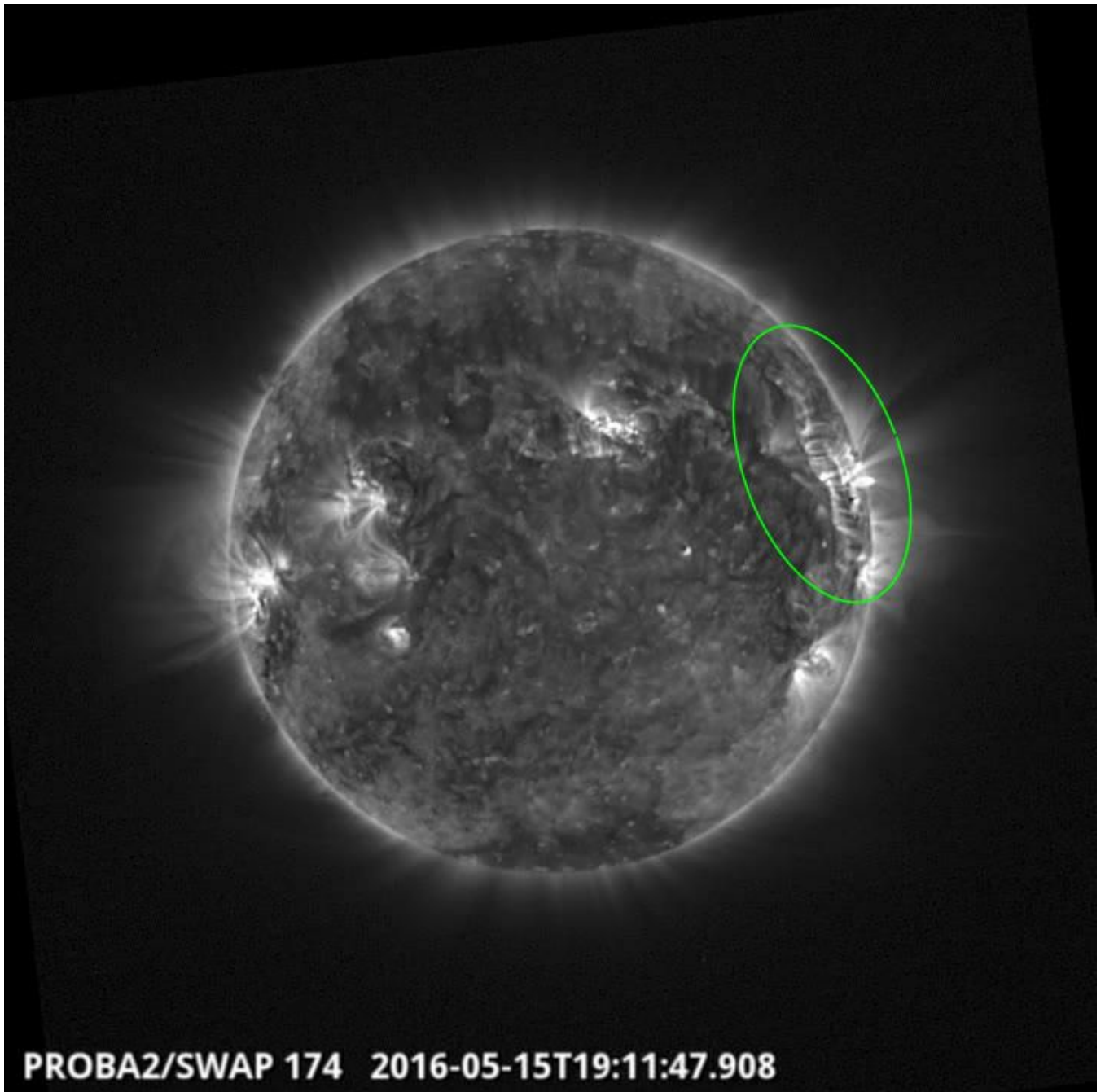


An eruption was observed by SWAP on the North-West limb of the Sun at 11:05 UT on 2016 May

11

Find a movie of the events [here](#) (SWAP movie)

Sunday May 15



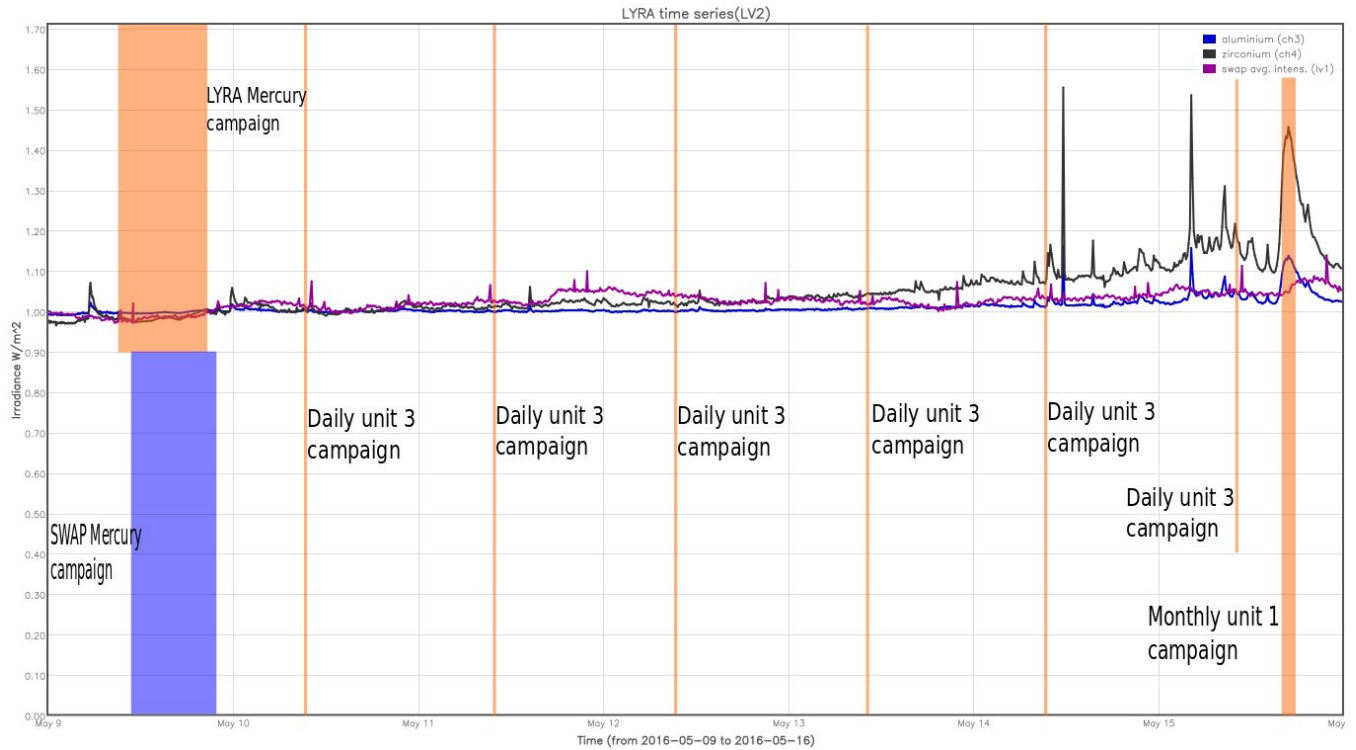
**A series of post eruption loops formed close to the west limb of the Sun at 19:11 UT on 2016
May 15 following an eruption**

Find a movie of the events [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 Mercury transit campaign, 2016-May-09

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

- LYRA Mercury transit campaign, 2016-May-09
- Daily unit 3 campaign, 2016-May-10
- Daily unit 3 campaign, 2016-May-11
- Daily unit 3 campaign, 2016-May-12
- Daily unit 3 campaign, 2016-May-13
- Daily unit 3 campaign, 2016-May-14
- Daily unit 3 campaign, 2016-May-15
- Monthly unit 1 campaign, 2016-May-15

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>).

- A website was created to cover the Mercury transit see: <http://proba2.oma.be/mercuryTransit> .
- E, D'Huys gave a course on PROBA2 at elementary school Ingenium school in Tervuren, Belgium on 2016-May-11

Guest Investigator Program

- None

2. LYRA instrument status

Calibration

No calibration this week.

IOS & operations

Monday 09 May	Tuesday 10 May	Wednesday 11 May	Thursday 12 May	Friday 13 May	Saturday 14 May	Sunday 15 May
Nominal acquisition + daily U3 + Mercury transit LYIOS00546	Nominal acquisition + daily U3 LYIOS00546	Nominal acquisition + daily U3 LYIOS00546	Nominal acquisition + daily U3 LYIOS00546	Nominal acquisition + daily U3 LYIOS00547	Nominal acquisition + daily U3 LYIOS00547	Nominal acquisition + daily U3 + unit 1 LYIOS00547

The following science campaigns were performed by LYRA:

- daily U3 observations campaign

On 2016-May-09

- Mercury transit

On 2016-May-15

- monthly unit 1 campaign

LYRA detector temperature

LYRA detector 2 temperature globally varied between 48.1 and 51 °C.

3. SWAP instrument status

Calibration

No calibration this week.

MCPM errors

The number of MCPM recoverable errors increased from 3489 to 3510.

The number of MCPM unrecoverable errors remained at 0.

IOS & operations

Monday 09 May	Tuesday 10 May	Wednesday 11 May	Thursday 12 May	Friday 13 May	Saturday 14 May	Sunday 15 May
Nominal acquisition + Mercury transit	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition
IOS00645 751 images	IOS00645 645 images	IOS00645 655 images	IOS00645 664 images	IOS00645 664 images	IOS00646 640 images	IOS00646 593 images

Special operations for SWAP, this week:

On 2016-05-09

- Mercury transit campaign, 2016-May-09

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -0.9 and 0.3 °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 20612 to 20674) 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 May 09 00:00 UT and 2016 May 16 00:00 UT: 4612

Highest cadence in this period: 0 seconds

Average cadence in this period: 131.14 seconds

Number of image gaps larger than 300 seconds: 390

Largest data gap: 9.17 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)