


P2SC-ROB-WR-321 - 20160516 Weekly report #321	<b>P2SC Weekly report</b>	
Period covered: Date:  Written by: Approved by:	Mon May 16 to Sun May 22, 2016 25 May 2016  Robbe Vansintjan Matthew West	Royal Observatory of Belgium  - PROBA2 Science Center
To:	LYRA PI, marie.dominique@sidc.be SWAP PI, david.berghmans@sidc.be	<a href="http://proba2.sidc.be">http://proba2.sidc.be</a> ++ 32 (0) 2 3730559
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## 1. Science

### Solar & Space weather events

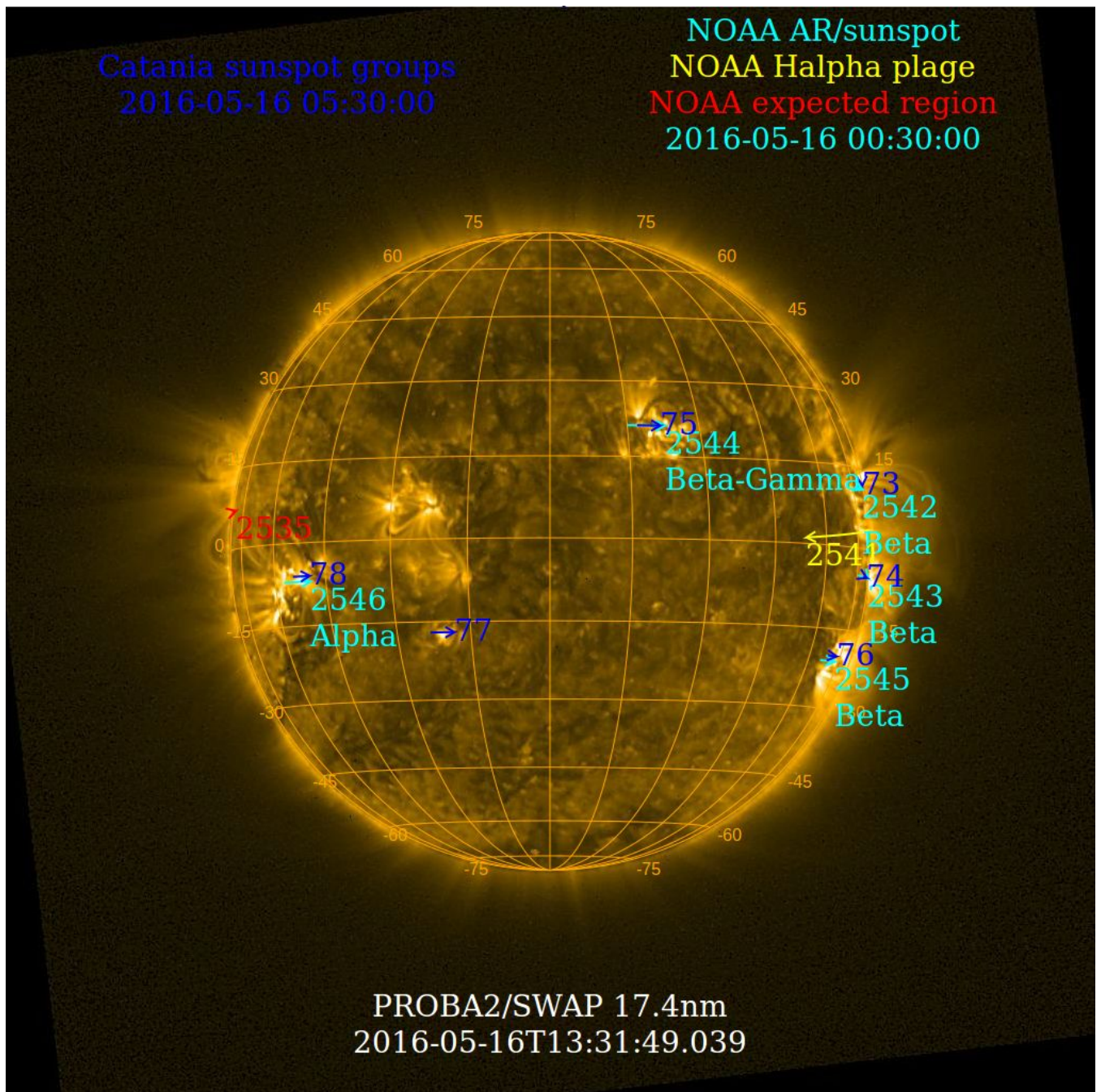
The level of solar activity<sup>1</sup> fluctuated between **very low** and **low** this week.

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

	Monday 16 May	Tuesday 17 May	Wednesday 18 May	Thursday 19 May	Friday 20 May	Saturday 21 May	Sunday 22 May
Activity	low	low	very low	very low	very low	low	very low
Flares	-	-	-	-	-	-	-

<sup>1</sup> See appendix. All timings are given in UT.

The SWAP images of May 16 and May 22 are shown below, with annotated active regions.

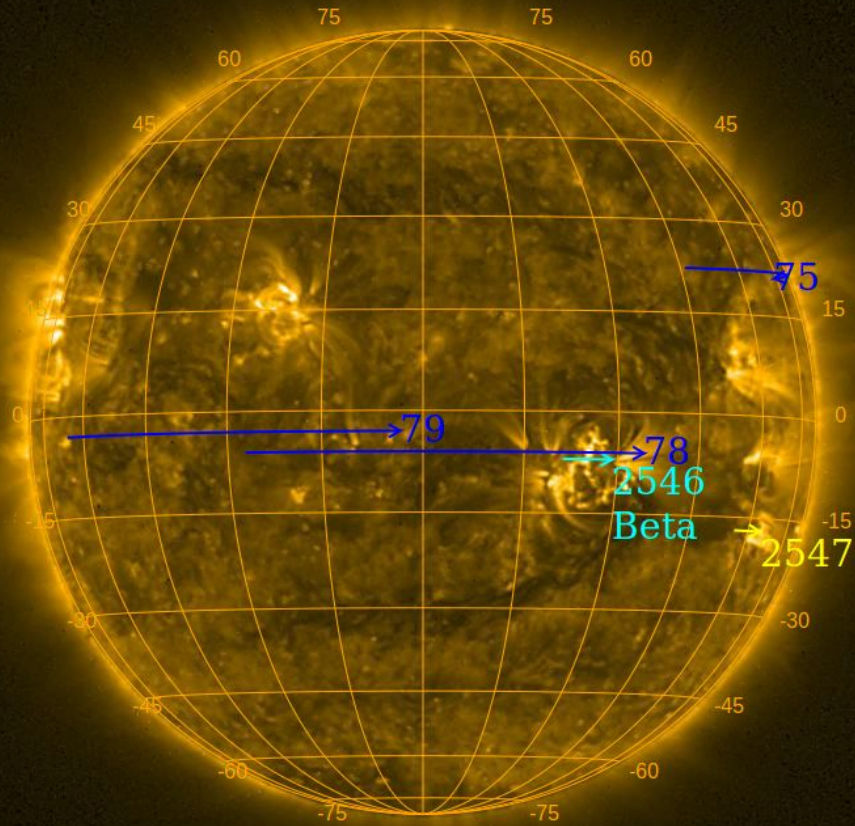


<http://sidc.be/soteria/soteria.php>



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

NOAA AR/sunspot  
NOAA Halpha plage  
NOAA expected region  
2016-05-22 00:30:00



PROBA2/SWAP 17.4nm  
2016-05-22T13:37:27.929

## **Solar Activity**

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

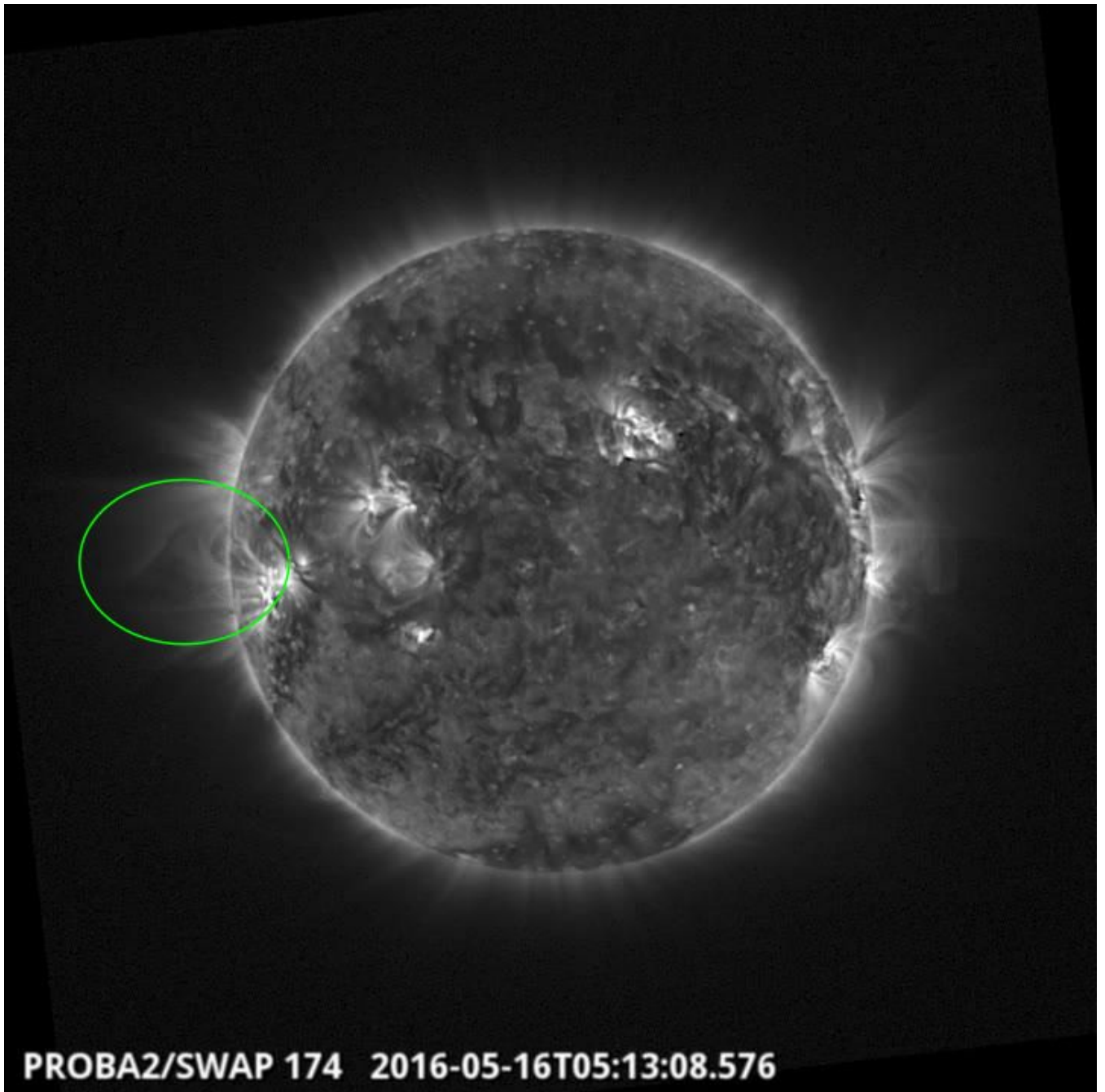
In order to view the activity of this week in more detail, we suggest to go to the following website from which all the daily (normal and difference) movies can be accessed: <http://proba2.oma.be/ssa>

This page also lists the recorded flaring events.

A weekly overview movie can be found [here](#) (SWAP week 321).

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

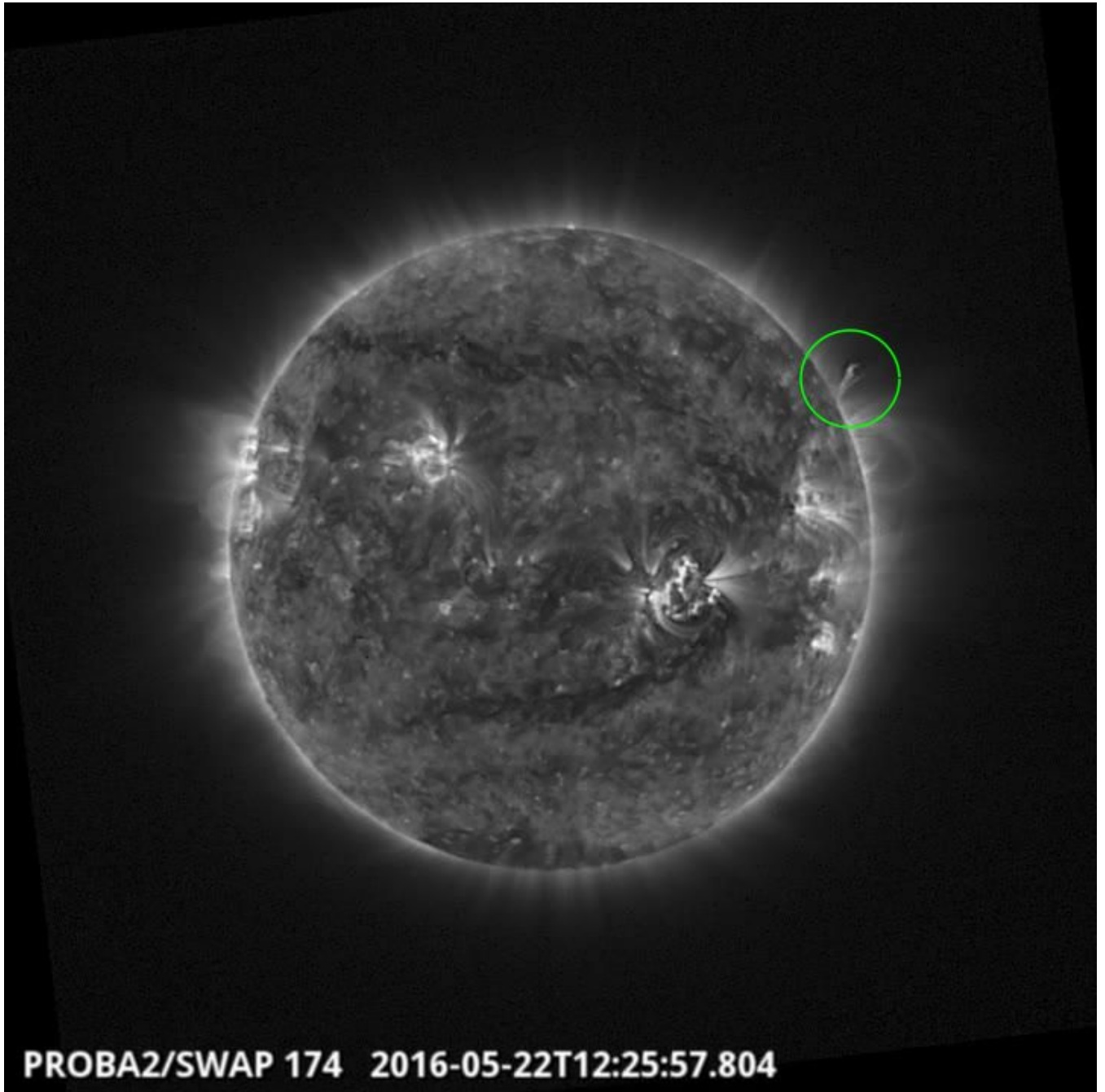
Monday May 16



**An eruption was observed by SWAP on the East limb of the Sun on 2016-May-16 at 05:13 UT**

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

Sunday May 22



An eruption was observed by SWAP on the north west limb of the Sun at on 2016-May-22 at  
12:25 UT

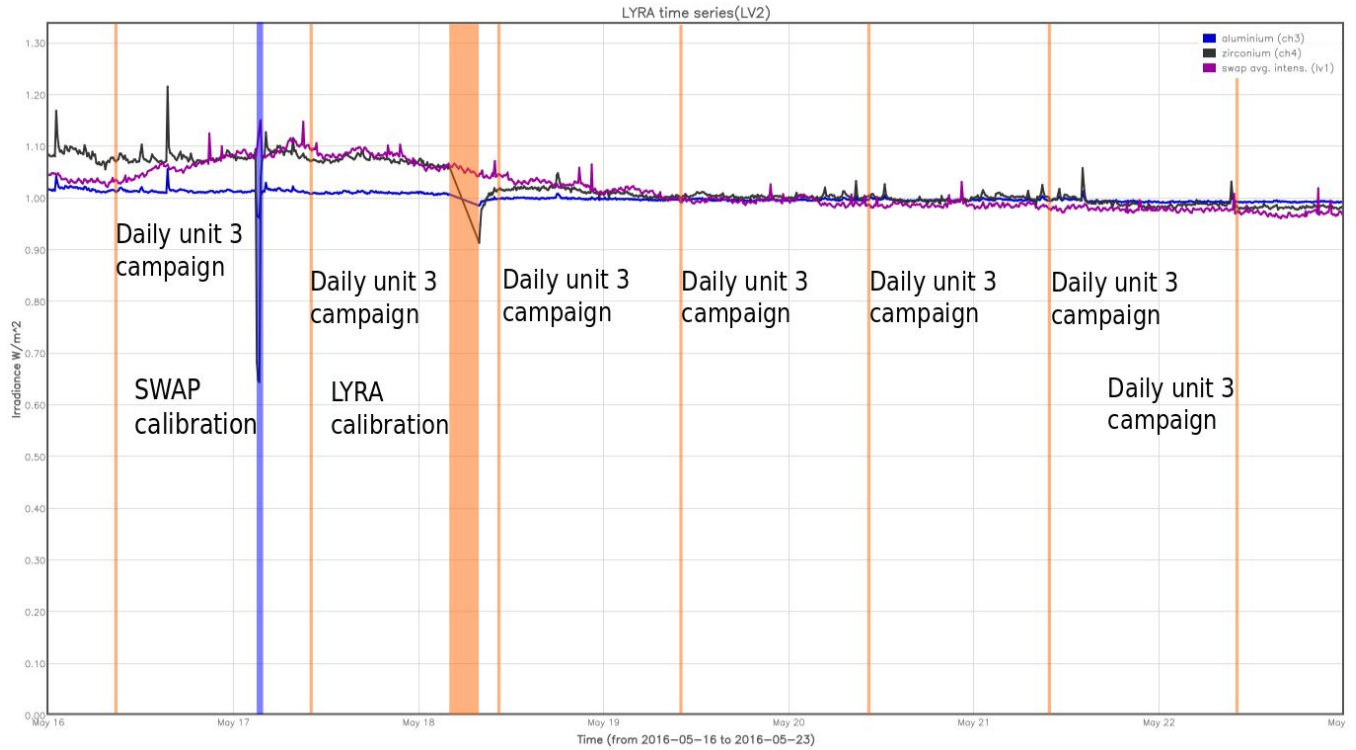
Find a movie of the events [here](#) (SWAP movie)



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 bi-weekly calibration, 2016-May-17

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

- Daily unit 3 campaign, 2016-May-16
- Daily unit 3 campaign, 2016-May-17
- LYRA bi-weekly calibration, 2016-May-18
- Daily unit 3 campaign, 2016-May-18
- Daily unit 3 campaign, 2016-May-19
- Daily unit 3 campaign, 2016-May-20
- Daily unit 3 campaign, 2016-May-21
- Daily unit 3 campaign, 2016-May-22

## **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>).

- S. Kuotchmy used PROBA2 observations in his presentation: "Recent advances from Eclipse Observations, including the last 2016 eclipse" on 2016-May-18 at the PROBA3 SWT meeting.
- A. Bemporad used PROBA2 observations in his presentation: "OATo - Solar eruptions: future observations with ASPIICS" on 2016-May-18 at the PROBA3 SWT meeting, where he used a movie from SWAP to simulate what is seen in ASPIICs.

## **Guest Investigator Program**

- None



## 2. LYRA instrument status

### Calibration

Calibration campaign on Wednesday this week.

### IOS & operations

Monday 16 May	Tuesday 17 May	Wednesday 18 May	Thursday 19 May	Friday 20 May	Saturday 21 May	Sunday 22 May
Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3 + calibration	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3
LYIOS00547	LYIOS00547	LYIOS00547 -> LYIOS00548	LYIOS00548	LYIOS00549	LYIOS00549	LYIOS00549

The following science campaigns were performed by LYRA:

- daily U3 observations campaign

On 2016-May-18

- Bi weekly calibration campaign

### LYRA detector temperature

LYRA detector 2 temperature globally varied between 46.6 and 48.8 °C.

### 3. SWAP instrument status

#### Calibration

Calibration campaign on Tuesday this week.

#### MCPM errors

The number of MCPM recoverable errors increased from 3510 to 3531.

The number of MCPM unrecoverable errors remained at 0.

#### IOS & operations

Monday 16 May	Tuesday 17 May	Wednesday 18 May	Thursday 19 May	Friday 20 May	Saturday 21 May	Sunday 22 May
Nominal acquisition	Nominal acquisition + calibration	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition
IOS00646 623 images	IOS00646 667 images	IOS00646 648 images	IOS00646 663 images	IOS00646 652 images	IOS00646 665 images	IOS00646 642 images

Special operations for SWAP, this week:

On 2016-May-17

- SWAP bi-weekly calibration

#### SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -1 and 0.1 °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 20675 to 20735) 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 16 00:00 UT and 2016 May 23 00:00 UT: 4560

Highest cadence in this period: 30 seconds

Average cadence in this period: 132.63 seconds

Number of image gaps larger than 300 seconds: 408

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)