


P2SC-ROB-WR-315 - 20160404 Weekly report #315	<b>P2SC Weekly report</b>	
Period covered: Date:  Written by: Approved by:	Mon Apr 04 to Sun Apr 10, 2016 18 Apr 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

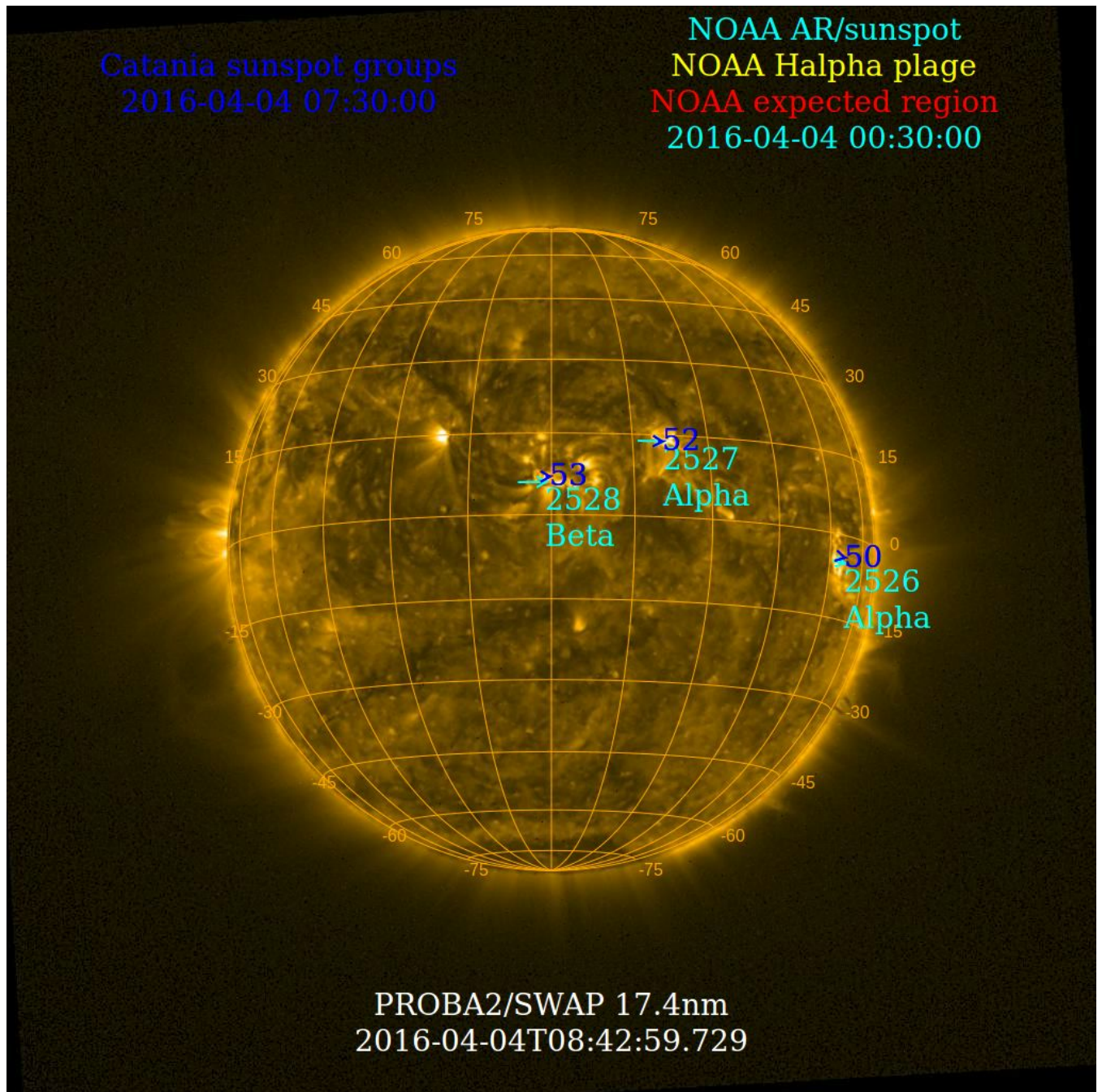
The level of solar activity<sup>1</sup> fluctuated between **very low** and **low** this week.

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

	Monday 04 Apr	Tuesday 05 Apr	Wednesday 06 Apr	Thursday 07 Apr	Friday 08 Apr	Saturday 09 Apr	Sunday 10 Apr
Activity	very low	very low	low	low	low	low	low
Flares	-	-	-	-	-	-	-

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

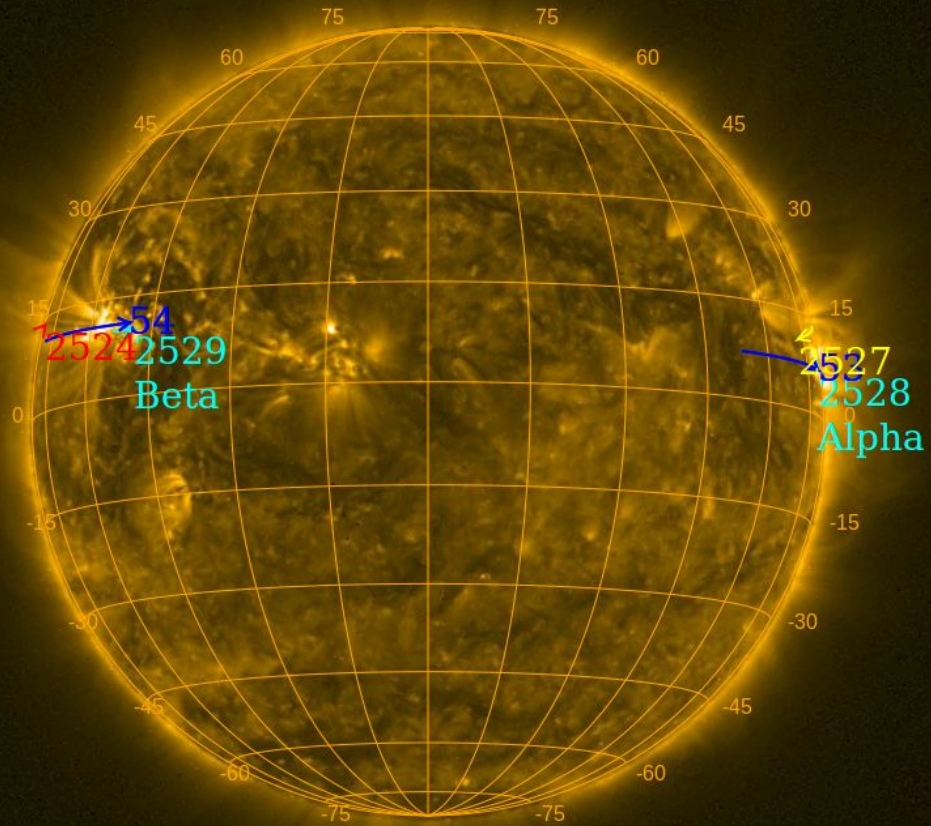
The SWAP images of Apr 04 and Apr 10 are shown below, with annotated active regions.



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

Catania sunspot groups  
2016-04-08 07:36:00

NOAA AR/sunspot  
NOAA Halpha plage  
NOAA expected region  
2016-04-10 00:30:00



PROBA2/SWAP 17.4nm  
2016-04-10T08:45:33.366

## **Solar Activity**

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

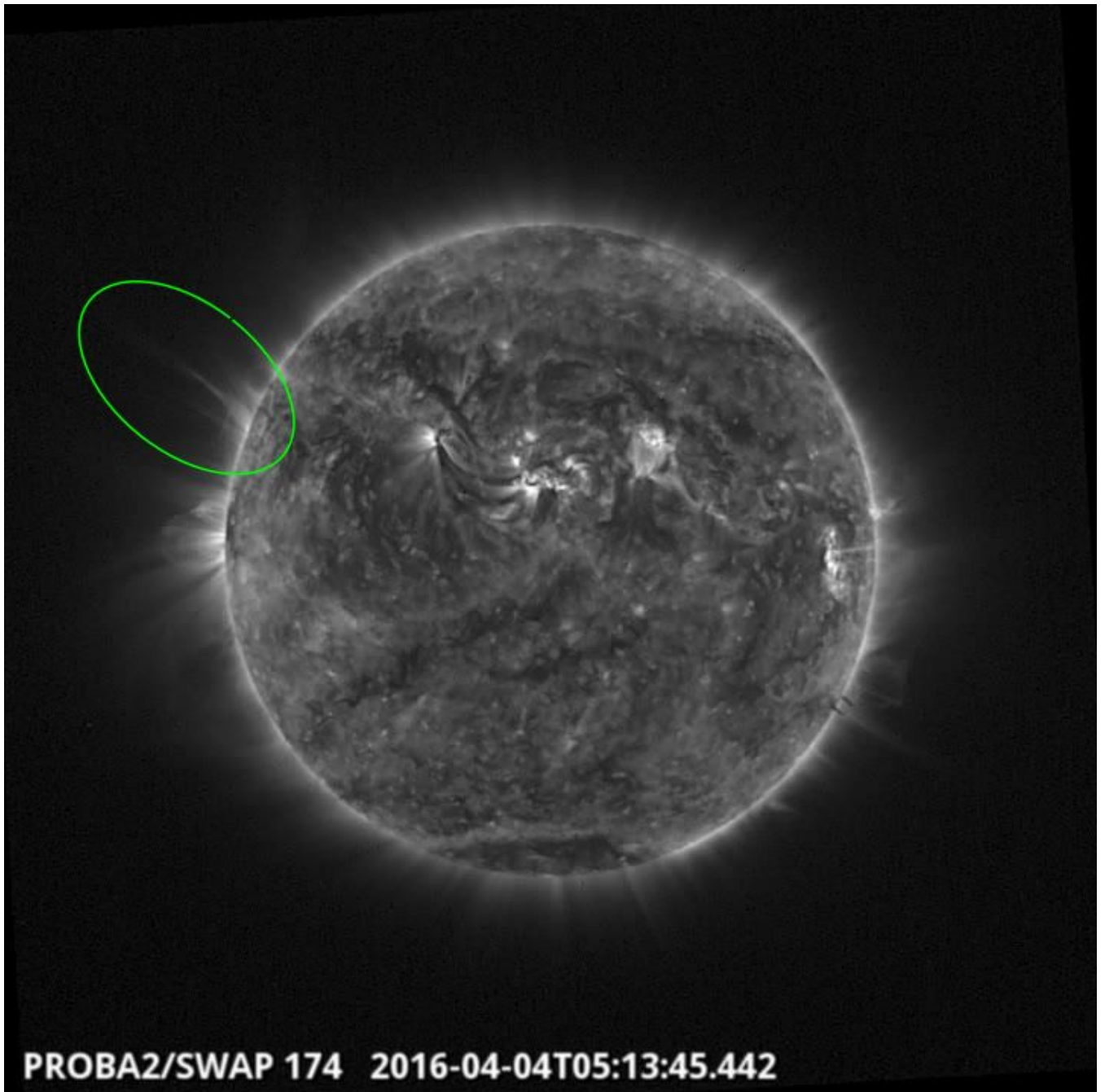
In order to view the activity of this week in more detail, we suggest to go to the following website from which all the daily (normal and difference) movies can be accessed: <http://proba2.oma.be/ssa>

This page also lists the recorded flaring events.

A weekly overview movie can be found [here](#) (SWAP week 315).

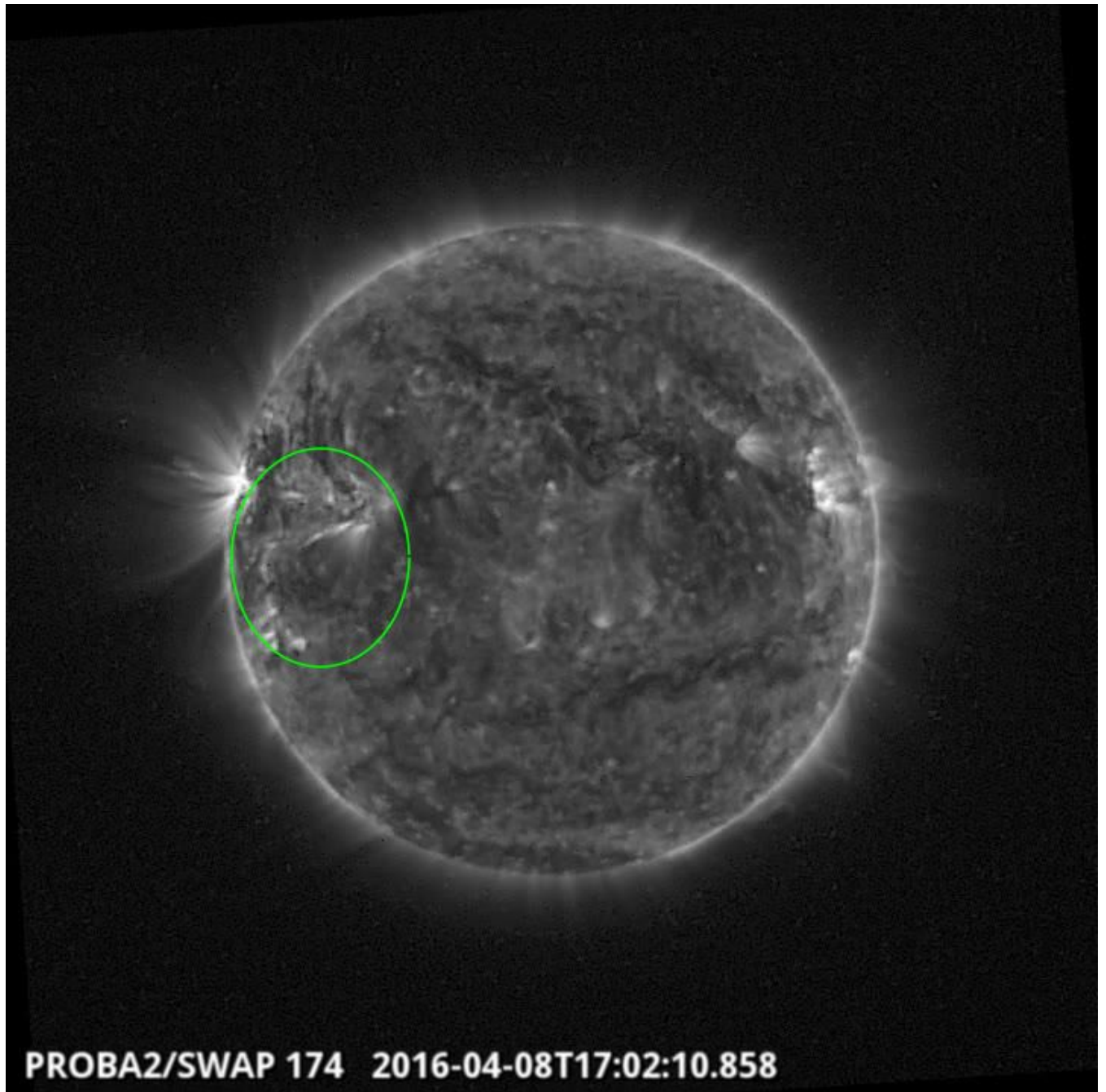
Details about some of this week's events, can be found further below.

Monday Apr 04



A slow eruption was observed by SWAP on the north east limb at 05:13 UT on 2016-Apr-04

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

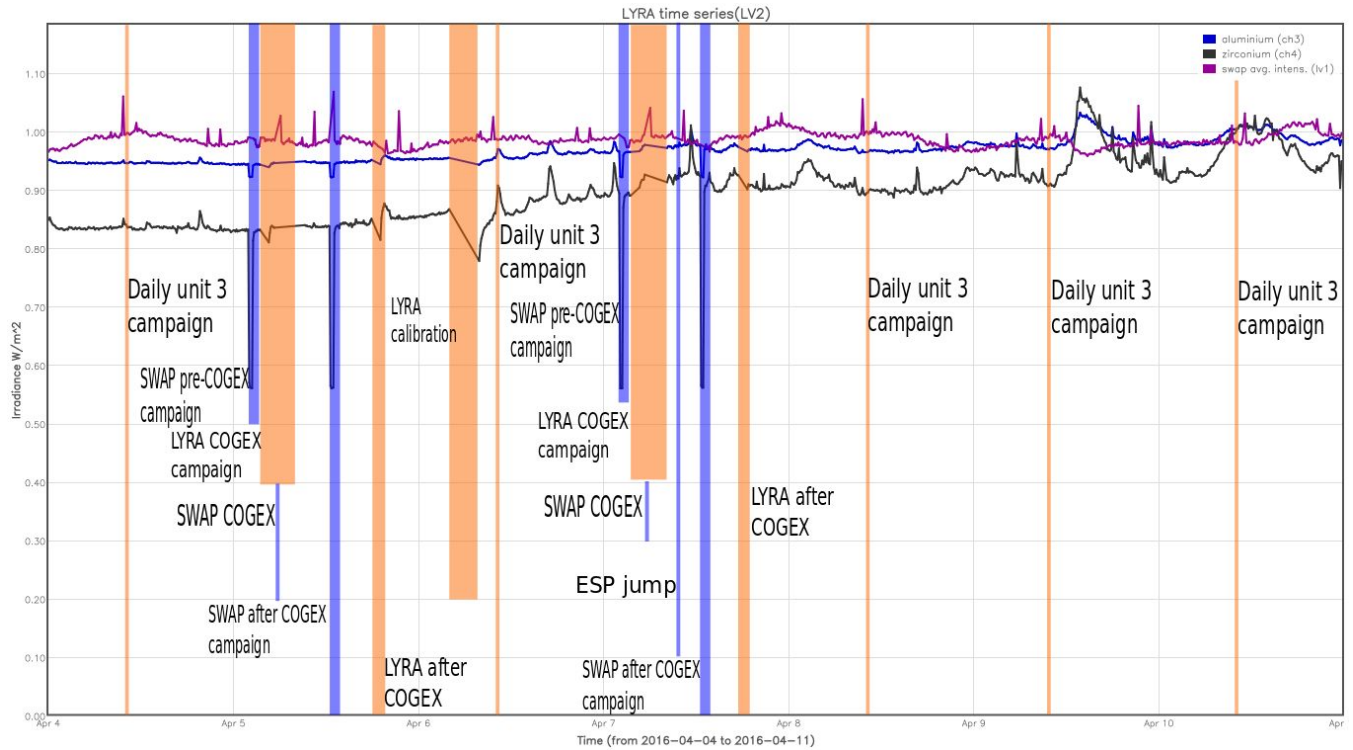


Flows were observed by SWAP on the east half of the Sun at 17:02 UT on 2016-Apr-08  
Find a movie of the events [here](#) (SWAP movie)

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 pre-COGEX campaign, 2016-Apr-05
- SWAP COGEX campaign, 2016-Apr-05
- SWAP after Cogex campaign, 2016-Apr-05
- SWAP pre-COGEX campaign, 2016-Apr-07
- SWAP COGEX campaign, 2016-Apr-07
- ESP jump, 2016-Apr-07
- SWAP after Cogex campaign, 2016-Apr-07

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

- Daily unit 3 campaign, 2016-Apr-04
- LYRA COGEX campaign, 2016-Apr-05
- LYRA after COGEX campaign, 2016-Apr-05
- LYRA bi-weekly calibration, 2016-Apr-06
- Daily unit 3 campaign, 2016-Apr-06
- LYRA COGEX campaign, 2016-Apr-07
- LYRA after COGEX campaign, 2016-Apr-07
- Daily unit 3 campaign, 2016-Apr-08
- Daily unit 3 campaign, 2016-Apr-09
- Daily unit 3 campaign, 2016-Apr-10

### **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>).

### **Guest Investigator Program**

- None



## 2. LYRA instrument status

### Calibration

Calibration campaign on Wednesday this week.

### IOS & operations

Monday 04 Apr	Tuesday 05 Apr	Wednesday 06 Apr	Thursday 07 Apr	Friday 08 Apr	Saturday 09 Apr	Sunday 10 Apr
Nominal acquisition + daily U3	Nominal acquisition + COGEX + after COGEX	Nominal acquisition + daily U3 + calibration	Nominal acquisition + COGEX + after COGEX	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3
LYIOS00539	LYIOS00539	LYIOS00539	LYIOS00539	LYIOS00540	LYIOS00541	LYIOS00541

The following science campaigns were performed by LYRA:

- daily U3 observations campaign

On 2016-Apr-05

- COGEX campaign
- After COGEX campaign

On 2016-Apr-07

- COGEX campaign
- After COGEX campaign

### LYRA detector temperature

LYRA detector 2 temperature globally varied between 46.9 and 50.4 °C.

### 3. SWAP instrument status

#### Calibration

The calibration was done with the before and after COGEX campaigns.

#### MCPM errors

The number of MCPM recoverable errors increased from 2724 to 2893.

The number of MCPM unrecoverable errors remained at 0.

#### IOS & operations

Monday 04 Apr	Tuesday 05 Apr	Wednesday 06 Apr	Thursday 07 Apr	Friday 08 Apr	Saturday 09 Apr	Sunday 10 Apr
Nominal acquisition	Nominal acquisition + pre COGEX COGEX + after COGEX	Nominal acquisition	Nominal acquisition + pre COGEX COGEX + ESP jump + after COGEX	Nominal acquisition	Nominal acquisition	Nominal acquisition
IOS00641 702 images	IOS00641 730 images	IOS00641 544 images	IOS00641 741 images	IOS00641 710 images	IOS00642 700 images	IOS00642 565 images

Special operations for SWAP, this week:

On 2016-Apr-05

- pre-COGEX campaign
- COGEX campaign
- After COGEX campaign

On 2016-Apr-07

- pre-COGEX campaign
- COGEX campaign
- ESP jump
- After COGEX campaign

#### SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -2.4 and 3.2 °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 20293 to 20357) 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 Apr 04 00:00 UT and 2016 Apr 11 00:00 UT: 4692

Highest cadence in this period: 29 seconds

Average cadence in this period: 128.90 seconds

Number of image gaps larger than 300 seconds: 173

Largest data gap: 40.95 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)