


P2SC-ROB-WR-365 - 20170320 Weekly report #365	<b>P2SC Weekly report</b>	
Period covered: Date:  Written by: Approved by:	Mon Mar 20 to Sun Mar 26, 2017 27 Mar 2017  Jennifer O'Hara Matthew West	Royal Observatory of Belgium - PROBA2 Science Center
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## 1. Science

### Solar & Space weather events

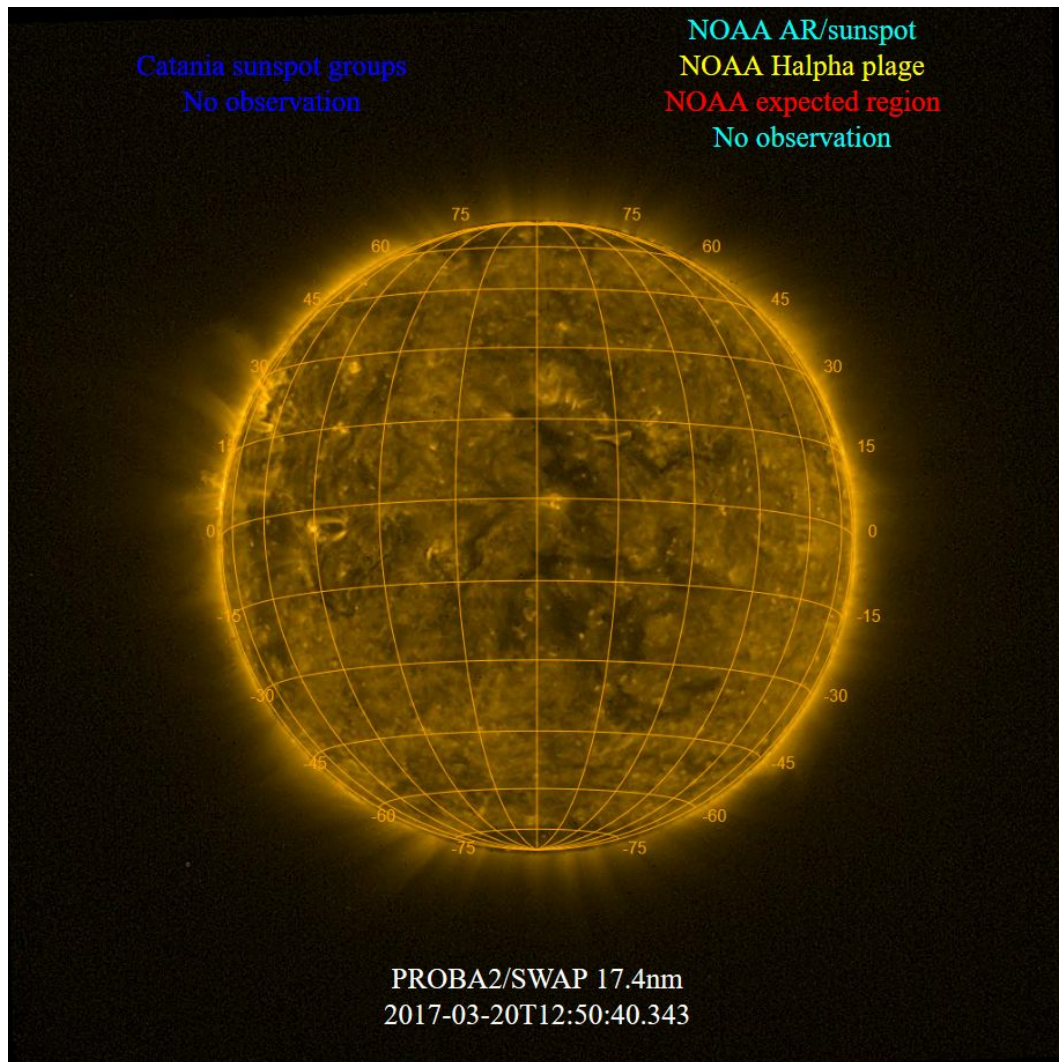
The level of solar activity<sup>1</sup> fluctuated remained **very low** this week.

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

	Monday 20 Mar	Tuesday 21 Mar	Wednesday 22 Mar	Thursday 23 Mar	Friday 24 Mar	Saturday 25 Mar	Sunday 26 Mar
Activity	very low	very low	very low	very low	very low	very low	very low
Flares	-	-	-	-	-	-	-

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

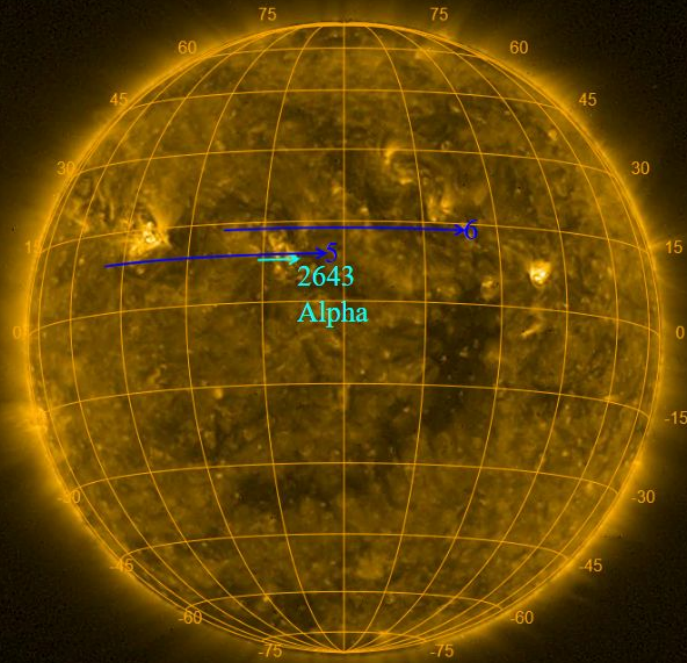
The SWAP images of Mar 20 and Mar 26 are shown below, with annotated active regions.



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

Catania sunspot groups  
2017-03-23 08:30:00

NOAA AR/sunspot  
NOAA Halpha plage  
NOAA expected region  
2017-03-26 00:30:00



PROBA2/SWAP 17.4nm  
2017-03-26T12:49:48.432

## **Solar Activity**

Solar flare activity remained very 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>

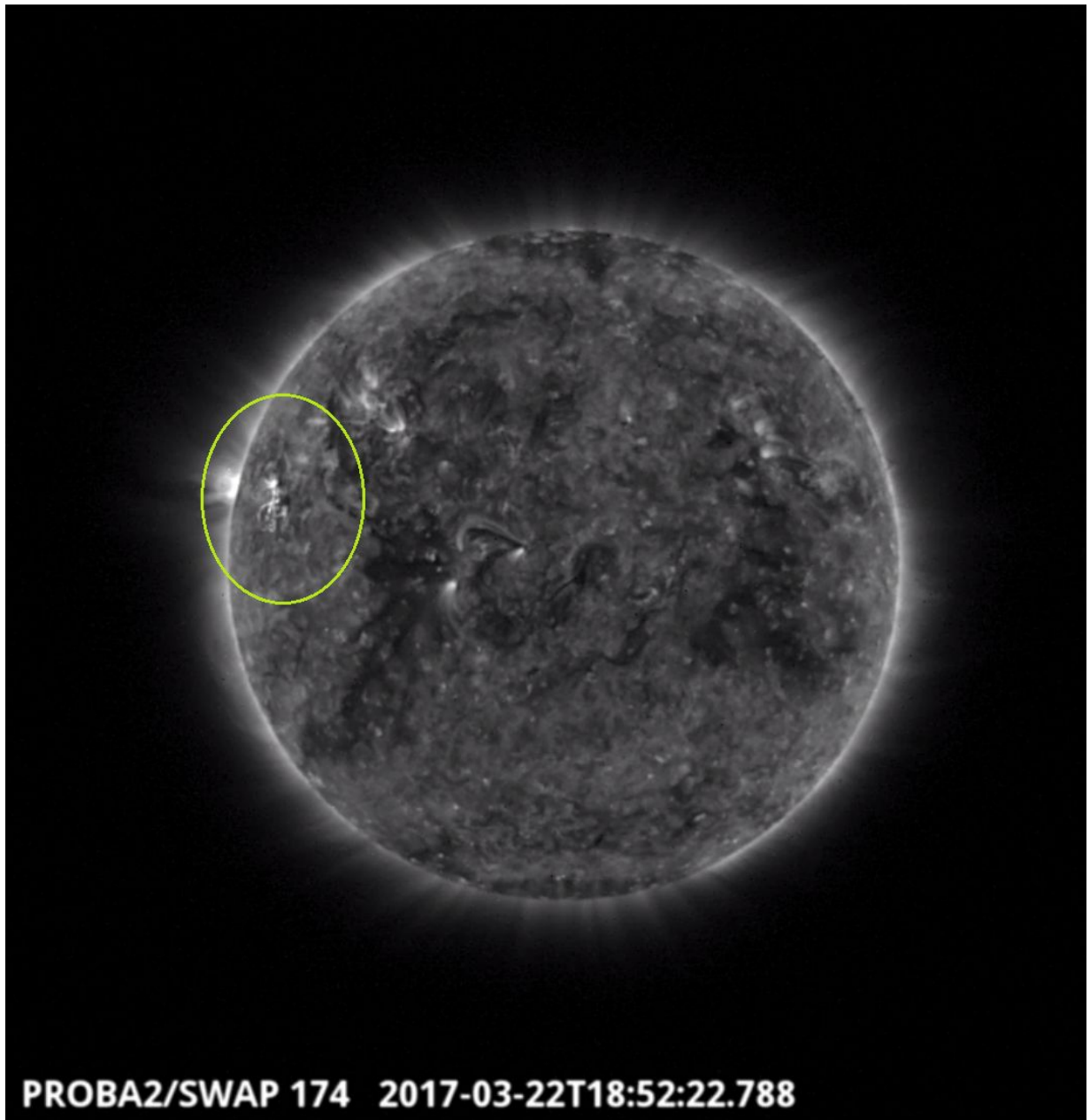
This page also lists the recorded flaring events.

A weekly overview movie can be found [here](#) (SWAP week 365).

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

If any of the linked movies are unavailable they can be found in the P2SC movie repository [here](#)

Wednesday Mar 22



**An eruption was observed by SWAP in the north-east quadrant of the Sun on 2017-Mar-22 shown here at 18:52 UT.**

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

Sunday Mar 26



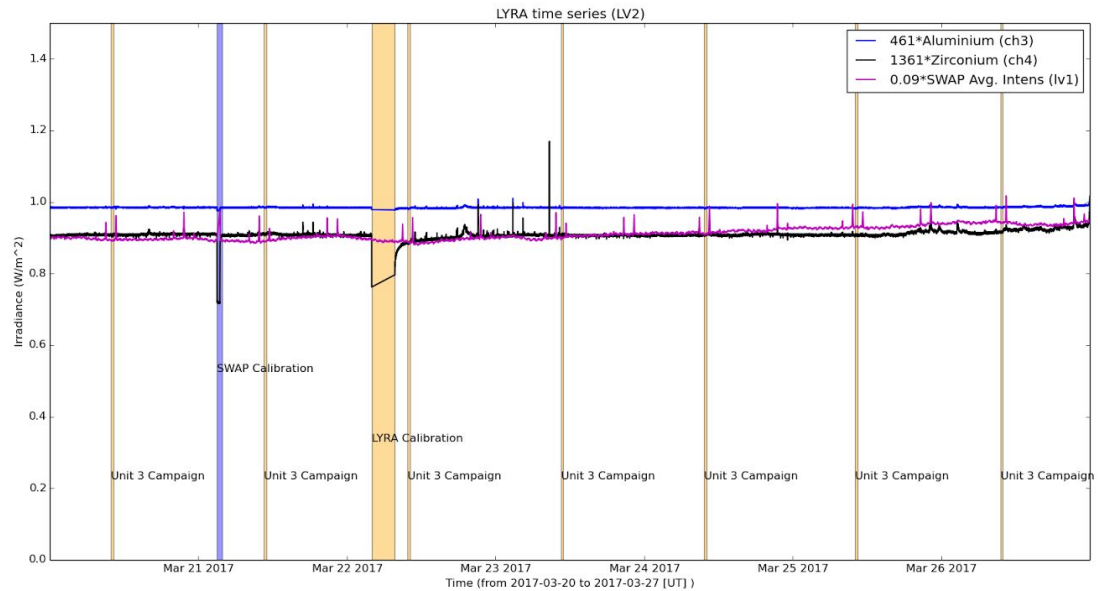
The largest flare (B4.0 class) of the week which was produced by AR 2644 was observed by SWAP on 2017-Mar-26, shown here in the eastern hemisphere of the Sun at 02:37 UT.

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, 2017-Mar-21

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

- Daily unit 3 campaign, 2017-Mar-20
- Daily unit 3 campaign, 2017-Mar-21
- LYRA bi-weekly Calibration, 2017-Mar-22
- Daily unit 3 campaign, 2017-Mar-22
- Daily unit 3 campaign, 2017-Mar-23
- Daily unit 3 campaign, 2017-Mar-24
- Daily unit 3 campaign, 2017-Mar-25
- Daily unit 3 campaign, 2017-Mar-26

The red shaded period corresponds to:

- None

## **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 Edward Thiemann from LASP (Colorado, USA) gave an STCE seminar entitled “MAVEN EUVM and PROBA2 LYRA: Kindred Spirits at the Red and Blue Planets” about his work on the inversion of LYRA Occultations with the Onion Peel Method.

## **Guest Investigator Program**

- Guest Investigator Edward Thiemann from LASP (Colorado, USA) visited the P2SC from 14th to the 25th of March to work on his GI project entitled “Inversion of LYRA Occultations with the Onion Peel Method”
- Guest Investigator Larisza Krista also returned to the P2SC between the 19th and the 26th of March to continue her work on “The structural and footpoint evolution of CMEs.”



## 2. LYRA instrument status

### Calibration

Calibration campaign on Wednesday this week.

### IOS & operations

Monday 20 Mar	Tuesday 21 Mar	Wednesday 22 Mar	Thursday 23 Mar	Friday 24 Mar	Saturday 25 Mar	Sunday 26 Mar
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
LYIOS00606	LYIOS00606	LYIOS00606	LYIOS00606	LYIOS00607	LYIOS00607	LYIOS00607

The following science campaigns were performed by LYRA:

- daily U3 observations campaign

### LYRA detector temperature

LYRA detector 2 temperature globally varied between 48.42 and 50.66 °C.

### 3. SWAP instrument status

#### Calibration

Calibration campaign on Tuesday this week.

#### MCPM errors

The number of MCPM recoverable errors increased from 7813 to 8011.

The number of MCPM unrecoverable errors remained at 0.

#### IOS & operations

Monday 20 Mar	Tuesday 21 Mar	Wednesday 22 Mar	Thursday 23 Mar	Friday 24 Mar	Saturday 25 Mar	Sunday 26 Mar
Nominal acquisition	Nominal acquisition + Calibration	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition
IOS00693 700 images	IOS00693 718 images	IOS00693 770 images	IOS00693 704 images	IOS00693 702 images	IOS00693 701 images	IOS00693 707 images

Special operations for SWAP, this week:

- None

#### SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -0.25 and 0.71 °C.

#### **4. PROBA2 Science Center Status**

The main operator is Laurence Wauters.

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 23514 to 23578) 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 2017 Mar 20 00:00 UT and 2017 Mar 27 00:00 UT: 5049

Highest cadence in this period: 30 seconds

Average cadence in this period: 119.79 seconds

Number of image gaps larger than 300 seconds: 81

Largest data gap: 7.33 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
DAC	Data Acquisition Controller
DBR	Deployment, backup & recovery
DDA	Decommutated data archive
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)