P2SC-ROB-WR-418 - 20180326 Weekly report #418	**P2SC Weekly report**	
Period covered: Date:	Mon Mar 26 to Sun Apr 1, 2018 3 Apr 2018	Royal Observatory of Belgium - PROBA2 Science Center
Written by: Approved by:	Jennifer O'Hara Matthew West	
To:	LYRA PI, marie.dominique@sidc.be SWAP PI, david.berghmans@sidc.be	http://proba2.sidc.be ++ 32 (0) 2 3730559
cc:	ROB DIR, ronald@oma.be ESA Redu, Etienne.Tilmans@esa.int ESA D/SRE, Joe.Zender@esa.int ESA D/TEC, Juha-Pekka.Luntama@esa.int	

# 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 26 Mar	Tuesday 27 Mar	Wednesday 28 Mar	Thursday 29 Mar	Friday 30 Mar	Saturday 31 Mar	Sunday 01 Apr
Activity	very low	very low	very low	very low	low	very low	very low
Flares	-	-	-	-	-	-	-

---

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

The SWAP images of Mar 26 and Apr 01 are shown below, with annotated active regions.
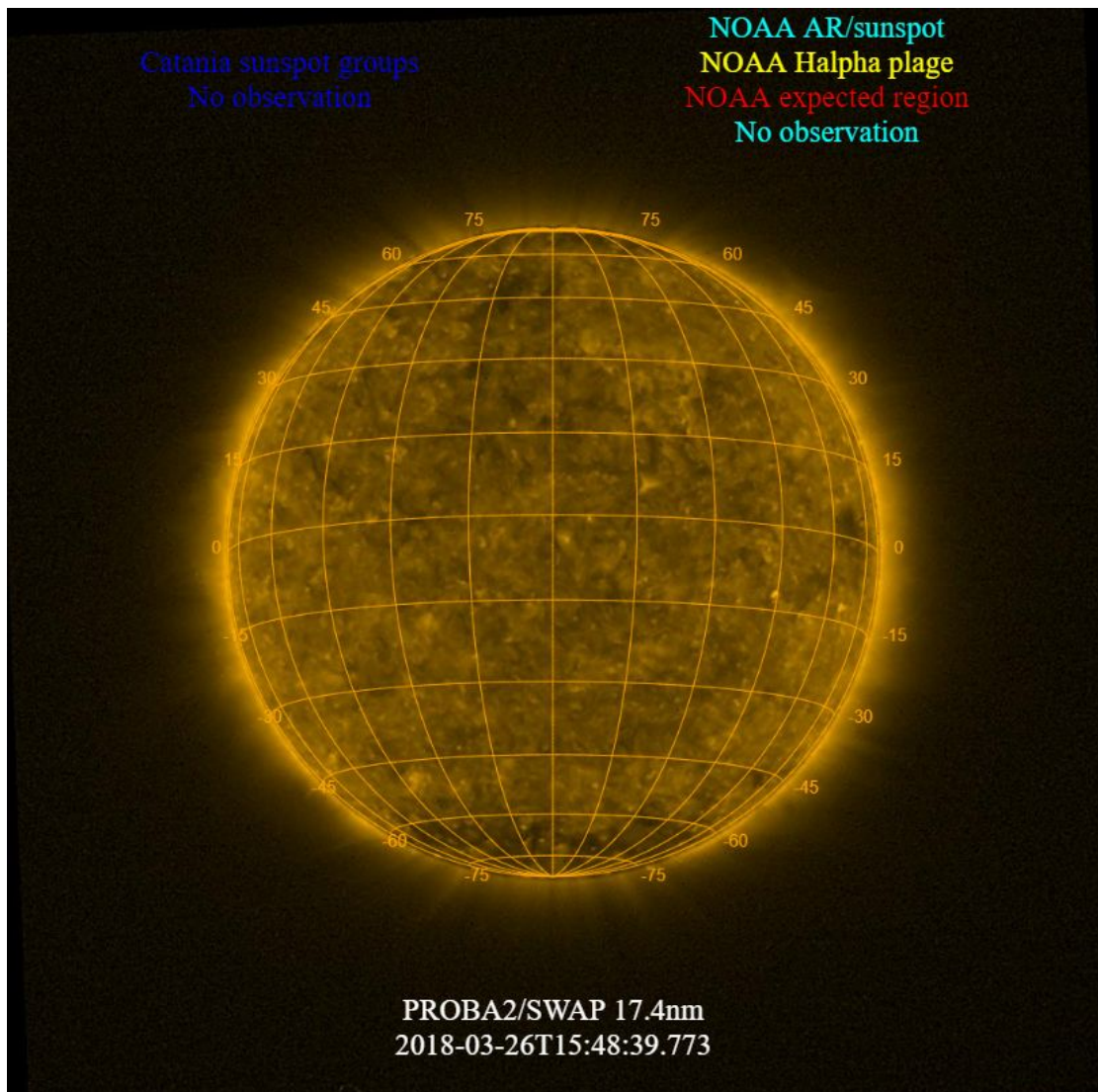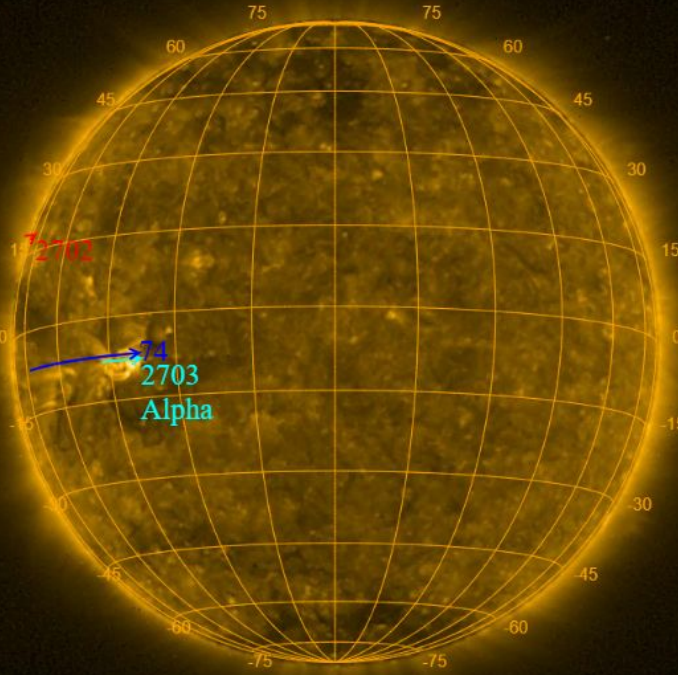
Solar Activity

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
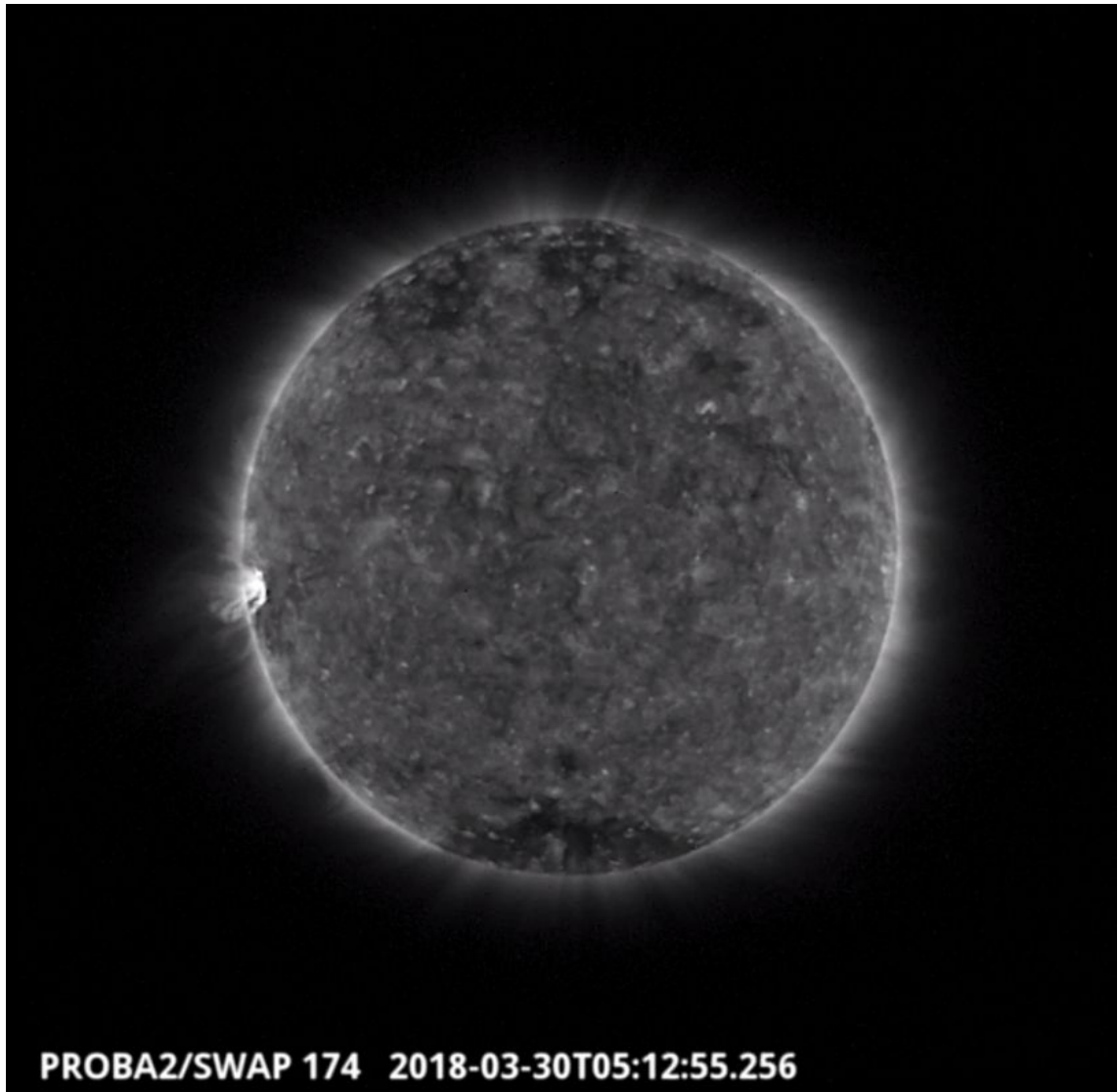This page also lists the recorded flaring events.

A weekly overview movie can be found here (SWAP week 418).

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

PROBA2/SWAP 174   2018-03-30T05:12:55.256

An eruption was observed by SWAP on the east limb of of the Sun on 2018-Mar-30, shown in the SWAP image above at 05:12 UT
Find a movie of the event **here** (SWAP movie)

PROBA2/SWAP 174   2018-03-30T08:05:15.333
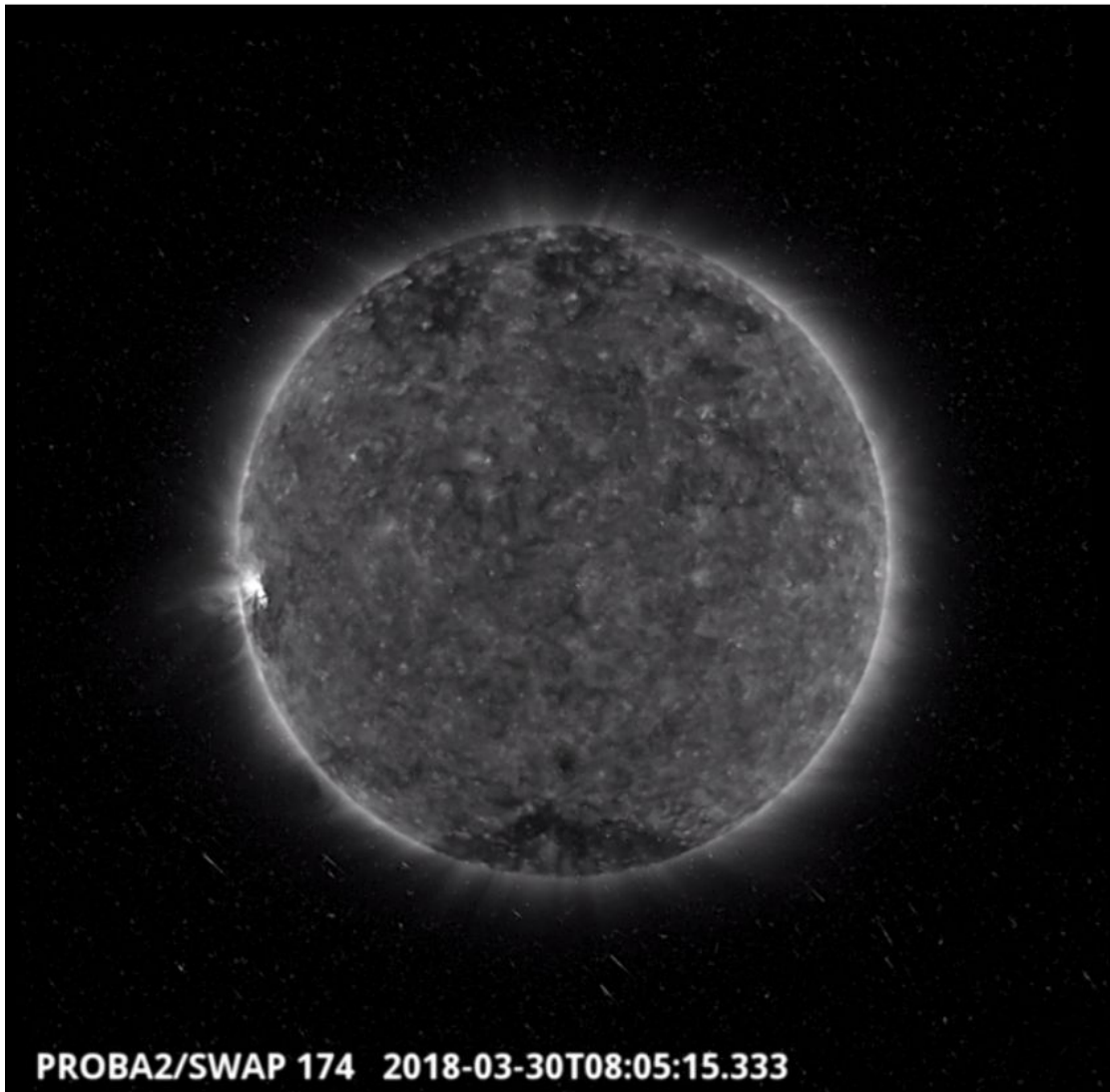
Also on 2018-Mar-30, SWAP observed the largest flare of the week (C4.6), which was associated with NOAA 2703. This is visible on the east limb of the Sun in the SWAP image above at 08:05 UT.

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

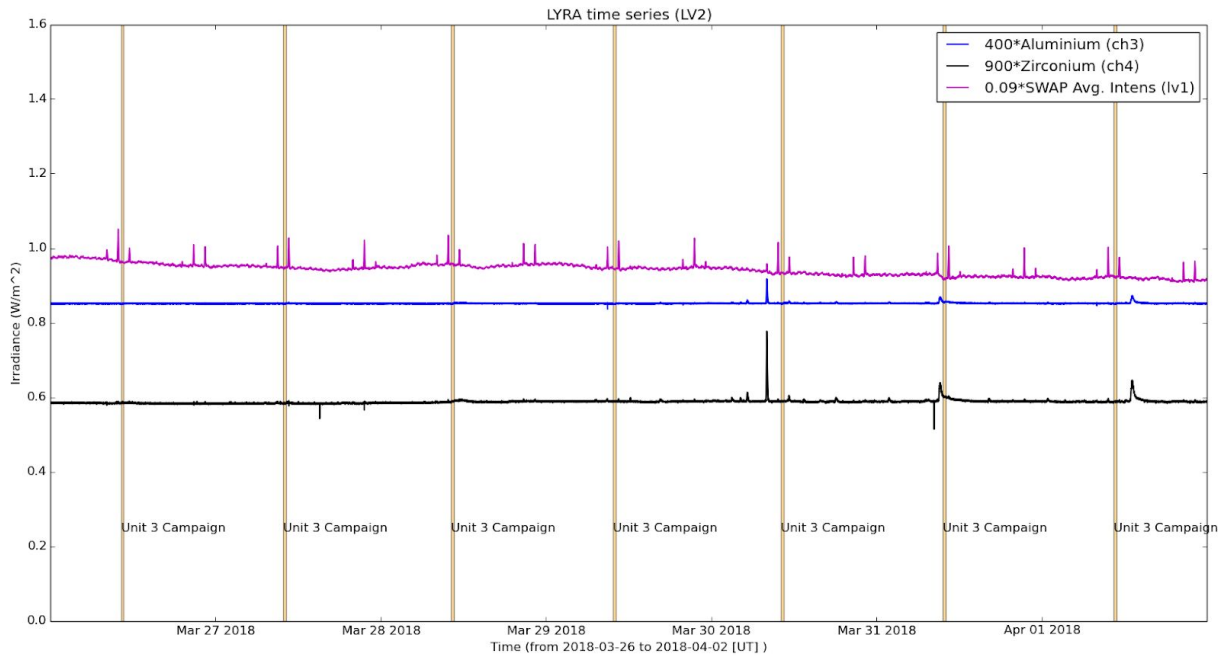PROBA2/SWAP 174   2018-04-01T13:11:38.676
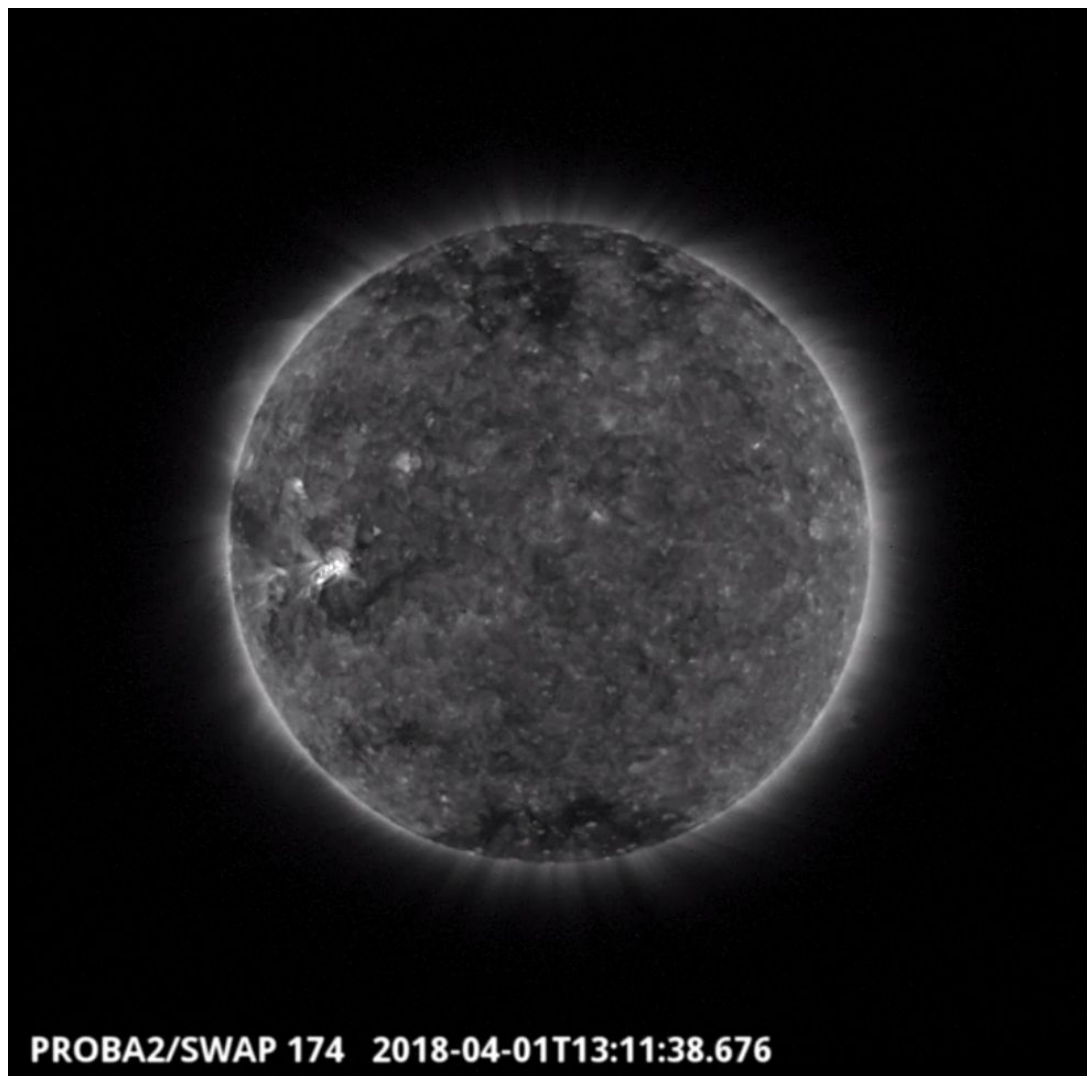
The second largest flare of the week (B9.0), associated with NOAA 2703, was observed by SWAP on 2018-Apr-01. This is visible in the SWAP image above towards the east of the solar disk at 13:11 UT.
Find a movie of the event **here** (SWAP movie)

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)

LYRA time series (LV2)

Legend:
- 400*Aluminium (ch3)
- 900*Zirconium (ch4)
- 0.09*SWAP Avg. Intens (lv1)

Time (from 2018-03-26 to 2018-04-02 [UT])

The blue shaded periods related to SWAP, correspond to, from left to right:
- None

The orange shaded periods related to LYRA correspond to, from left to right:
- Daily Unit 3 campaign, 2018-Mar-26
- Daily Unit 3 campaign, 2018-Mar-27
- Daily Unit 3 campaign, 2018-Mar-28
- Daily Unit 3 campaign, 2018-Mar-29
- Daily Unit 3 campaign, 2018-Mar-30
- Daily Unit 3 campaign, 2018-Mar-31
- Daily Unit 3 campaign, 2018-Apr-01

The red shaded periods related to other issues 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 Program
- Karen Meyer is visiting the P2SC between 26th March and 6th April to work on her project entitled "Investigation of the middle corona with SWAP and a data-driven non-potential coronal field model".
- Alexandros Koukras continued his visit to the P2SC working on his project entitled "A unique opportunity of observing and modeling a CME event from the low to the outer corona".

2. LYRA instrument status

Calibration

No calibration campaign this week.

IOS & operations

Monday 26 Mar	Tuesday 27 Mar	Wednesday 28 Mar	Thursday 29 Mar	Friday 30 Mar	Saturday 31 Mar	Sunday 01 Apr
Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3
LYIOS00685	LYIOS00685	LYIOS00685	LYIOS00685	LYIOS00685	LYIOS00686	LYIOS00686

The following science campaigns were performed by LYRA:
- daily U3 observations campaign

LYRA detector temperature

LYRA detector 2 temperature globally varied between 49.42 and 50.51 °C.

3. SWAP instrument status

Calibration

No calibration campaign this week.

MCPM errors
The number of MCPM recoverable errors increased from 3192 to 3393.
The number of MCPM unrecoverable errors remained at 0.

IOS & operations

Monday 26 Mar	Tuesday 27 Mar	Wednesday 28 Mar	Thursday 29 Mar	Friday 30 Mar	Saturday 31 Mar	Sunday 01 Apr
Nominal acquisition IOS00766 661 images	Nominal acquisition IOS00766 700 images	Nominal acquisition IOS00766 697 images	Nominal acquisition IOS00766 760 images	Nominal acquisition IOS00766 702 images	Nominal acquisition IOS00767 692 images	Nominal acquisition IOS00767 599 images

Special operations for SWAP, this week:
● None

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -0.65 and 0.39 °C.

4. PROBA2 Science Center Status

The main operator is Jennifer O'Hara.

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 26999 to 27064) 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 2018 Mar 26 00:00 UT and 2018 Apr 02 00:00 UT: 4897
Highest cadence in this period: 110 seconds
Average cadence in this period: 123.50 seconds
Number of image gaps larger than 300 seconds: 98
Largest data gap: 11.00 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)