


P2SC-ROB-WR-366 - 20170327 Weekly report #366	P2SC Weekly report	
Period covered: Date: Written by: Approved by:	Mon Mar 27 to Sun Apr 02, 2017 3 Apr 2017 Jennifer O'Hara Matthew West	Royal Observatory of Belgium - PROBA2 Science Center
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

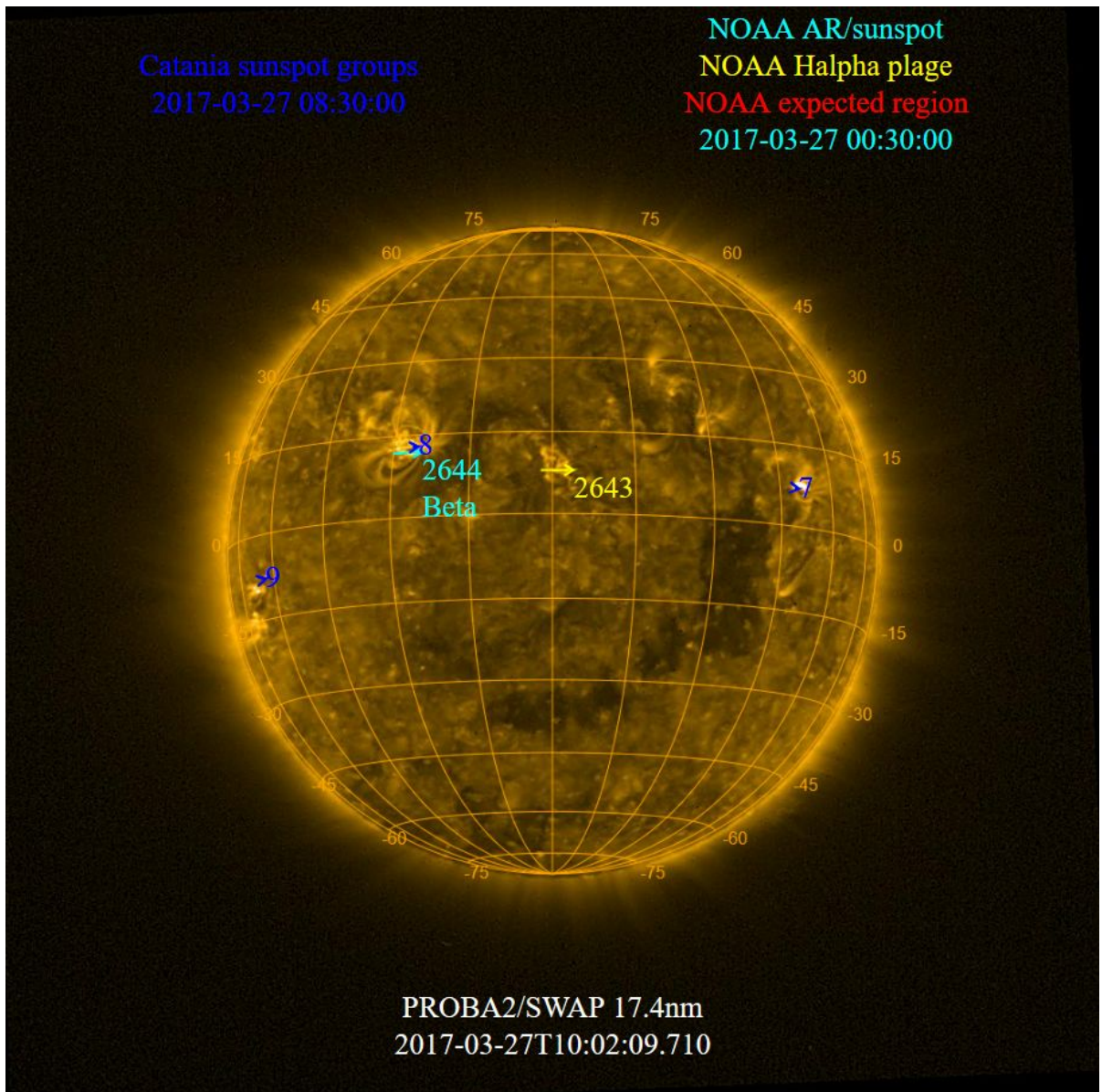
The level of solar activity¹ fluctuated between **very low** and **moderate** this week.

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

	Monday 27 Mar	Tuesday 28 Mar	Wednesday 29 Mar	Thursday 30 Mar	Friday 31 Mar	Saturday 01 Apr	Sunday 02 Apr
Activity	low	low	very low	very low	low	moderate	moderate
Flares	-	-	-	-	-	M4.4@21:48	M5.3@08:02 M5.6@08:02 M2.3@13:00 M2.1@18:38 M5.7@20:33

¹ See appendix. All timings are given in UT.

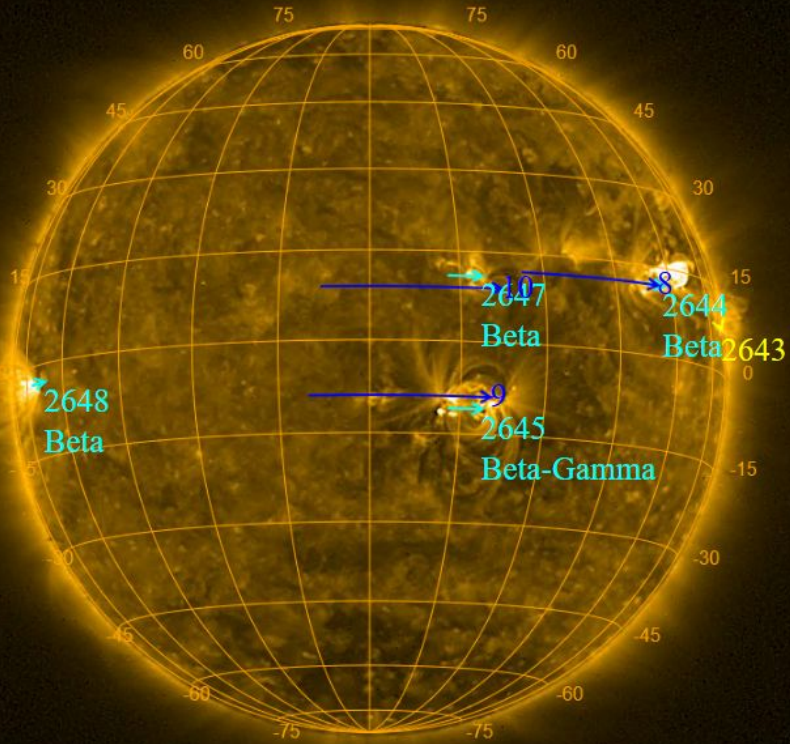
The SWAP images of Mar 27 and Apr 02 are shown below, with annotated active regions.



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

Catania sunspot groups
2017-03-31 08:30:00

NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2017-04-02 00:30:00



PROBA2/SWAP 17.4nm
2017-04-02T10:01:08.724

Solar Activity

Solar flare activity fluctuated between very low and moderate 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>

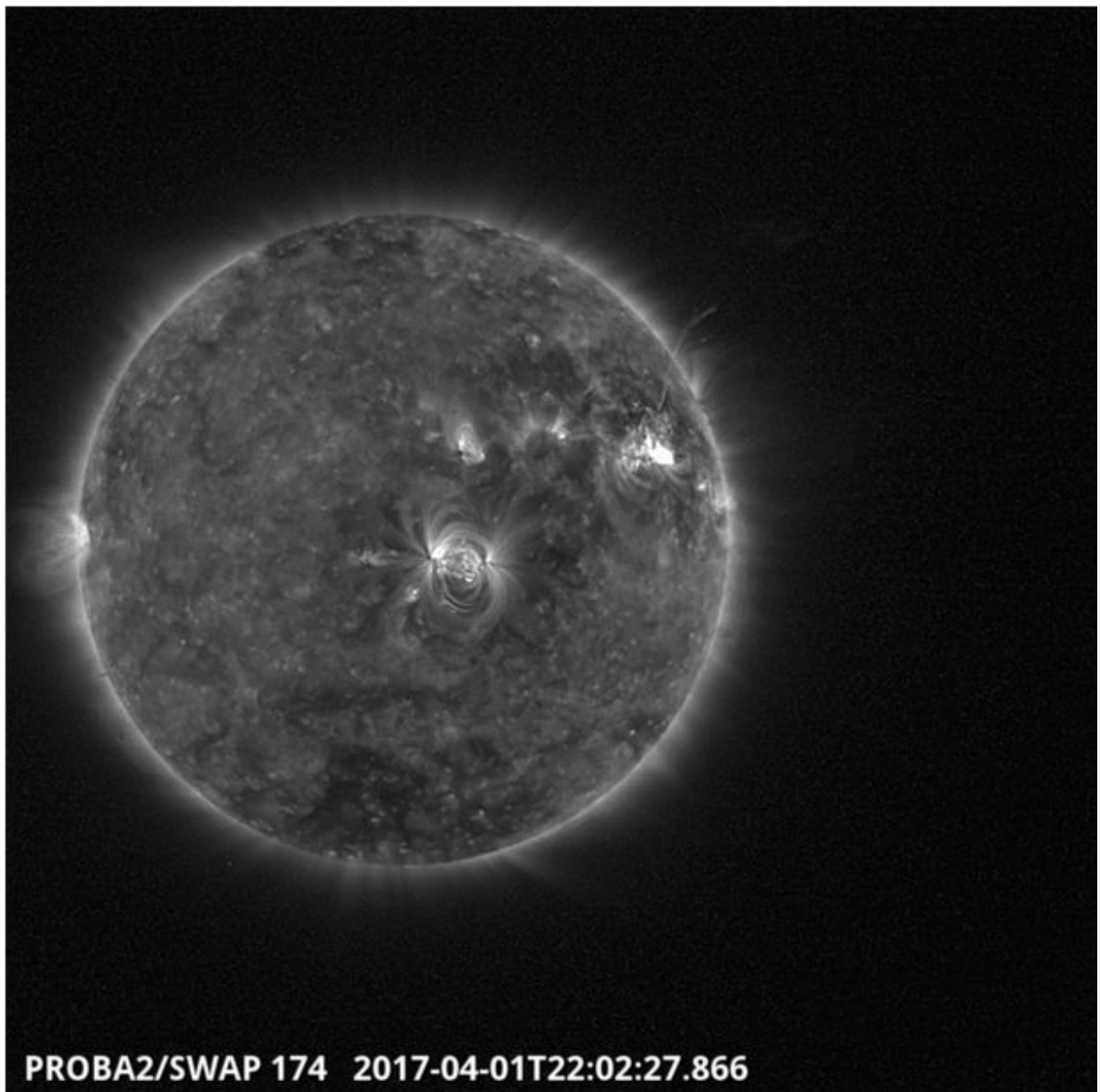
This page also lists the recorded flaring events.

A weekly overview movie can be found [here](#) (SWAP week 366).

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](#)

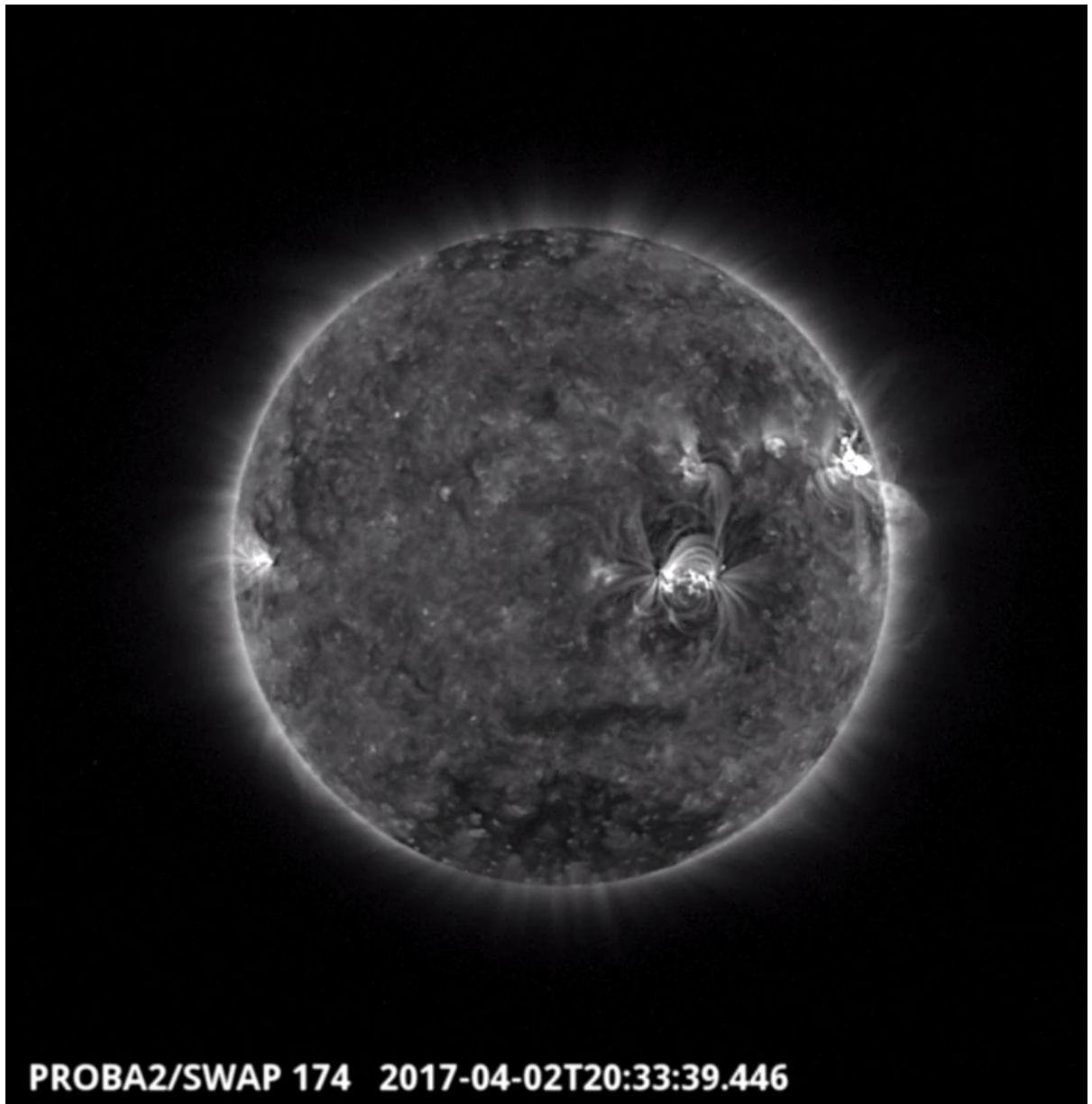
Saturday Apr 01



The first M class flare of the week (M4.4) and a corresponding eruption was observed by SWAP near the west limb of the Sun on 2017-Apr-01, shown here at 22:02 UT, while SWAP was off-pointed to the solar west.

Find a movie of the event [here](#) (SWAP movie of off-pointed images)

Sunday Apr 02



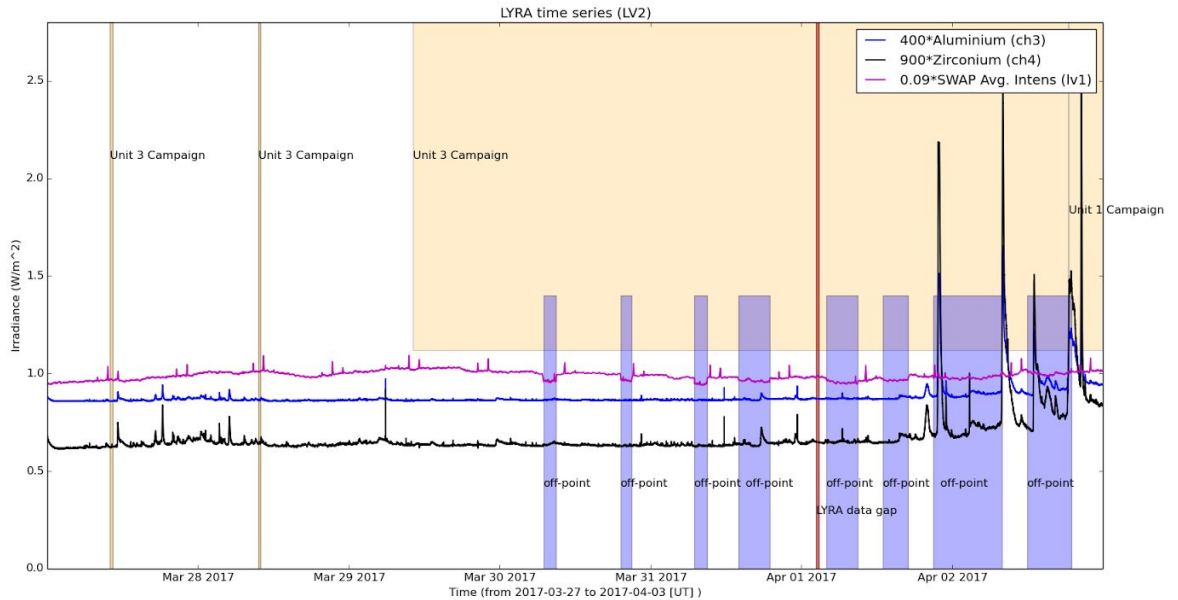
The largest flare (M5.7) of the week, also from AR 12644, was observed by SWAP near the west limb of the Sun on 2017-Apr-02 and shown here at 20:33 UT.

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)



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

- Off-point to the north-east, cadence=30, 2017-Mar-30
- Off-point to the east, cadence=30, 2017-Mar-30
- Off-point to the north west, cadence=30, 2017-Mar-31
- Off-point to the north west, cadence=110, 2017-Mar-31
- Off-point to the west, cadence=110, 2017-Apr-01
- Off-point to the west, cadence=110, 2017-Apr-01
- Off-point to the west, cadence=110, 2017-Apr-01 to 2017-Apr-02
- Off-point to the west, cadence=110, 2017-Apr-02

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

- LYRA daily unit 3 campaign, 2017-Mar-27
- LYRA daily unit 3 campaign, 2017-Mar-28
- LYRA unit 3 campaign, 2017-Mar-29 until 2017-Apr-02
- LYRA unit 1 campaign, 2017-Apr-02

The red shaded period corresponds to:

- LYRA data Gap, 2017-Apr-01

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

None

IOS & operations

Monday 27 Mar	Tuesday 28 Mar	Wednesday 29 Mar	Thursday 30 Mar	Friday 31 Mar	Saturday 01 Apr	Sunday 02 Apr
Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + U3	Nominal acquisition + U3	Nominal acquisition + U3	Nominal acquisition + U3	Nominal acquisition + U3 + U1
LYIOS00607	LYIOS00607 LYIOS00608	LYIOS00609	LYIOS00609	LYIOS00609	LYIOS00609	LYIOS00609 LYIOS00610

The following science campaigns were performed by LYRA:

On 2017-Mar-27:

- daily U3 observations campaign

On 2017-Mar-28:

- daily U3 observations campaign

From 2017-Mar-29 until 2017-Apr-02:

- U3 campaign

On 2017-Apr-02:

- U1 campaign

LYRA detector temperature

LYRA detector 2 temperature globally varied between 49.72 and 52.14 °C.

3. SWAP instrument status

Calibration

None.

MCPM errors

The number of MCPM recoverable errors increased from 8011 to 8189.

The number of MCPM unrecoverable errors remained at 0.

IOS & operations

Monday 27 Mar	Tuesday 28 Mar	Wednesday 29 Mar	Thursday 30 Mar	Friday 31 Mar	Saturday 01 Apr	Sunday 02 Apr
Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition
IOS00693	IOS00693	IOS00693	IOS00694	IOS00694 IOS00695 IOS00696	IOS00696	IOS00696
661 images	696 images	706 images	706 images	733 images	679 images	638 images

Special operations for SWAP, this week:

On 2017-Mar-30:

- Off-point to the north-east, cadence=30
- Off-point to the east, cadence=30

On 2017-Mar-31:

- 2 Off-points to the north-west, cadence=30

On 2017-Apr-01:

- 3 Off-points to the west, cadence=110

On 2017-Apr-02:

- Off-point to the west, cadence=110

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -0.49 and 0.55 °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 23579 to 23643) was nominal, except for:

- Problematic passes: 23584, 23626

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 27 00:00 UT and 2017 Apr 03 00:00 UT: 4851

Highest cadence in this period: 29 seconds

Average cadence in this period: 124.68 seconds

Number of image gaps larger than 300 seconds: 243

Largest data gap: 16.50 minutes

Data coverage LYRA

All LYRA Science data files (BINLYRA) have been received, except:

- None
- Problematic passes: 23584, 23626 Data gap between 02:25 to 02:50 on 2017-Apr-01 and then a period of lower cadence until 04:00 due to bad signal during the dump of the Lyra store.

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)