P2SC-ROB-WR-387 - 20170821 Weekly report #387	**P2SC Weekly report**	
Period covered: Date: Written by: Approved by:	Mon Aug 21 to Sun Aug 27, 2017 28 Aug 2017 Jennifer O'Hara Matthew West	Royal Observatory of Belgium - PROBA2 Science Center
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1. Science

Solar & Space weather events

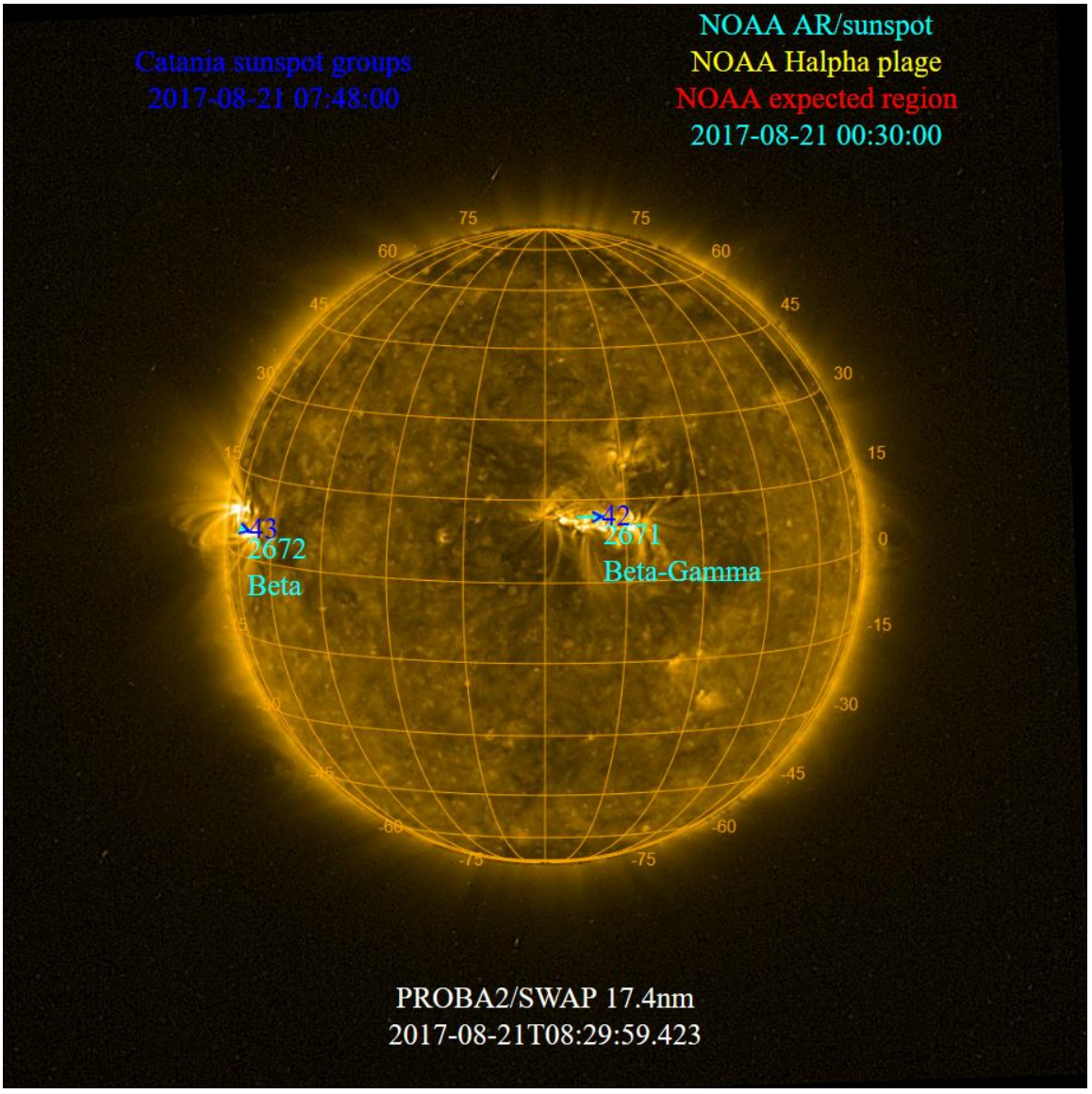
The level of solar activity[1] fluctuated between **very low and low** this week.

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

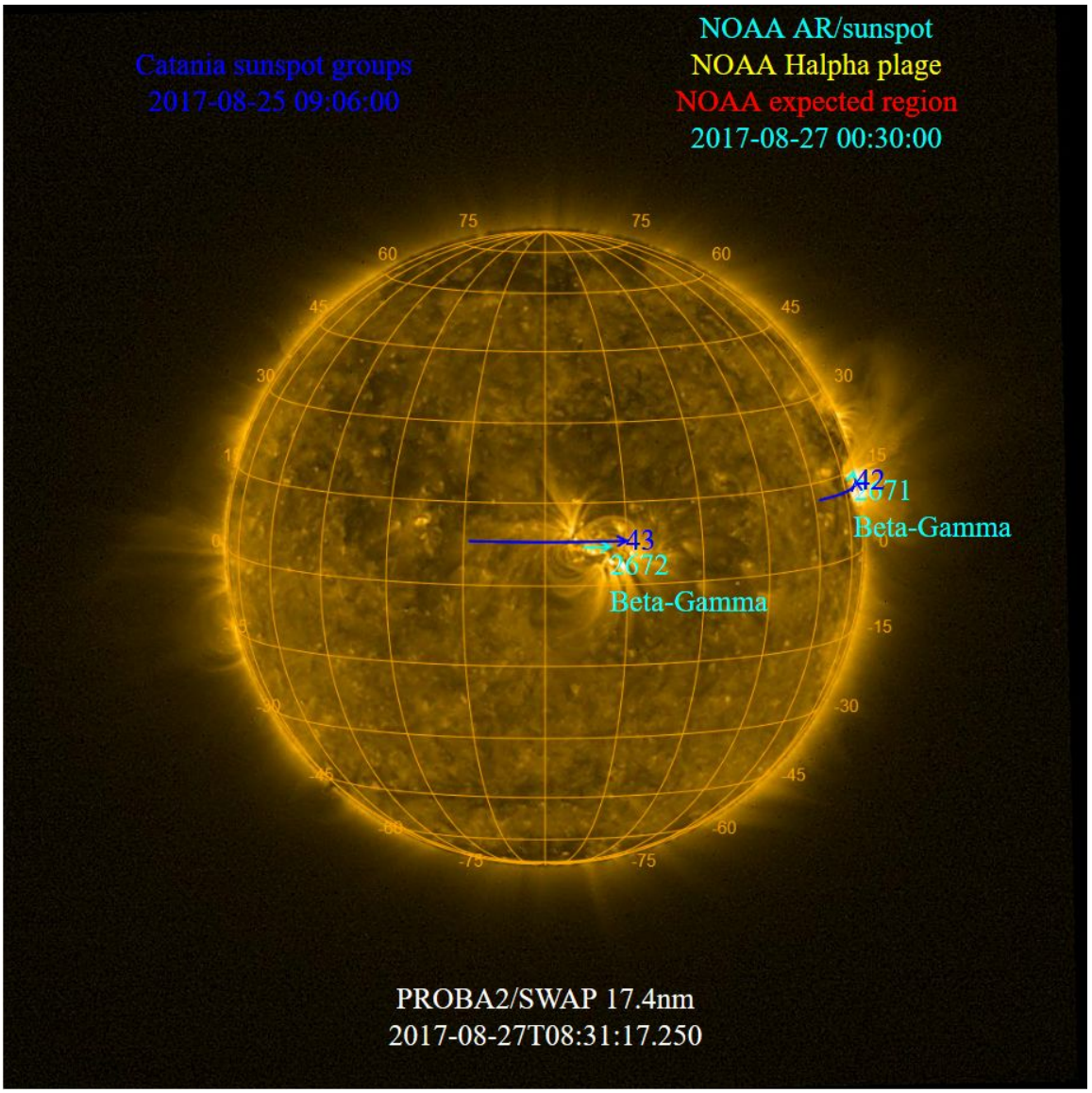
	Monday 21 Aug	Tuesday 22 Aug	Wednesday 23 Aug	Thursday 24 Aug	Friday 25 Aug	Saturday 26 Aug	Sunday 27 Aug
Activity	low	low	low	low	low	very low	low
Flares	-	-	-	-	-	-	-

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

The SWAP images of Aug 21 and Aug 27 are shown below, with annotated active regions.



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


Catania sunspot groups
2017-08-25 09:06:00
NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2017-08-27 00:30:00
42
2671
Beta-Gamma
43
2672
Beta-Gamma
PROBA2/SWAP 17.4nm
2017-08-27T08:31:17.250

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 387).

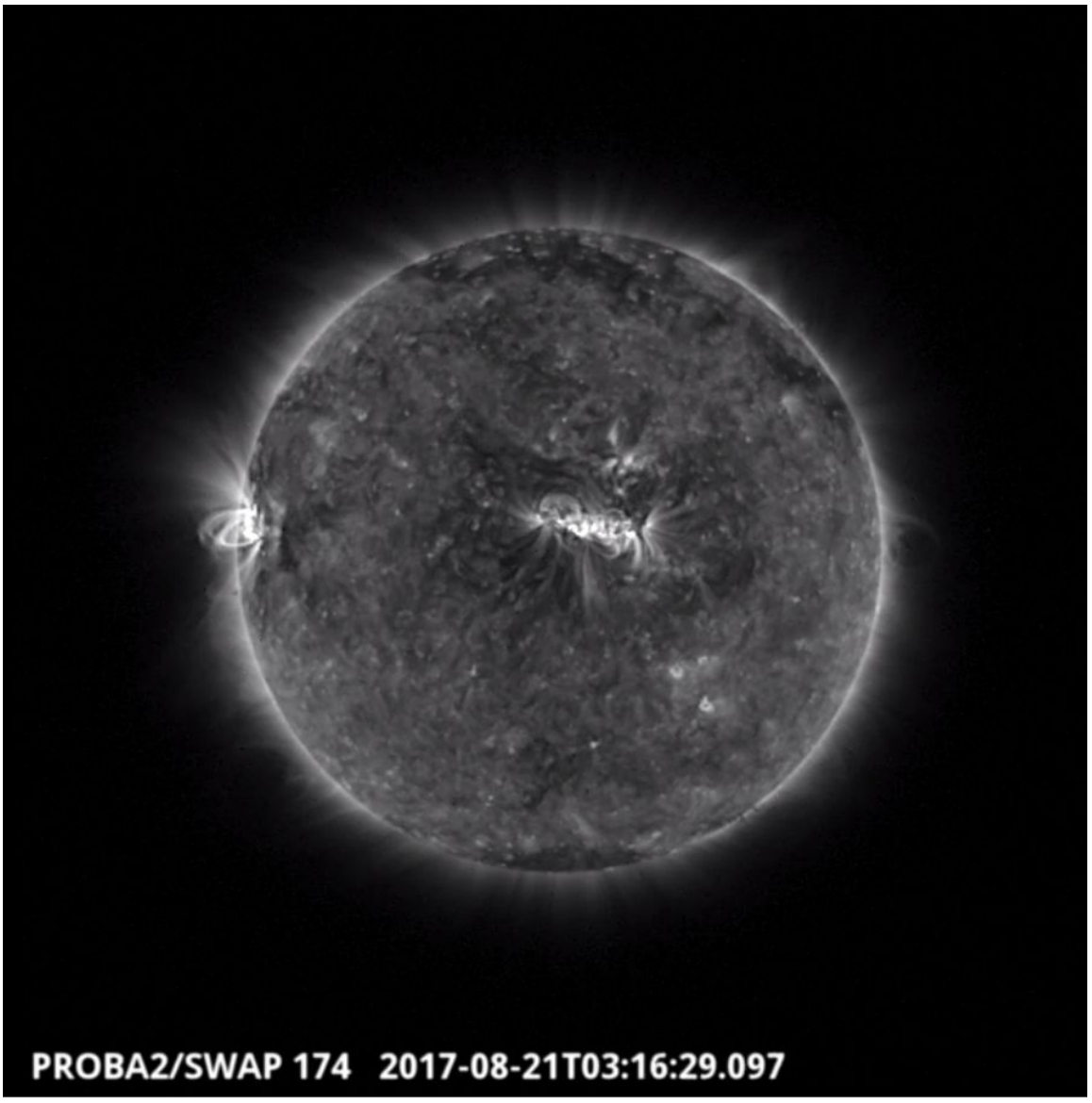
Details about some of this week's events, can be found further below.

If any of the linked movies are unavailable they can be found in the P2SC movie repository here

Monday Aug 21

Eclipse Campaign in SWAP images on 2017-Aug-21.
Find a movie of the events **here** (SWAP eclipse movie)

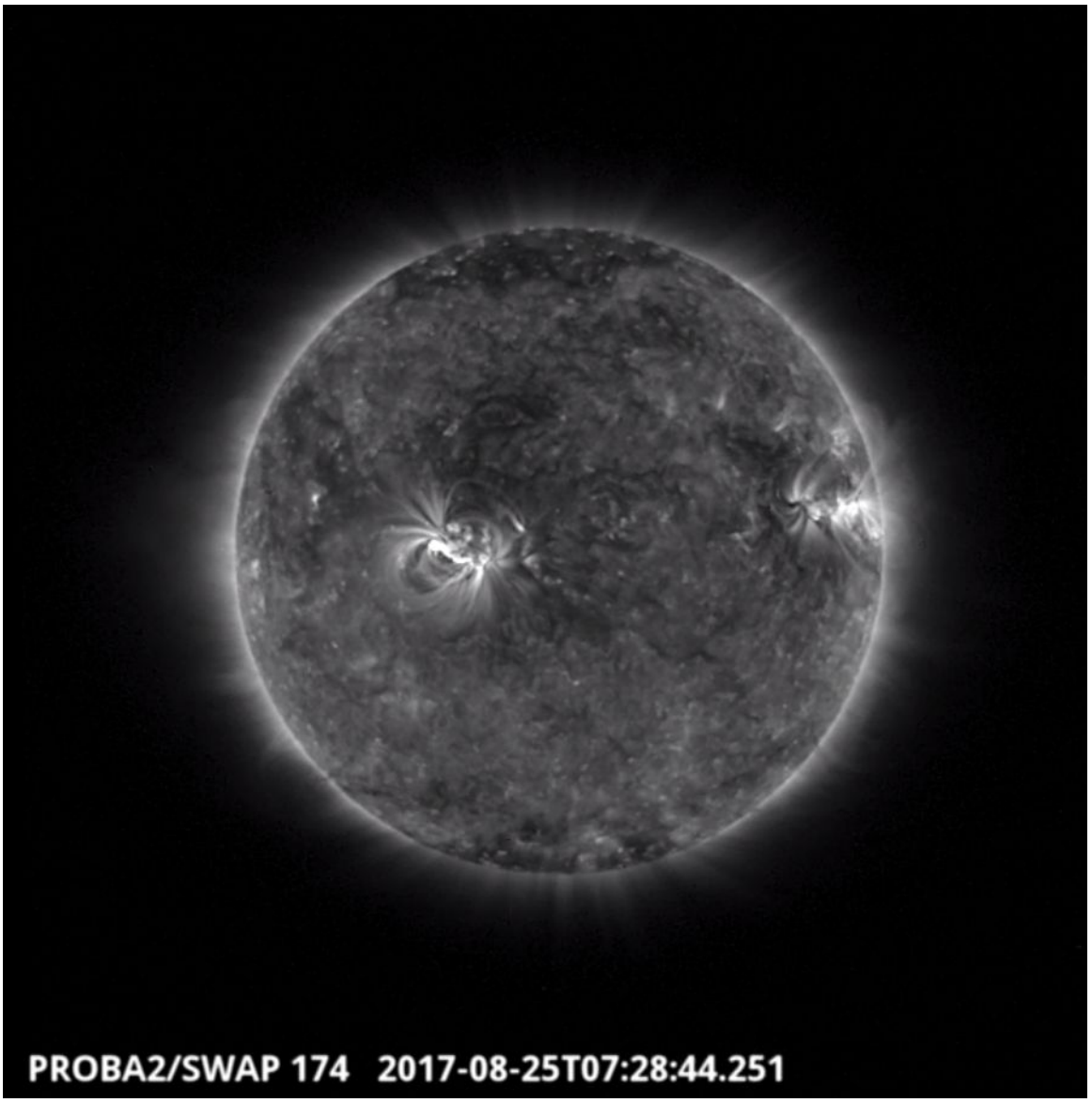
Monday Aug 21



The second largest flare of the week was a c-class (C5.9) flare and was observed by SWAP on 2017-Aug-21. The flaring region and bright loops are visible near the eastern limb of the Sun in the SWAP image above at 03:16 UT.

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

Friday-Aug-25

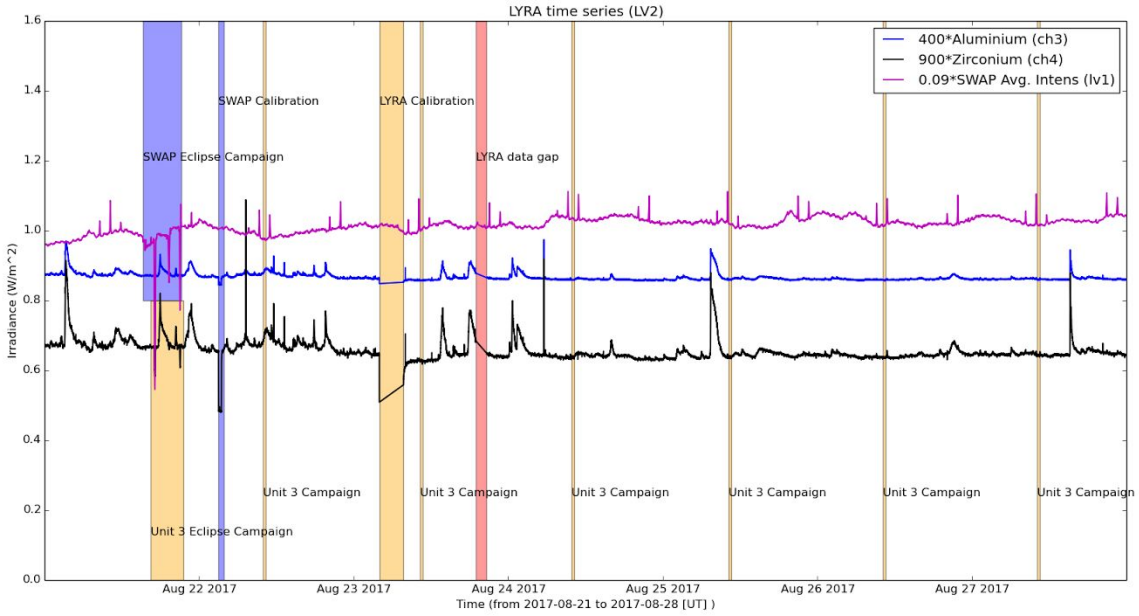


Another c-class (C5.5) flare was observed from AR 2672 by SWAP on 2017-Aug-25 in the eastern hemisphere shown in the SWAP image above at 07:28 UT.

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 related to SWAP, correspond to, from left to right:

- High cadence eclipse campaign and mosaic, 2017-Aug-21
- Bi-weekly calibration, 2017-Aug-22

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

- Eclipse unit 3 campaign, 2017-Aug-21
- Daily unit 3 campaign, 2017-Aug-22
- Bi-weekly calibration, 2017-Aug-23
- Daily unit 3 campaign, 2017-Aug-23
- Daily unit 3 campaign, 2017-Aug-24
- Daily unit 3 campaign, 2017-Aug-25
- Daily unit 3 campaign, 2017-Aug-26
- Daily unit 3 campaign, 2017-Aug-27

The red shaded periods related to other issues corresponds to:

- Lyra data gap, 2017-Aug-23

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).

A special eclipse observation campaign was organised on 2017-Aug-21. The event was reported on Facebook, Twitter, the PROBA2 front page: http://proba2.oma.be/eclipse-August-2017 and in an article by ESA:
http://www.esa.int/Our_Activities/Space_Science/Solar_spectacular_seen_from_Earth_and_space

Guest Investigator Program

- None

2. LYRA instrument status

Calibration

Calibration campaign on Wednesday this week.

IOS & operations

Monday 21 Aug	Tuesday 22 Aug	Wednesday 23 Aug	Thursday 24 Aug	Friday 25 Aug	Saturday 26 Aug	Sunday 27 Aug
Nominal acquisition + U3 eclipse campaign LYIOS00635	Nominal acquisition + daily U3 LYIOS00635	Nominal acquisition + daily U3 + calibration LYIOS00635	Nominal acquisition + daily U3 LYIOS00635	Nominal acquisition + daily U3 LYIOS00636	Nominal acquisition + daily U3 LYIOS00636	Nominal acquisition + daily U3 LYIOS00636

The following science campaigns were performed by LYRA:

- daily U3 observations campaign

On 2017-Aug-21

- Unit 3 eclipse campaign

On 2017-Aug-23

- Bi-weekly calibration campaign

LYRA detector temperature

LYRA detector 2 temperature globally varied between 46.67 and 49.97°C.

3. SWAP instrument status

Calibration

Calibration campaign on Tuesday this week.

MCPM errors

The number of MCPM recoverable errors increased from 11623 to 11654.
The number of MCPM unrecoverable errors remained at 0.

IOS & operations

Monday 21 Aug	Tuesday 22 Aug	Wednesday 23 Aug	Thursday 24 Aug	Friday 25 Aug	Saturday 26 Aug	Sunday 27 Aug
Nominal acquisition + eclipse campaign IOS00713 898 images	Nominal acquisition + calibration IOS00713 715 images	Nominal acquisition IOS00713 682 images	Nominal acquisition IOS00713 702 images	Nominal acquisition IOS00713 679 images	Nominal acquisition IOS00713 705 images	Nominal acquisition IOS00713 554 images

Special operations for SWAP, this week:
On 2017-Aug-14

- Eclipse campaign, consisting of high cadence observations and a mosaic.

On 2017-Aug-15

- Bi-weekly calibration campaign

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -1.69 and -0.41 °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 24948 to 24958) was nominal, except for:

- 24976, where the signal of the pass was poort.

Data coverage HK

All HK data files (LYRA_AD) have been received, except:

- Problematic pass: 24976. This resulted in a data gap on 2017-08-23 from 19:11:54 to 19:53:10 in the LYRA AD.

Data coverage SWAP

All SWAP Science data files (BINSWAP) have been received, except:

- None.

Total number of images between 2017 Aug 21 00:00 UT and 2017 Aug 28 00:00 UT: 4935
Highest cadence in this period: 17 seconds
Average cadence in this period: 122.54 seconds
Number of image gaps larger than 300 seconds: 160
Largest data gap: 9.17 minutes

Data coverage LYRA

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

- Problematic pass: 24976. Due to slightly corrupted data there were processing issues and this resulted in a LYRA data gap on 2017-08-23 from 18:59:51 to 20:39:13.

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)