


P2SC-ROB-WR-381 - 20170710 Weekly report #381	P2SC Weekly report	
Period covered: Date: Written by: Approved by:	Mon Jul 10 to Sun Jul 16, 2017 17 Jul 2017 Jennifer O'Hara Matthew West	Royal Observatory of Belgium - PROBA2 Science Center
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1. Science

Solar & Space weather events

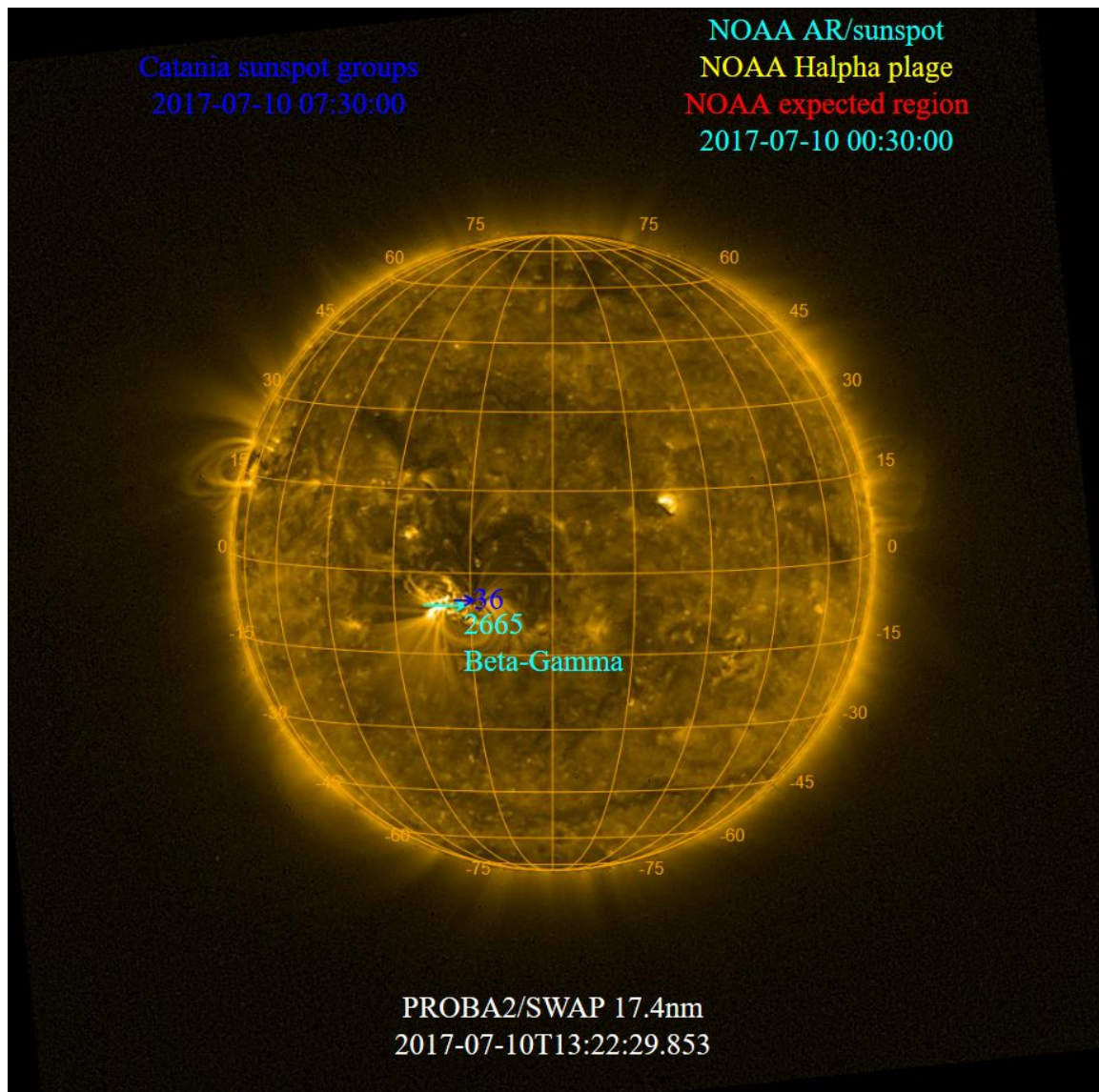
The level of solar activity¹ fluctuated between **very low and moderate** this week.

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

	Monday 10 Jul	Tuesday 11 Jul	Wednesday 12 Jul	Thursday 13 Jul	Friday 14 Jul	Saturday 15 Jul	Sunday 16 Jul
Activity	low	low	very low	low	moderate	low	low
Flares	-	-	-	-	M2.4 @02.09	-	-

¹ See appendix. All timings are given in UT.

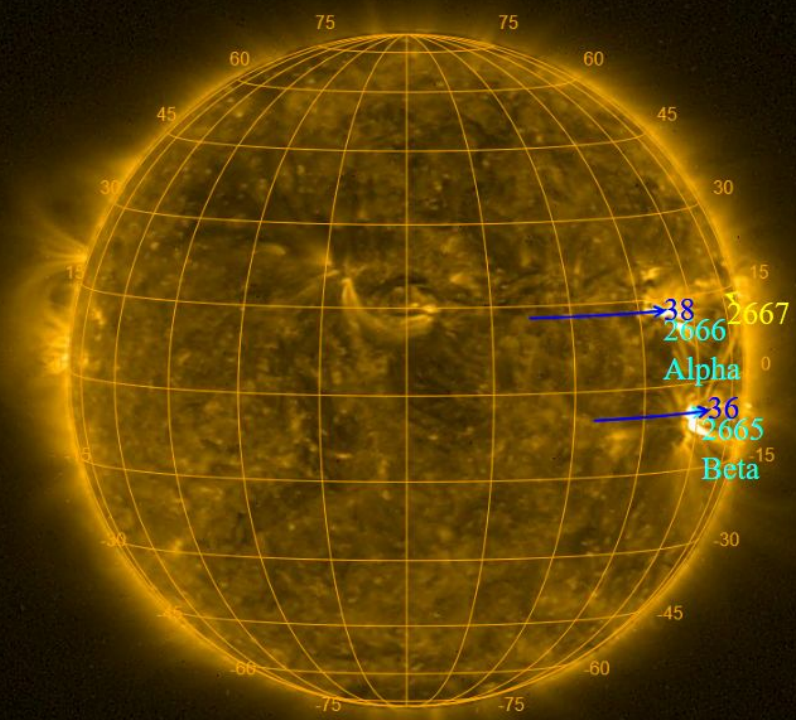
The SWAP images of Jul 10 and Jul 16 are shown below, with annotated active regions.



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

Catania sunspot groups
2017-07-14 07:30:00

NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2017-07-16 00:30:00



PROBA2/SWAP 17.4nm
2017-07-16T08:07:27.293

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>

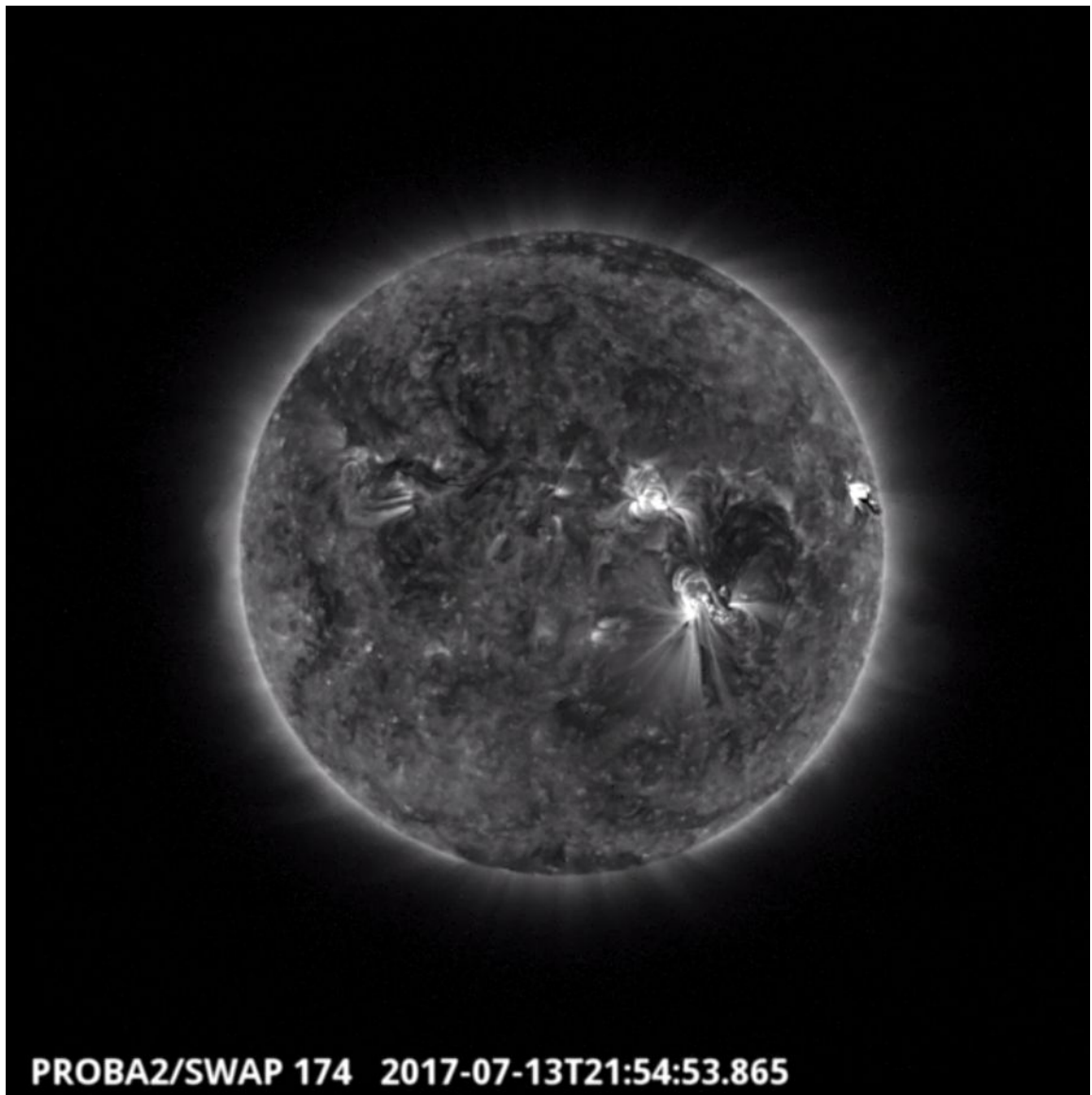
This page also lists the recorded flaring events.

A weekly overview movie can be found [here](#) (SWAP week 381).

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](#)

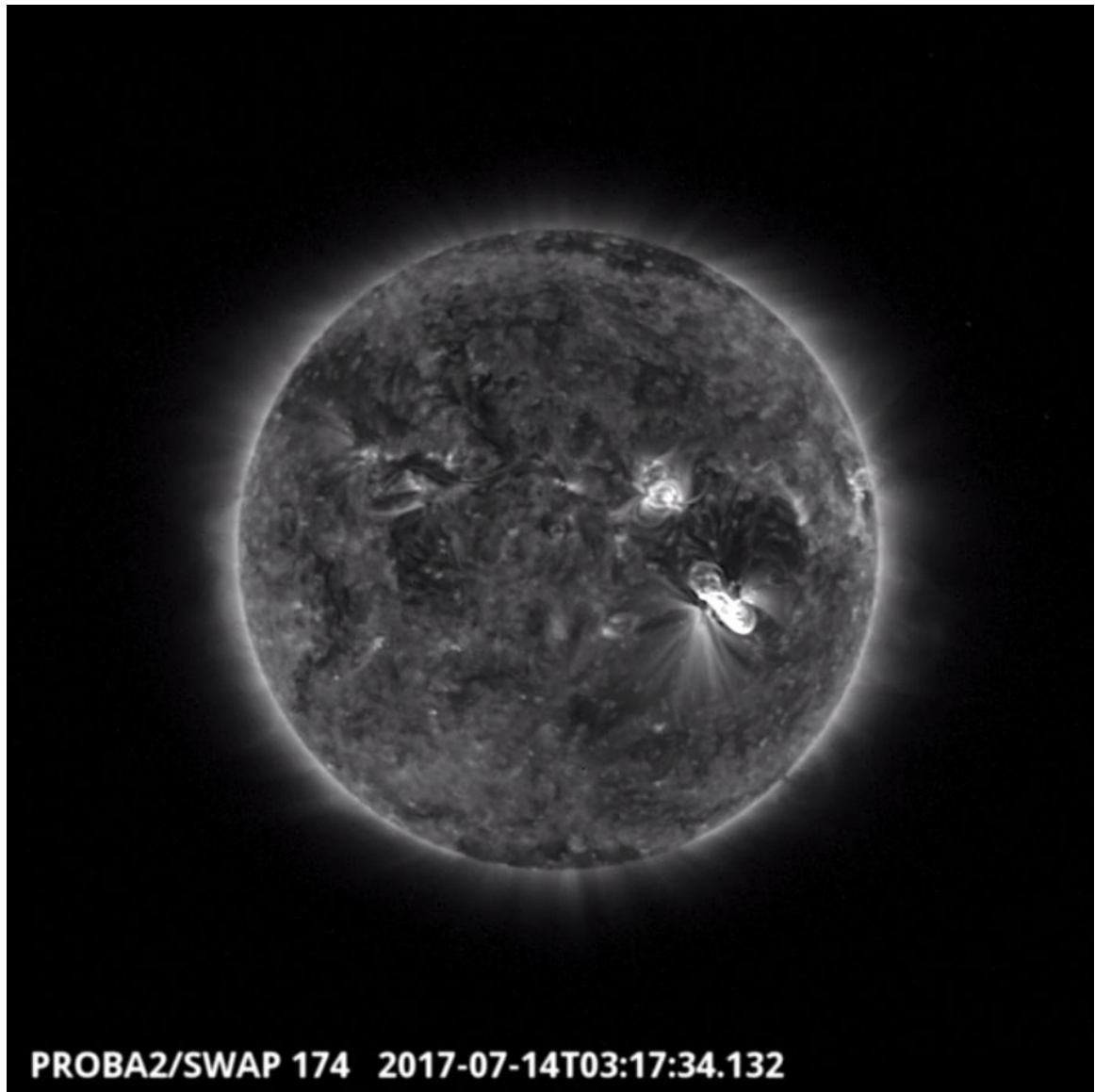
Thursday Jul 13



On 2017-Jul-13 multiple C-class flares and small eruptions were seen from NOAA AR 2667. One of which is shown in the SWAP image above at 21:54 UT, where the active region is situated near the west limb of the Sun.

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

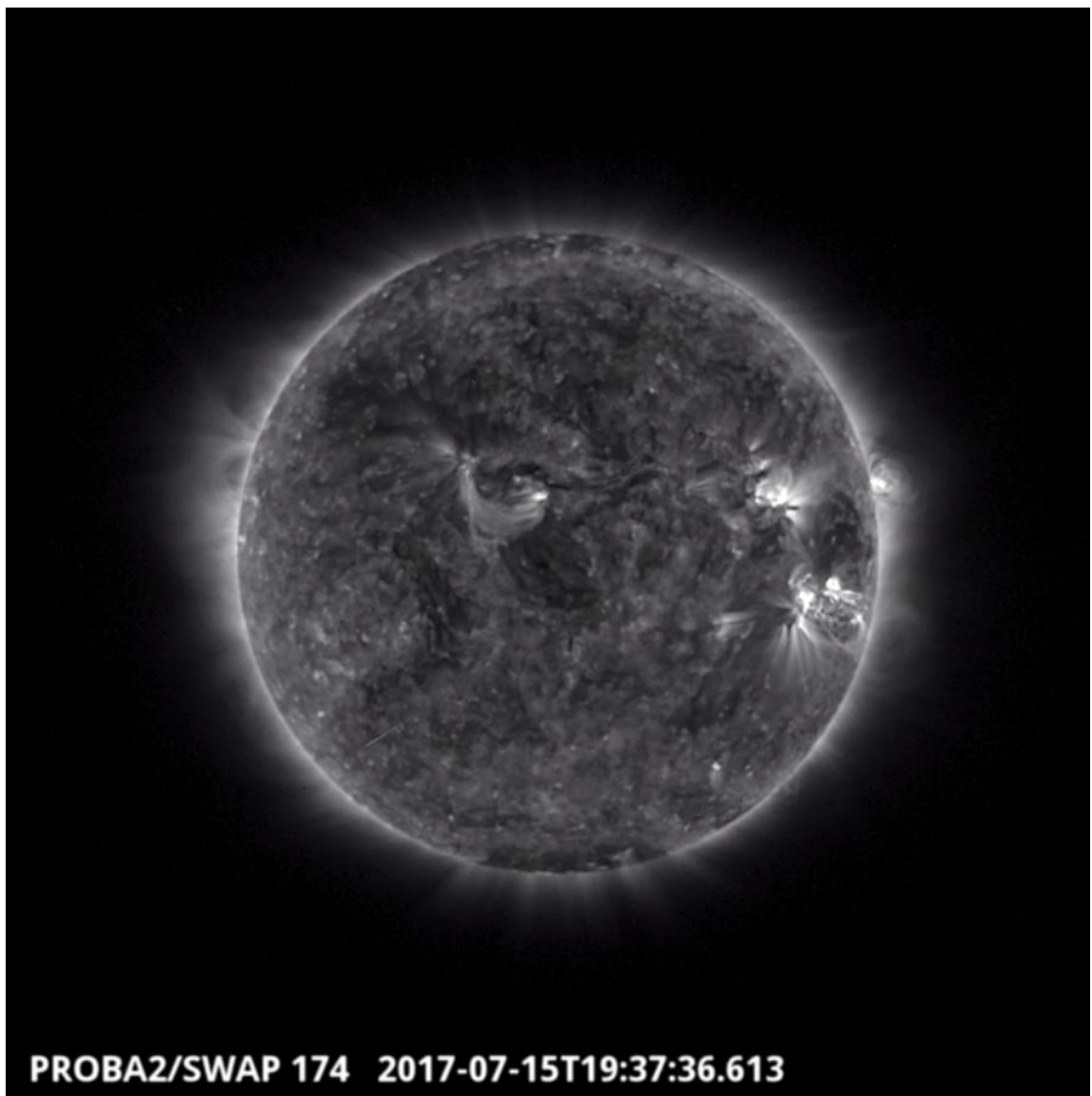
Friday Jul 14



A long duration M-class flare (M2.4) was observed by SWAP on 2017-Jul-14. The flaring region (NOAA AR 2655) with bright coronal loops can be seen in the western hemisphere of the Sun at 03:17 UT in the SWAP image above.

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

Saturday Jul 15



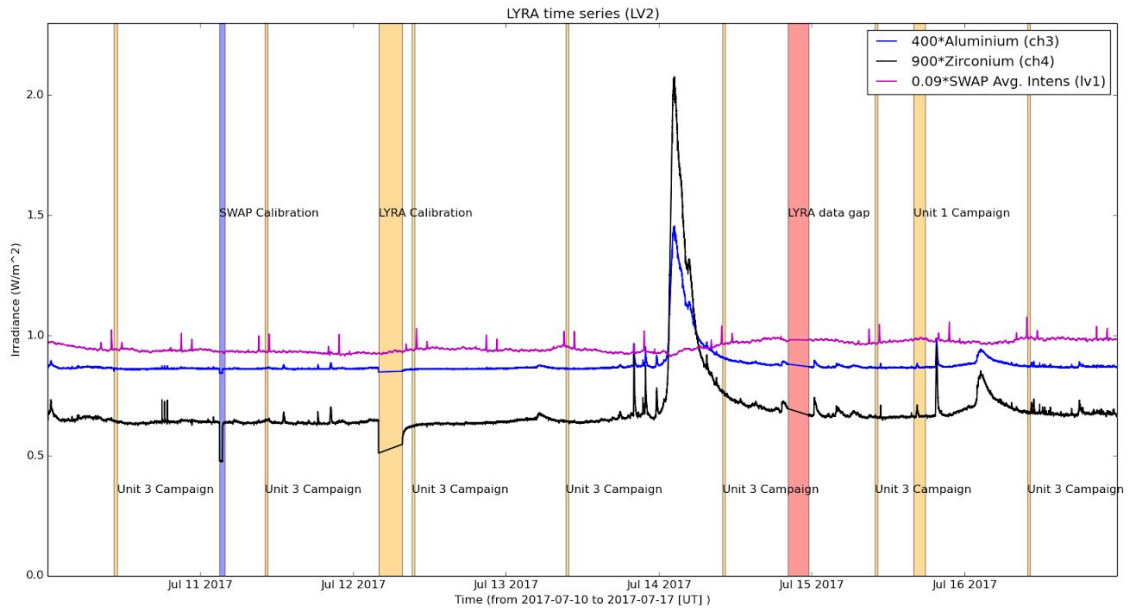
The same active region (NOAA AR 2655) continued to produce lower level flaring activity, including a C5.8 flare at 19:37 UT on 2017-Jul-15 shown in the SWAP image above.

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:

- Bi-weekly calibration, 2017-Jul-11

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

- Daily unit 3 campaign, 2017-Jul-10
- Daily unit 3 campaign, 2017-Jul-11
- Bi-weekly calibration, 2017-Jul-12
- Daily unit 3 campaign, 2017-Jul-12
- Daily unit 3 campaign, 2017-Jul-13
- Daily unit 3 campaign, 2017-Jul-14
- Daily unit 3 campaign, 2017-Jul-15
- Monthly unit 1 campaign, 2017-Jul-15
- Daily unit 3 campaign, 2017-Jul-16

The red shaded periods related to other issues corresponds to:

- LYRA data gap due to poor signal because of an antenna problem at Svalbard, 2017-Jul-14

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 10 Jul	Tuesday 11 Jul	Wednesday 12 Jul	Thursday 13 Jul	Friday 14 Jul	Saturday 15 Jul	Sunday 16 Jul
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 + Monthly U1	Nominal acquisition + daily U3
LYIOS00628	LYIOS00628	LYIOS00628	LYIOS00628	LYIOS00629	LYIOS00629	LYIOS00629

The following science campaigns were performed by LYRA:

- daily U3 observations campaign

On 2017-Jul-12

- Bi-weekly calibration

On 2017-Jul-15

- Monthly U1 campaign

LYRA detector temperature

LYRA detector 2 temperature globally varied between 46.33 and 49.16 °C.

3. SWAP instrument status

Calibration

Calibration campaign on Tuesday this week.

MCPM errors

The number of MCPM recoverable errors increased from 10655 to 10759.

The number of MCPM unrecoverable errors remained at 0.

IOS & operations

Monday 10 Jul	Tuesday 11 Jul	Wednesday 12 Jul	Thursday 13 Jul	Friday 14 Jul	Saturday 15 Jul	Sunday 16 Jul
Nominal acquisition	Nominal acquisition + calibration	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition
IOS00709 664 images	IOS00709 712 images	IOS00709 691 images	IOS00709 689 images	IOS00709 699 images	IOS00709 702 images	IOS00709 678 images

Special operations for SWAP, this week:

2017-Jul-11

- Bi-weekly calibration

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -1.61 and -0.33 °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 24558 to 24623) was nominal, except for:

- 24605.

Data coverage HK

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

- 24605 received but with large data gap between 20:30:07 and 23:35:07 due to poor signal.

Data coverage SWAP

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

- None.

Total number of images between 2017 Jul 10 00:00 UT and 2017 Jul 17 00:00 UT: 4904

Highest cadence in this period: 30 seconds

Average cadence in this period: 123.32 seconds

Number of image gaps larger than 300 seconds: 110

Largest data gap: 9.17 minutes

Data coverage LYRA

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

- 24605 not received because of poor signal due to an antenna problem at Svalbard, resulting in data gap between 20:15:42 and 23:31:56.

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)