


P2SC-ROB-WR-403 - 20171211 Weekly report #403	P2SC Weekly report	
Period covered: Date: Written by: Approved by:	Mon Dec 11 to Sun Dec 17, 2017 20 Dec 2017 Laurence Wauters Matthew West	Royal Observatory of Belgium - PROBA2 Science Center
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1. Science

Solar & Space weather events

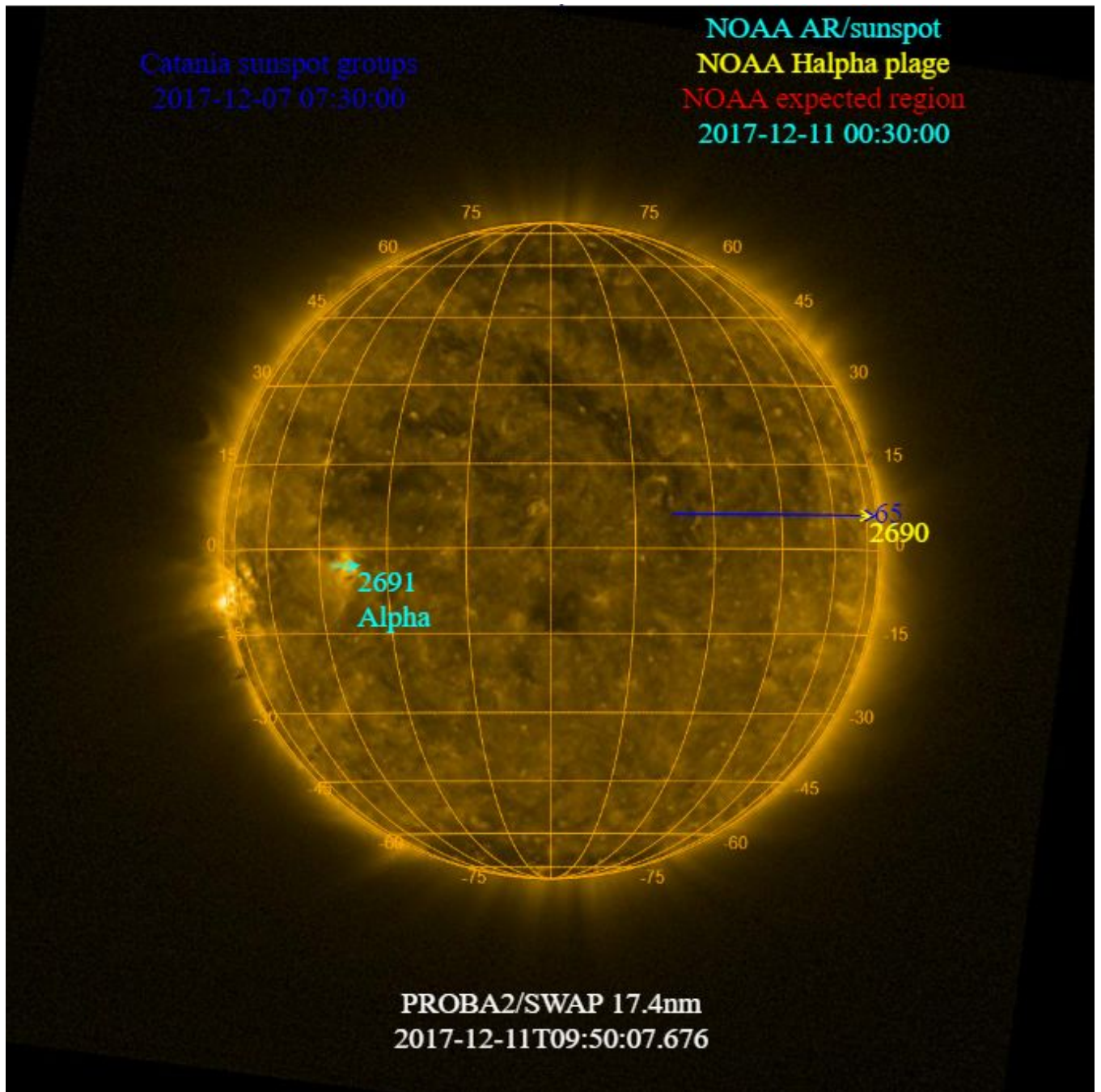
The level of solar activity¹ was **very low** this week.

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

	Monday 11 Dec	Tuesday 12 Dec	Wednesday 13 Dec	Thursday 14 Dec	Friday 15 Dec	Saturday 16 Dec	Sunday 17 Dec
Activity	very low	very low	very low	very low	very low	very low	very low
Flares	-	-	-	-	-	-	-

¹ See appendix. All timings are given in UT.

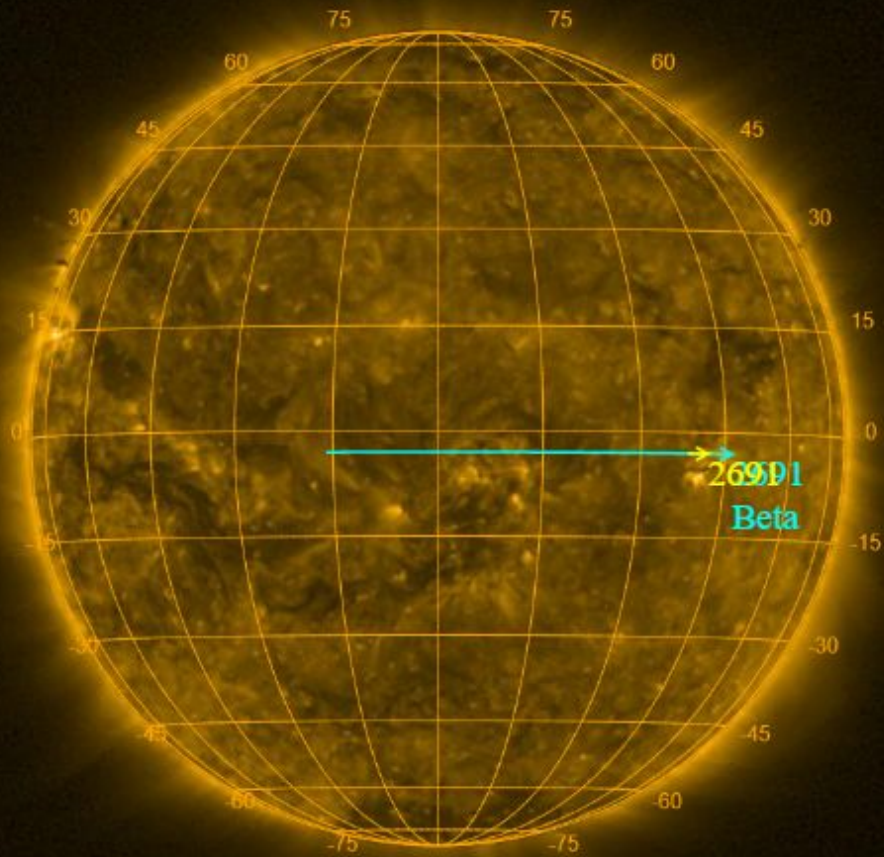
The SWAP images of Dec 11 and Dec 17 are shown below, with annotated active regions.



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

Catania sunspot groups
No observation

NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2017-12-13 00:30:00



PROBA2/SWAP 17.4nm
2017-12-17T06:18:01.643

Solar Activity

Solar flare activity was **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>

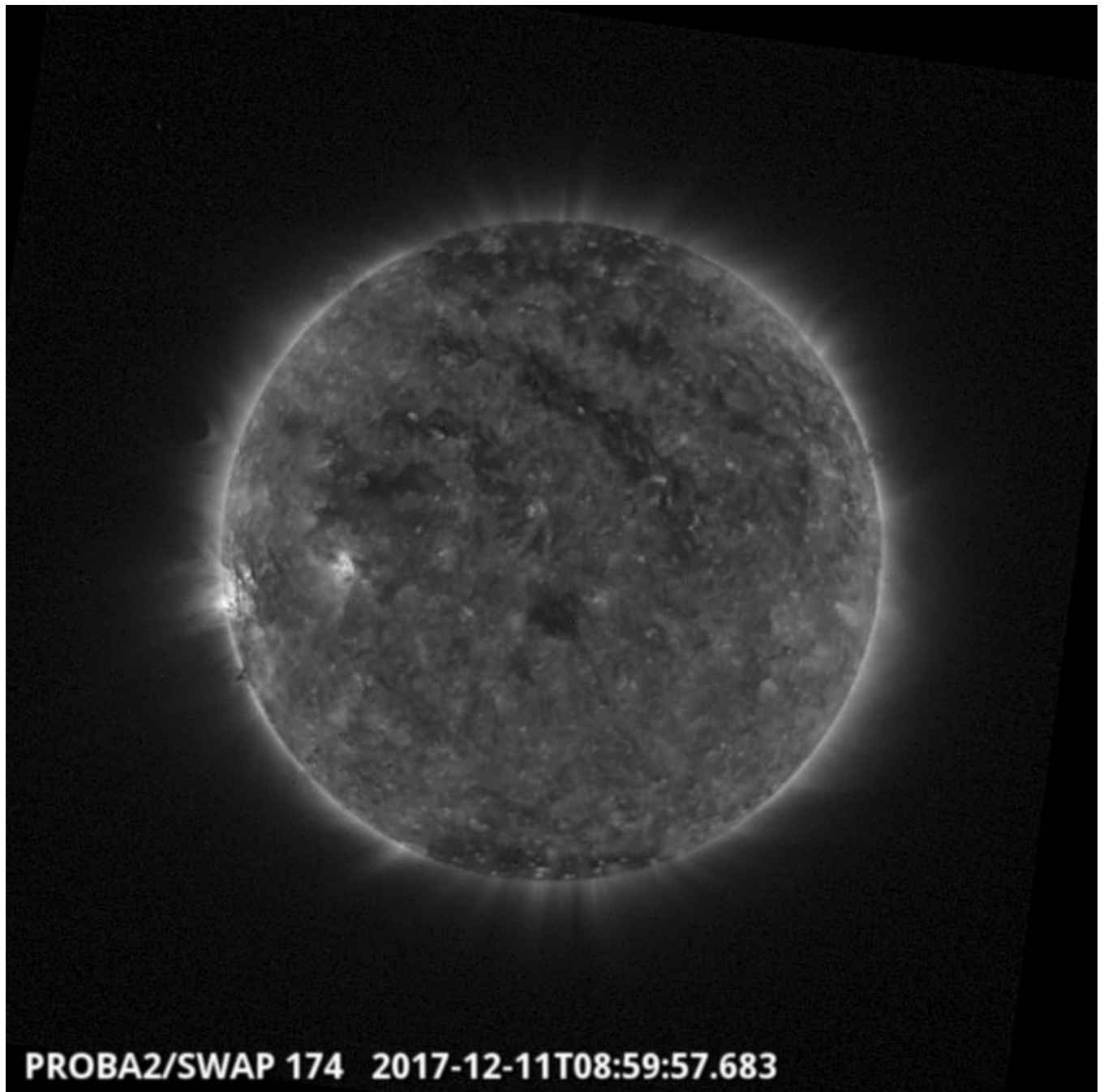
This page also lists the recorded flaring events.

A weekly overview movie can be found [here](#) (SWAP week 403).

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](#)

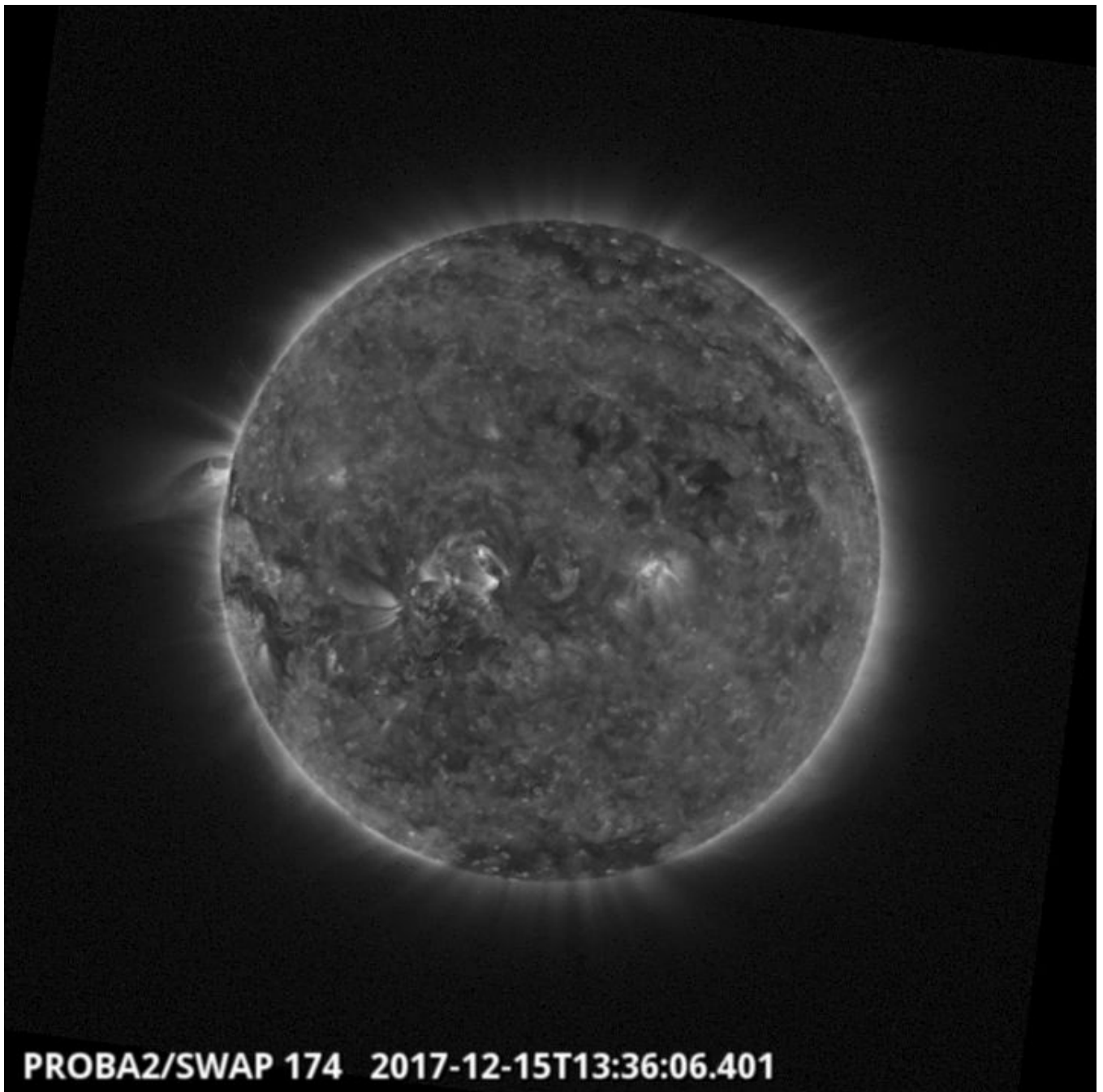
Monday Dec 11



There have been two significant coronal holes visible on the solar disk throughout the week. A large positive Northern polar coronal hole and a small centrally (latitude) located hole, these are visible in the SWAP image above.

The weekly movie showing the hole can be seen [here](#) (SWAP movie)

Friday Dec 15



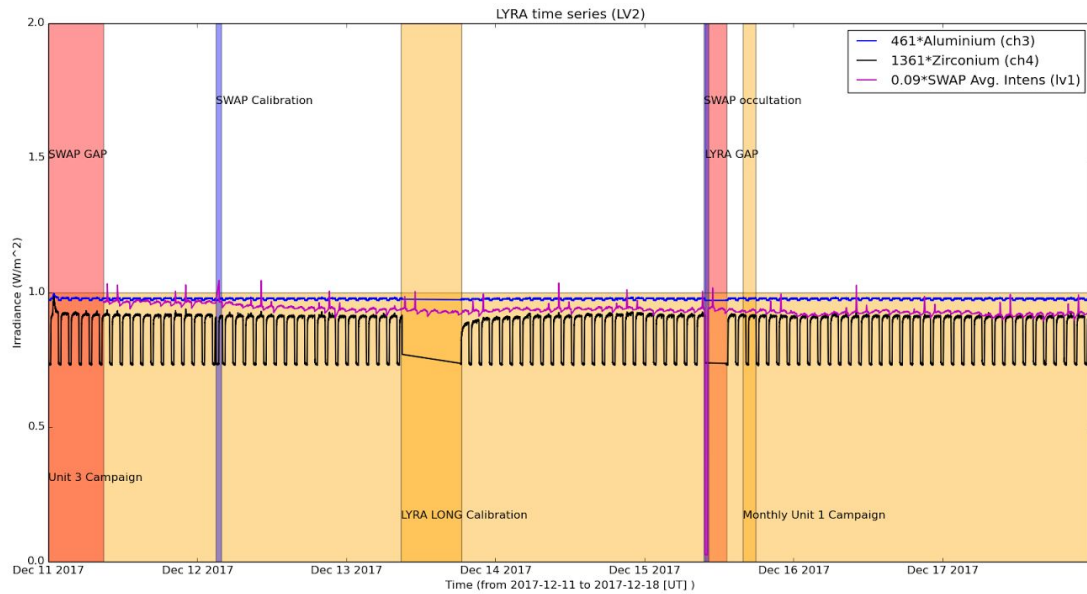
A filament erupted on 2017-12-15 around 12:00 UT from S25E40, a CME related to this event was recorded in coronagraph industry.

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

- Bi-weekly calibration, 2017-Dec-12
- Parallel occultation campaign with LYRA, 2017-Dec-15

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

- Continuous Unit 3 campaign, from 2017-Dec 11 to 2017-Dec-17
- Long calibration, 2017-Dec-13
- Monthly Unit 1 campaign, 2017-Dec-15

The red shaded periods related to other issues corresponds to:

- LYRA gap for pass 26047, 2017-Dec-15 (BINLYRA_26047_SVA1_2017.12.15T13.40.22.tar has been extracted two times by REDU but cannot be processed by LYTMR)
- SWAP Gap for passes 26004, 26005, 26006, 26007, 2017-12-11 from 00:00UT until 8:54. The SWAP images have not being processed on board after reboot.

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>).

SWAP observations were presented at AGU, New orleans, USA on Friday, 15 December 2017 11:05 - 11:20 in the presentation: Post-Flare Giant Arches - Unanswered Questions

Guest Investigator Program

- None

2. LYRA instrument status

Calibration

Calibration campaign on Wednesday this week.

IOS & operations

Monday 11 Dec	Tuesday 12 Dec	Wednesday 13 Dec	Thursday 14 Dec	Friday 15 Dec	Saturday 16 Dec	Sunday 17 Dec
Nominal acquisition + U3	Nominal acquisition + U3	Nominal acquisition + U3 + Long calibration	Nominal acquisition + U3	Nominal acquisition + U3+Monthly Unit 1 Campaign	Nominal acquisition + U3	Nominal acquisition + U3
LYIOS00663	LYIOS00663	LYIOS00663	LYIOS00663	LYIOS00663	LYIOS00664	LYIOS00664

The following science campaigns were performed by LYRA:

From 2017-Dec-11 onwards:

- Continuous U3 observation campaign for occultation season

On 2017-Dec-13

- Long calibration campaign

On 2017-Dec-15

- Monthly Unit 1 Campaign

LYRA detector temperature

LYRA detector 2 temperature globally varied between 38.85 and 44.12 °C.

3. SWAP instrument status

Calibration

Calibration campaign on Tuesday this week.

MCPM errors

The number of MCPM recoverable errors increased from 0 to 149.

The number of MCPM unrecoverable errors remained at 0.

IOS & operations

Monday 11 Dec	Tuesday 12 Dec	Wednesday 13 Dec	Thursday 14 Dec	Friday 15 Dec	Saturday 16 Dec	Sunday 17 Dec
Nominal acquisition	Nominal acquisition + calibration	Nominal acquisition	Nominal acquisition	Nominal acquisition+ parallel occultation	Nominal acquisition	Nominal acquisition
IOS00737,7440 525 images	IOS00740 793 images	IOS00741 777 images	IOS00741 788 images	IOS00741 820 images	IOS00741 626 images	IOS00742 764 images

Special operations for SWAP, this week:

On 2017-Dec-12

- Bi-weekly calibration campaign

On 2017-Dec-15

- SWAP and LYRA parallel occultation campaign

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -5.45 and -2.65 °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 26004 to 26070) was nominal, except for:

- 26004, 26005, 26006, 26007 no passes due to SWAP images not being processed on board after reboot.
- 26008 (raw images were download on request)
- 26047 LYRA tar file cannot be processed at ROB

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:

- 26004, 26005, 26006, 26007 no passes due to images not being processed on board after reboot. (2017-12-11)
- 26008 (raw images were download on request)

Total number of images between 2017 Dec 11 00:00 UT and 2017 Dec 18 00:00 UT: 5106

Highest cadence in this period: 0 seconds

Average cadence in this period: 112.19 seconds

Number of image gaps larger than 300 seconds: 103

Largest data gap: 34.15 minutes

Data coverage LYRA

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

- None
- BINLYRA_26047_SVA1_2017.12.15T13.40.22.tar has been extracted two times by REDU but cannot be processed by LYTMR

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)