


P2SC-ROB-WR-447 - 20181015 Weekly report #447	P2SC Weekly report	
Period covered: Date: Written by: Approved by:	Mon Oct 15 to Sun Oct 21, 2018 23 Oct 2018 Laurence Wauters Matthew West	Royal Observatory of Belgium - PROBA2 Science Center
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1. Science

Solar & Space weather events

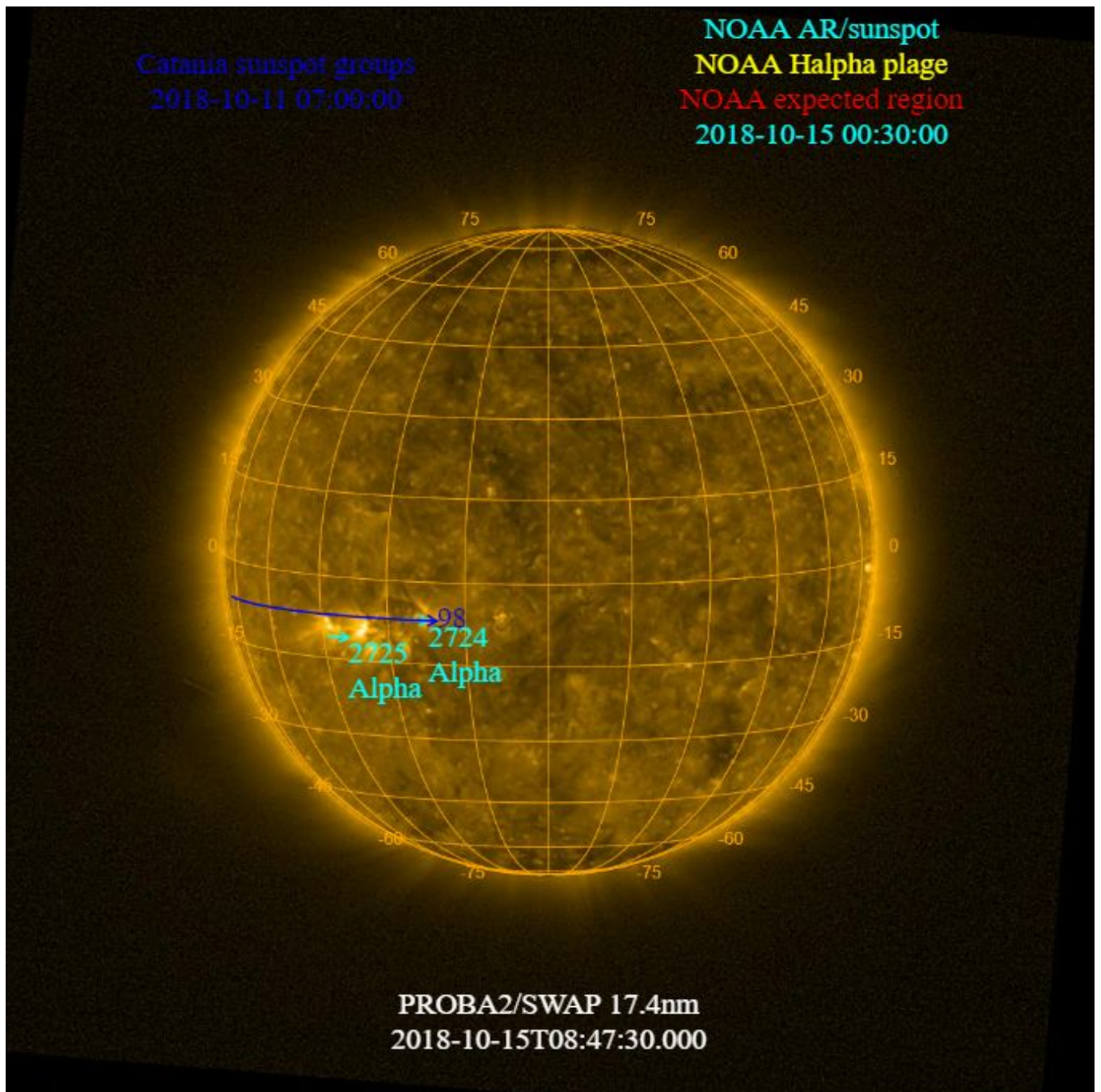
The level of solar activity¹ was **very low** this week.

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

	Monday 15 Oct	Tuesday 16 Oct	Wednesday 17 Oct	Thursday 18 Oct	Friday 19 Oct	Saturday 20 Oct	Sunday 21 Oct
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.

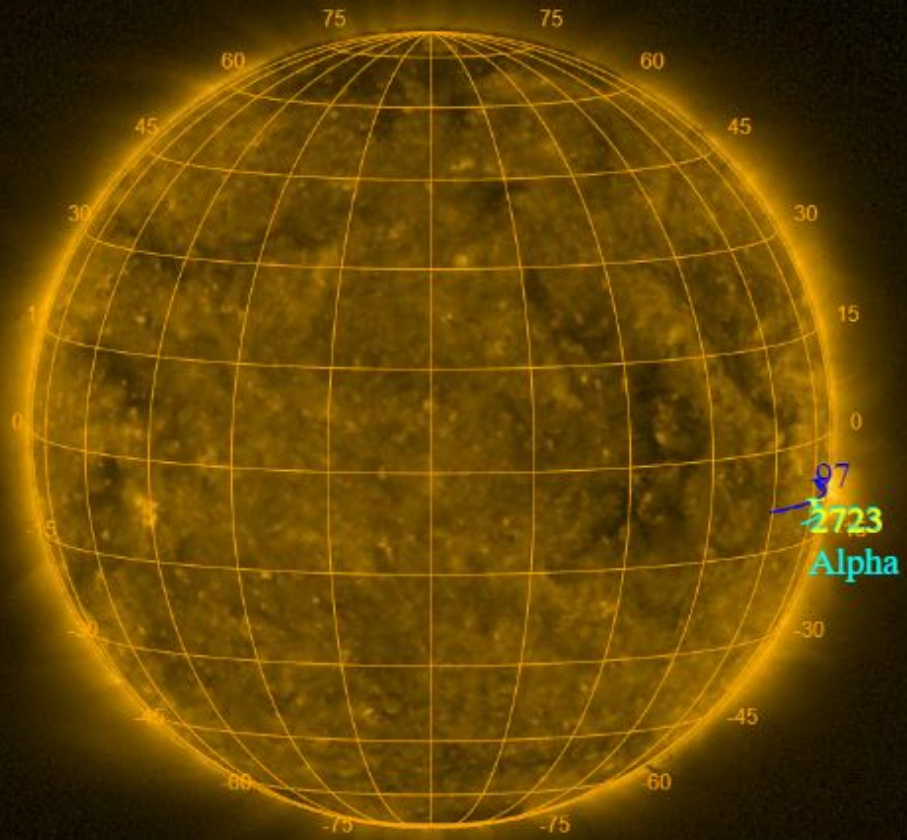
The SWAP images of Oct 15 and Oct 21 are shown below, with annotated active regions.



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

Catania sunspot groups
2018-10-04 06:36:00

NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2018-10-05 00:30:00



PROBA2/SWAP 17.4nm
2018-10-07T07:46:08.465

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>

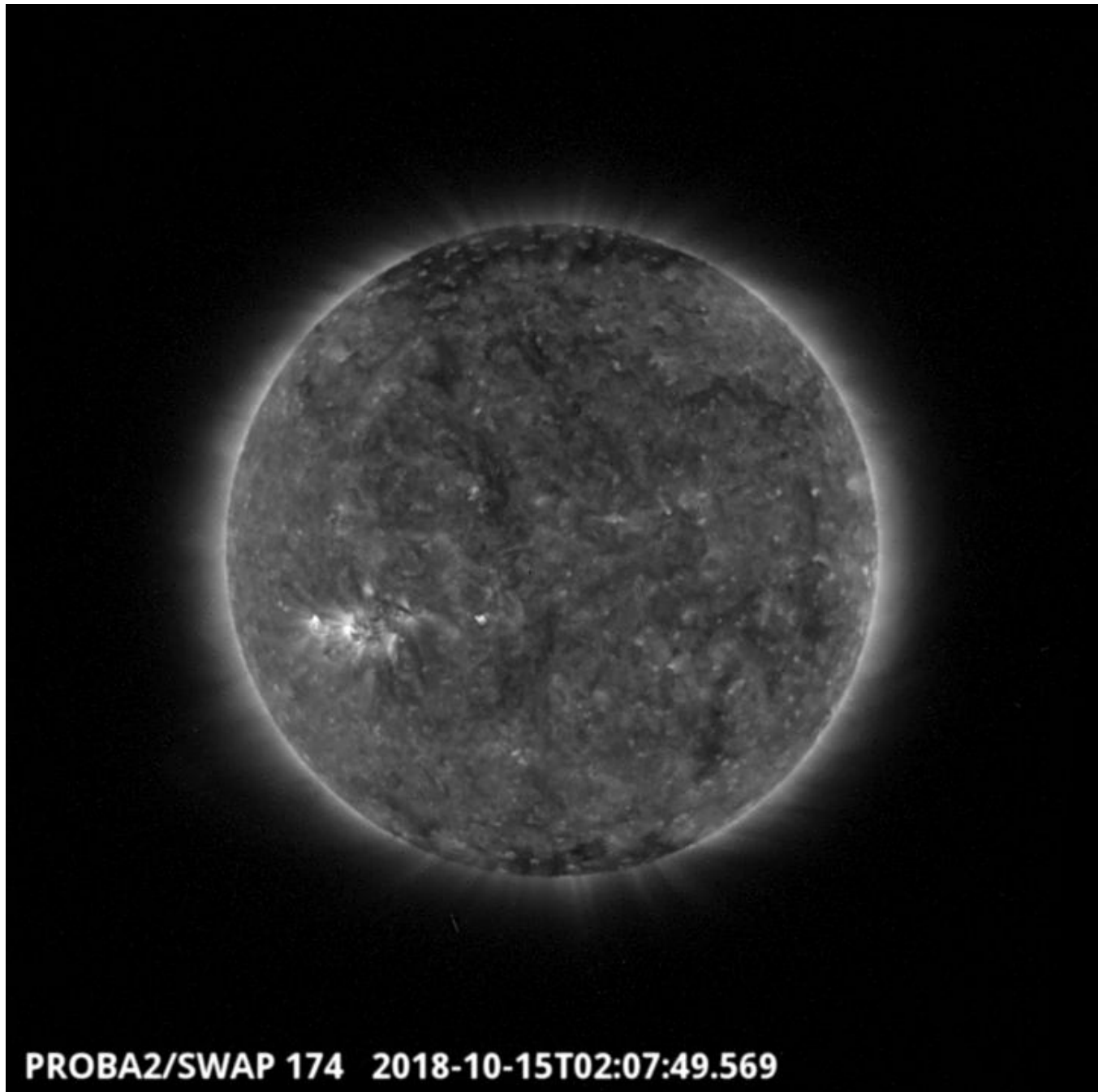
This page also lists the recorded flaring events.

A weekly overview movie can be found [here](#) (SWAP week 447).

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](#)

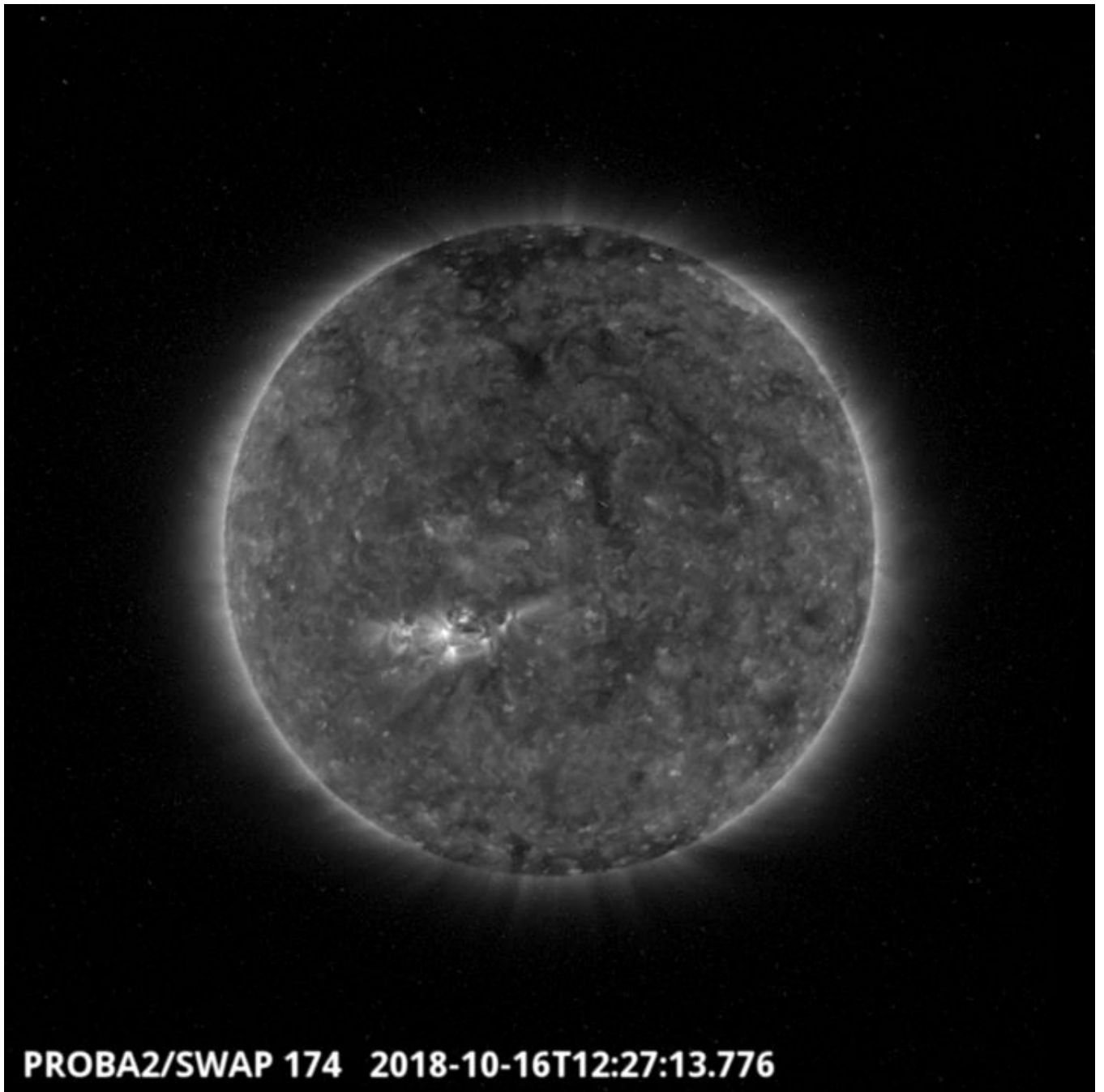
Monday Oct 15



There were two active regions present on the disk at the beginning of the week, both are visible to the South-east of the solar disk in SWAP image above, from 2018-Oct-15. Both Active Regions were quiet and didn't produce any flares.

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

Tuesday Oct 16



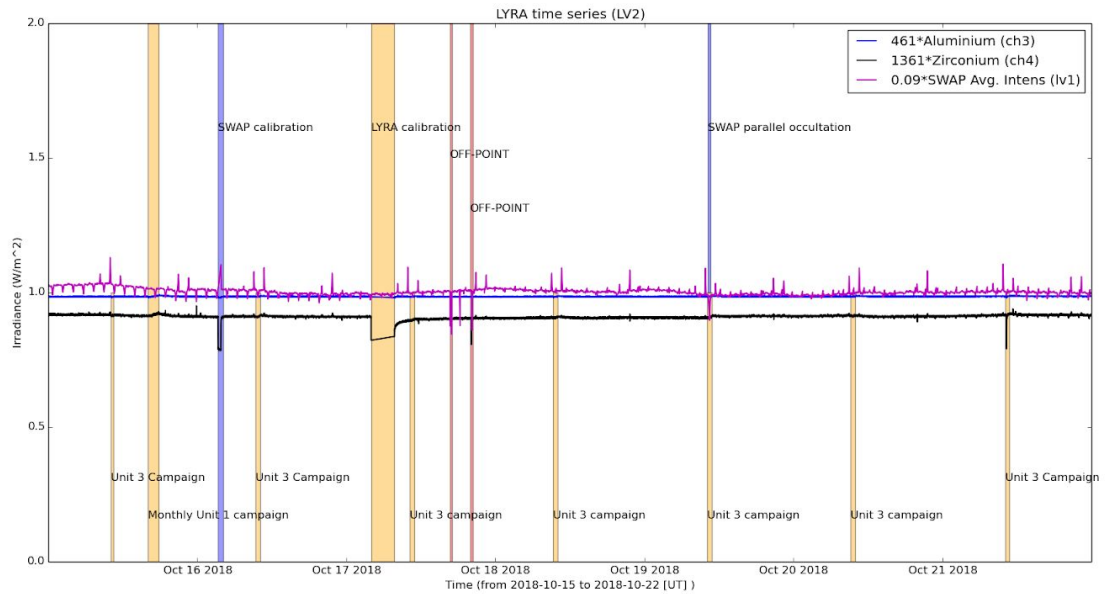
A low latitudinal extension of the northern polar coronal hole traversed the central meridian on 2018-Oct-16.

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, 2018-Oct-16

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

- Daily Unit 3 Campaign, 2018-Oct-15
- Monthly Unit 1 Campaign, 2018-Oct-15
- Daily Unit 3 Campaign, 2018-Oct-16
- Bi-weekly calibration, 2018-Oct-17
- Daily Unit 3 Campaign, 2018-Oct-17
- Daily Unit 3 Campaign, 2018-Oct-18
- Daily Unit 3 Campaign, 2018-Oct-19
- Daily Unit 3 Campaign, 2018-Oct-20
- Daily Unit 3 Campaign, 2018-Oct-21

The red shaded periods related to other issues corresponds to:

- Unscheduled off-point of 0.35 deg, 2018-Oct-17 between 16:39:45 and 17:01:00
- Unscheduled off-point, 2018-Oct-17 between 19:57:45 and 20:20:45 (6.35 deg at 20:08:45).

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>).

On the 2018-Oct-17, Alexandros Koukras gave the seminar: "A Data Driven Analysis of Energy Deposition in Solar Active Regions".

Guest Investigator Program

- Erika Palmerio, from Helsinki (Fi), visited the P2SC between 14th and the 28th October, she works on "Earth-impacting coronal mass ejections erupting from the solar limb".
- Farid Goryaev, from Lebedev (Russia), visited the P2SC between 17th and the 28th October.

2. LYRA instrument status

Calibration

Calibration campaign on Wednesday this week.

IOS & operations

Monday 15 Oct	Tuesday 16 Oct	Wednesday 17 Oct	Thursday 18 Oct	Friday 19 Oct	Saturday 20 Oct	Sunday 21 Oct
Nominal acquisition + daily U3+ Monthly Unit 1 campaign	Nominal acquisition + daily U3	Nominal acquisition + daily U3 + calibration	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3
LYIOS00730	LYIOS00730	LYIOS00730	LYIOS00730	LYIOS00730	LYIOS00731	LYIOS00731

The following science campaigns were performed by LYRA:

- daily U3 observations campaign
- Monthly unit 1 campaign, 2018-Oct-15
- Bi-weekly calibration, 2018-Oct-17

LYRA detector temperature

LYRA detector 2 temperature globally varied between 49.95 and 53.27 °C.

3. SWAP instrument status

Calibration

Calibration campaign on Tuesday this week.

MCPM errors

The number of MCPM recoverable errors increased from 976 to 1163.

The number of MCPM unrecoverable errors remained at 0.

IOS & operations

Monday 15 Oct	Tuesday 16 Oct	Wednesday 17 Oct	Thursday 18 Oct	Friday 19 Oct	Saturday 20 Oct	Sunday 21 Oct
Nominal acquisition	Nominal acquisition + calibration	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition
IOS00791 608 images	IOS00791 734 images	IOS00791 654 images	IOS00791 717 images	IOS00792 729 images	IOS00792 669 images	IOS00792 663 images

Special operations for SWAP, this week:

- Bi-weekly calibration campaign, 2018-Oct-16

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between 1.51 and 2.79 °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 28898 to 28964) 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.
- Similar to previous years, around the 21st of October, pointing errors are observed due to periods of star tracker camera 2 invalidity (altitude control stop).

Off-points were observed on the 17th of October

between 16:39:45 and 17:01:00 with an off-pointing of 0.35 deg

around 17:10 with an off-pointing of 0.23 deg

between 19:57:45 and 20:20:45 with an off-pointing of 6.35 deg at 20:08:45.

Total number of images between 2018 Oct 15 0UT and 2018 Oct 22 0UT: 4822

Highest cadence in this period: 29 seconds

Average cadence in this period: 125.42 seconds

Number of image gaps larger than 300 seconds: 131

Largest data gap: 18.38 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)