P2SC-ROB-WR-430 - 20180618 Weekly report #430	**P2SC Weekly report**	
Period covered: Date: Written by: Approved by:	Mon Jun 18 to Sun Jun 24, 2018 27 Jun 2018 Laurence Wauters Matthew West	Royal Observatory of Belgium - PROBA2 Science Center
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1. Science

Solar & Space weather events

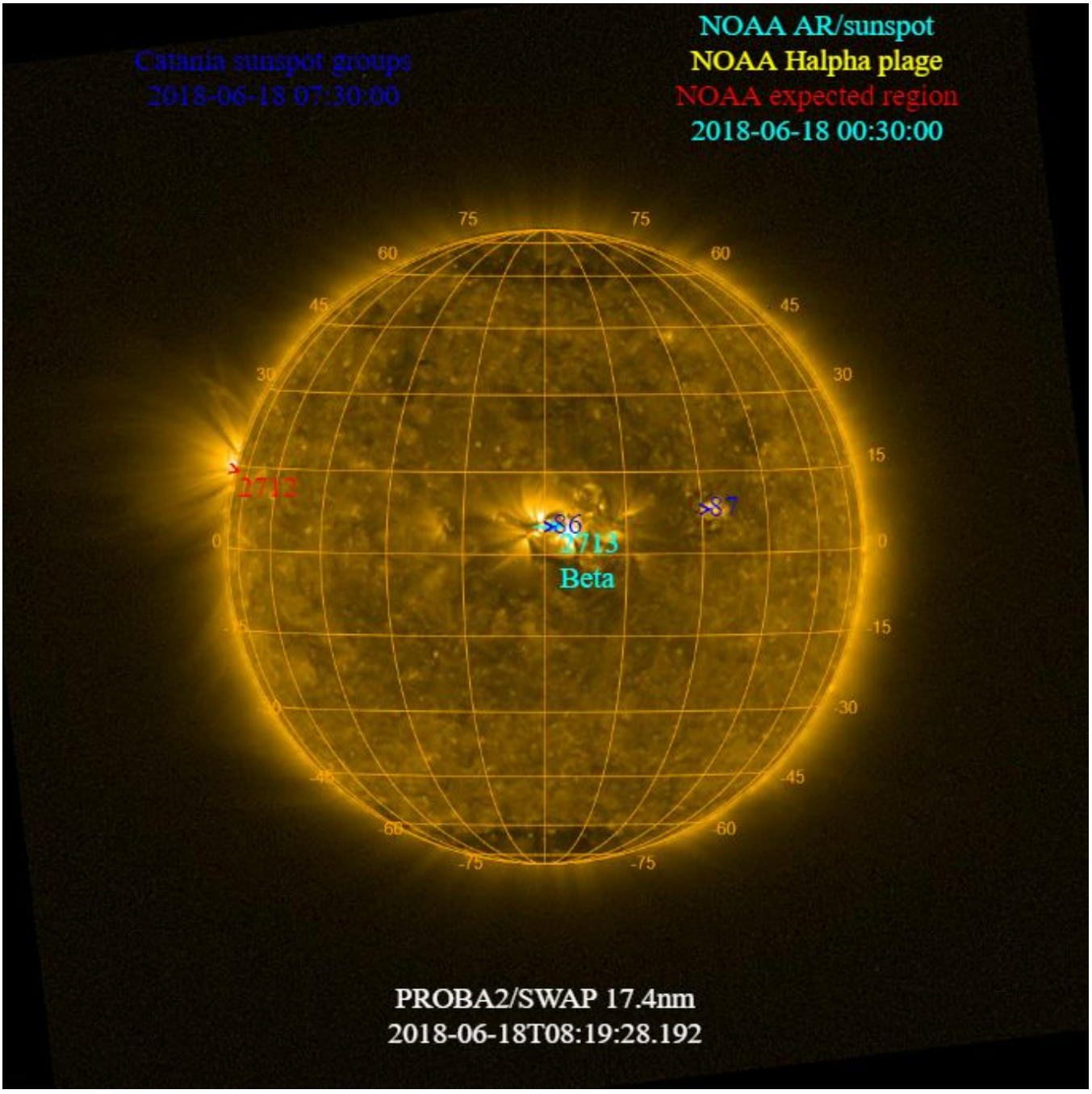
The level of solar activity[1] fluctuated between **very low and low** this week.

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

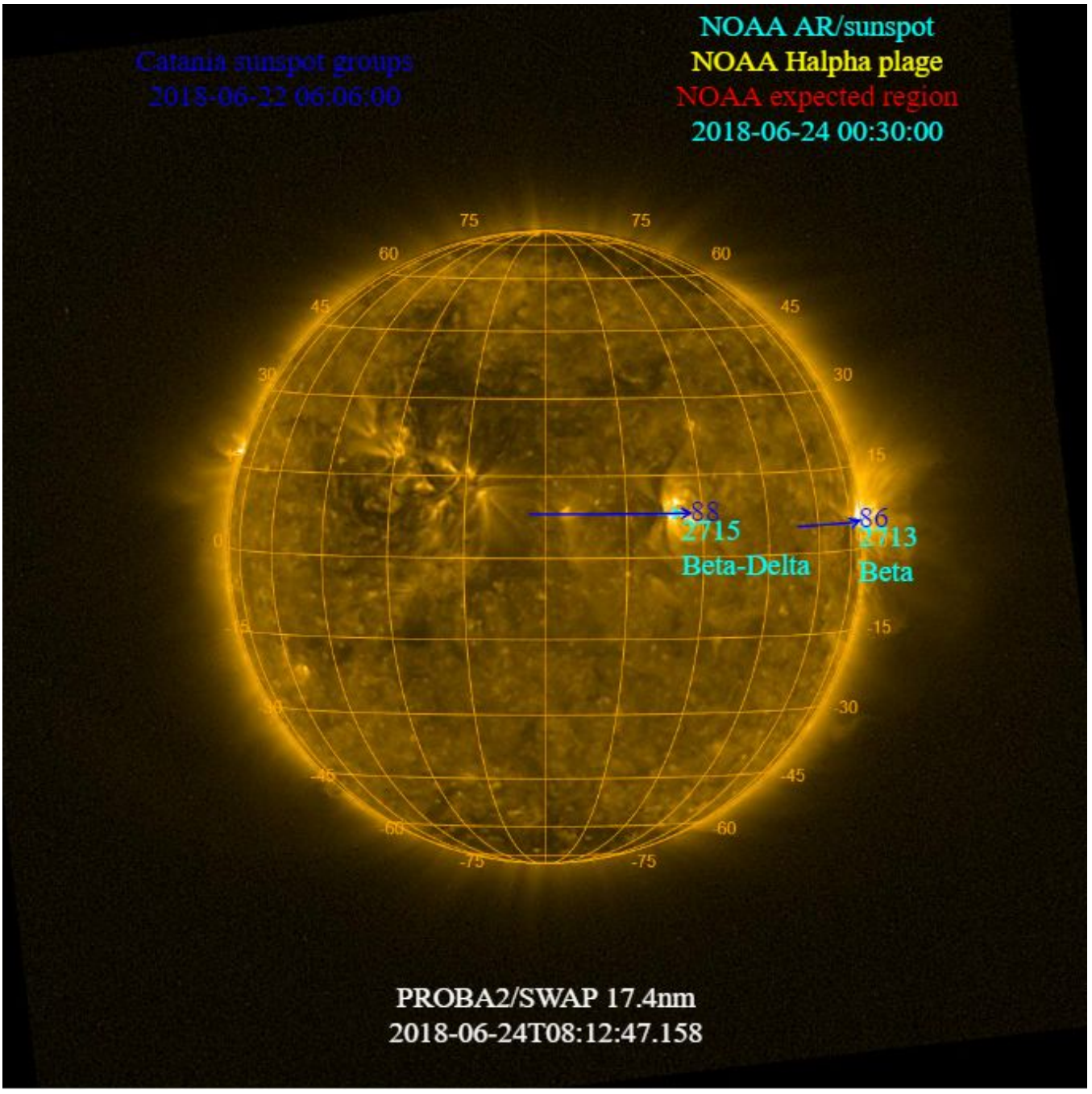
	Monday 18 Jun	Tuesday 19 Jun	Wednesday 20 Jun	Thursday 21 Jun	Friday 22 Jun	Saturday 23 Jun	Sunday 24 Jun
Activity	very low	very low	very low	low	very low	very low	very low
Flares	-	-	-	-	-	-	-

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

The SWAP images of Jun 18 and Jun 24 are shown below, with annotated active regions.



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


Catania sunspot groups
2018-06-22 06:06:00
NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2018-06-24 00:30:00
88
2715
Beta-Delta
86
2713
Beta
PROBA2/SWAP 17.4nm
2018-06-24T08:12:47.158

Solar Activity

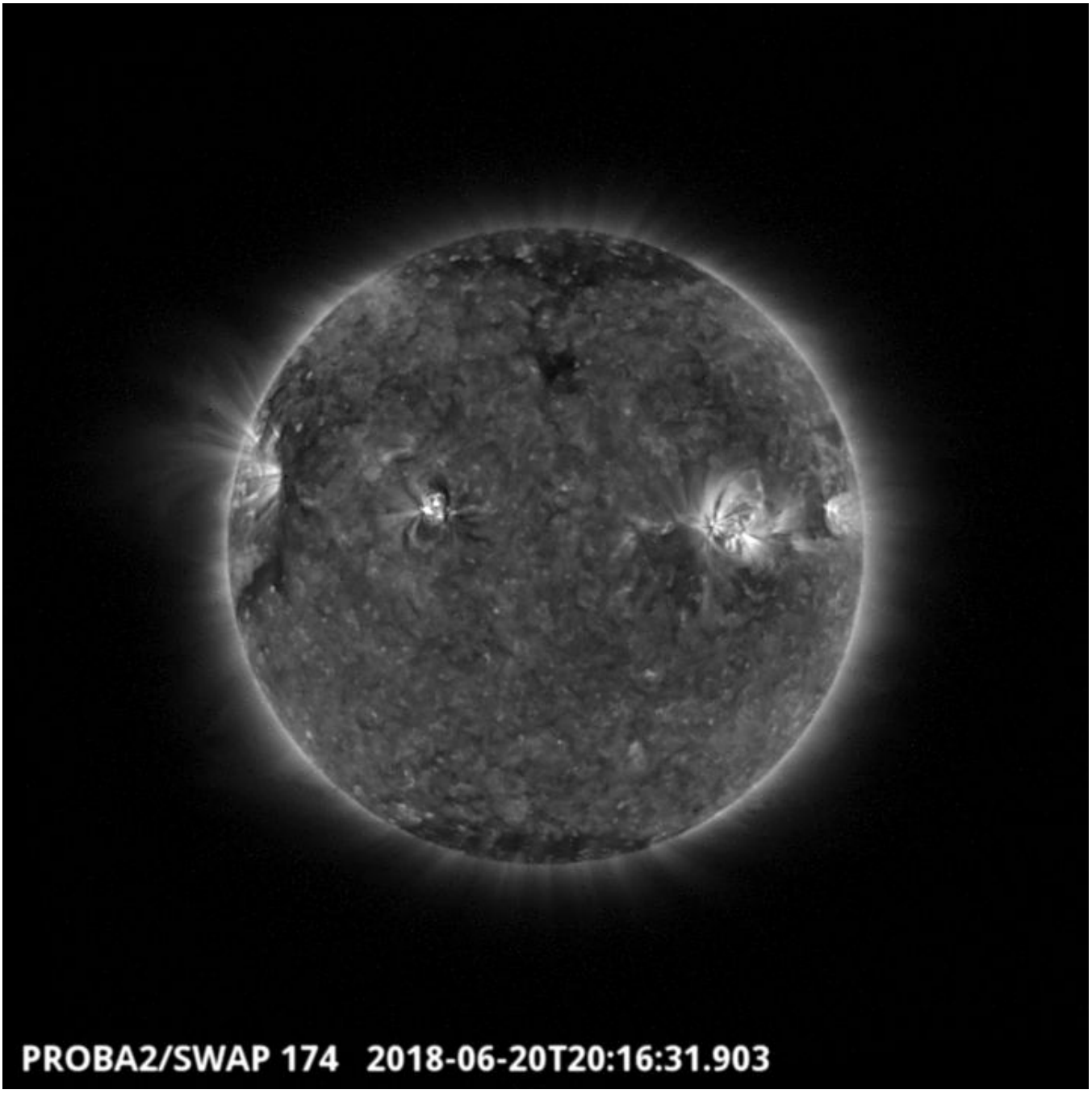
Solar flare activity fluctuated between very low and low during the week.
In order to view the activity of this week in more detail, we suggest to go to the following website from which all the daily (normal and difference) movies can be accessed: http://proba2.oma.be/ssa
This page also lists the recorded flaring events.

A weekly overview movie can be found here (SWAP week 430).

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

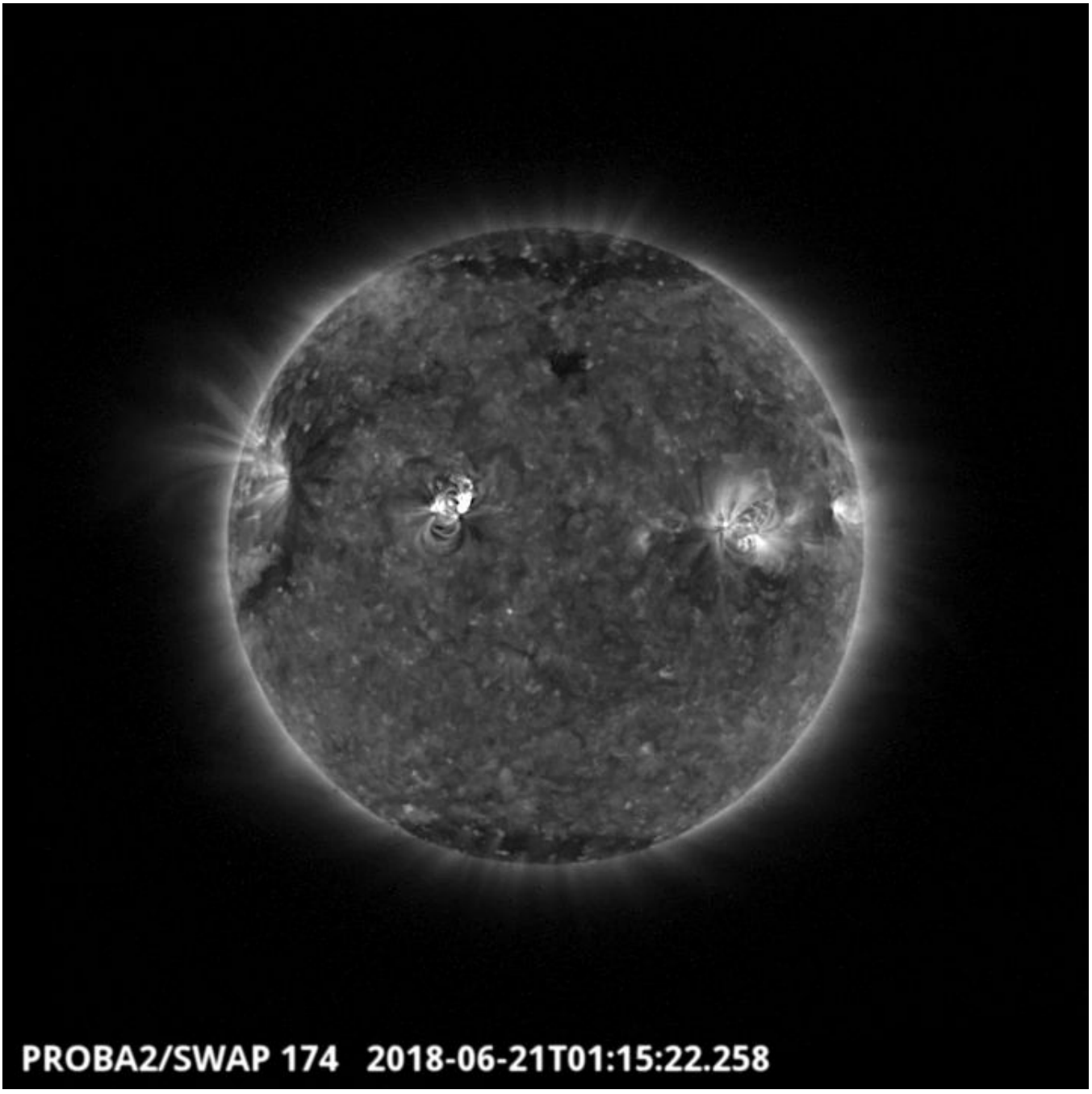
If any of the linked movies are unavailable they can be found in the P2SC movie repository here

Wednesday Jun 20



The SWAP image above shows an elongated coronal hole in the north which transited the central meridian on 2018-Jun-20. Find a movie of the event here (SWAP movie)

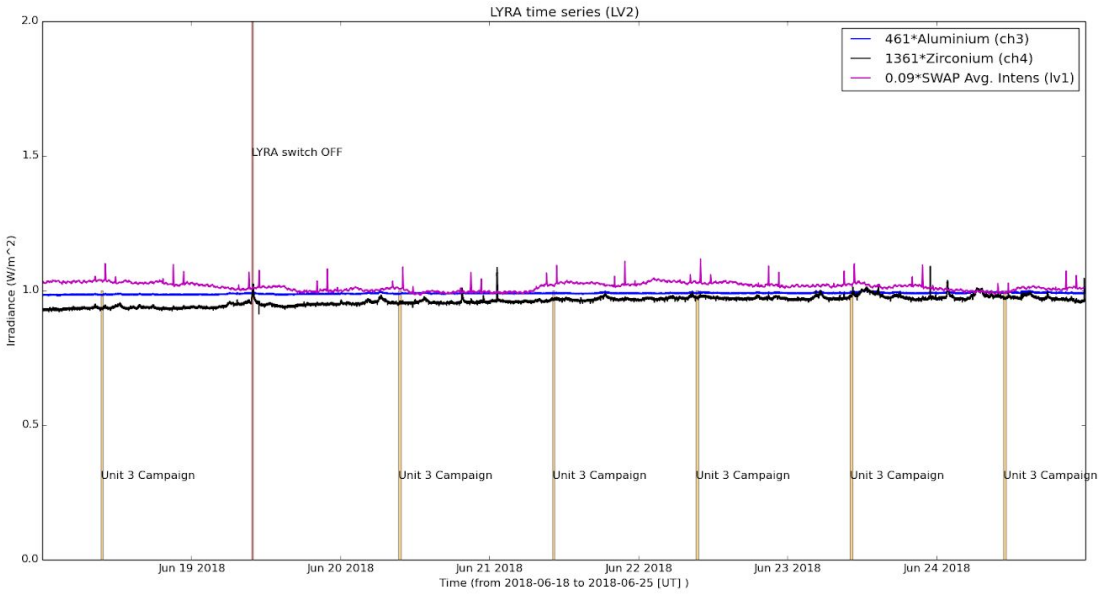
Thursday Jun 21



The largest flare of the week was a C2.1 class flare associated with the NOAA region 2715. The flare is visible on the North-East part of the SWAP image above at 01:17 UT on 2018-Jun-21.
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:

- None

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

- Daily Unit 3 campaign, 2018-Jun-18
- Daily Unit 3 campaign, 2018-Jun-20
- Daily Unit 3 campaign, 2018-Jun-21
- Daily Unit 3 campaign, 2018-Jun-22
- Daily Unit 3 campaign, 2018-Jun-23
- Daily Unit 3 campaign, 2018-Jun-24

The red shaded periods related to other issues corresponds to:

- LYRA was switched off on 2018-Jun-19 at 09:40 UT due to star trackers test and warm-up ten minutes later.

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

- D. Ryan visited the P2SC, working with LYRA to study the relationship between Hard X-ray and Ly-alpha Emission in Coronal Energy Release Events.
- E. Thiemans visited the P2SC, working with LYRA to comparing the response of the thermospheres of Earth and Mars to solar forcing with contemporaneous solar EUV occultations.

2. LYRA instrument status

Calibration

No Calibration campaign on this week.

IOS & operations

Monday 18 Jun	Tuesday 19 Jun	Wednesday 20 Jun	Thursday 21 Jun	Friday 22 Jun	Saturday 23 Jun	Sunday 24 Jun
Nominal acquisition + daily U3 LYIOS00708 ->LYIOS00709	Nominal acquisition +LYRA SWITCH OFF/ON LYIOS00709	Nominal acquisition + daily U3 LYIOS00709 ->LYIOS00710	Nominal acquisition + daily U3 LYIOS00710	Nominal acquisition + daily U3 LYIOS00710	Nominal acquisition + daily U3 LYIOS00711	Nominal acquisition + daily U3 LYIOS00711

The following science campaigns were performed by LYRA:

- daily U3 observations campaigns

LYRA detector temperature

LYRA detector 2 temperature globally varied between 46.75 and 49.01 °C.

3. SWAP instrument status

Calibration

No Calibration campaign on this week.

MCPM errors

The number of MCPM recoverable errors increased from 392 to 493.

The number of MCPM unrecoverable errors remained at 0.

IOS & operations

Monday 18 Jun	Tuesday 19 Jun	Wednesday 20 Jun	Thursday 21 Jun	Friday 22 Jun	Saturday 23 Jun	Sunday 24 Jun
Nominal acquisition IOS00776 776 images	Nominal acquisition IOS00776 698 images	Nominal acquisition IOS00776 685 images	Nominal acquisition IOS00776 699 images	Nominal acquisition IOS00776 692 images	Nominal acquisition IOS00777 690 images	Nominal acquisition IOS00777 581 images

Special operations for SWAP, this week:

- None

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -1.21 and 0.07 °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 27776 to 27842) was nominal, except for:

- 27843 (The KSAT scheduler did not execute this pass, data received in the next pass)

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:

- 27843 (The KSAT scheduler did not execute this pass, the data was lost)

Total number of images between 2018 Jun 18 00:00 UT and 2018 Jun 25 00:00 UT: 4826
Highest cadence in this period: 110 seconds
Average cadence in this period: 125.14 seconds
Number of image gaps larger than 300 seconds: 123
Largest data gap: 9.17 minutes

Data coverage LYRA

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

- 27843. LYRA data of pass 27843 has been re-dumped with pass 27846.

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)