


P2SC-ROB-WR-359 - 20170206 Weekly report #359	P2SC Weekly report	
Period covered: Date: Written by: Approved by:	Mon Feb 06 to Sun Feb 12, 2017 14 Feb 2017 Laurence Wauters Matthew West	Royal Observatory of Belgium - PROBA2 Science Center
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1. Science

Solar & Space weather events

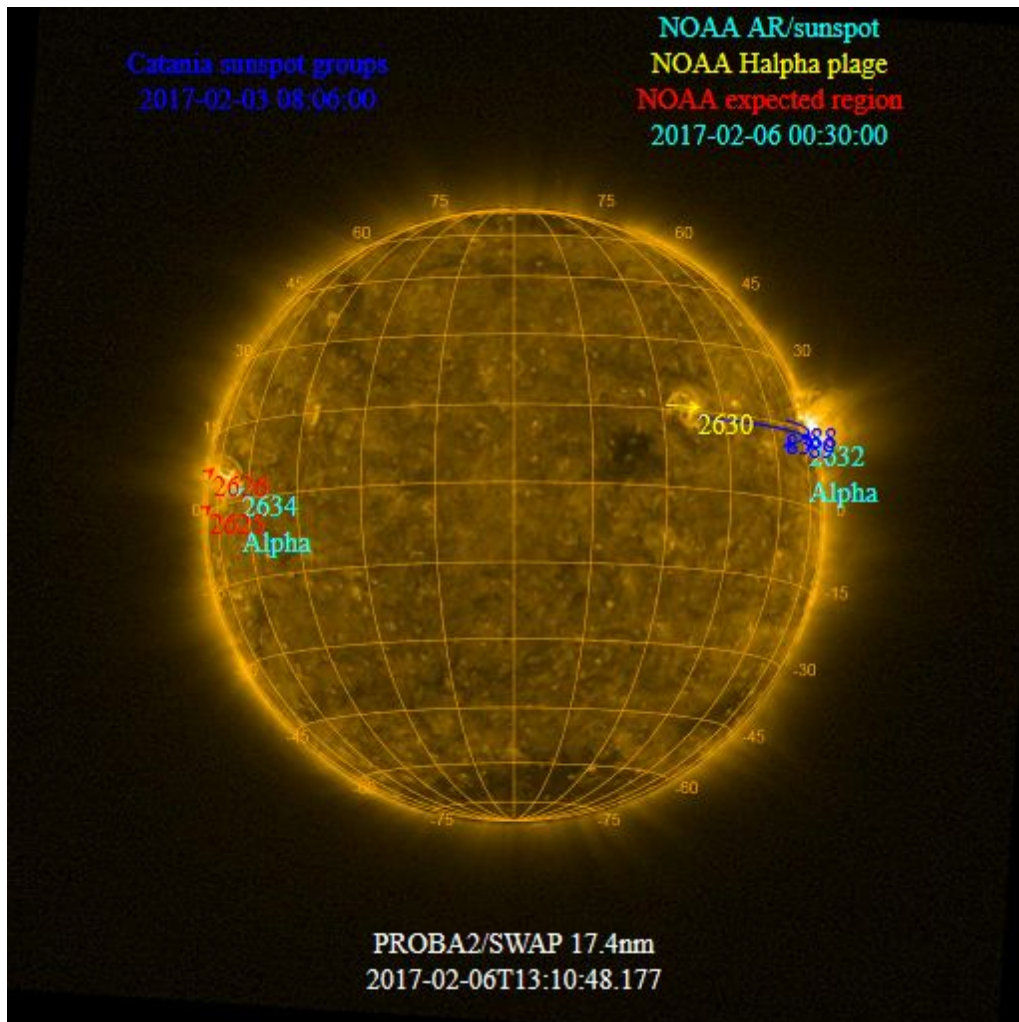
The level of solar activity¹ fluctuated between **very low and low** this week.

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

	Monday 06 Feb	Tuesday 07 Feb	Wednesday 08 Feb	Thursday 09 Feb	Friday 10 Feb	Saturday 11 Feb	Sunday 12 Feb
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 Feb 06 and Feb 12 are shown below, with annotated active regions.

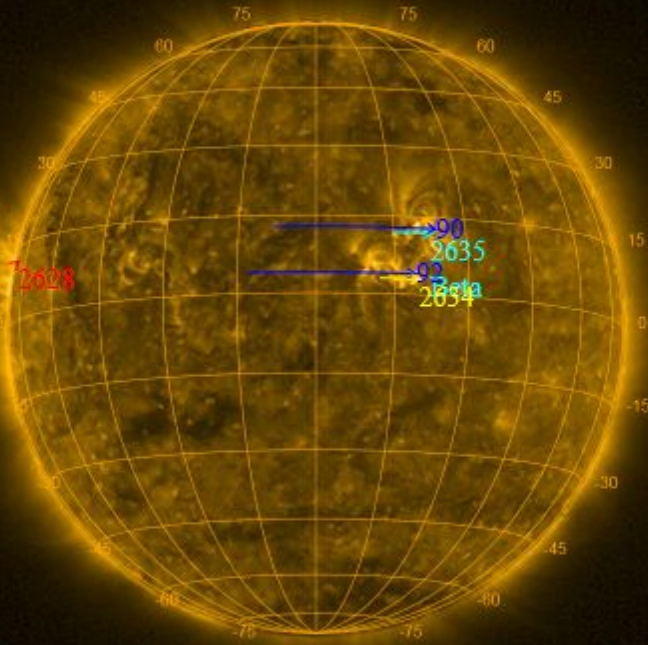


<http://sidc.be/soteria/soteria.php>

Go back 1 day

Catania sunspot groups
2017-02-10 08:48:00

NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2017-02-12 00:30:00



PROBA2/SWAP 17.4nm
2017-02-12T13:12:17.459

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>

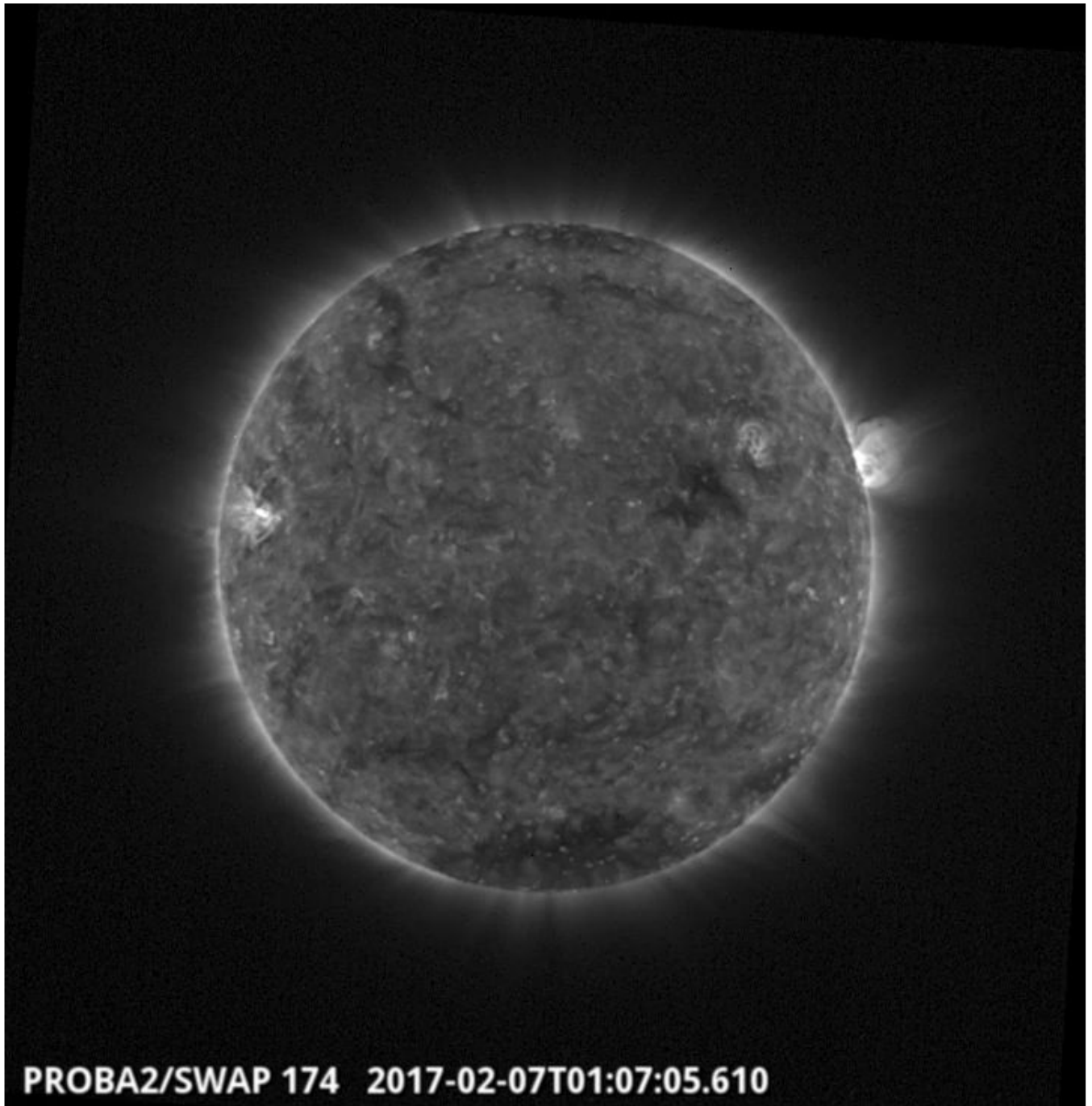
This page also lists the recorded flaring events.

A weekly overview movie can be found [here](#) (SWAP week 359).

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](#)

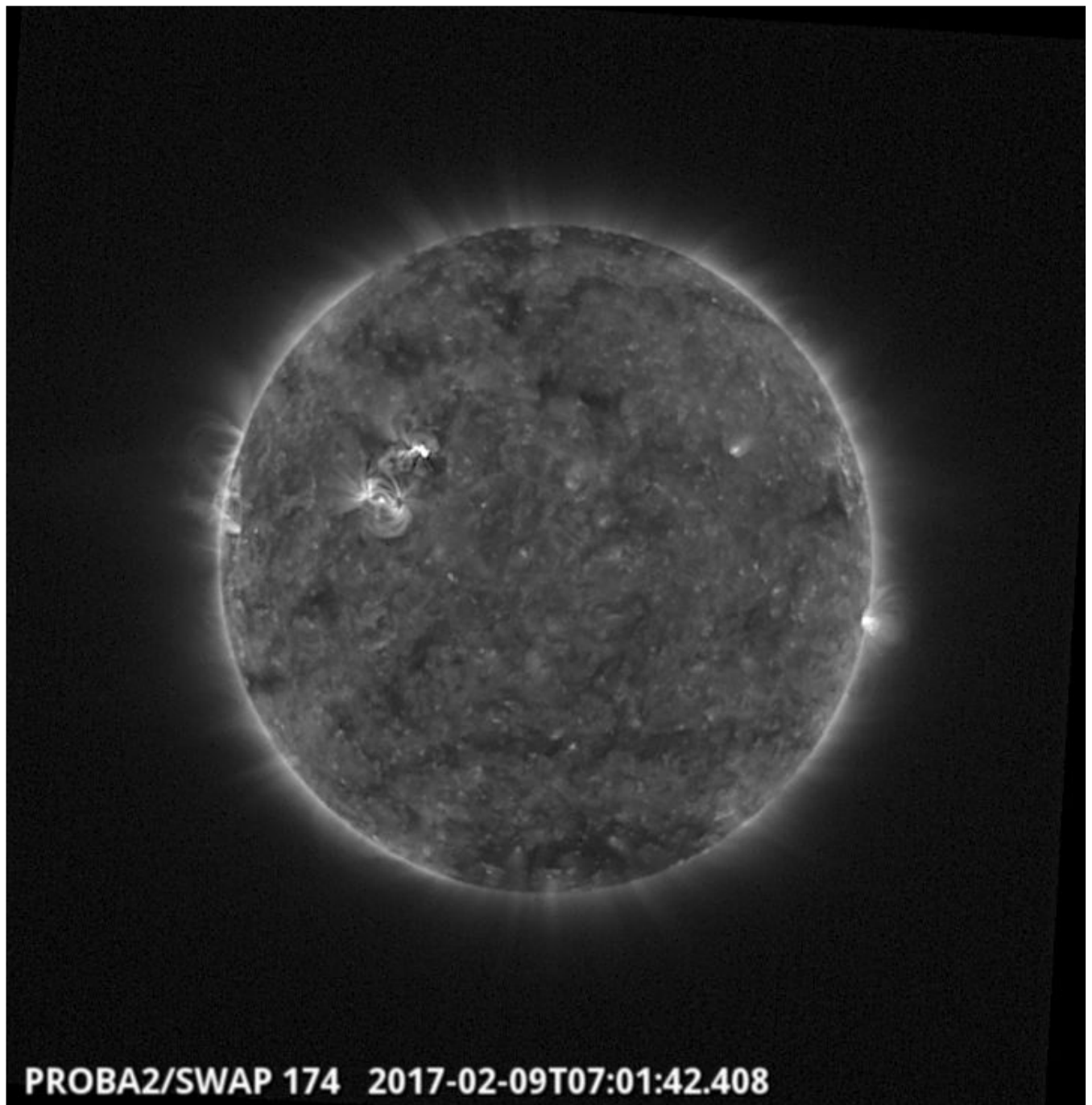
Tuesday Feb 07



A Southern coronal hole, which produced enhanced geomagnetic conditions at the Earth was seen on the the solar disk at the beginning of the week, this can be seen in the above SWAP image in the Western hemisphere.

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

Thursday Feb 09



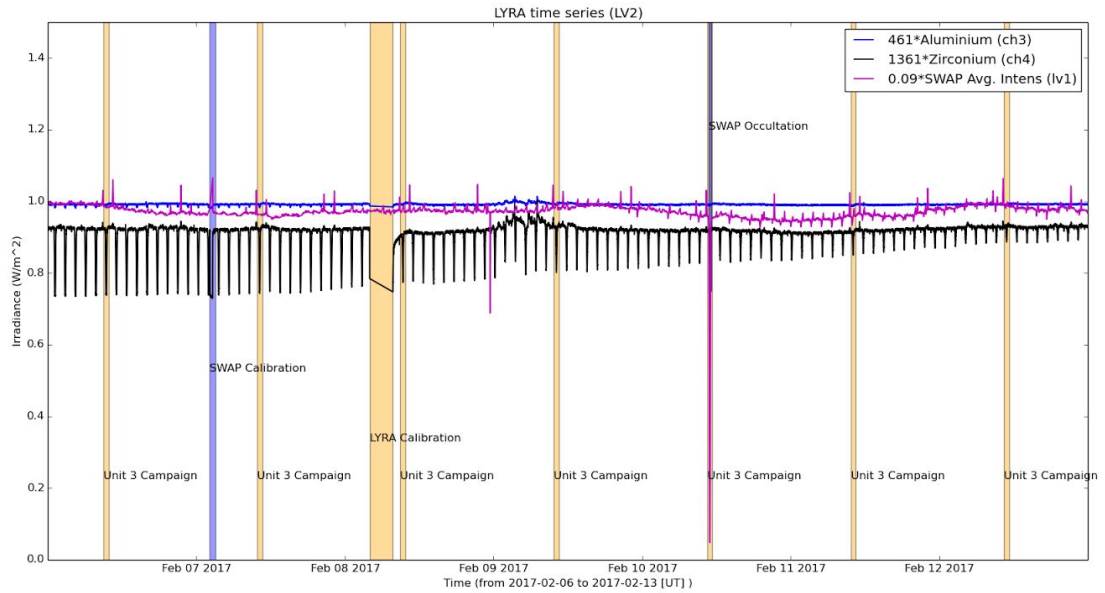
AR 2635 produced eleven B-flares and three C-class flares on 2017-Feb-09 (the largest one was a C1.3). This active region is visible above in the North-East part of the Sun flaring at 07:02 UT when it produced a C1.1 class flare.

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 correspond to, from left to right:

- SWAP calibration, Feb 07
- SWAP occultation campaign, Feb 10

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

- Daily unit 3 campaign, 2017-Feb 06
- Daily unit 3 campaign, 2017-Feb 07
- LYRA bi-weekly Calibration, 2017-Feb-08
- Daily unit 3 campaign, 2017-Feb-08
- Daily unit 3 campaign, 2017-Feb-09
- Daily unit 3 campaign, 2017-Feb-10
- Daily unit 3 campaign, 2017-Feb-11
- Daily unit 3 campaign, 2017-Feb-12

The red shaded period corresponds to:

- None

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>).

Schanche et al. 2016, published a paper entitled: "The blob connection: Searching for low coronal signatures of solar post-CME blobs". Following coronal mass ejections or other eruptions on the Sun, it's postulated that the magnetic field trailing the eruption collapses in on itself due to magnetic pressures, this can result in a magnetic null point trailing the CME. Magnetic null points, although invisible, can be tracked through the ejection of material from the null point. This material has previously been interpreted as blobs of material that are seen to travel from the null point, along the current sheet trailing the eruption, into the lower corona. The authors use PROBA2 SWAP and SDO AIA observations to try and track these blobs in the lower corona, but fail in both EUV imagers. This null result has led the authors to question the previously estimated properties of the blobs, suggesting that they form higher in the solar atmosphere, or do not coalesce as we would expect and / or have lower densities than previously anticipated.

Guest Investigator Program

- None

2. LYRA instrument status

Calibration

Calibration campaign on Wednesday this week.

IOS & operations

Monday 06 Feb	Tuesday 07 Feb	Wednesday 08 Feb	Thursday 09 Feb	Friday 10 Feb	Saturday 11 Feb	Sunday 12 Feb
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	Nominal acquisition + daily U3
LYIOS00599	LYIOS00599	LYIOS00599	LYIOS00599	LYIOS00600	LYIOS00600	LYIOS00600

The following science campaigns were performed by LYRA:

- Daily U3 observations campaign

On 2017-Feb-08

- LYRA bi-weekly calibration, 2017-Feb-08

LYRA detector temperature

LYRA detector 2 temperature globally varied between 51.67 and 54.48 °C.

3. SWAP instrument status

Calibration

Calibration campaign on Tuesday this week.

MCPM errors

The number of MCPM recoverable errors increased from 6021 and 6254 .

The number of MCPM unrecoverable errors remained at 0.

IOS & operations

Monday 06 Feb	Tuesday 07 Feb	Wednesday 08 Feb	Thursday 09 Feb	Friday 10 Feb	Saturday 11 Feb	Sunday 12 Feb
Nominal acquisition	Nominal acquisition+ Calibration	Nominal acquisition	Nominal acquisition	Nominal acquisition+ Occultation	Nominal acquisition	Nominal acquisition
IOS00685 749 images	IOS00686 691 images	IOS00686 780 images	IOS00686 717 images	IOS00687 746 images	IOS00687 671 images	IOS00687 650 images

Special operations for SWAP, this week:

- SWAP calibration, 2017-Feb-07
- SWAP occultation campaign, 2017-Feb-10

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between 2.23 and 4.31 °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 23118 to 23184) 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.

Total number of images between 2017 Feb 06 0UT and 2017 Feb 13 0UT: 5004

Highest cadence in this period: 29 seconds

Average cadence in this period: 120.84 seconds

Number of image gaps larger than 300 seconds: 122

Largest data gap: 27.68 minutes

Data coverage LYRA

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

- None
- On Feb 12, two files of the BINLYRA.tar for pass 23177 were corrupted.

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)