P2SC-ROB-WR-437 - 20180806 Weekly report #437	**P2SC Weekly report**	
Period covered: Date: Written by: Approved by:	Mon Aug 06 to Sun Aug 12, 2018 13 Aug 2018 Jennifer O'Hara Matthew West	Royal Observatory of Belgium - PROBA2 Science Center
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1. Science

Solar & Space weather events

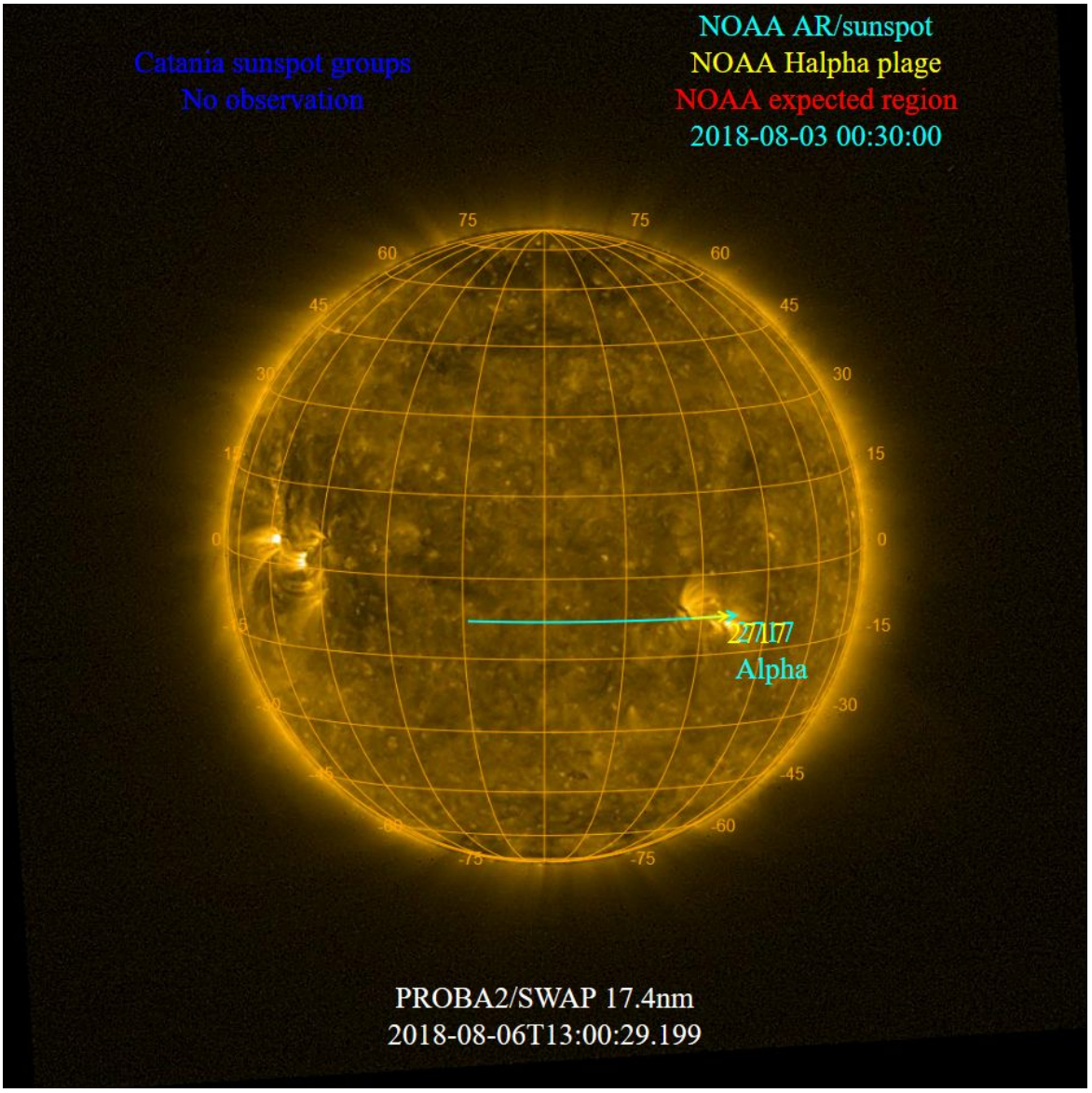
The level of solar activity[1] remained **very low** this week.

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

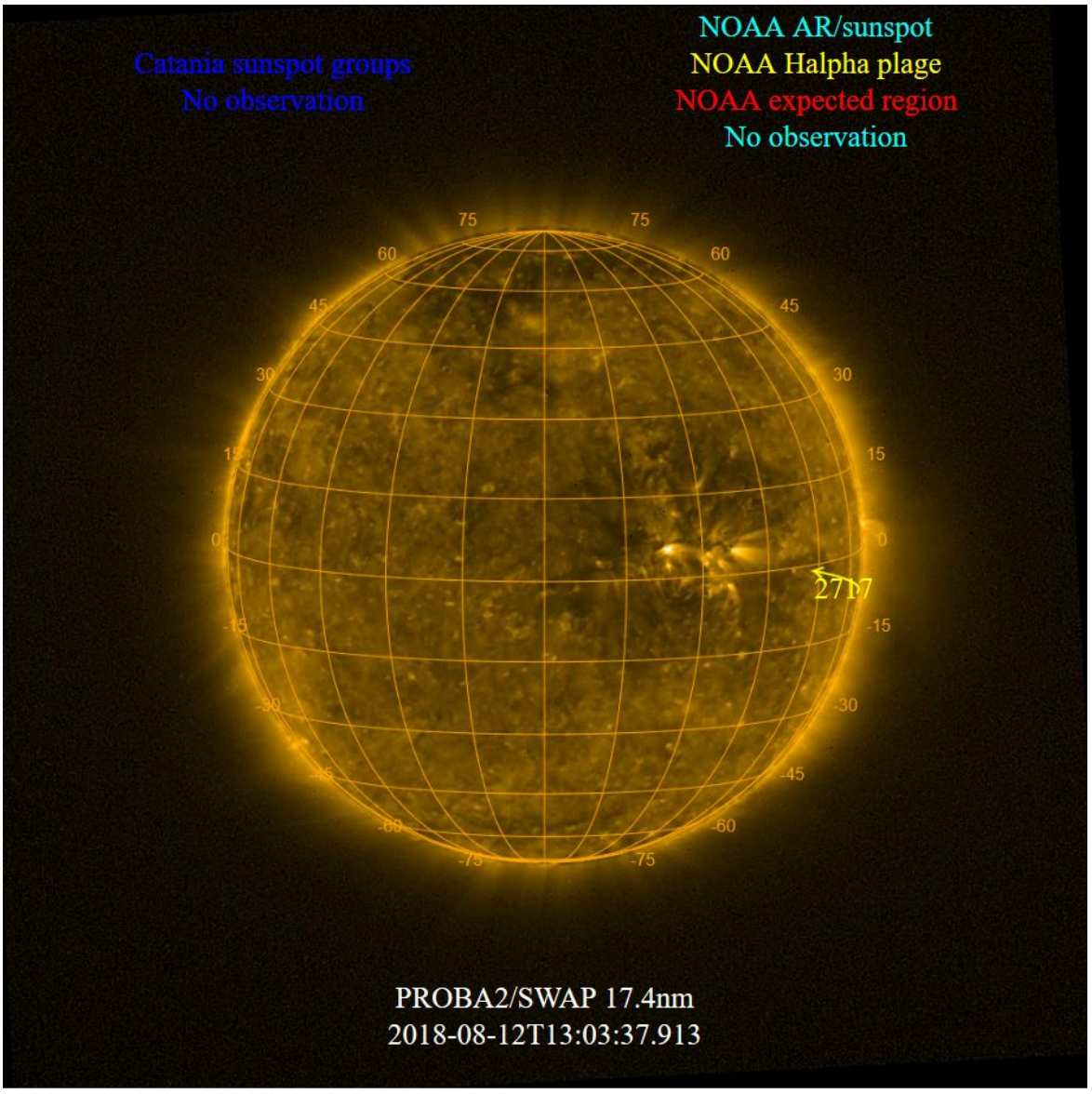
	Monday 06 Aug	Tuesday 07 Aug	Wednesday 08 Aug	Thursday 09 Aug	Friday 10 Aug	Saturday 11 Aug	Sunday 12 Aug
Activity	very low	very low	very low	very low	very low	very low	very low
Flares	-	-	-	-	-	-	-

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

The SWAP images of Aug 06 and Aug 12 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
No observation
75
60
45
30
15
0
-15
-30
-45
-60
-75
2717
PROBA2/SWAP 17.4nm
2018-08-12T13:03:37.913

Solar Activity

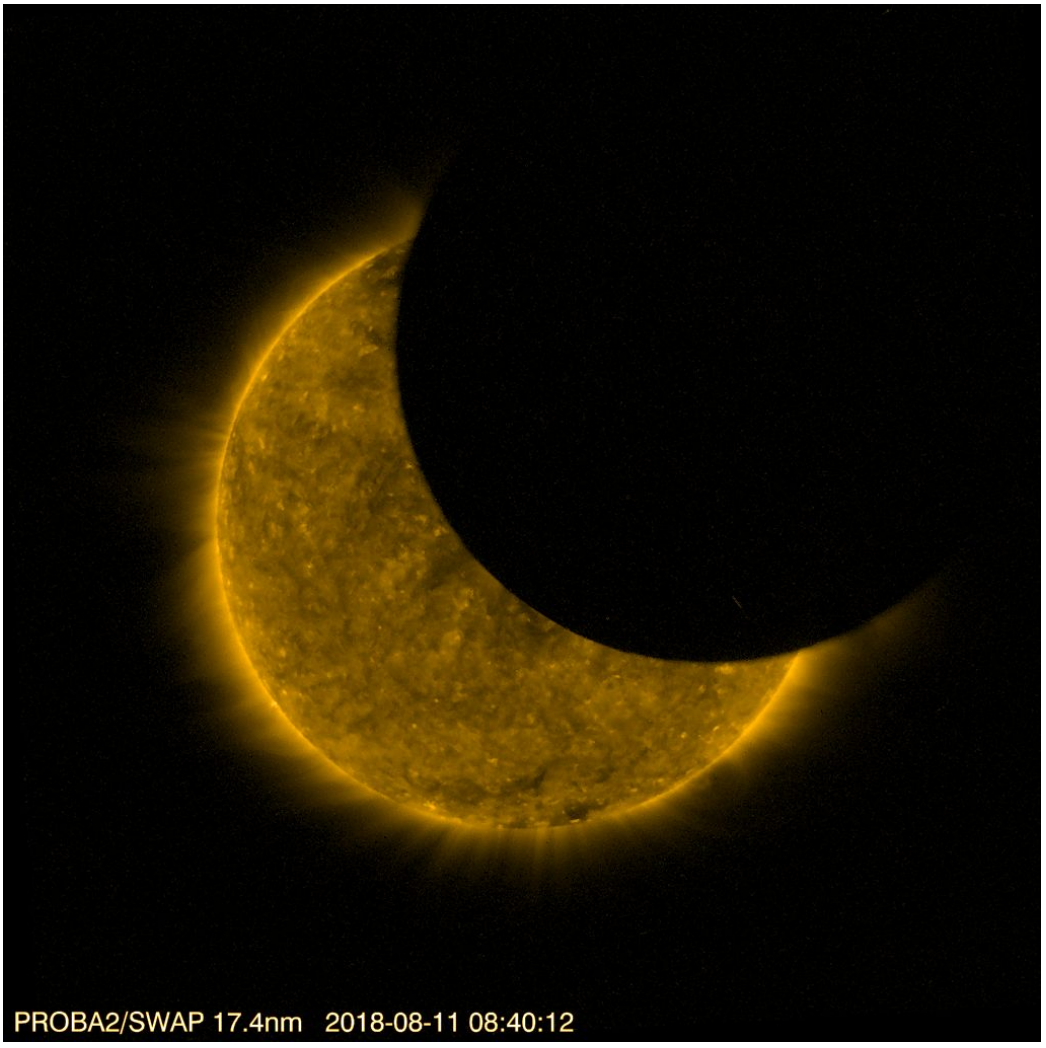
Solar flare activity remained very low during the week.
In order to view the activity of this week in more detail, we suggest to go to the following website from which all the daily (normal and difference) movies can be accessed: http://proba2.oma.be/ssa
This page also lists the recorded flaring events.

A weekly overview movie can be found here (SWAP week 437).

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

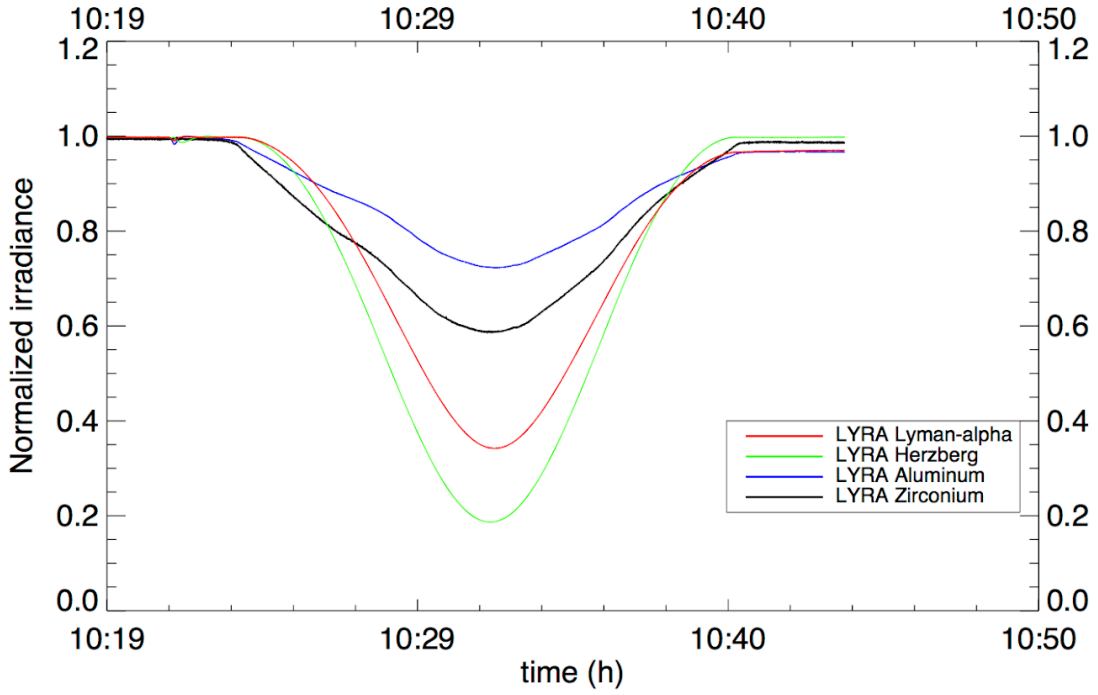
Saturday Aug 11



On 2018-Aug-11 two partial eclipses were observed by SWAP, between 08:29 and 08:49 UT, and between 10:21 and 10:45 UT respectively. The SWAP image above was taken during the first partial occultation. Additionally, the Moon appeared one more time into the SWAP and LYRA field of view, but without obscuring the solar disk.

Find a movie of the event here and further images available of both eclipses here

Saturday Aug 11

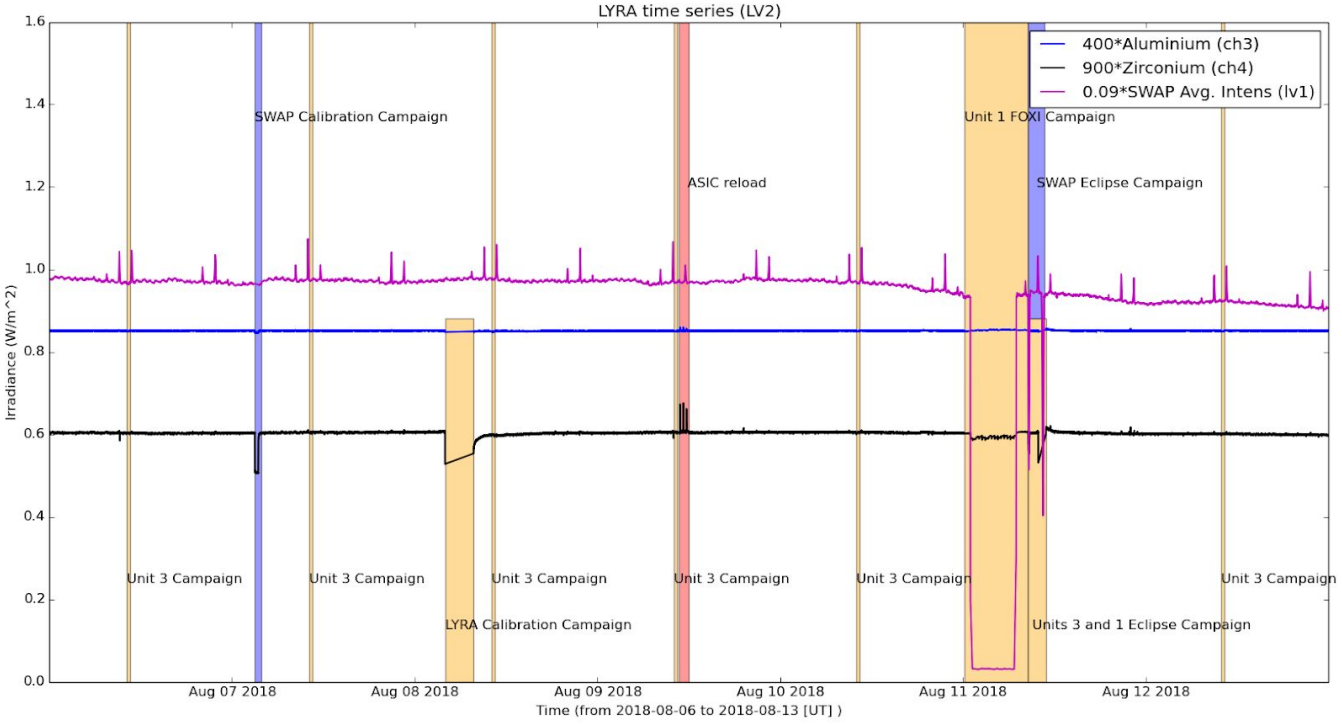


The partial eclipses on 2018-Aug-11 were also observed by LYRA which used the nominal unit (unit 2) and then the backup unit (unit 3) in parallel with the calibration unit (unit 1) for the two occultations, respectively. The above image shows the irradiance curves from LYRA throughout the second occultation event between 10:21 and 10:45 UT.

Find further LYRA files and images for this event here.

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-Aug-07
- High cadence eclipse campaign, 2018-Aug-11

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

- Daily Unit 3 campaign, 2018-Aug-06
- Daily Unit 3 campaign, 2018-Aug-07
- Bi-weekly calibration, 2018-Aug-08
- Daily Unit 3 campaign, 2018-Aug-08
- Daily Unit 3 campaign, 2018-Aug-09
- Daily Unit 3 campaign, 2018-Aug-10
- Unit 1 test campaign with off-point for future FOXI campaign, 2018-Aug-11
- Unit 1 and Unit 3 campaign for partial eclipse
- Daily Unit 3 campaign, 2018-Aug-12

The red shaded periods related to other issues corresponds to:

- ASIC reload requested and carried out between 10:40 and 12:00 UT (3LAR'S), 2018-Aug-09

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).

The 16th PROBA2 Science Working Team (SWT) meeting was held on 2018-Aug-06 at the Royal Observatory of Belgium and was also presented online with both presenters and others attendees from around the world connected via video conference. The status of the mission was presented followed by 5 guest speakers presenting their work based on LYRA and SWAP measurements.

Matthew J West helped publish an article, entitled “PARTIAL SOLAR ECLIPSE FROM SPACE”, in ESA Space In Images (http://www.esa.int/spaceinimages/Images/2018/08/Partial_solar_eclipse_from_space).
The article displayed the SWAP observations and gave an explanation of the partial solar eclipse which was viewed by SWAP and LYRA on 2018-Aug-11.

A web article was also released on the PROBA2 Web pages hosted art ROB: http://proba2.oma.be/PartialEclipses2018Jul13_Aug11.

University of Finland Masters Student: Milla Kalliokoski will be working at the Royal Observatory of Belgium from 06-Aug-2018 to 06-Sep-2018, with PROBA2 data to help categorize different events seen in the data. This work is supported by a ASBL grant awarded by the ROB.

Guest Investigator Program

- Alexandros Koukras continued his visit to the P2SC working on his project entitled “A unique opportunity of observing and modeling a CME event from the low to the outer corona”.

2. LYRA instrument status

Calibration

Calibration campaign on Wednesday this week.

IOS & operations

Monday 06 Aug	Tuesday 07 Aug	Wednesday 08 Aug	Thursday 09 Aug	Friday 10 Aug	Saturday 11 Aug	Sunday 12 Aug
Nominal acquisition + daily U3 LYIOS00717	Nominal acquisition + daily U3 LYIOS00717	Nominal acquisition + daily U3 + calibration LYIOS00717	Nominal acquisition + daily U3 LYIOS00717	Nominal acquisition + daily U3 LYIOS00717	Nominal acquisition + daily U3 + FOXI test campaign with U1 + Eclipse campaign with U1 and U3 LYIOS00718	Nominal acquisition + daily U3 LYIOS00718

The following science campaigns were performed by LYRA:

- daily U3 observations campaign

On 2018-Aug-08:

- LYRA bi-weekly short calibration

On 2018-Aug-11

- U1 and U2 campaign with off-point - for test campaign for FOXI
- U1 and U3 campaign for partial eclipse

LYRA detector temperature

LYRA detector 2 temperature globally varied between 46.01 and 50.85 °C.

3. SWAP instrument status

Calibration

Calibration campaign on Tuesday this week.

MCPM errors

The number of MCPM recoverable errors increased from 1163 to 1366.
The number of MCPM unrecoverable errors remained at 0.

IOS & operations

Monday 06 Aug	Tuesday 07 Aug	Wednesday 08 Aug	Thursday 09 Aug	Friday 10 Aug	Saturday 11 Aug	Sunday 12 Aug
Nominal acquisition IOS00784 582 images	Nominal acquisition + calibration IOS00784 648 images	Nominal acquisition IOS00784 662 images	Nominal acquisition IOS00784 558 images	Nominal acquisition IOS00784 719 images	Nominal acquisition + partial eclipse campaign IOS00785 801 images	Nominal acquisition IOS00785 674 images

Special operations for SWAP, this week:
On 2018-Aug-07

- SWAP Bi-weekly Calibration

On 2018-Aug-11

- High cadence campaign for partial eclipse

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -1.85 and -0.33 °C.

4. PROBA2 Science Center Status

The main operator is Jennifer O'Hara.

The following changes were made to the P2SC:

- On 2018-Aug-08: r5360, LY-TMR & LY-EDG were edited to increase max_page_count to allow for SQLite database files larger than 1 TiB.

5. Data reception & discussions with MOC

Passes

The delivery of the passes for this week (passes 28237 to 28303) 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 2018 Aug 06 00:00 UT and 2018 Aug 13 00:00 UT: 4747
Highest cadence in this period: 17 seconds
Average cadence in this period: 127.35 seconds
Number of image gaps larger than 300 seconds: 175
Largest data gap: 15.00 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)