


P2SC-ROB-WR-329 - 20160711 Weekly report #329	P2SC Weekly report	
Period covered: Date: Written by: Approved by:	Mon Jul 11 to Sun Jul 17, 2016 18 Jul 2016 Laurence Wauters Matthew West	Royal Observatory of Belgium - PROBA2 Science Center
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1. Science

Solar & Space weather events

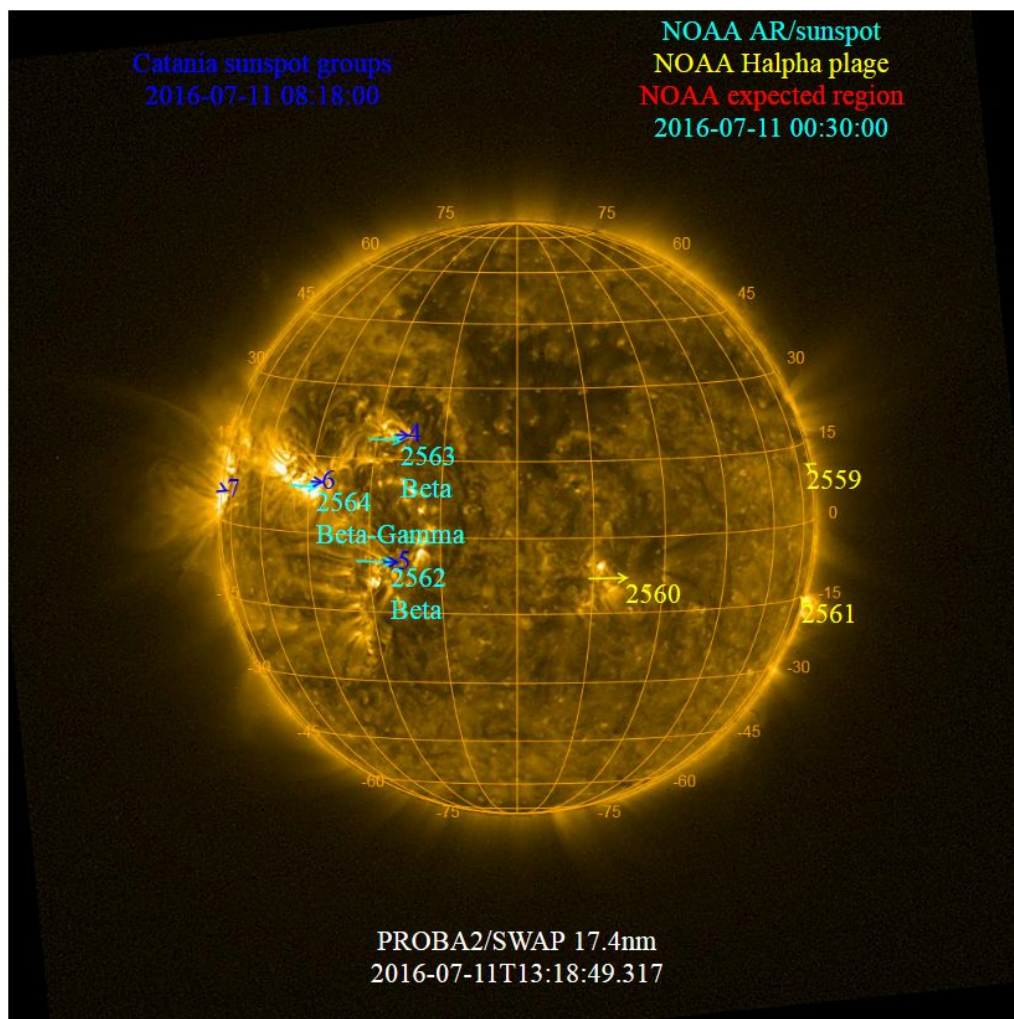
The level of solar activity¹ fluctuated between **very low** and **low** this week.

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

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

¹ See appendix. All timings are given in UT.

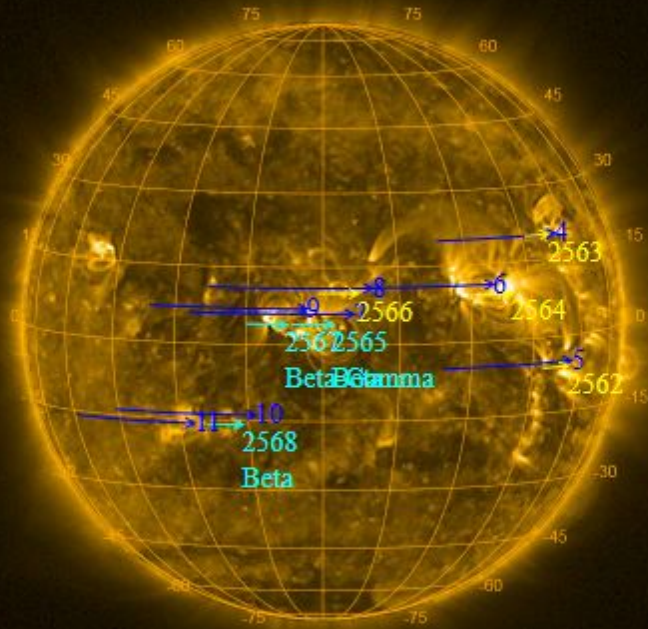
The SWAP images of Jul 11 and Jul 17 are shown below, with annotated active regions.



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

Catania sunspot groups
2016-07-15 07:30:00

NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2016-07-17 00:30:00



PROBA2/SWAP 17.4nm
2016-07-17T13:19:08.067

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>

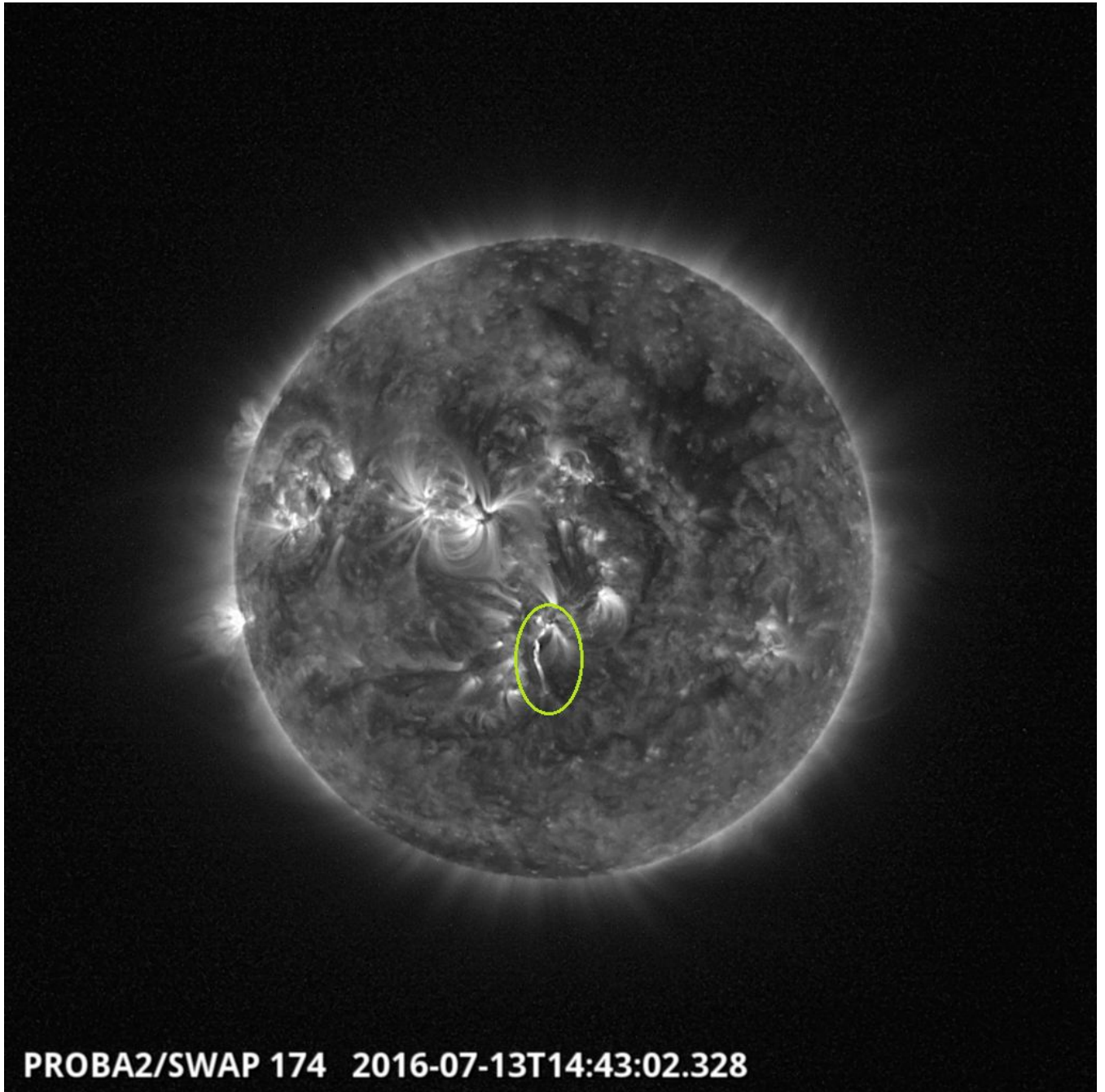
This page also lists the recorded flaring events.

A weekly overview movie can be found [here](#) (SWAP week 329).

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](#)

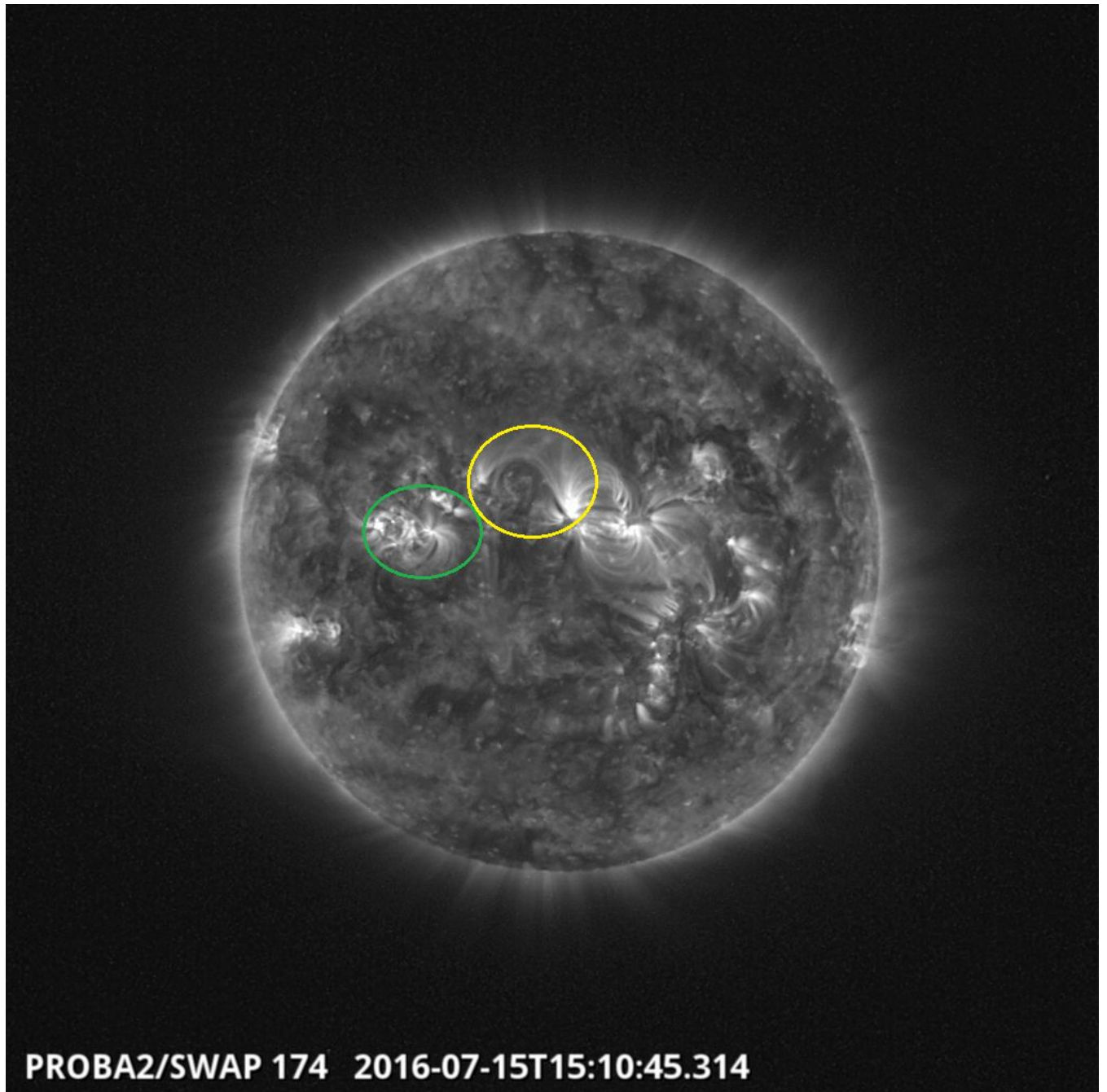
Wednesday Jul 13



**A Bursty outflow followed by an eruption at the South Central Meridian was observed at 14:43
UT - SWAP image**

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

Friday Jul 15

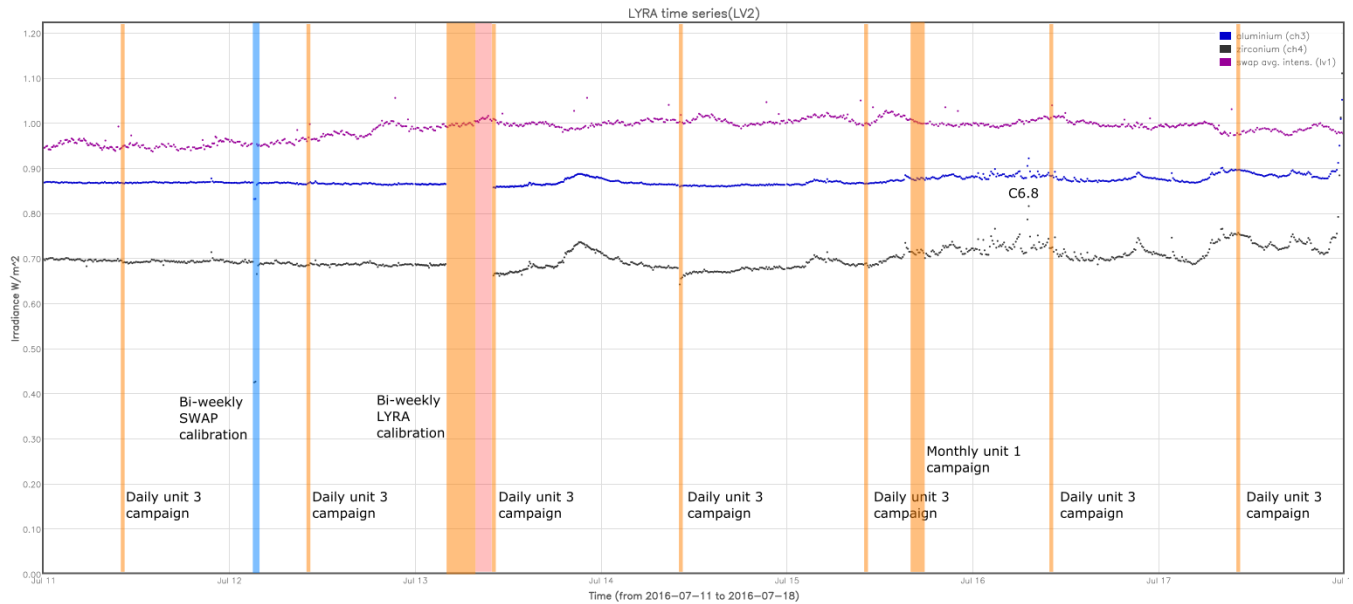


Several B and a few C flares occurred on the North East part of the Sun (NOAA 2567-2565). C-class flaring continued in these regions on Jul 16 and 17. A magnetic interconnection was also visible between the 2564 sunspot group and an unlabeled region, this loop was visible during the entire week - SWAP image
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 correspond to, from left to right:

- Bi-weekly SWAP calibration campaign, 2016-Jul-12

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

- Daily unit 3 campaign, 2016-Jul-11
- Daily unit 3 campaign, 2016-Jul-12
- Daily unit 3 campaign, 2016-Jul-13
- Daily unit 3 campaign, 2016-Jul-14
- Daily unit 3 campaign, 2016-Jul-15
- Bi-weekly LYRA calibration campaign 2016-Jul-15
- Daily unit 3 campaign, 2016-Jul-16
- Daily unit 3 campaign, 2016-Jul-17

The red shaded period corresponds to:

- Missing LYRA data: under investigation, 2016-Jul-13

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.

An STCE seminar was given by Guest Investigator James P. Mason, LASP, the title was: "Coronal Dimmings and Their Relationship to CMEs and the Success of the MinXSS CubeSat"

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

- J. Mason has been visiting the P2SC on the GI program, he has been working on SWAP data looking at "Coronal Dimming Diagnostics In EUV Irradiance Measurements".

2. LYRA instrument status

Calibration

Calibration campaign on Wednesday this week.

IOS & operations

Monday 11 Jul	Tuesday 12 Jul	Wednesday 13 Jul	Thursday 14 Jul	Friday 15 Jul	Saturday 16 Jul	Sunday 17 Jul
Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3
LYIOS00570	LYIOS00570	LYIOS00570	LYIOS00570	LYIOS00571	LYIOS00571	LYIOS00571

The following science campaigns were performed by LYRA:

- daily U3 observations campaign
- Monthly U1 observations campaign on July 15

LYRA detector temperature

LYRA detector 2 temperature globally varied between 45.89 and 48.77 °C.

3. SWAP instrument status

Calibration

Calibration campaign on Tuesday this week.

MCPM errors

The number of MCPM recoverable errors increased from 3608 to 3613.

The number of MCPM unrecoverable errors remained at 0.

IOS & operations

Monday 11 Jul	Tuesday 12 Jul	Wednesday 13 Jul	Thursday 14 Jul	Friday 15 Jul	Saturday 16 Jul	Sunday 17 Jul
Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition
IOS00653 622 images	IOS00653 716 images	IOS00653 699 images	IOS00653 687 images	IOS00654 675 images	IOS00654 695 images	IOS00654 546 images

Special operations for SWAP, this week:

- SWAP calibration on 2016-July-12

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -1.69 and -0.33°C.

4. PROBA2 Science Center Status

The main operator is Robbe Vansintjan.

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 21176 to 21240) 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 2016 Jul 11 00:00 UT and 2016 Jul 18 00:00 UT: 4649

Highest cadence in this period: 30 seconds

Average cadence in this period: 130.09 seconds

Number of image gaps larger than 300 seconds: 145

Largest data gap: 9.17 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
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)