


P2SC-ROB-WR-414 - 20180226 Weekly report #414	<b>P2SC Weekly report</b>	
Period covered: Date:  Written by: Approved by	Mon Feb 26 to Sun March 04, 2017 08 March 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<sup>1</sup> fluctuated between **very low and low** this week.

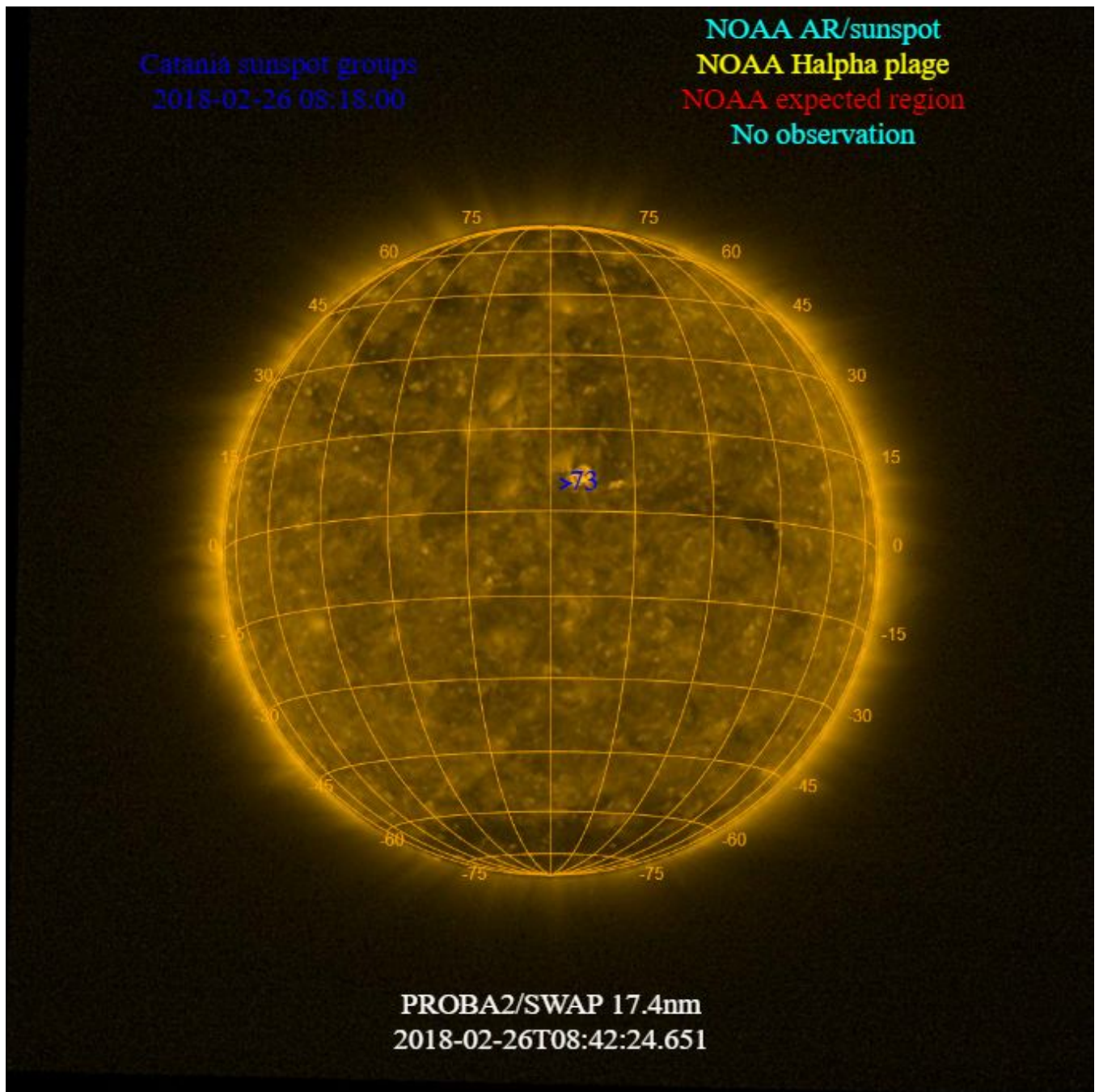
Only M- and X-flares are mentioned, the most energetic one(s) per day are presented in **bold**:

	Monday 26 Feb	Tuesday 27 Feb	Wednesday 28 Feb	Thursday 1 Mar	Friday 2 Mar	Saturday 3 Mar	Sunday 4 Mar
Activity	very low	very low	very low	very low	low	very low	very low
Flares	-	-	-	-	-	-	-

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<sup>1</sup> See appendix. All timings are given in UT.

The SWAP images of Feb 26 and Mar 04 are shown below, with annotated active regions.

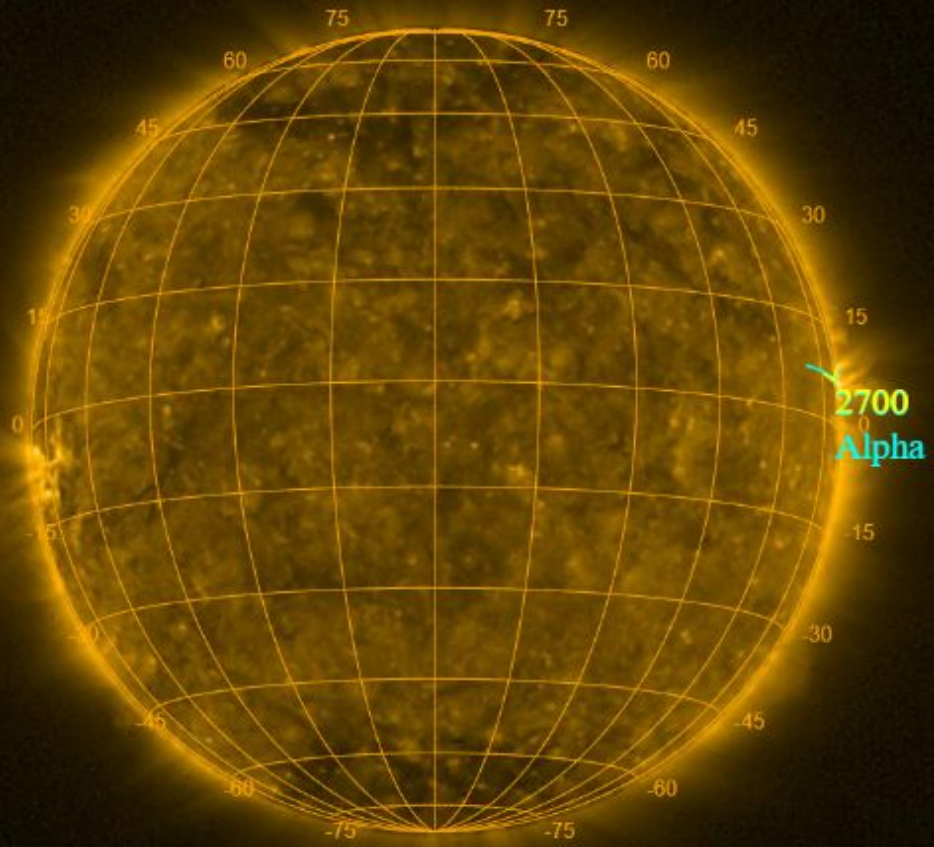


<http://sidc.be/soteria/soteria.php>

Go back 1 day

Catania sunspot groups  
No observation

NOAA AR/sunspot  
NOAA Halpha plage  
NOAA expected region  
2018-03-03 00:30:00



PROBA2/SWAP 17.4nm  
2018-03-04T08:45:33.967

## **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>

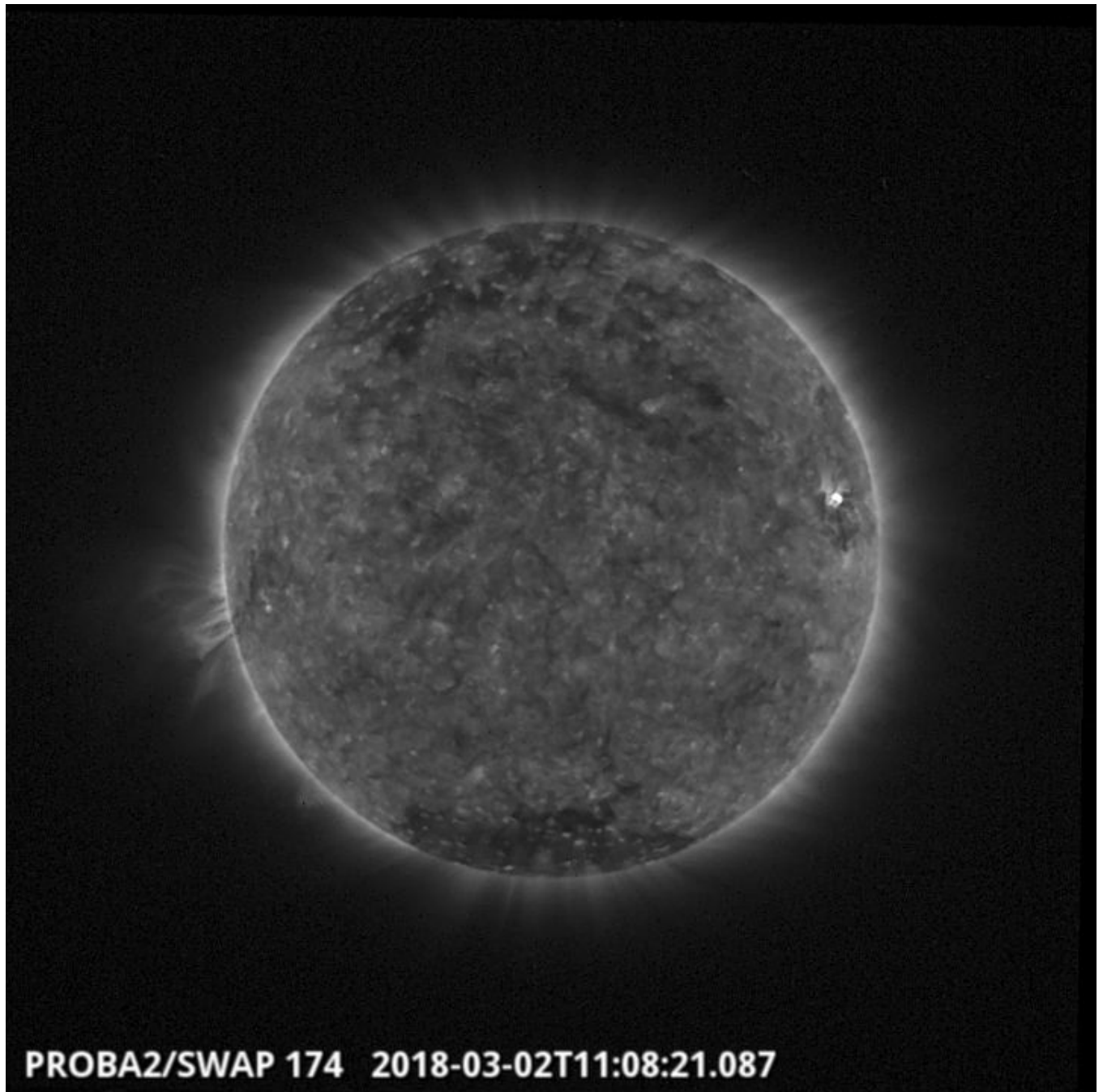
This page also lists the recorded flaring events.

A weekly overview movie can be found [here](#) (SWAP week 414).

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](#)

Friday Mar 02



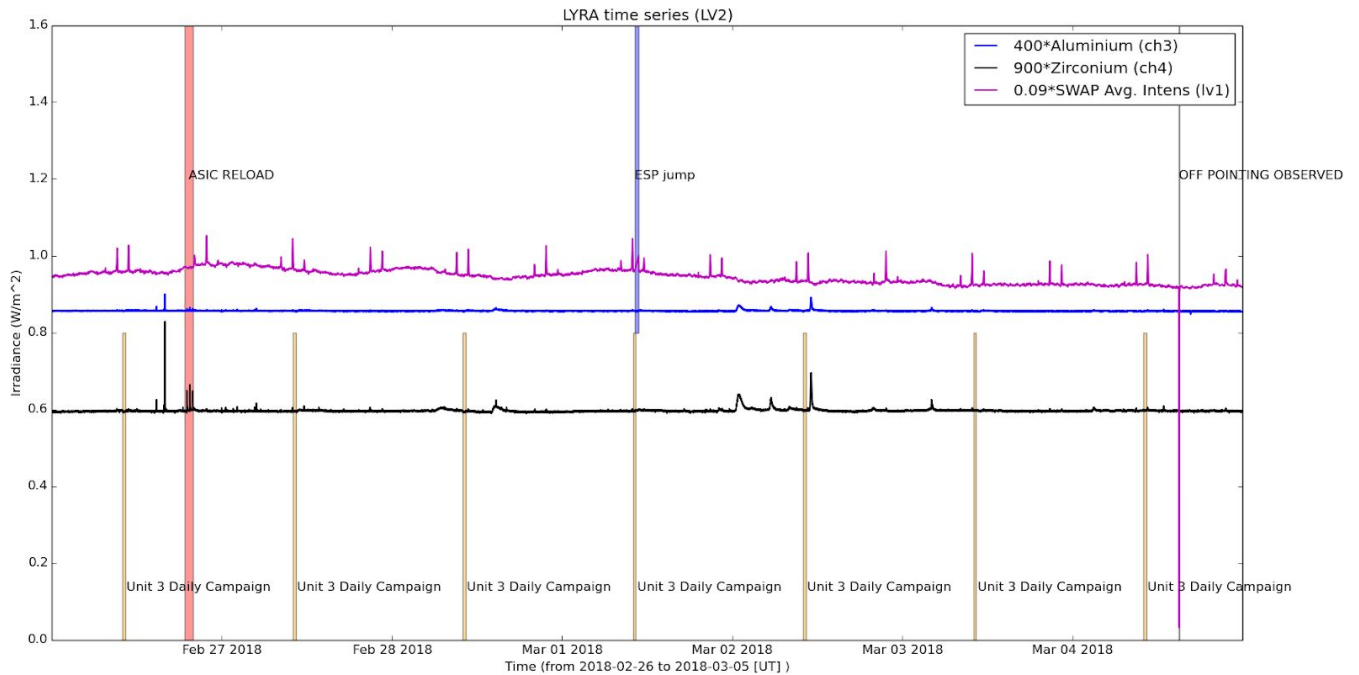
The largest flare of the week was a C-class (C1.9) flare associated with NOAA AR 2700. The flare is visible in the North-West part of the solar disk in the SWAP image above at 11:08 UT. The AR produced B-class flares throughout the whole week.

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:

- ESP jump, 2018-03-01

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

- daily U3 observations campaign, 2018-02-26
- daily U3 observations campaign, 2018-02-27
- daily U3 observations campaign, 2018-02-28
- daily U3 observations campaign, 2018-03-01
- daily U3 observations campaign, 2018-03-02
- daily U3 observations campaign, 2018-03-03
- daily U3 observations campaign, 2018-03-04

The red-grey shaded periods related to other issues corresponds to:

- ASIC reload requested by LYRA PI (drop in the LYRA calibration voltages). It has been applied during 3 LAR (2018-02-26T18:45:00 and 2018-02-26T20:00:00)
- The PROBA2 GPS did not work properly from 2018-03-04T01:13:49 to 2018-03-05T00:35:50. As a consequence two small off points have been observed by REDU on 2018-03-04T15:01:16 (0.4 deg) and on 2018-03-04T15:06:16z (0.87 deg), the SWAVINT data was reduced at that time.

## **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>).

A paper by Tavabi, E. et al. titled: "Analysis of a Failed Eclipse Plasma Ejection Using EUV Observations", was published in Sol Phys, see the Publications section of the webpage for more details.

## **Guest Investigator Program**

- Mariana Cécere and Valeria Sieyra (Ph.D. student) from the Instituto de Astronomía Teórica y Experimental, CONICET-UNC, Córdoba, Argentina continued their visit at the P2SC, working on the project: "A Systematic Study of CME Deflections".
- 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

No Calibration campaign on this week.

### IOS & operations

Monday 26 Feb	Tuesday 27 Feb	Wednesday 28 Feb	Thursday 1 Mar	Friday 2 Mar	Saturday 3 Mar	Sunday 4 Mar
Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U	Nominal acquisition + daily U3	Nominal acquisition + daily U3
LYIOS00677	LYIOS00677	LYIOS00677	LYIOS00677	LYIOS00677/679	LYIOS00679	LYIOS00679

The following science campaigns were performed by LYRA:

- daily U3 observations campaign

### LYRA detector temperature

LYRA detector 2 temperature globally varied between 51.18 and 52.41 °C.



### 3. SWAP instrument status

#### Calibration

No Calibration campaign on this week.

#### MCPM errors

The number of MCPM recoverable errors increased from 2227 to 2446.

The number of MCPM unrecoverable errors remained at 0.

#### IOS & operations

Monday 26 Feb	Tuesday 27 Feb	Wednesday 28 Feb	Thursday 1 Mar	Friday 2 Mar	Saturday 3 Mar	Sunday 4 Mar
Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition + ESP jump	Nominal acquisition	Nominal acquisition	Nominal acquisition
IOS00764 630 images	IOS00764 658 images	IOS00765 610 images	IOS00765 661 images	IOS00765 743 images	IOS00765 699 images	IOS00765 606 images

Special operations for SWAP, this week:

- ESP jump, 2018-03-01

#### SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between 0.870 and 2.50 °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 26732 to 26797) 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 Feb 26 00:00 UT and 2018 Mar 05 00:00 UT: 4735

Highest cadence in this period: 110 seconds

Average cadence in this period: 127.74 seconds

Number of image gaps larger than 300 seconds: 118

Largest data gap: 33.67 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)