


P2SC-ROB-WR-375 - 20170529 Weekly report #375	<b>P2SC Weekly report</b>	
Period covered: Date:  Written by: Approved by:	Mon May 29 to Sun Jun 4, 2017 6 Jun 2017  Jennifer O'Hara Matthew West	Royal Observatory of Belgium - PROBA2 Science Center
To:	LYRA PI, marie.dominique@sidc.be SWAP PI, david.berghmans@sidc.be	<a href="http://proba2.sidc.be">http://proba2.sidc.be</a> ++ 32 (0) 2 3730559
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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.

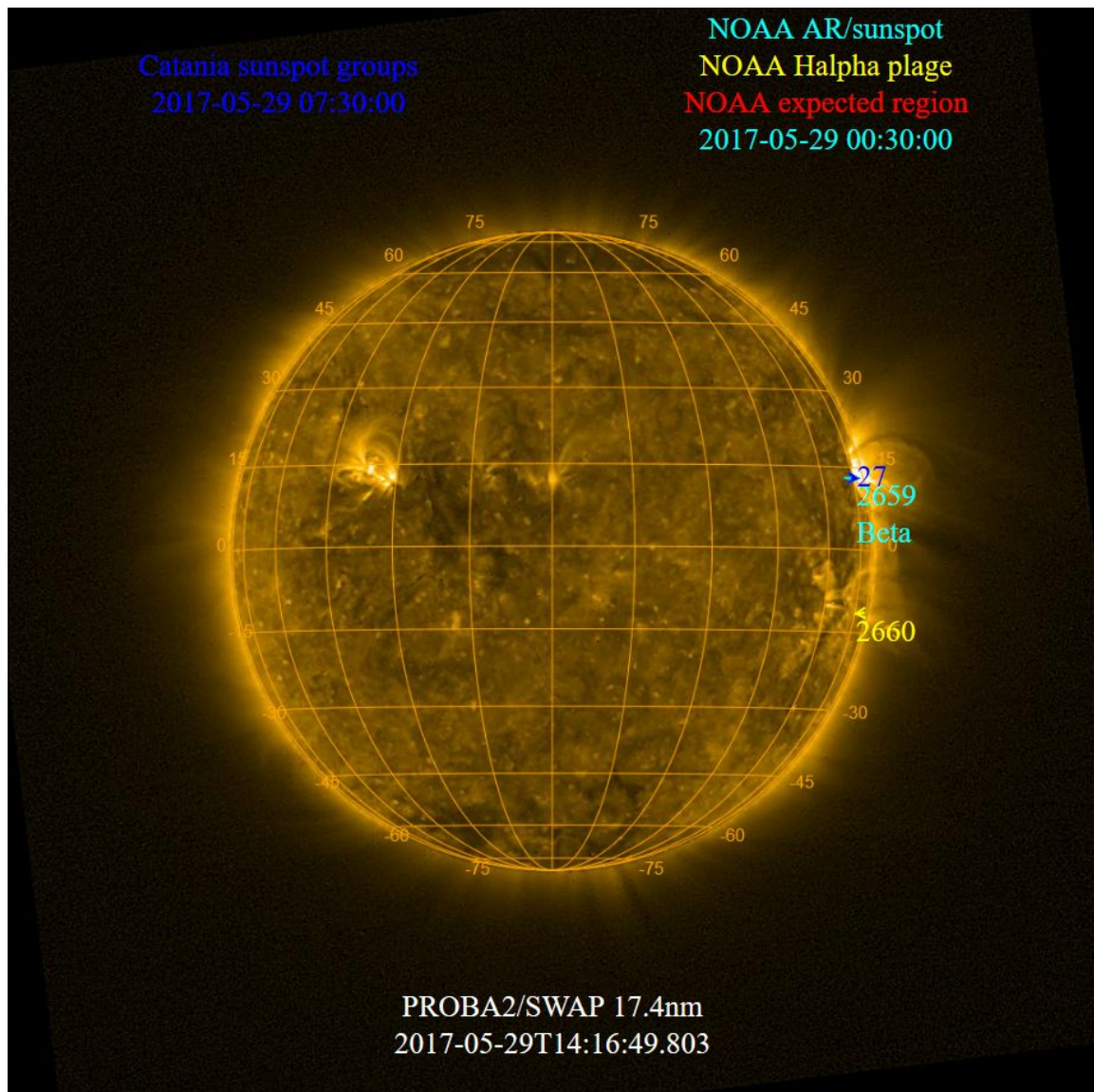
Only M- and X-flares are mentioned, the most energetic one(s) per day are presented in **bold**:

	Monday 30 May	Tuesday 31 May	Wednesday 01 Jun	Thursday 02 Jun	Friday 03 Jun	Saturday 04 Jun	Sunday 05 Jun
Activity	very low	very low	low	low	low	low	very low
Flares	-	-	-	-	-	-	-

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

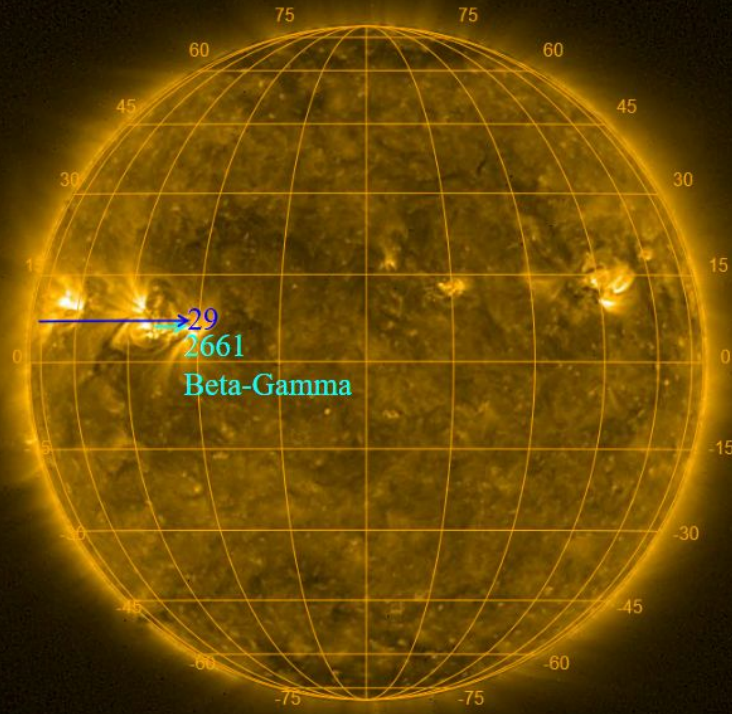
The SWAP images of May 29 and Jun 04 are shown below, with annotated active regions.



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

Catania sunspot groups  
2017-06-01 07:30:00

NOAA AR/sunspot  
NOAA Halpha plage  
NOAA expected region  
2017-06-04 00:30:00



PROBA2/SWAP 17.4nm  
2017-06-04T10:20:07.410

## **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>

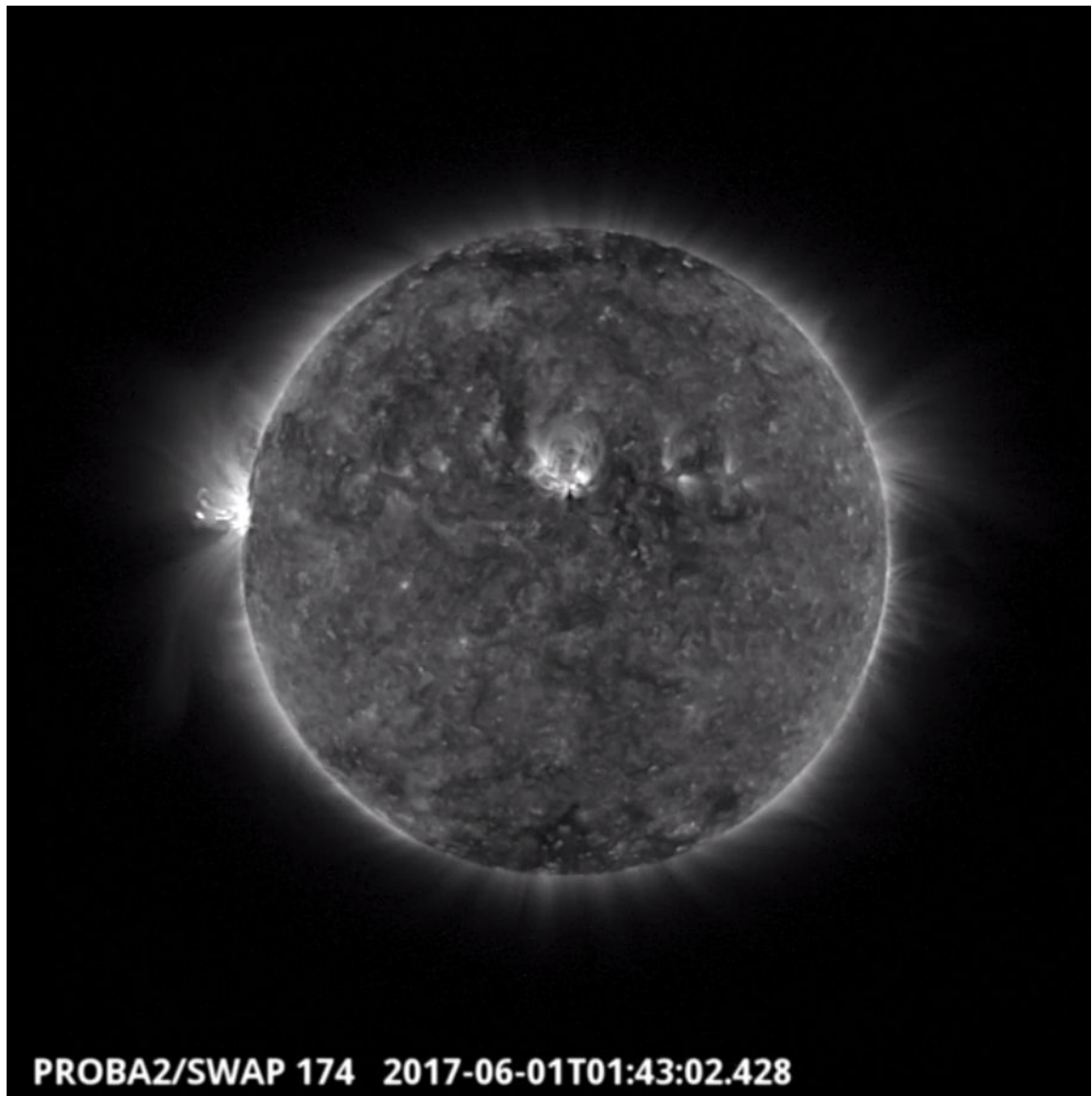
This page also lists the recorded flaring events.

A weekly overview movie can be found [here](#) (SWAP week 375).

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](#)

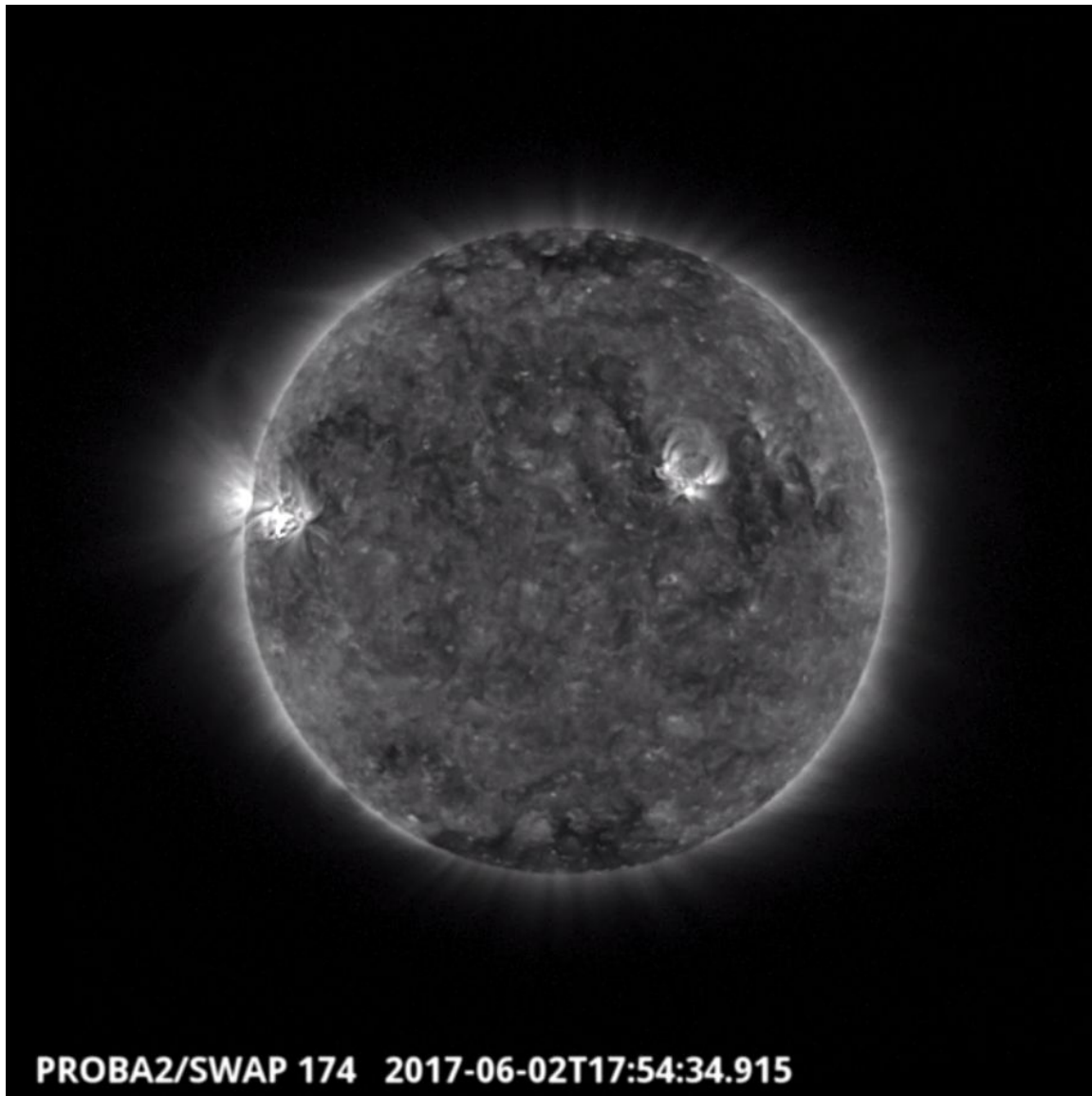
Thursday Jun 01



**On 2017-Jun-01 NOAA active region 2661 produced multiple c-class flares. A C6.6 flare which corresponded with an eruption is shown on the west limb of the Sun at 01:43 UT in the SWAP image above.**

Find a movie of the day's flaring events [here](#) (SWAP movie)

Friday Jun 02



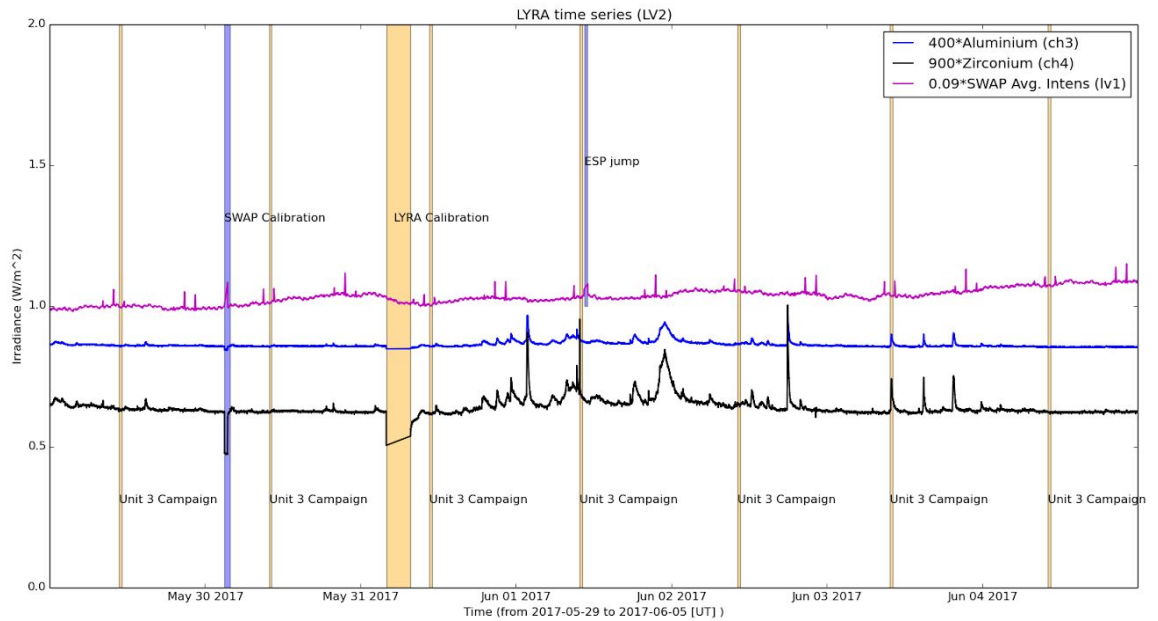
The largest flare of the week (C8.0) occurred on 2017-Jun-02 in the western hemisphere of the Sun, also from NOAA active region 2661, and is shown in the SWAP image above at 17:54 UT.

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:

- SWAP bi-weekly calibration, 2017-May-30
- SWAP ESP Jump, 2017-Jun-01

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

- LYRA Daily unit 3 campaign, 2017-May-29
- LYRA Daily unit 3 campaign, 2017-May-30
- LYRA bi-weekly Calibration, 2017-May-31
- LYRA Daily unit 3 campaign, 2017-May-31
- LYRA Daily unit 3 campaign, 2017-Jun-01
- LYRA Daily unit 3 campaign, 2017-Jun-02
- LYRA Daily unit 3 campaign, 2017-Jun-03
- LYRA Daily unit 3 campaign, 2017-Jun-04

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>).

**Guest Investigator Program**

- None



## 2. LYRA instrument status

### Calibration

Calibration campaign on Wednesday this week.

### IOS & operations

Monday 30 May	Tuesday 31 May	Wednesday 01 Jun	Thursday 02 Jun	Friday 03 Jun	Saturday 04 Jun	Sunday 05 Jun
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
LYIOS00621	LYIOS00621	LYIOS00621	LYIOS00621	LYIOS00622	LYIOS00622	LYIOS00622

The following science campaigns were performed by LYRA:

- daily U3 observations campaign

On 2017-May-31

- LYRA bi-weekly calibration

### LYRA detector temperature

LYRA detector 2 temperature globally varied between 46.85 and 48.92 °C.

### 3. SWAP instrument status

#### Calibration

Calibration campaign on Tuesday this week.

#### MCPM errors

The number of MCPM recoverable errors increased from 9688 to 9913.

The number of MCPM unrecoverable errors remained at 0.

#### IOS & operations

Monday 39 May	Tuesday 30 May	Wednesday 31 May	Thursday 01 Jun	Friday 02 Jun	Saturday 03 Jun	Sunday 04 Jun
Nominal acquisition	Nominal acquisition + calibration	Nominal acquisition	Nominal acquisition + ESP Jump	Nominal acquisition	Nominal acquisition	Nominal acquisition
IOS00705 561 images	IOS00705 707 images	IOS00705 655 images	IOS00705 706 images	IOS00705 697 images	IOS00705 686 images	IOS00705 550 images

Special operations for SWAP, this week:

On 2017-May-30

- SWAP bi-weekly calibration

On 2017-Jun-01

- ESP jump

#### SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -0.89 and 0.23 °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 24168 to 24232) 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 May 29 OUT and 2017 Jun 05 OUT: 4650

Highest cadence in this period: 30 seconds

Average cadence in this period: 130.08 seconds

Number of image gaps larger than 300 seconds: 158

Largest data gap: 31.83 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)