


P2SC-ROB-WR-296 - 20151123 Weekly report #296	<b>P2SC Weekly report</b>	
Period covered: Date:  Written by: Approved by:	Mon Nov 23 to Sun Nov 29, 2015 02 Dec 2015  Robbe Vansintjan Matthew West	Royal Observatory of Belgium  - PROBA2 Science Center
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## 1. Science

### Solar & Space weather events

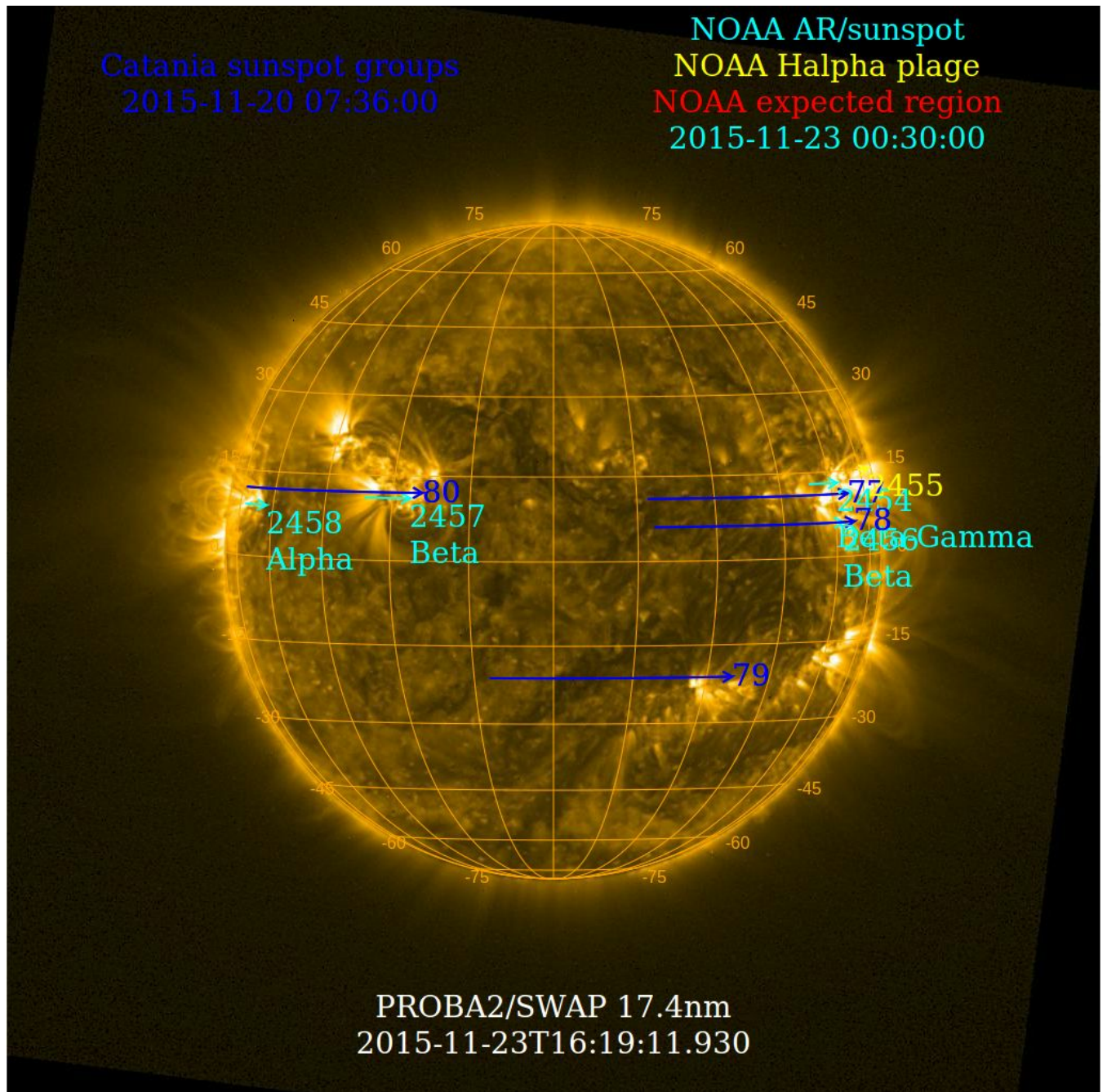
The level of solar activity<sup>1</sup> fluctuated between **very low** and **low** this week.

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

	Monday 23 Nov	Tuesday 24 Nov	Wednesday 25 Nov	Thursday 26 Nov	Friday 27 Nov	Saturday 28 Nov	Sunday 29 Nov
Activity	low	very low	low	very low	very low	very low	very low
Flares	-	-	-	-	-	-	-

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

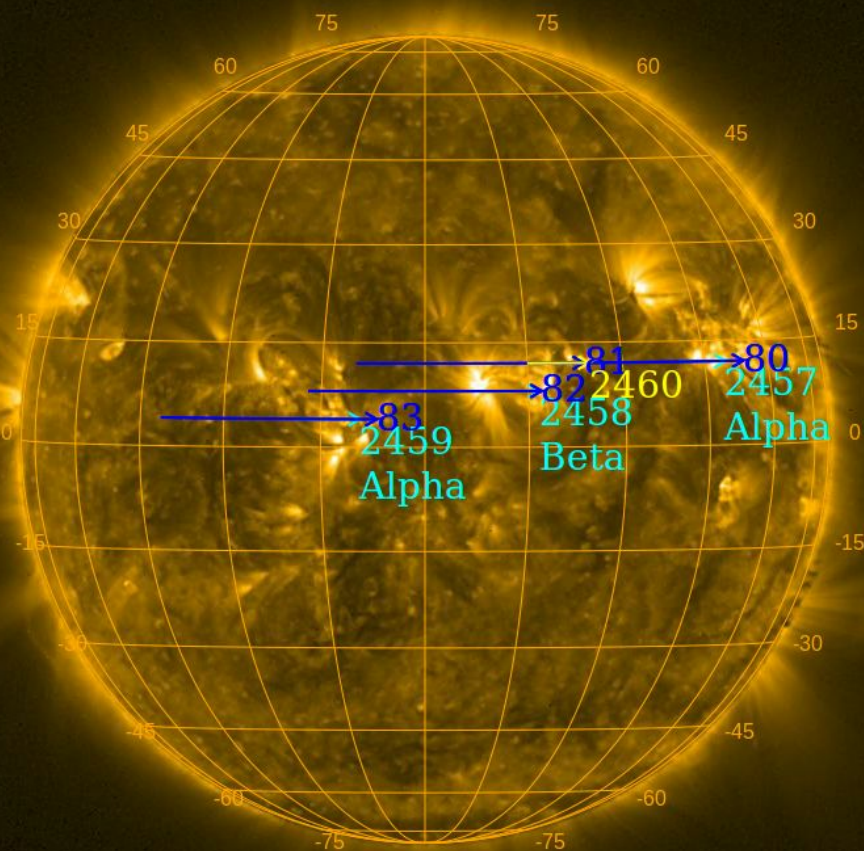
The SWAP images of Nov 23 and Nov 29 are shown below, with annotated active regions.



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

Catania sunspot groups  
2015-11-27 08:36:00

NOAA AR/sunspot  
NOAA Halpha plage  
NOAA expected region  
2015-11-29 00:30:00



PROBA2/SWAP 17.4nm  
2015-11-29T16:19:48.218

## **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>

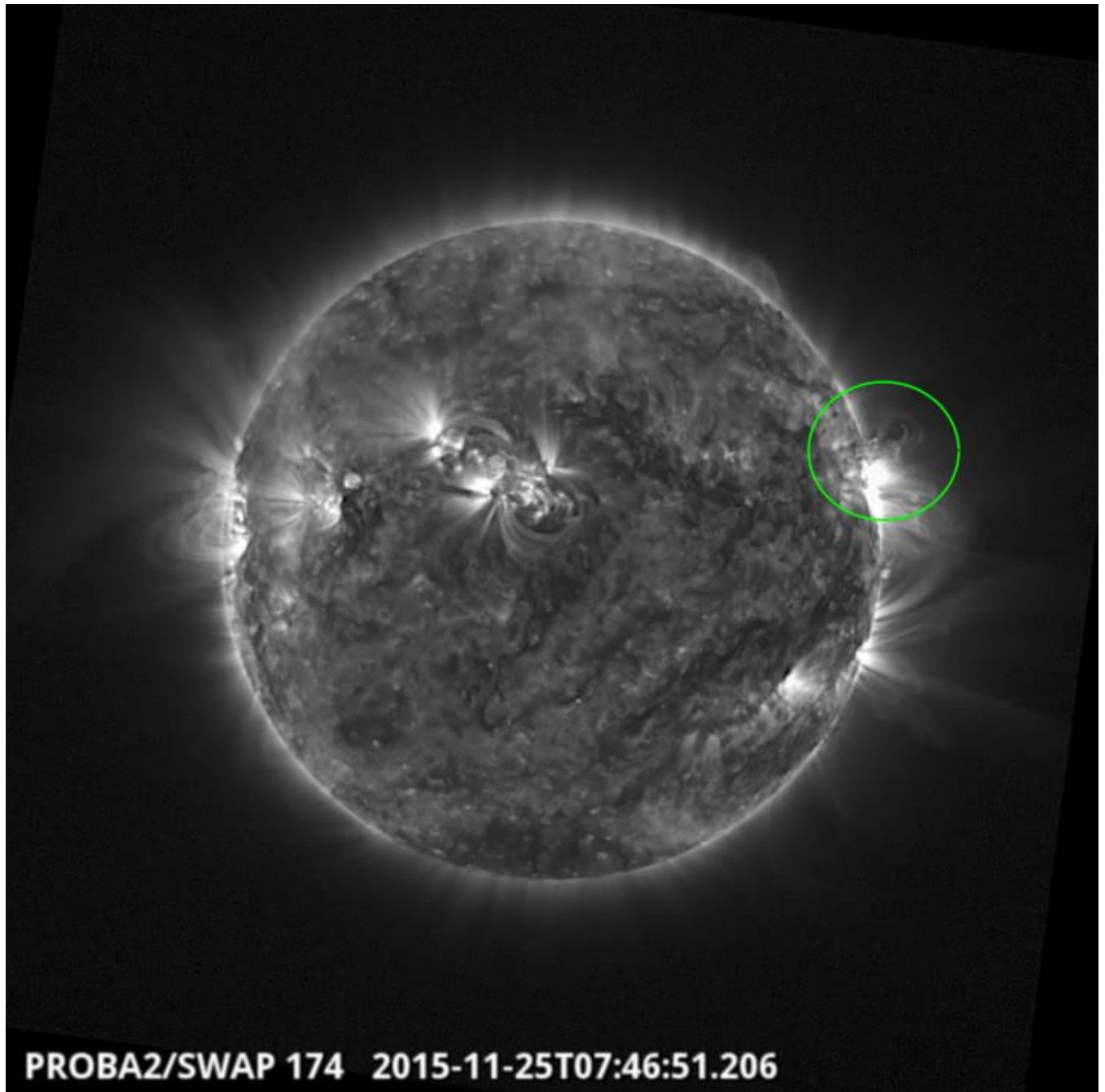
This page also lists the recorded flaring events.

A weekly overview movie can be found [here](#) (SWAP week 296).

Details about some of this week's events, can be found further below.



Wednesday Nov 25



**PROBA2/SWAP 174 2015-11-25T07:46:51.206**

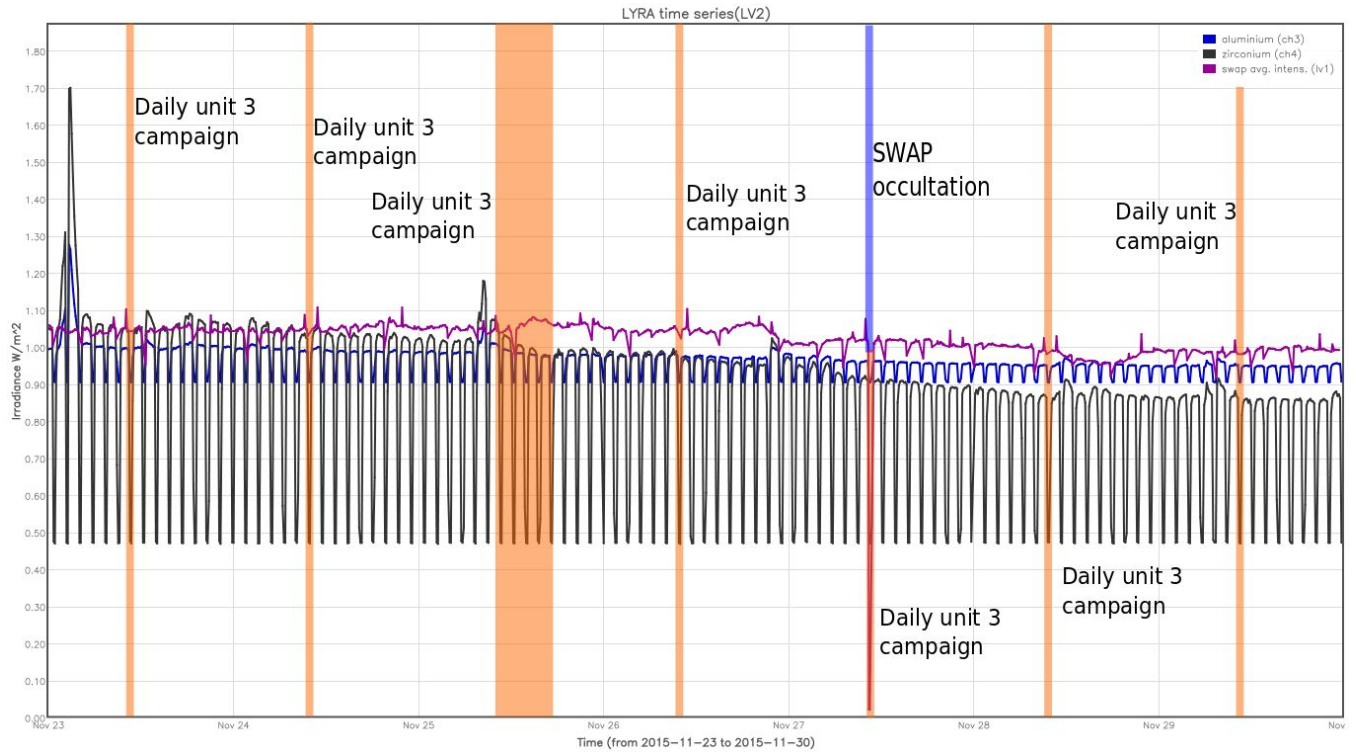
**A partially failed eruption, and subsequent plasma dynamics were observed in SWAP imagery  
at 07:46 UT**

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 occultation campaign, 2015-Nov-27

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

- Daily unit 3 campaign, 2015-Nov-23
- Daily unit 3 campaign, 2015-Nov-24
- Daily unit 3 campaign, 2015-Nov-25
- Daily unit 3 campaign, 2015-Nov-26
- Daily unit 3 campaign, 2015-Nov-27
- Daily unit 3 campaign, 2015-Nov-28
- Daily unit 3 campaign, 2015-Nov-29

## **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>).

- During ESWW12 M. Mierla gave a presentation “Analysis of CMEs-ICMEs on the ascending phase of SC24” which feature SWAP data
- A PROBA2 stand advertised PROBA2 data products throughout the ESWW and at a dedicated fair.
- During the PROBA2 SWT at ESWW12 the following talks were given:
  - M. J. West - PROBA2 Science Center status
  - E. D'Huys - SWAP status report
  - M. Dominique - LYRA status report
  - M. J. West - The Guest Investigator Program status report
  - J. Machol (presented by D. Ryan)- Lyman- $\alpha$  data from LYRA and GOES for use in flare studies
  - C. Arridge - Solar EUV and solar wind effects on the ionosphere of Venus
  - P. Bryans - Studying the Origins of the Fast Solar Wind

## **Guest Investigator Program**

- P. Bryans worked with SWAP on “Studying the Origins of the Fast Solar Wind.”

## 2. LYRA instrument status

### Calibration

No calibration this week.

### IOS & operations

Monday 23 Nov	Tuesday 24 Nov	Wednesday 25 Nov	Thursday 26 Nov	Friday 27 Nov	Saturday 28 Nov	Sunday 29 Nov
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
LYIOS00510	LYIOS00510	LYIOS00510 -> LYIOS00511	LYIOS00511	LYIOS00512	LYIOS00512	LYIOS00512

The following science campaigns were performed by LYRA:

- daily U3 observations campaign

### LYRA detector temperature

LYRA detector 2 temperature globally varied between 41 and 44.8 °C.



### 3. SWAP instrument status

#### Calibration

No calibration this week.

#### MCPM errors

The number of MCPM recoverable errors increased from 1024 to 1054.

The number of MCPM unrecoverable errors remained at 0.

#### IOS & operations

Monday 23 Nov	Tuesday 24 Nov	Wednesday 25 Nov	Thursday 26 Nov	Friday 27 Nov	Saturday 28 Nov	Sunday 29 Nov
Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition + occultation campaign	Nominal acquisition	Nominal acquisition
IOS00609 690 images	IOS00609 687 images	IOS00609 684 images	IOS00609 691 images	IOS00610 708 images	IOS00610 695 images	IOS00610 670 images

Special operations for SWAP, this week:

- SWAP and LYRA parallel occultation campaign.

#### SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -3.9 and -2.2°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 19077 to 19141) 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 2015 Nov 23 00:00 UT and 2015 Nov 30 00:00 UT: 4825

Highest cadence in this period: 29 seconds

Average cadence in this period: 125.35 seconds

Number of image gaps larger than 300 seconds: 104

Largest data gap: 31.03 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)