P2SC-ROB-WR-245 - 20141201 Weekly report #245	**P2SC Weekly report**	
Period covered: Date: Written by: Approved by:	Mon Dec 01 to Sun Dec 07, 2014 10 Dec 2014 Katrien Bonte and Robbe Vansintjan Matthew West	Royal Observatory of Belgium - PROBA2 Science Center
To:	LYRA PI, marie.dominique@sidc.be SWAP PI, dseaton@sidc.be	http://proba2.sidc.be ++ 32 (0) 2 3730559
cc:	ROB DIR, ronald@oma.be ESA Redu, Etienne.Tilmans@esa.int ESA D/SRE, Joe.Zender@esa.int ESA D/TEC, Juha-Pekka.Luntama@esa.int	

1. Science

Solar & Space weather events

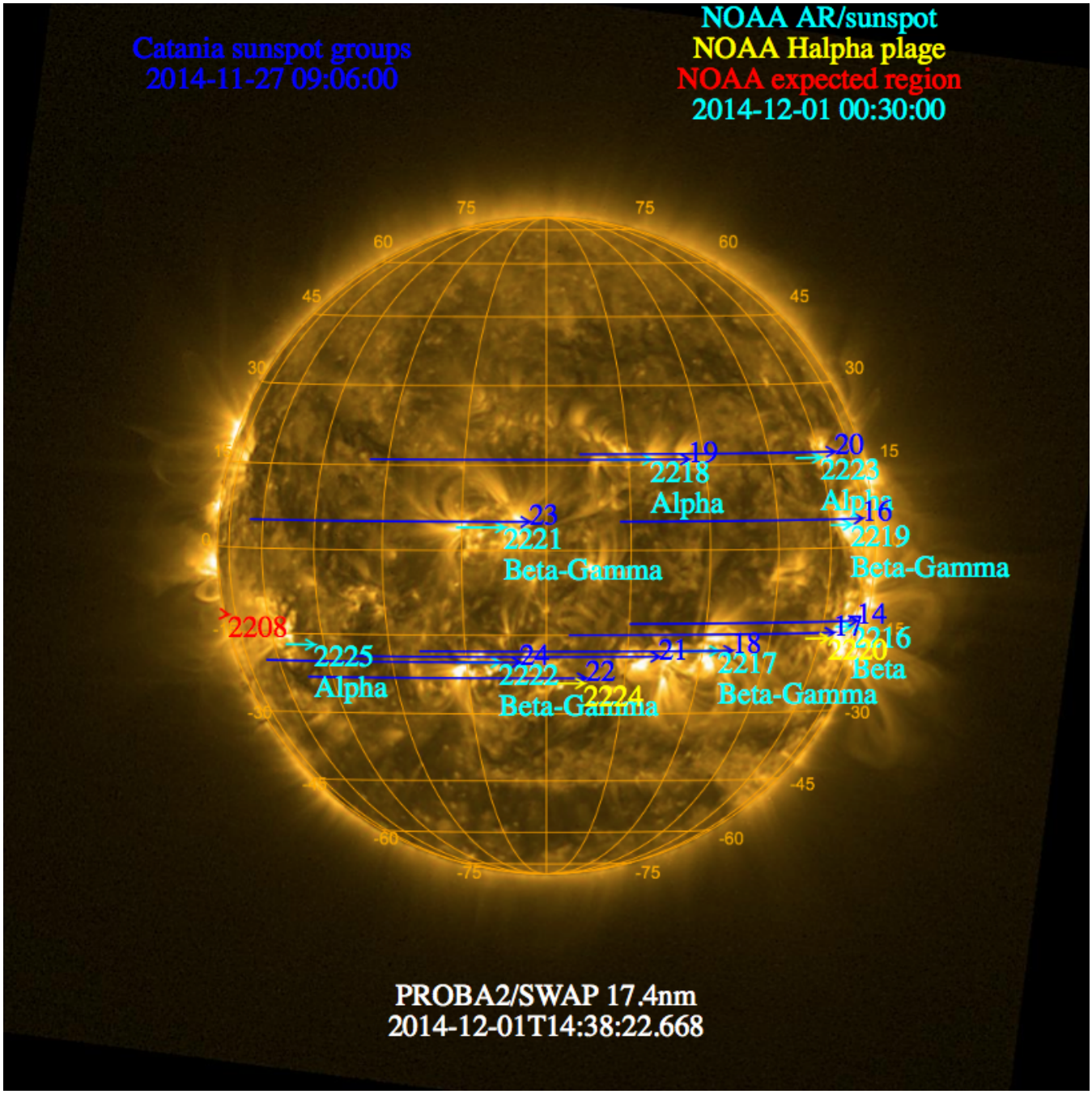
The level of solar activity[1] fluctuated between **low** and **moderate** this week.

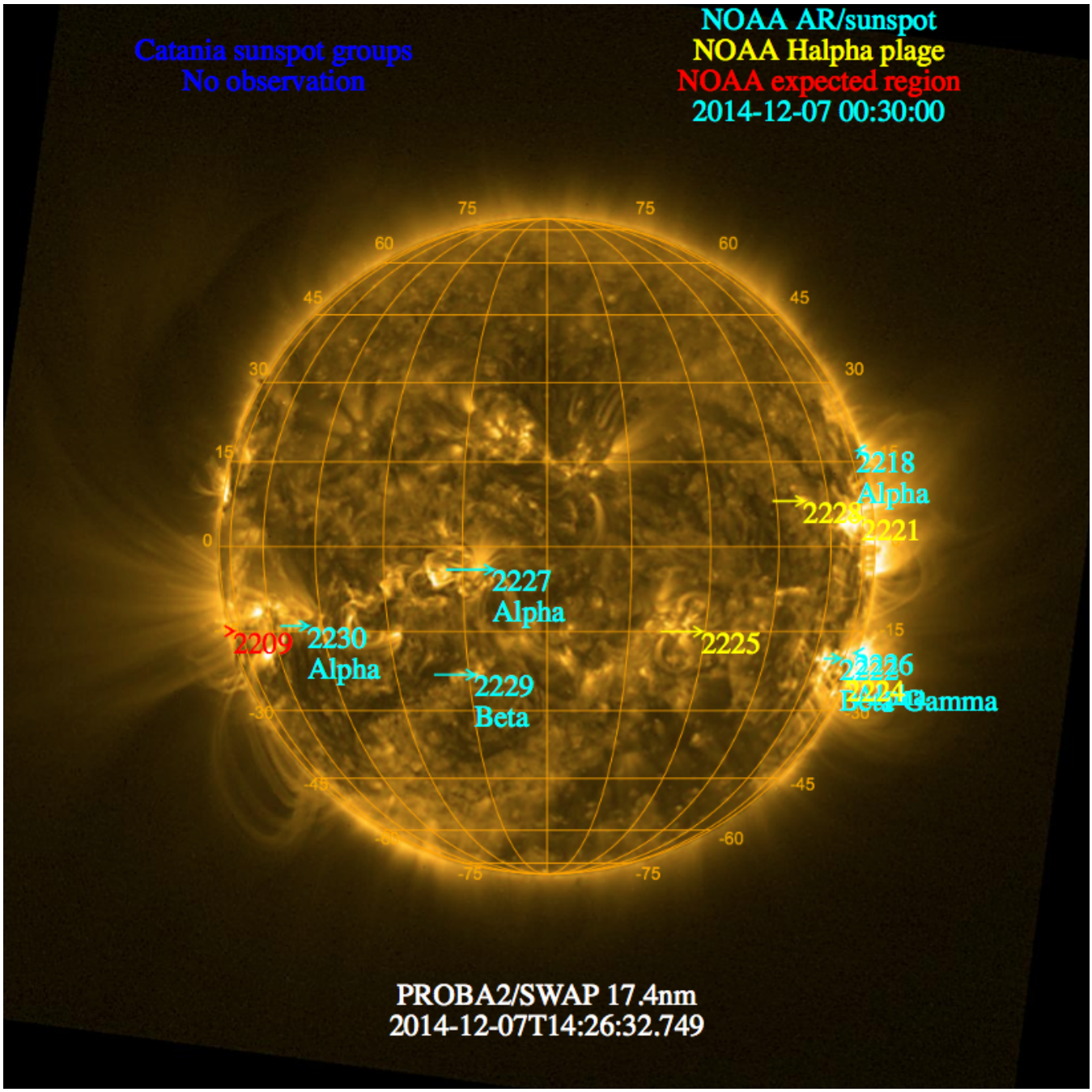
Only M- and X-flares are mentioned, the most energetic one(s) per day are presented in **bold**:

	Monday 01 Dec	Tuesday 02 Dec	Wednesday 03 Dec	Thursday 04 Dec	Friday 05 Dec	Saturday 06 Dec	Sunday 07 Dec
Activity	moderate	low	low	moderate	moderate	low	low
Flares	**M1.8@06h41**	-	-	**M1.3@19h41** **M6.1@18h25** **M1.3@08h10**	**M1.5@11h33**	-	-

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

The SWAP images of Dec 01 and Dec 07 are shown below, with annotated active regions.




Catania sunspot groups
No observation
NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2014-12-07 00:30:00
75
75
60
60
45
45
30
30
15
0
-30
-45
-45
-60
-75
-75
2218
Alpha
2228
2221
2227
Alpha
2209
2230
Alpha
2225
2229
Beta
2226
2224
Gamma
PROBA2/SWAP 17.4nm
2014-12-07T14:26:32.749

Solar Activity

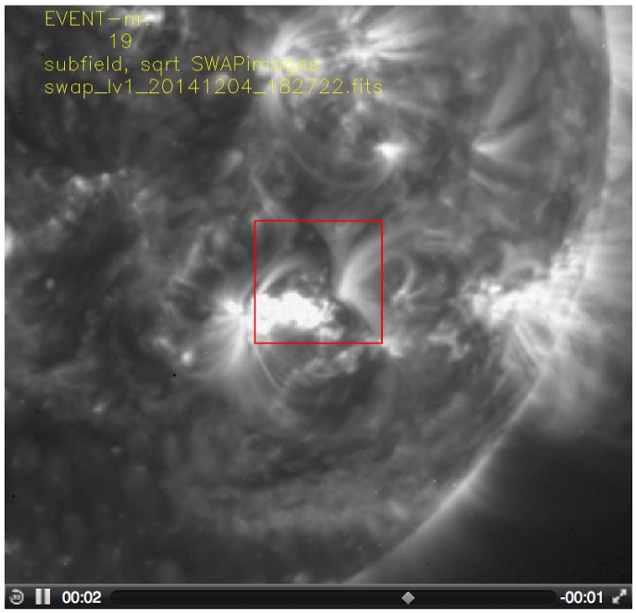
Solar flare activity fluctuated between low and moderate during the week.
In order to view the activity of this week in more detail, we suggest to go to the following website from which all the daily (normal and difference) movies can be accessed: http://proba2.oma.be/ssa
This page also lists the recorded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

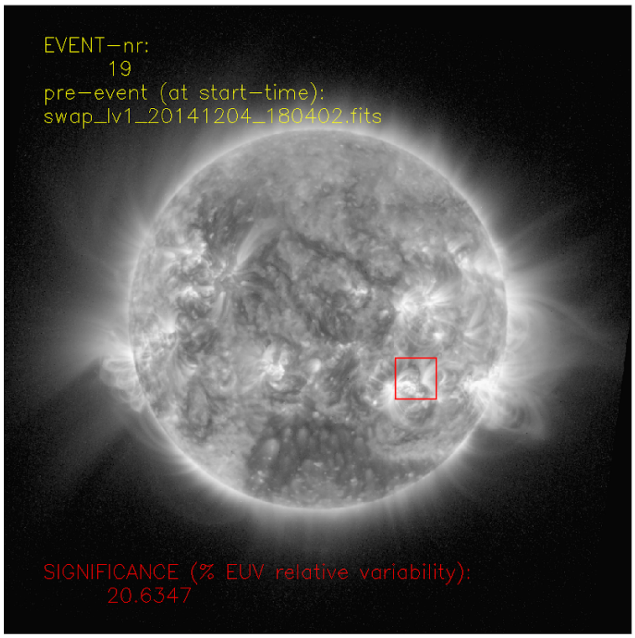
A weekly overview movie can be found here (SWAP week 245).

Details about some of this week's events:

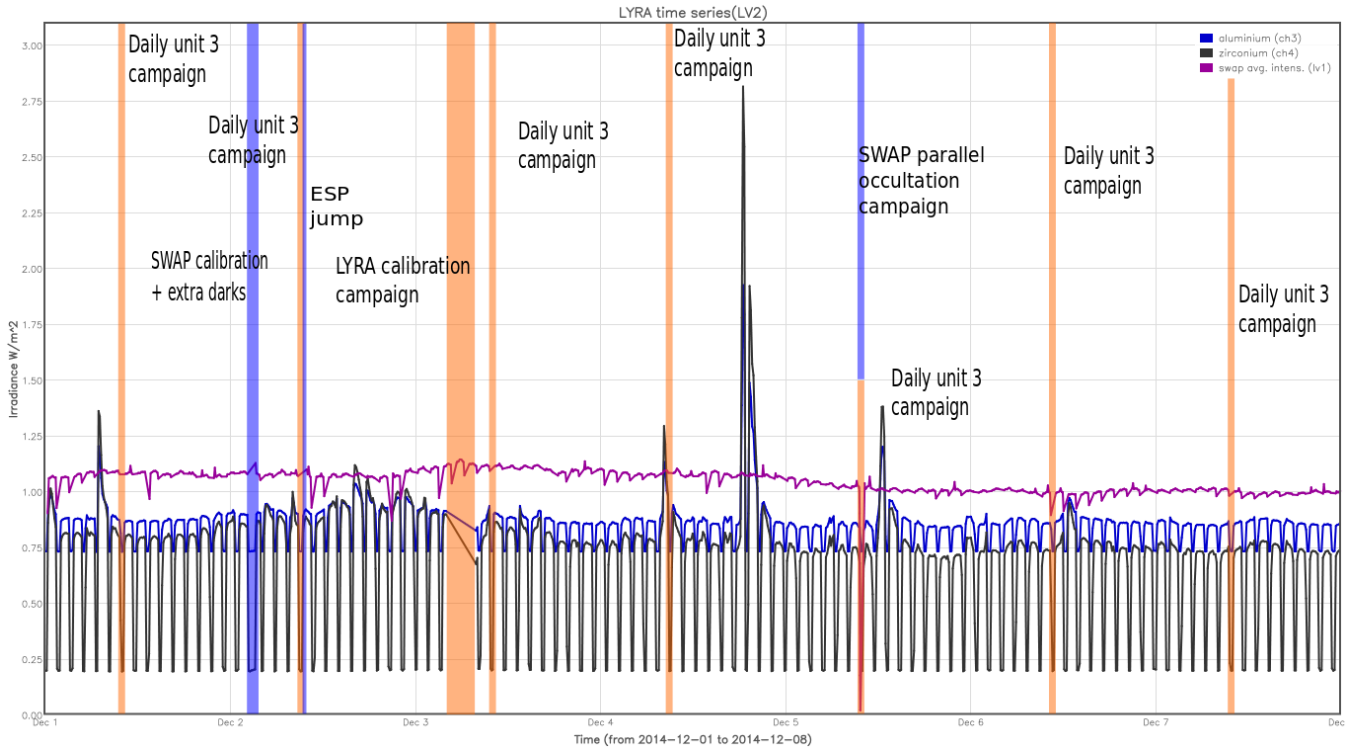
Below we provide SWAP images of the time when a strong M-flare occurred on 2014-Dec-04. These annotated snapshots are produced by the Solar Feature Automated Search Tool (SoFAST). This tool detects dynamic solar events in EUV images from SWAP in real-time. More info on http://www.sidc.be/sofast.

Thursday Dec 04:
M6.1 flare peaking around 18h25





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 extended calibration on Dec 2
- SWAP ESP jump on Dec 2
- SWAP occultation campaign parallel with LYRA on Dec 5

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

- LYRA daily U3 occultation campaign
- LYRA bi-weekly calibration on Dec 3

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

- Judith de Patoul SWAP “Morphology of evolution of plume and inter-plume regions.”
- Janet Machol LYRA “Investigation of solar flares at the Lyman-alpha wavelength with LYRA & GOES data”

Other visitors working with the PROBA2 team

- Li Feng
- Bernd Inhester

2. LYRA instrument status

Calibration

Calibration campaign on Wednesday this week.

IOS & operations

Monday 01 Dec	Tuesday 02 Dec	Wednesday 03 Dec	Thursday 04 Dec	Friday 05 Dec	Saturday 06 Dec	Sunday 07 Dec
Nominal acquisition + daily U3 LYIOS00439	Nominal acquisition + daily U3 LYIOS00439	Nominal acquisition + daily U3 + calibration LYIOS00439	Nominal acquisition + daily U3 LYIOS00439	Nominal acquisition + daily U3 LYIOS00440	Nominal acquisition + daily U3 LYIOS00440	Nominal acquisition + daily U3 LYIOS00440

The following science campaigns were performed by LYRA:

- Daily U3 occultation campaign
- Bi-weekly calibration on Dec 3

LYRA detector temperature

LYRA detector 2 temperature globally varied between 39.3 and 43.60 °C, taking into account the daily U3 activation periods.

3. SWAP instrument status

Calibration

Calibration campaign on Tuesday this week.

MCPM errors

The number of MCPM recoverable errors increased from 24239 to 24439.
The number of MCPM unrecoverable errors increased from 2741 to 2909.

IOS & operations

Monday 01 Dec	Tuesday 02 Dec	Wednesday 03 Dec	Thursday 04 Dec	Friday 05 Dec	Saturday 06 Dec	Sunday 07 Dec
Nominal acquisition IOS00554 614 images	Nominal acquisition + ESP jump + calibration IOS00554 642 images	Nominal acquisition IOS00554 614 images	Nominal acquisition IOS00554 610 images	Nominal acquisition + occultation IOS00555 654 images	Nominal acquisition IOS00555 607 images	Nominal acquisition IOS00555 617 images

Special operations for SWAP, this week:

- SWAP extended calibration on Dec 2: including half an hour of darks prior to usual calibration
- SWAP ESP jump on Dec 2
- Occultation campaign parallel with LYRA on Dec 5

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -4.65 and -2.23 °C.

4. PROBA2 Science Center Status

The main operator is Katrien Bonte.

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 15919 to 15980) 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 2014 Dec 01 0UT and 2014 Dec 08 0UT: 4358
Highest cadence in this period: 29 seconds
Average cadence in this period: 138.57 seconds
Number of image gaps larger than 300 seconds: 103
Largest data gap: 32.17 minutes

The data gap is due to occultations during which we do not take SWAP data.

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)