


P2SC-ROB-WR-230- 20140818 Weekly report #230	P2SC Weekly report	
Period covered: Date: Written by: Approved by:	Mon Aug 18 to Sun Aug 24, 2014 27 Aug 2014 Erik Pylyser Matthew West	Royal Observatory of Belgium - PROBA2 Science Center
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1. Science

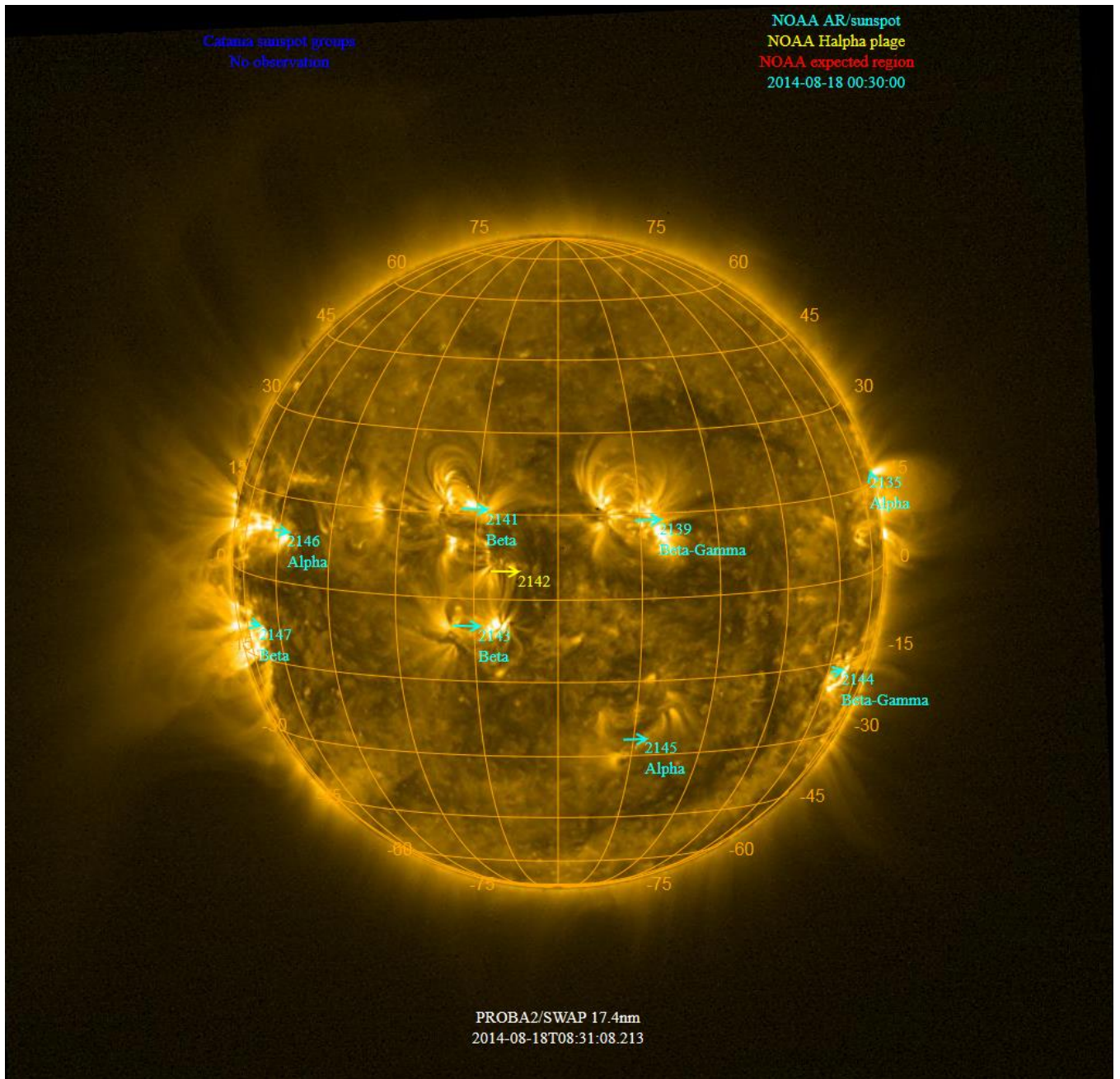
Solar & Space weather events

The level of solar activity was **very low** to **moderate** this week. Three M-flares were recorded, all originating from emerging active regions on the East limb (i.e. AR 12149 and AR 12151).

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

	Monday 18 Aug	Tuesday 19 Aug	Wednesday 20 Aug	Thursday 21 Aug	Friday 22 Aug	Saturday 23 Aug	Sunday 24 Aug
Activity	low	very low	low	moderate	moderate	low	moderate
Flares	-	-	-	M3.4@13:31	M1.3@06:28	-	M5.9@12:17

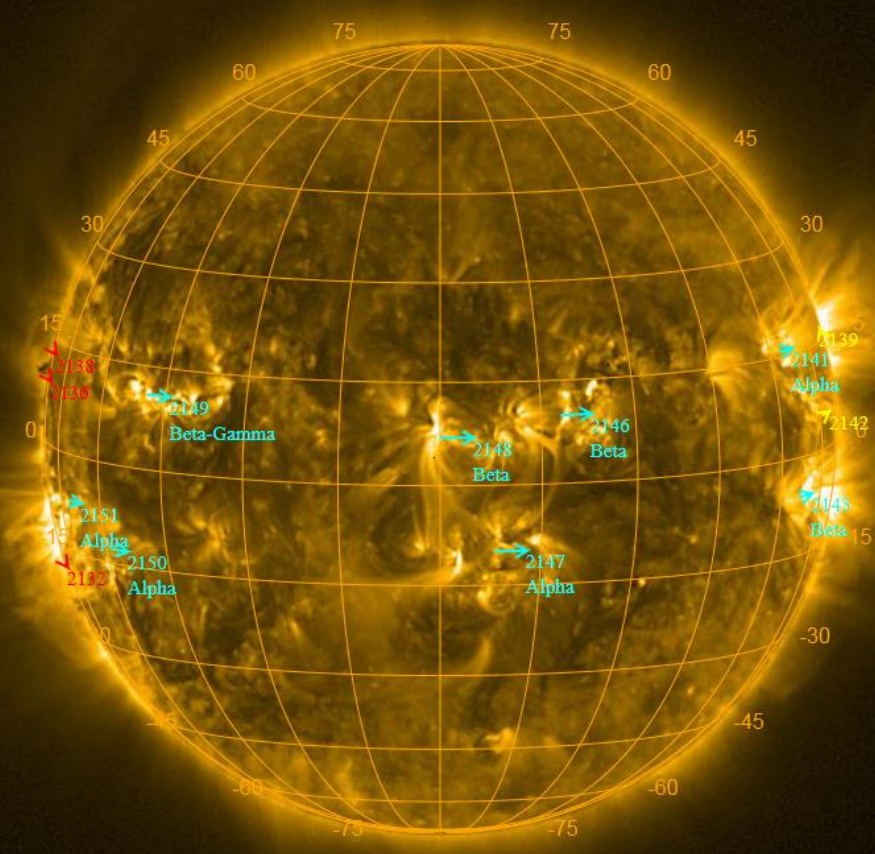
The SWAP images of Aug 18 and Aug 24 are shown below, with annotated active regions.



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

Catania sunspot groups
No observation

NOAA AR/sunspot
NOAA Alpha plage
NOAA expected region
2014-08-24 00:30:00



PROBA2/SWAP 17.4nm
2014-08-24T08:31:56.920

Solar Activity

The level of solar activity was **very low** to **moderate** this week. Three M-flares were recorded, all originating from emerging active regions on the East limb (i.e. AR 12149 and AR 12151).

In order to view the activity of this week in more detail, we suggest going 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 230).

Note the off-point campaigns at the beginning of this movie. They are the consequence of SWAP supporting the LYRA paving campaign at the very beginning of this week (see also section 2 for more details)

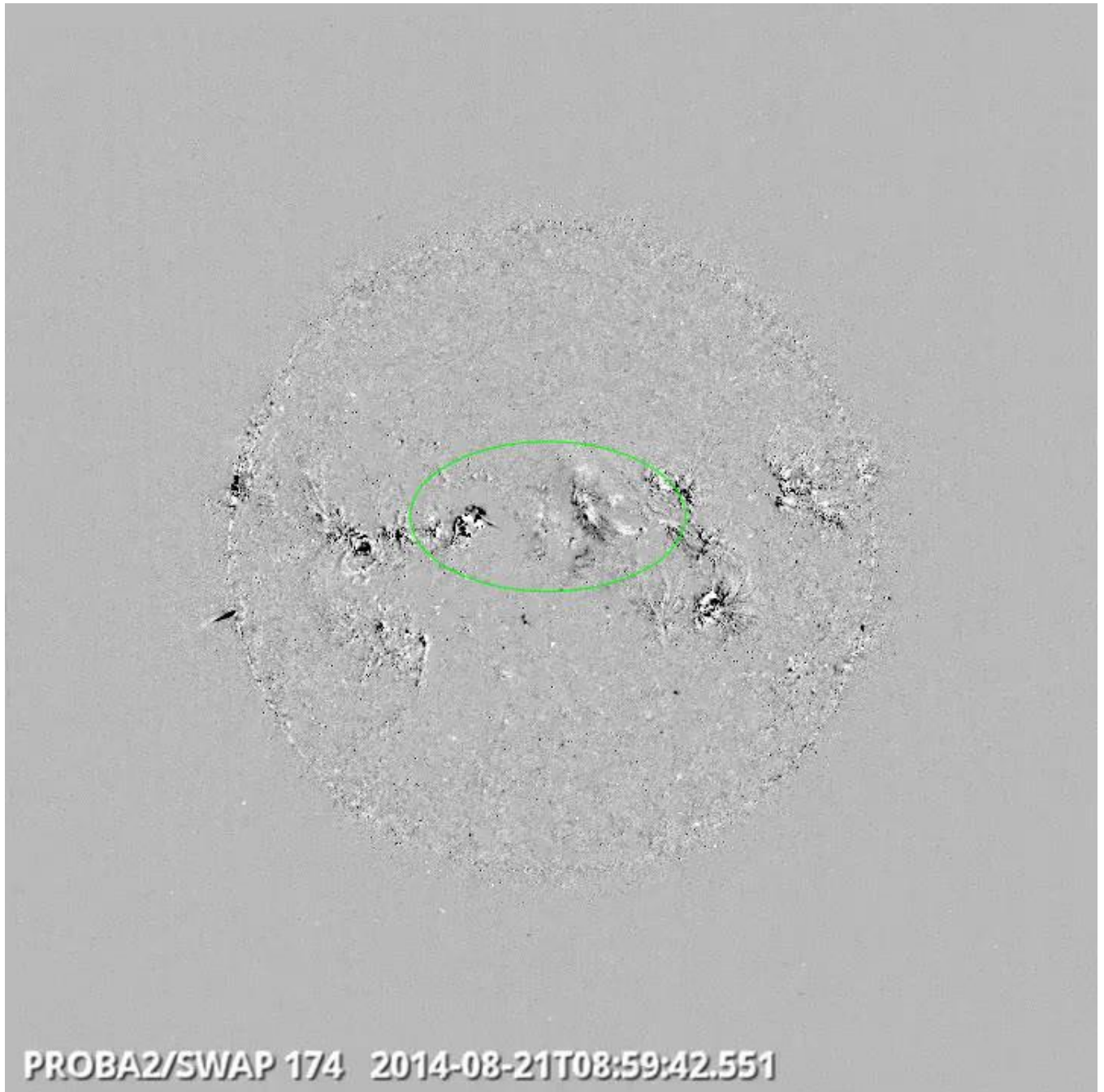
Details about some of this week's events, can be found further below.

Tuesday Aug 19:

On Tuesday 19th, a prominence eruption occurred on the North limb. It can (barely) be seen on the weekly overview movie. It is a long duration occurrence, which triggers, on Thursday Aug 21st, the eruption of another prominence, better visible, slightly to the NNW, as well as the disturbance of the high coronal feature situated above the NNE limb.

Wednesday Aug 20 until (at least and not including) Monday Aug 25:

A long series of 11 EIT waves can be seen being generated over at least 5 days, all originating from the Western tip of AR 12146. All the EIT waves are directed westward. A few of them are shown below.



Eruption with EIT wave, solar centre, from AR 12146 @ 17:57 - SWAP difference image

A movie showing two of the EIT waves (on August 22) can be seen [here](#).

Sunday Aug 24:

On Sunday, an M5.9 flare occurred on the East limb, from the newly emerging AR 12151 on the East limb. This eruption and the mass expelled are very impressive and could have been seen way beyond the SWAP FOV (see the image and movie below). Some of the expelled material falls back. Simultaneously, another EIT wave occurs at AR 12146.

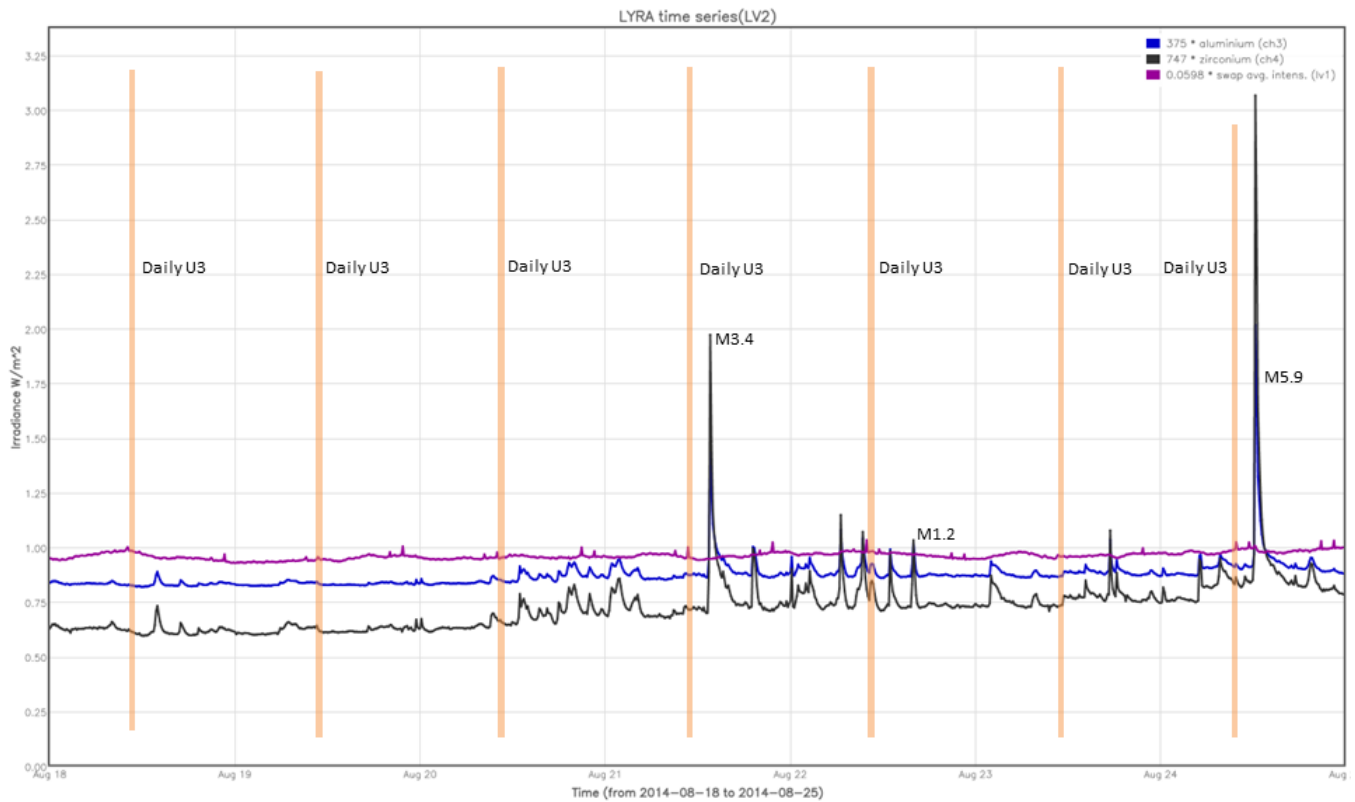


A movie showing the M5.9 flare eruption can be seen [here](#).

An overview of the weekly LYRA & SWAP data is provided below:

The following curves are visible:

- black: Zirconium Channel LYRA Unit 2
- blue: Aluminum Channel of LYRA Unit 2
- purple: SWAVINT (SWAP Average Intensity; integrated solar intensity per SWAP image pixel)



The (LYRA related) orange shaded periods correspond to, from left to right (see also section 2):

- Daily LYRA unit 3 campaign (7 consecutive days)

The (SWAP related) blue shaded periods correspond to, from left to right (see also section 3)

- 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>).

SWAP & LYRA data is being provided to the VENUS EXPRESS mission, in support of their upcoming operations to aerobrake the orbiter into Venus' atmosphere (see also this ESA [link](#)). This type of information is provided on a daily basis and can be found on this [website](#).

Guest Investigator Program

- None

Other Visitors

- None

2. LYRA instrument status

Calibration

No LYRA calibration this week.

IOS & operations

Monday 18 Aug	Tuesday 19 Aug	Wednesday 20 Aug	Thursday 21 Aug	Friday 22 Aug	Saturday 23 Aug	Sunday 24 Aug
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
LYIOS00414	LYIOS00414	LYIOS00414	LYIOS00414	LYIOS00414	LYIOS00414	LYIOS00414

The following science campaigns were performed by LYRA:

- Daily LYRA unit 3 campaign (7 consecutive days)

LYRA detector temperature

During normal operations, the LYRA detector 2 temperature varied between 46.9 and 47.7°C, taking into account the small daily U3 activation temperature peaks.

3. SWAP instrument status

Calibration

No SWAP calibration this week.

MCPM errors

The number of MCPM **recoverable** errors increased from 21362 to 21486.

The number of MCPM **unrecoverable** errors remained at 1657.

IOS & operations

Monday 18 Aug	Tuesday 19 Aug	Wednesday 20 Aug	Thursday 21 Aug	Friday 22 Aug	Saturday 23 Aug	Sunday 24 Aug
Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition
IOS00530 655 images	IOS00530 664 images	IOS00530 664 images	IOS00530 663 images	IOS00530 664 images	IOS00530 664 images	IOS00530 665 images

Special SWAP operations this week

- None

SWAP detector temperature

The SWAP Cold Finger Temperature varied between -0.72 °C and -1.60 °C.

4. PROBA2 Science Center Status

The main operator is Erik Pylyser.

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 14992 and 15053) was nominal.

Data coverage HK

All HK data files (LYRA_AD) have been received.

Data coverage SWAP

All SWAP Science data files (BINSWAP) have been received.

Total number of images between 2014 Aug 18 0UT and 2014 Aug 25 0UT: 4639

Highest cadence in this period: 130 seconds

Average cadence in this period: 130.39 seconds

Number of image gaps larger than 300 seconds: 0

Data coverage LYRA

All LYRA Science data files (BINLYRA) have been received.

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
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)