P2SC-ROB-WR-291 - 20151019 Weekly report #291	**P2SC Weekly report**	
Period covered: Date: Written by: Approved by:	Mon Oct 19 to Sun Oct 25, 2015 28 Oct 2015 Katrien Bonte Matthew West	Royal Observatory of Belgium - PROBA2 Science Center
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1. Science

Solar & Space weather events

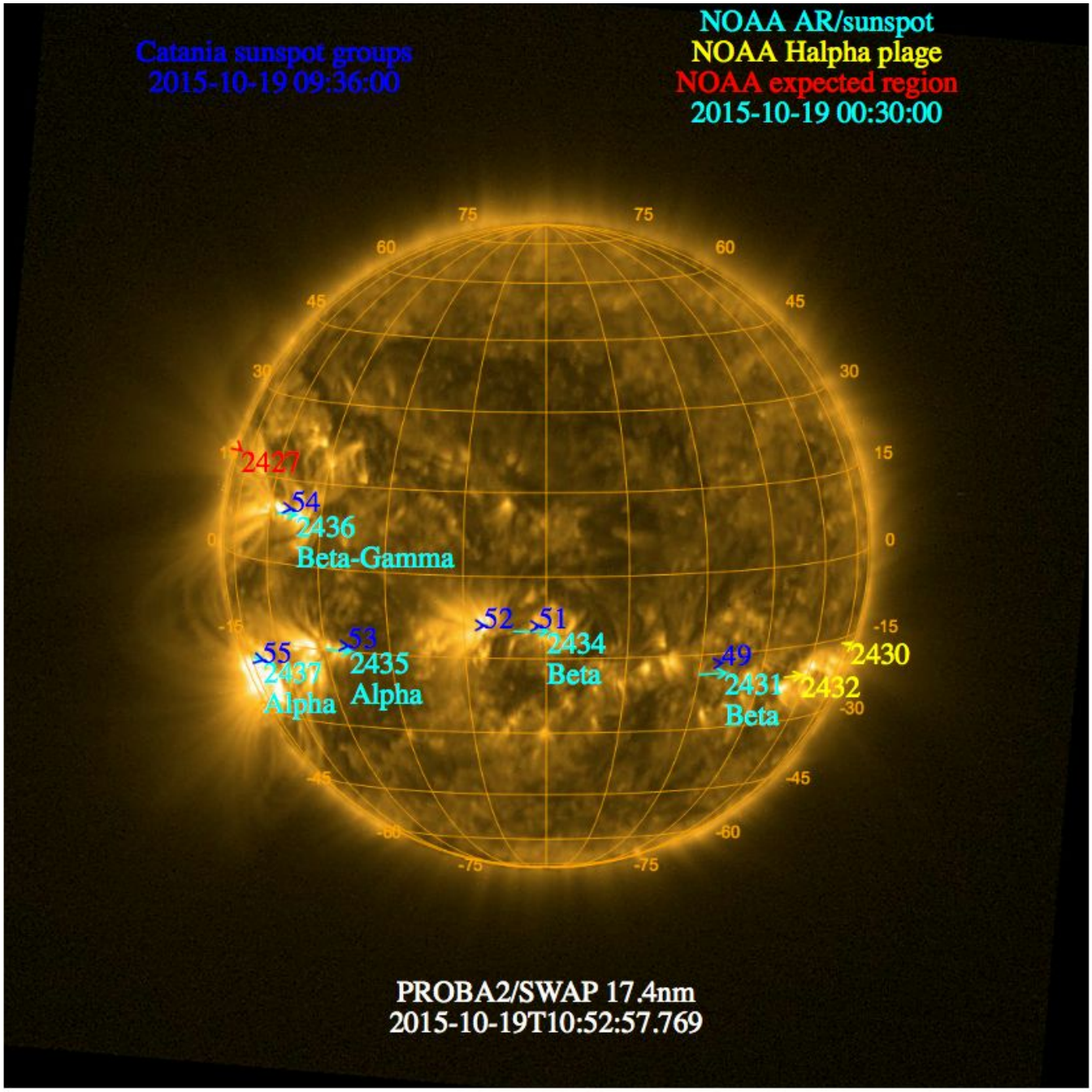
The level of solar activity[1] fluctuated between **very low** and **low** this week.

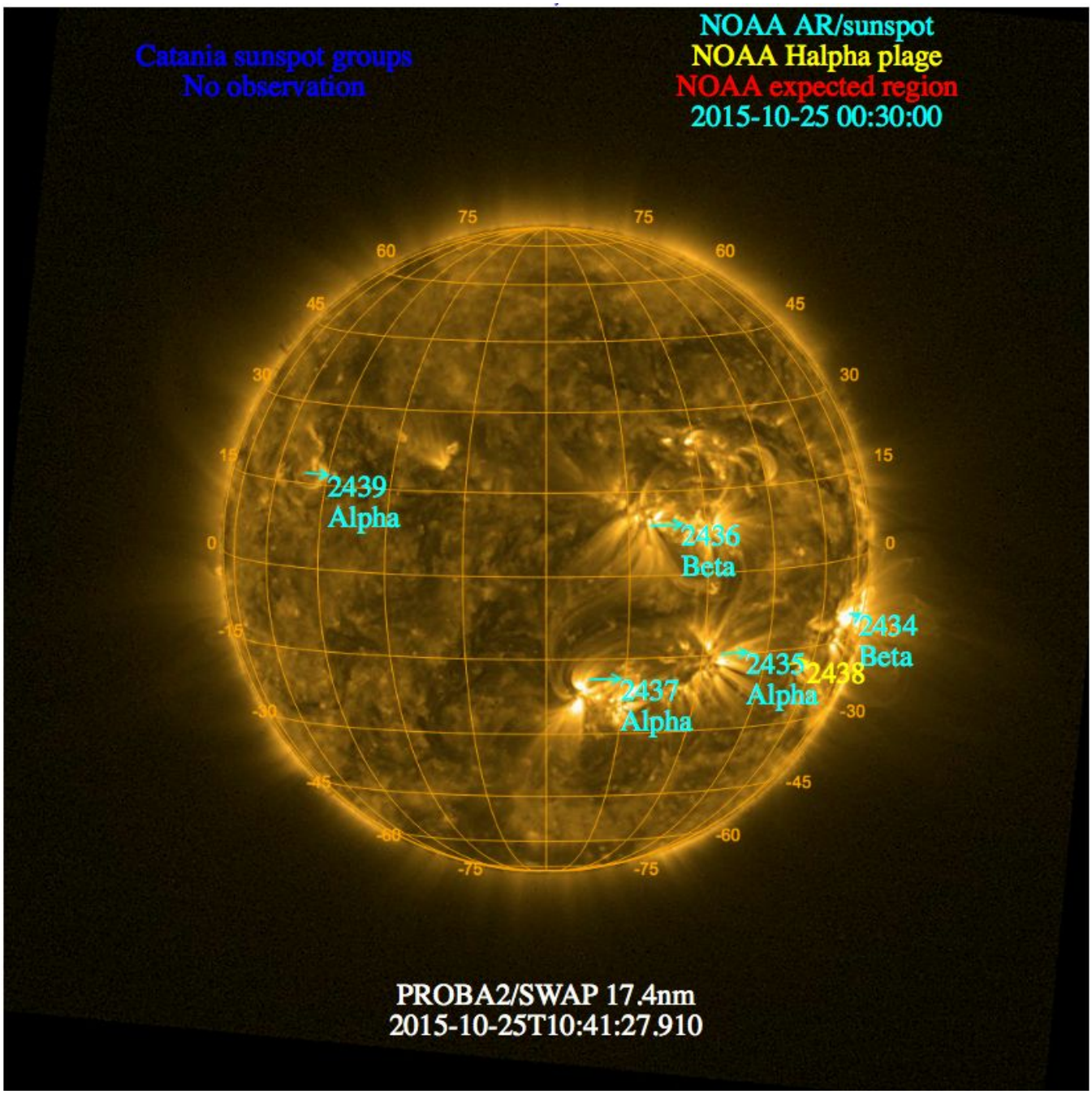
Only M- and X-flares are mentioned, the most energetic one(s) per day are presented in **bold**:

	Monday 19 Oct	Tuesday 20 Oct	Wednesday 21 Oct	Thursday 22 Oct	Friday 23 Oct	Saturday 24 Oct	Sunday 25 Oct
Activity	low	low	low	low	very low	low	very low
Flares	-	-	-	-	-	-	-

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

The SWAP images of Oct 19 and Oct 25 are shown below, with annotated active regions.




Catania sunspot groups
No observation
NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2015-10-25 00:30:00
75
60
45
30
15
0
-15
-30
-45
-60
-75
2439
Alpha
2436
Beta
2434
Beta
2435
Alpha
2438
2437
Alpha
PROBA2/SWAP 17.4nm
2015-10-25T10:41:27.910

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) SWAP movies can be accessed: http://proba2.oma.be/ssa
This page also lists recorded flaring events.

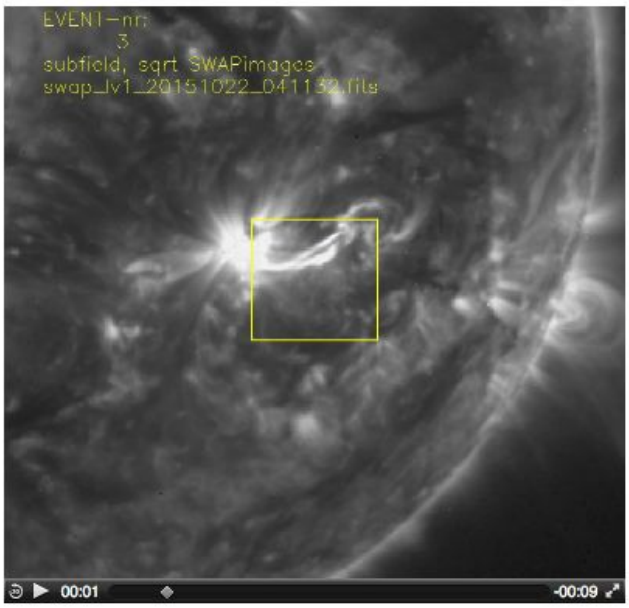
A weekly overview movie can be found here (SWAP week 291).

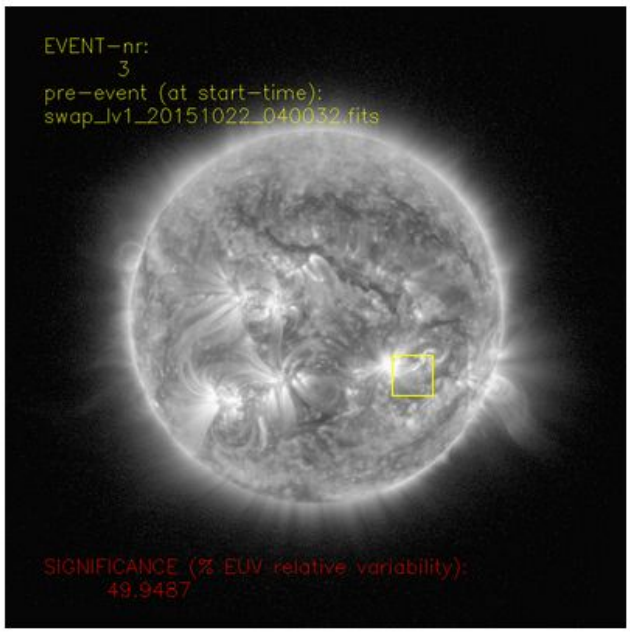
Solar activity was low this week. AR 2434 produced a long duration C-class flare on 2015-Oct-22 between 03:13 and 05:15 UT. Below we provide SWAP images from the time when this C-class flare occurred. The annotated snapshots are produced by the Solar Feature Automated Search Tool (SoFAST). This tool detects dynamic solar events in EUV images from SWAP in near real-time. The snapshots illustrate the location of the flare on the solar disk (right) and a zoomed image (left).

The complete SoFAST online event list and additional plots are available on http://www.sidc.be/sofast.

2015-Oct-22:

Long duration C4.4 flare

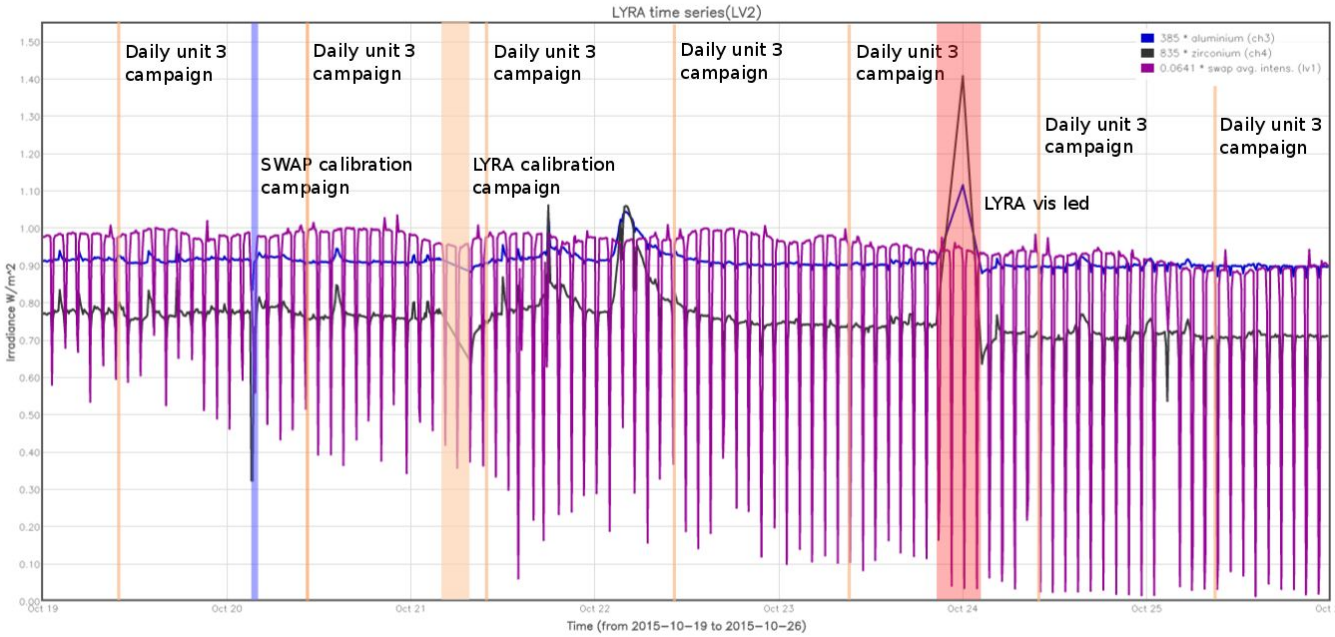




A movie of this event can be found here (SWAP daily movie)

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 campaign on 2015-Oct-20

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

- LYRA daily U3 campaign on 2015-Oct-19
- LYRA daily U3 campaign on 2015-Oct-20
- LYRA short bi-weekly calibration on 2015-Oct-21
- LYRA daily U3 campaign on 2015-Oct-21
- LYRA daily U3 campaign on 2015-Oct-22
- LYRA daily U3 campaign on 2015-Oct-23
- LYRA daily U3 campaign on 2015-Oct-24
- LYRA daily U3 campaign on 2015-Oct-25

The red shaded period corresponds to:

- LYRA visual LED switched on between 2015-Oct-23 20:48 and 2015-Oct-24 02:22 UT

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).

- PROBA2 Guest Investigator Michael Kirk gave a presentation of his work on: “Mapping Solar Cycles Through Polar Coronal Holes” at ROB on 2015-Oct-22

Guest Investigator Program

- 2015-Oct-14 until 2015-Oct-23: Michael Kirk is working at the P2SC, using SWAP data to perform research on: “**Mapping Solar Cycles Through Polar Coronal Holes**.”
- 2015-Oct-21 until 2015-Nov-01: Sabrina Savage is working at the P2SC, **using SWAP data to tie coronal flows to flare arcades spines**.
- 2015-Oct-21 until 2015-Oct-29: Adam Kobelski is working at the P2SC, using SWAP data to **study AR-AR reconnection after flux emergence**.

2. LYRA instrument status

Calibration

Calibration campaign on Wednesday this week.

IOS & operations

Monday 19 Oct	Tuesday 20 Oct	Wednesday 21 Oct	Thursday 22 Oct	Friday 23 Oct	Saturday 24 Oct	Sunday 25 Oct
Nominal acquisition + daily U3 LYIOS00502	Nominal acquisition + daily U3 LYIOS00502	Nominal acquisition + daily U3 + calibration LYIOS00502	Nominal acquisition + daily U3 LYIOS00503	Nominal acquisition + daily U3 + vis led LYIOS00503	Nominal acquisition + daily U3 LYIOS00503	Nominal acquisition + daily U3 LYIOS00503

The following science campaigns were performed by LYRA:

- Daily U3 observation campaigns
- Short bi-weekly calibration on 2015-Oct-21
- Between 2015-Oct-23 20:48 and 2015-Oct-24 02:22 the visual LED was switched on (uncommanded)

LYRA detector temperature

LYRA detector 2 temperature globally varied between 49.66 and 52.52 °C.

3. SWAP instrument status

Calibration

Calibration campaign on Tuesday this week.

MCPM errors

The number of MCPM recoverable errors increased from 174 to 316.
The number of MCPM unrecoverable errors remained 0.

IOS & operations

Monday 19 Oct	Tuesday 20 Oct	Wednesday 21 Oct	Thursday 22 Oct	Friday 23 Oct	Saturday 24 Oct	Sunday 25 Oct
Nominal acquisition IOS00602 597 images	Nominal acquisition + calibration IOS00602 693 images	Nominal acquisition IOS00602 570 images	Nominal acquisition IOS00602 680 images	Nominal acquisition IOS00602 640 images	Nominal acquisition IOS00602 521 images	Nominal acquisition IOS00602 570 images

Special operations for SWAP, this week:

- Bi-weekly calibration on 2015-Oct-20

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between 1.83 and 2.87 °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 18763 to 18824) 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 Oct 19 0UT and 2015 Oct 26 0UT: 4272
Highest cadence in this period: 0 seconds
Average cadence in this period: 141.59 seconds
Number of image gaps larger than 300 seconds: 205
Largest data gap: 11.00 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)