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| P2SC-ROB-WR-353 - 20161226 Weekly report #353 | P2SC Weekly report |  |
| Period covered: Date: Written by: Approved by: | Mon Dec 26, 2016 to Sun Jan 01, 2017 04 Jan 2017 Robbe Vansintjan Matthew West | Royal Observatory of Belgium - PROBA2 Science Center |
| To: | LYRA PI, marie.dominique@sidc.be SWAP PI, david.berghmans@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

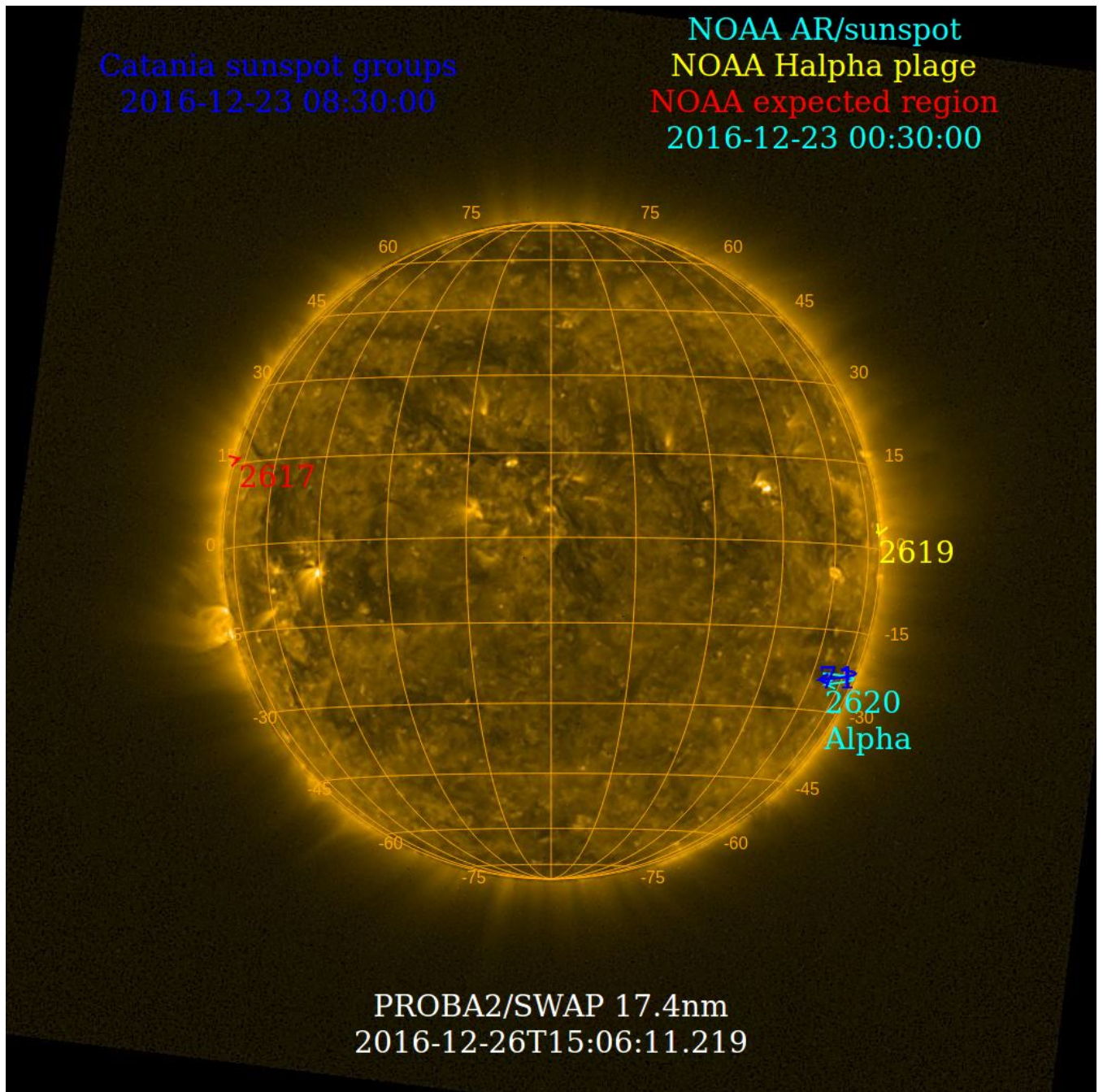
The level of solar activity¹ fluctuated remained **very low** this week.

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

| | Monday 26 Dec | Tuesday 27 Dec | Wednesday 28 Dec | Thursday 29 Dec | Friday 30 Dec | Saturday 31 Dec | Sunday 01 Jan |
|----------|------------------|-------------------|---------------------|--------------------|------------------|--------------------|------------------|
| Activity | very low | very low | very low | very low | very low | very low | very low |
| Flares | - | - | - | - | - | - | - |

¹ See appendix. All timings are given in UT.

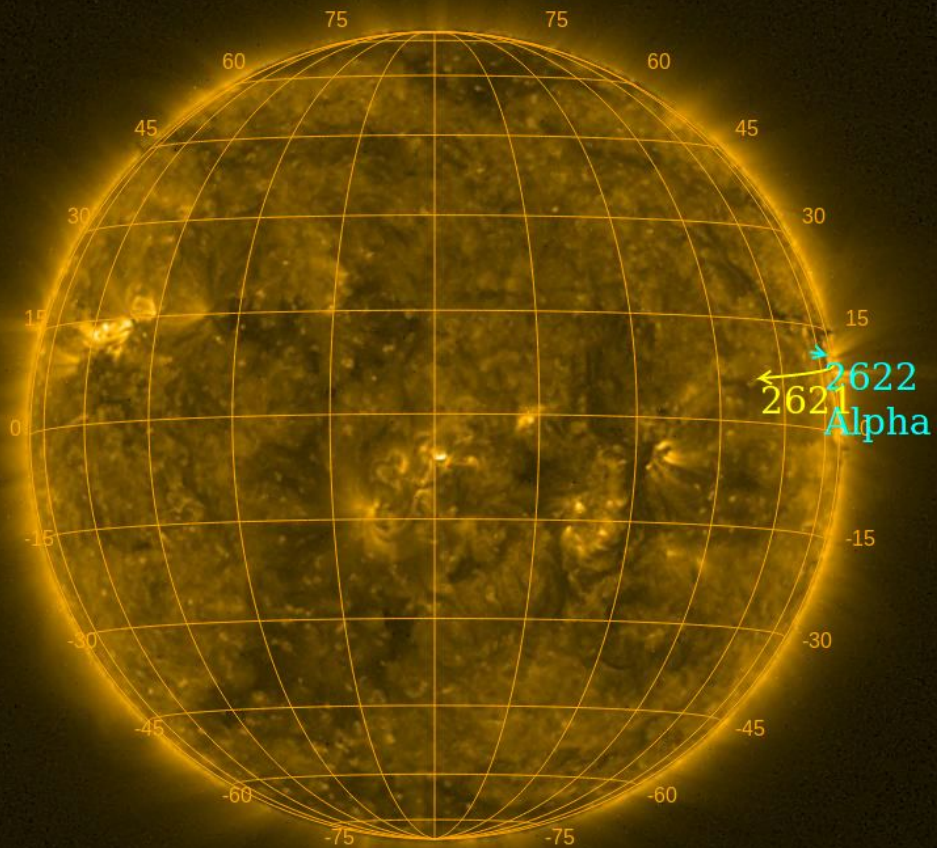
The SWAP images of Dec 26 and Jan 01 are shown below, with annotated active regions.



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

Catania sunspot groups
No observation

NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2017-01-01 00:30:00



PROBA2/SWAP 17.4nm
2017-01-01T13:44:56.407

Solar Activity

Solar flare activity fluctuated remained very 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>

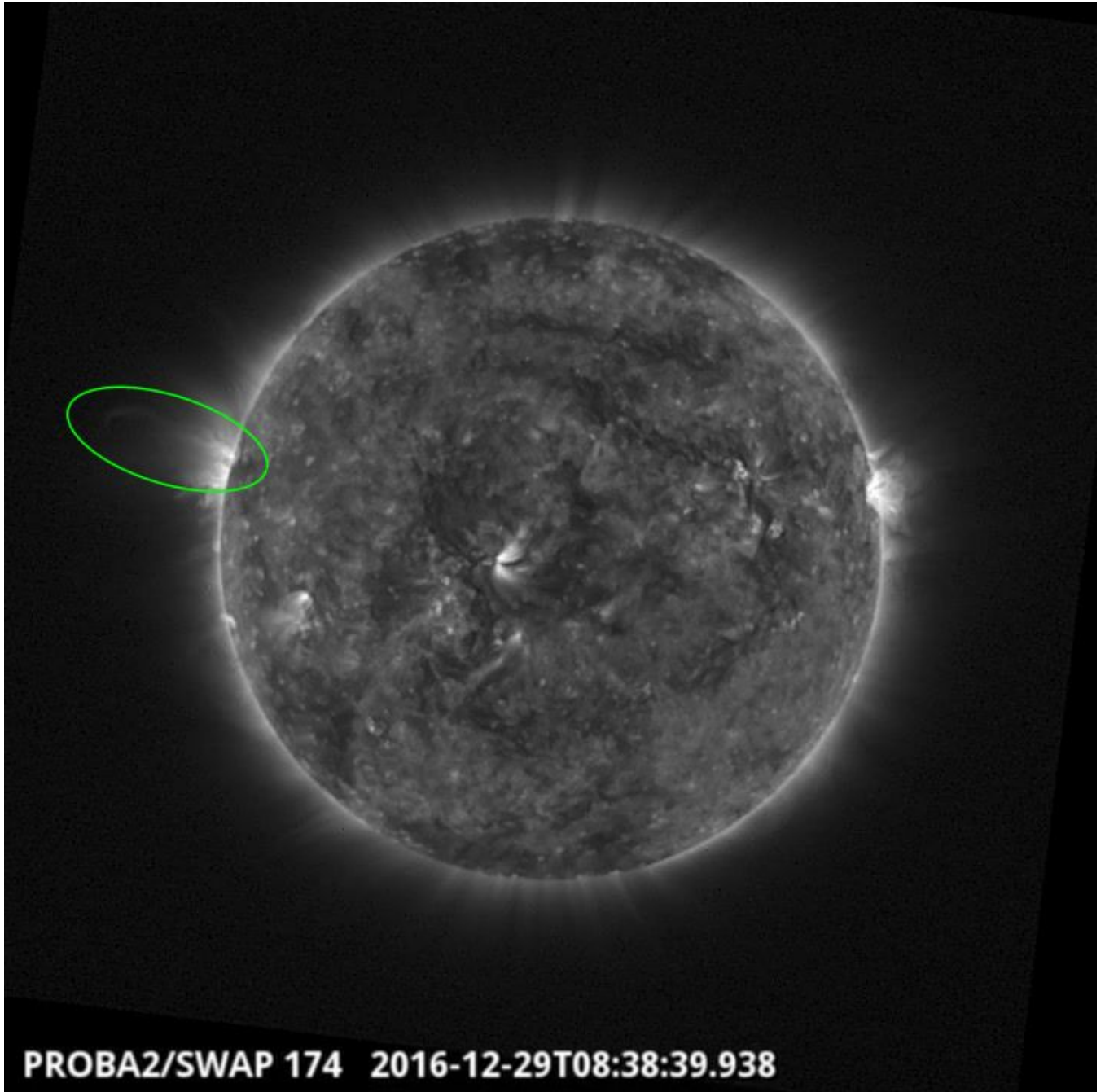
This page also lists the recorded flaring events.

A weekly overview movie can be found [here](#) (SWAP week 353).

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](#)

Saturday Dec 29

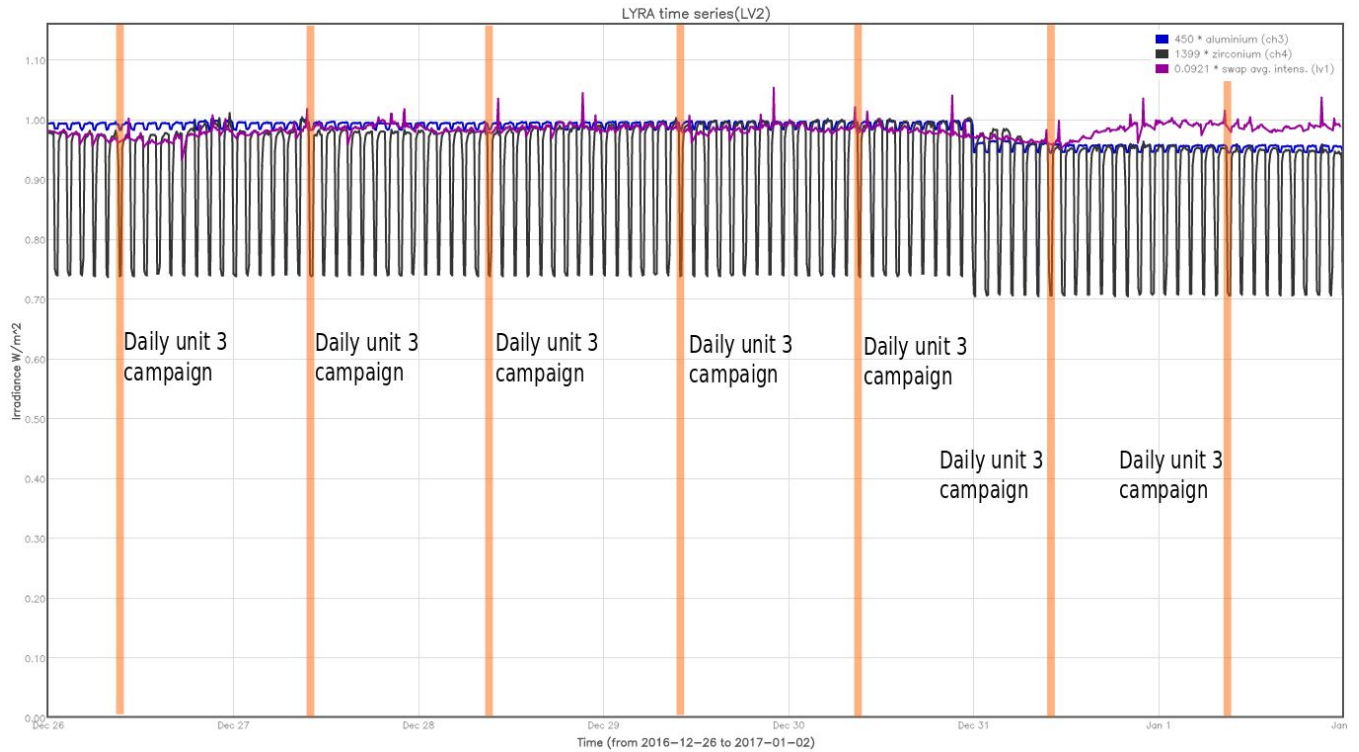


An eruption was observed by SWAP on the east limb of the Sun on 2016-Dec-29 at 08:38 UT
Find a movie of the event [here](#) (SWAP movie)

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 orange shaded periods correspond to, from left to right:

- Daily unit 3 campaign, 2016-12-26
- Daily unit 3 campaign, 2016-12-27
- Daily unit 3 campaign, 2016-12-28
- Daily unit 3 campaign, 2016-12-29
- Daily unit 3 campaign, 2016-12-30
- Daily unit 3 campaign, 2016-12-31
- Daily unit 3 campaign, 2017-01-01

NOTE: The calibration of LYRA data (level 2) has been updated on December 31 2016 00:00:00 to take into account new information about the evolution of dark current, as well as the result of the last calibration campaigns. This update currently results in a small amplitude jump in the timeseries. This jump should disappear the next time the data will be reprocessed, in a few months.

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

No calibration this week.

IOS & operations

| Monday 26 Dec | Tuesday 27 Dec | Wednesday 28 Dec | Thursday 29 Dec | Friday 30 Dec | Saturday 31 Dec | Sunday 01 Jan |
|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| 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 |
| LYIOS00591 | LYIOS00591 | LYIOS00591 | LYIOS00591 | LYIOS00591 | LYIOS00591 | LYIOS00591 |

The following science campaigns were performed by LYRA:

- daily U3 observations campaign

LYRA detector temperature

LYRA detector 2 temperature globally varied between 39.8 and 42.7 °C.

3. SWAP instrument status

Calibration

Calibration campaign on Tuesday this week.

MCPM errors

The number of MCPM recoverable errors increased from 5604 to 5606.

The number of MCPM unrecoverable errors remained at 0.

IOS & operations

| Monday 26 Dec | Tuesday 27 Dec | Wednesday 28 Dec | Thursday 29 Dec | Friday 30 Dec | Saturday 31 Dec | Sunday 01 Jan |
|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| Nominal acquisition | Nominal acquisition | Nominal acquisition | Nominal acquisition | Nominal acquisition | Nominal acquisition | Nominal acquisition |
| IOS00677 746 images | IOS00677 779 images | IOS00677 722 images | IOS00677 782 images | IOS00677 733 images | IOS00677 801 images | IOS00677 718 images |

Special operations for SWAP, this week:

- None

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -4.7 and -2.7 °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 22725 to 22790) 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 2016 Dec 26 0UT and 2017 Jan 02 0UT: 5281

Highest cadence in this period: 70 seconds

Average cadence in this period: 114.33 seconds

Number of image gaps larger than 300 seconds: 109

Largest data gap: 32.73 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)