


P2SC-ROB- WR-007-20100426 Weekly Report # 007	<h2>P2SC Weekly report</h2>	
Period Covered: Date: Written By: Released By:	Mon April 26 to Sun May 02 2010 April 26 2010 Marie Dominique David Berghmans	Royal Observatory of Belgium PROBA2 Science Center
	To: LYRA PI, hochedez@sidc.be SWAP PI, david@sidc.be	http://proba2.sidc.be ++ 32 (0) 2 373 0 559
	cc: ROB DIR, ronald@oma.be ESA Redu, Etienne.Tilmans@esa.int ESA D/SRE, Joe.Zender@esa.int ESA D/TEC, Karsten.Strauch@esa.int	

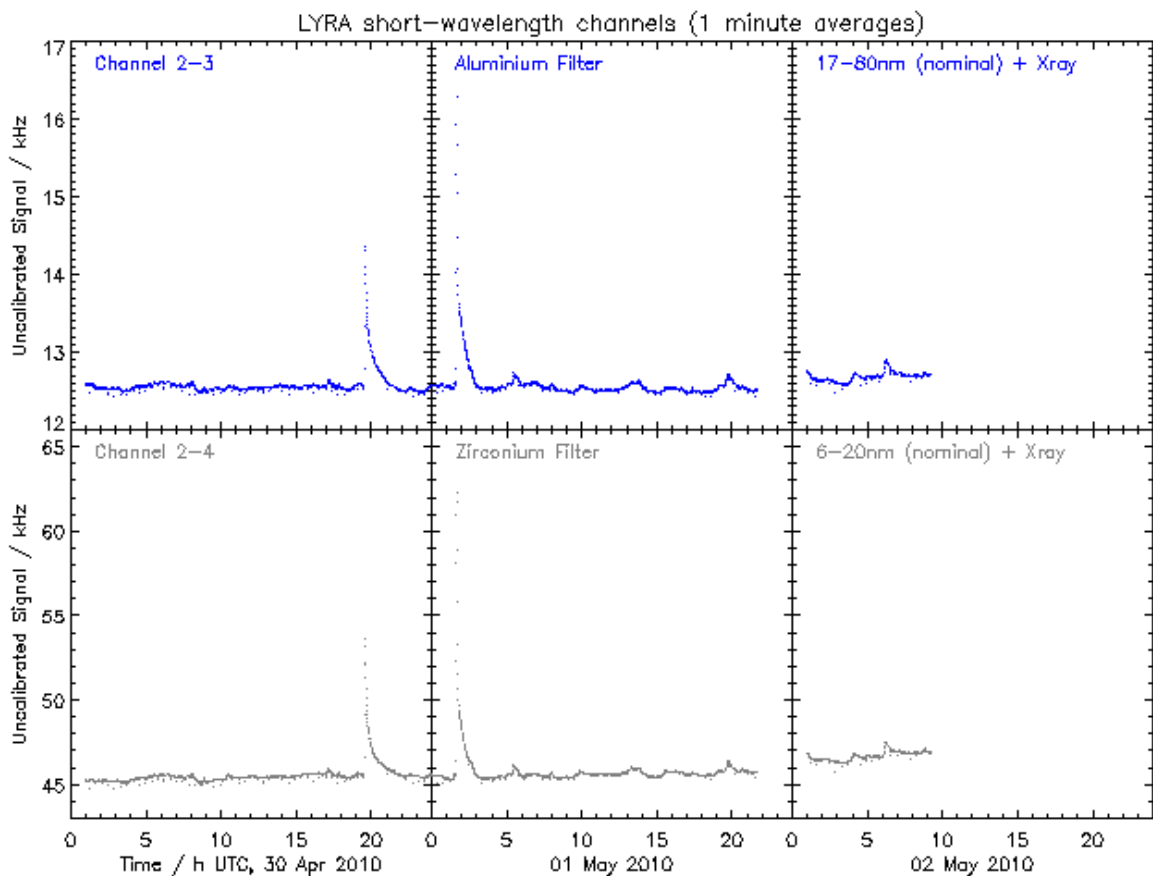
1. Science

2010-04-30/2010-05-01 LYRA/SWAP sees two fast flares

GOES reference:

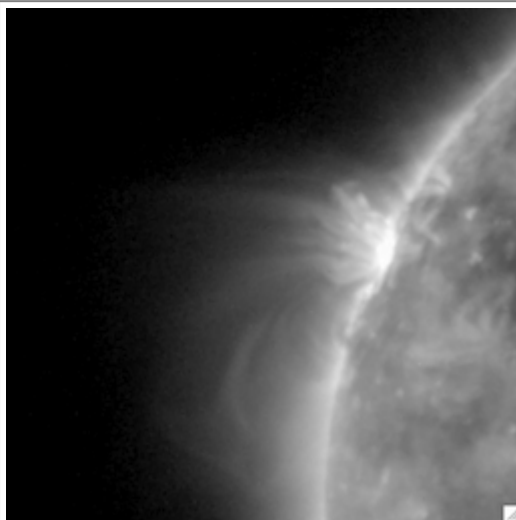
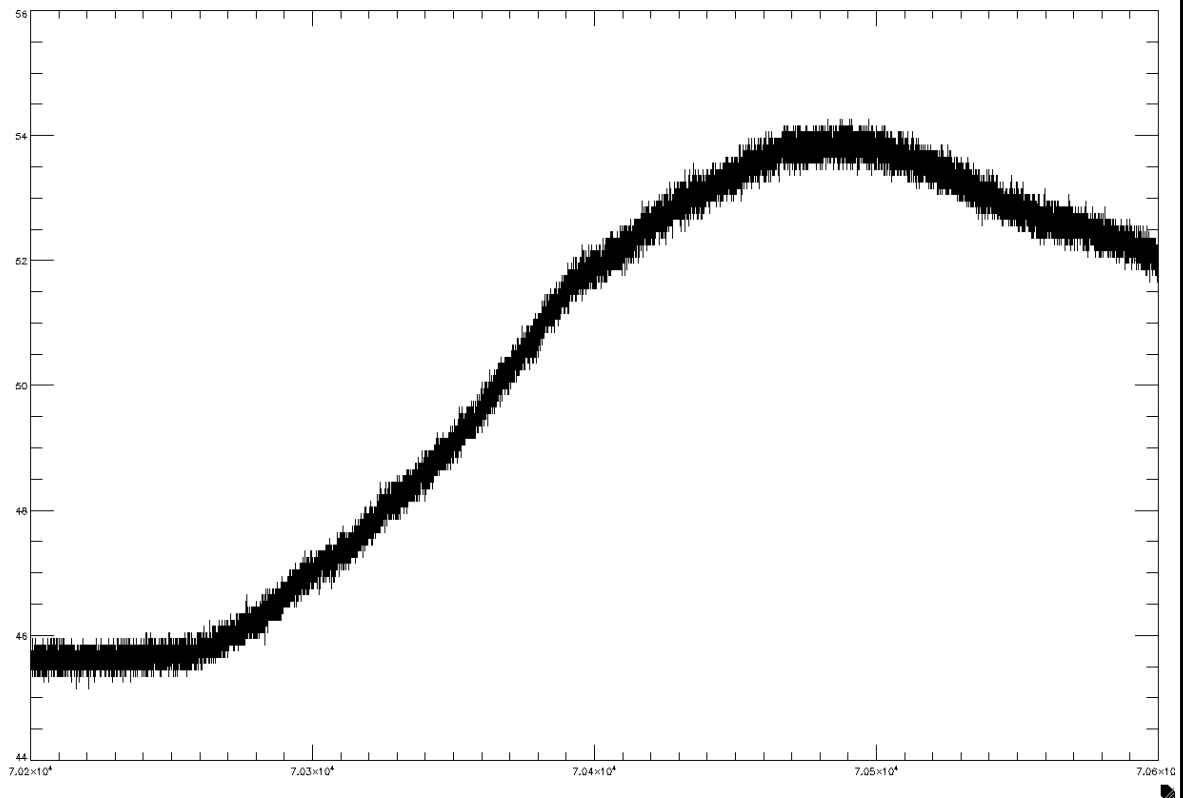
April 30, 19:28-19:38 (peak 19:34): C2.2

May 1, 01:34-01:43 (peak 01:39): C5.7

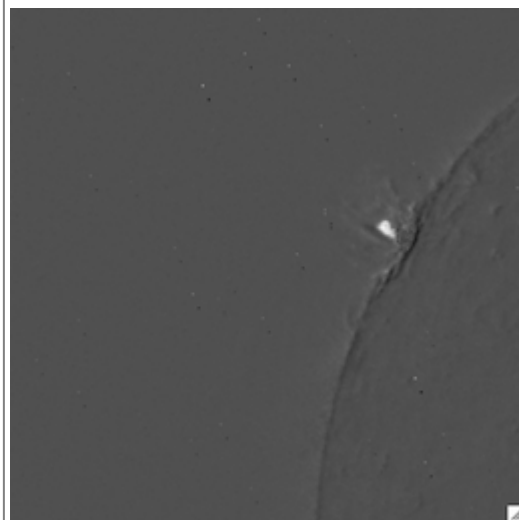


ROB/SIDC, Brussels, Belgium

A zoom-in on the first flare shows that at 100Hz even this very fast flare is strongly oversampled allowing in future deeper statistically analysis of fluctuations and eventual precursors.



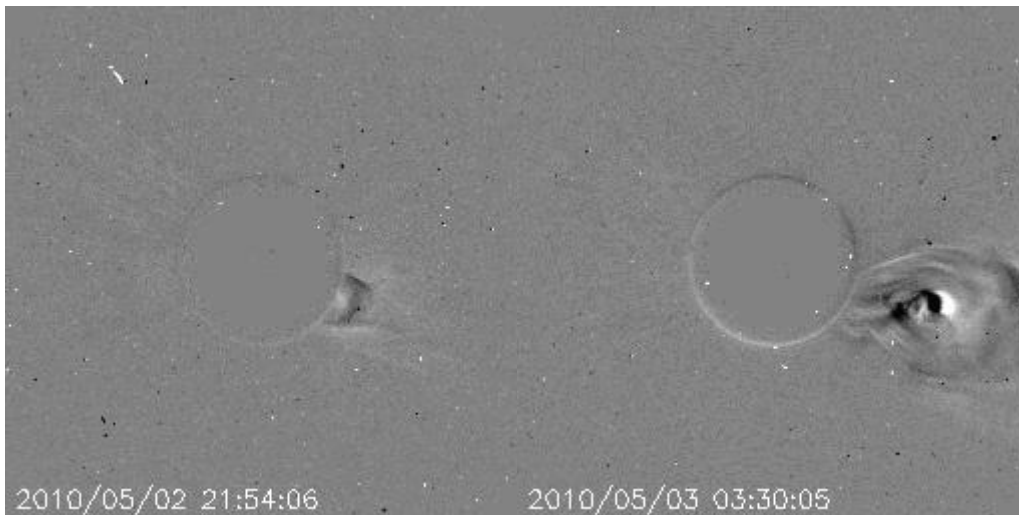
SWAP subfield April 30, 19h30 showing the global structure of the flaring active region.



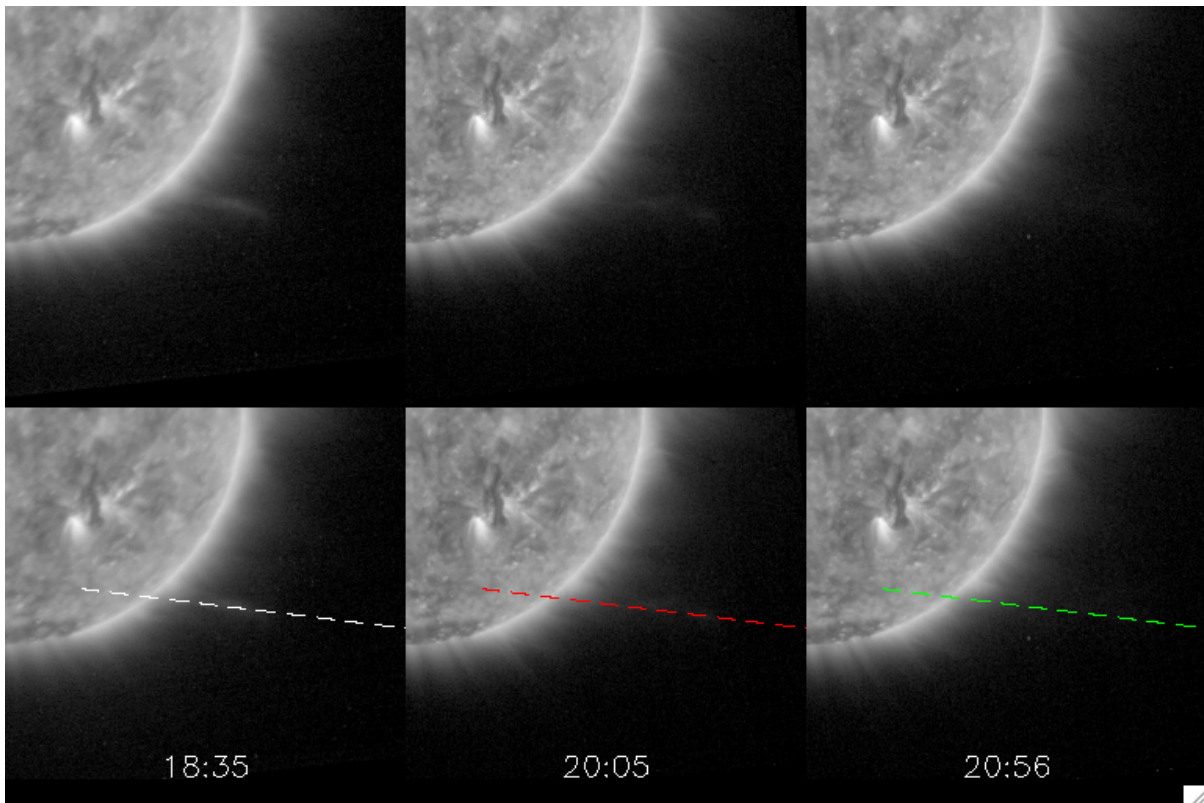
SWAP subfield April 30, difference 19h34-19h30. The flare kernel is clearly visible.

2010-05-02 Eruption in SWAP FOV

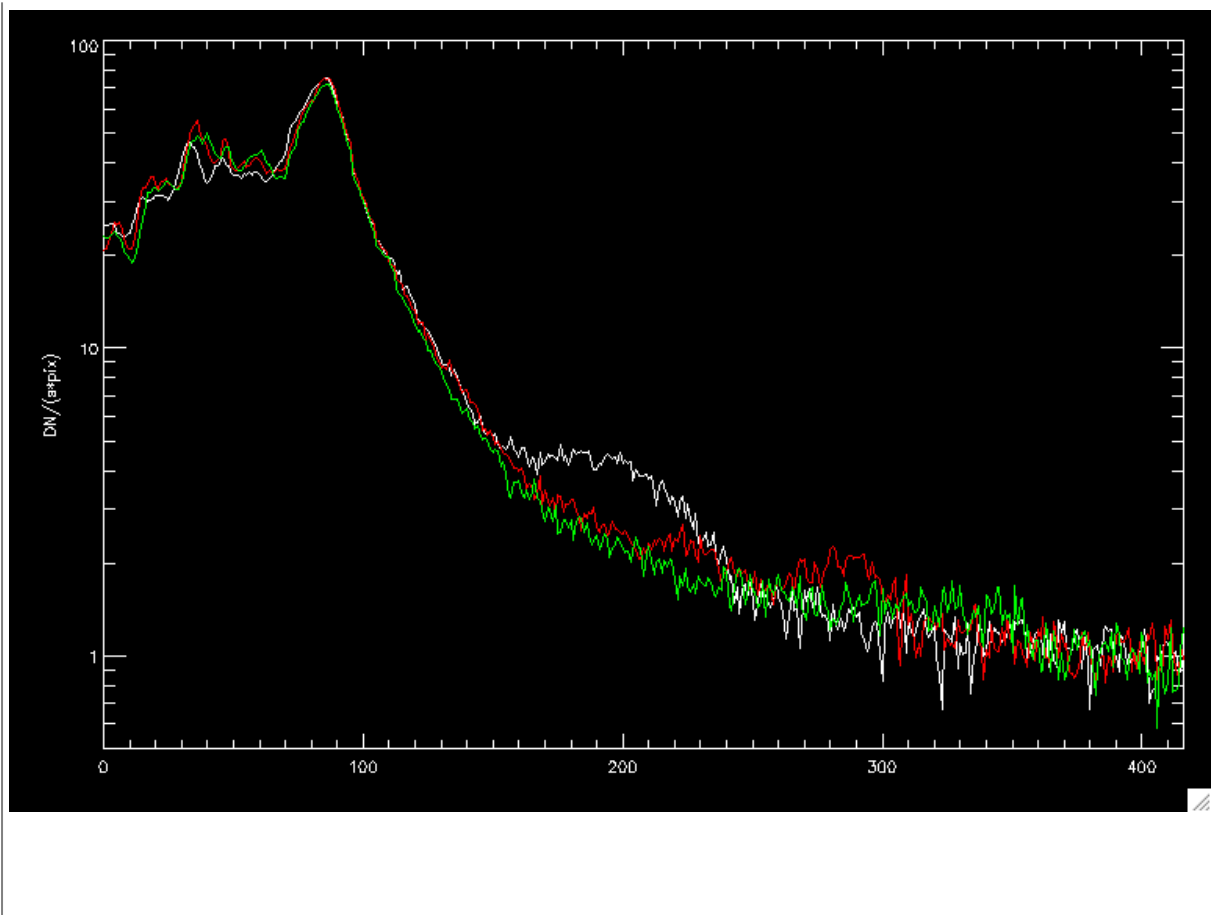
SOHO (LASCO C2) observed the following CME (automatically detected by <http://sidc.be/cactus>)



The eruption was also seen in the SWAP FOV.



To explore the signal strength of the eruption, we take a cut in the above subfields and plot below the signal along the cut. The source are SWAP LV1 files, so the vertical axis is $\text{DN}/(\text{s} \cdot \text{pix})$. The integration time was 10s. The horizontal axis is approximately in pixel units. Each value is the average of 5 actual pixel values, 2 above and 2 below the cut. The eruption can be clearly seen in the 18h35 cut (white), reasonable be seen in the 20h05 cut (red) and only vaguely be seen in the 20h56 cut (green).



2. LYRA instrument status

The LYRA instrument functioned normally during the period.

In an ongoing MOC-SOC discussion, the observed LYRA daily temperature variations are linked to the albedo. This is TBC.

2010-04-26 (IOS 00058)

LYRA remains acquiring at high cadence with unit 2.

2010-04-28 (IOS 00060)

In addition to the standard LREP_02, we performed a special version of LREP_03.

The latter consisted in 3 orbits of 1s acquisitions with units 1 and 3 and 1/2h covers closed, 1/2h covers open and 1/2h covers closed.

- The first sequence (orbit) without LEDs
- The 2nd sequence with UV LED ON during the first 1/2h (while covers closed)
- The 3rd sequence with UV LED ON during the first hours (while covers being closed and then opened).

This test is another attempt to see whether the LEDs can be used to fasten the stabilization of the diamond detector signal.

After the campaign, we go back to nominal unit 2 acquisition with 10ms cadence. But a mistake in the IOS did that unit1 was kept acquiring (though its cover was closed).

2010-04-29 (IOS 00061)

Unit 1 is switched off. We are back to the normal.

3. SWAP instrument status

The SWAP instrument functioned normally during the period.

2010-04-26 Nominal Imaging (IOS00106)

Table acquisition at 120s cadence, jumping over LARs.

The flag to disable imaging during LARs was switched on. The behavior of this is still not completely understood:

- the first image after the LAR doesn't always fit the expected time of acquisition
- some LAR images haven't been skipped
- other have been skipped too early
- ...

This is in discussion with the MOC.

2010-04-27 10:00-10:51 SREP_02_LED_Sequence (IOS00107)

The weekly LED calibration sequence was run. Apart from the 3s LED and dark images, and the 10s darks, we also took more than 10 solar images without any processing. The time of off-pointing was from 10:00 to 10:29.

From 2010-04-27 10:00 Nominal Imaging (IOS00107)

After the calibration, SWAP remains imaging through a table of 3 entries, with 3 different priority numbers. The only differences with the previous week is the cadence, which has been decreased to 100 seconds (the on-board buffer was too frequently emptied during contacts, indicated that the cadence was not optimal), and the jumping over LARS was still activated.

2010-04-30 SEU upset in MCPM

The MCPM NB RECOV ER jumped by two (143 to 145) at once on 2010-04-30T19:19:52.000Z. This is more than 10 minutes before the flare of April 30 and no other disturbance in space weather conditions could be identified. The cause of this jump is thus unknown. The MCPM NB UNREC ER remained at zero.

4. PROBA2 Science Center Status

Marie Dominique was operator during this week.

In the LYRA pipeline, only the LY-TMR runs automatically. The LY-EDG, taking a lot of time to complete, is scheduled manually on a daily basis, when no overlap is expected with the after-pass activities.

A few minor updates were performed.

2010-04-26 DCVC conf was modified

The lower limit of SW NB PRO IM is set back to 0 in DCVC configuration.

2010-04-28 ADP was updated

The ADP was updated to r3096 to accept gzipped tar files as well as unzipped tar files. P2SC is now ready to receive zipped LYRA_AD files.

2010-04-28 QL viewers were updated

The QL/aux was updated to r3098 to accept the auxiliary event files as well as .bmp format pass planning plots in addition to .jpg.

The QL/swap was updated to r2112 to improve the barplots.

The QL/lyra was updated to r2112 to improve the barplots. LYQLV was also added to the LMATtools.ini file and activated as nexttool for ADP.

2010-04-28 PP_MAKEPLOT was updated

This tool was updated to r2112 to improve the barplots. It was also reactivated in LMATtools.ini as nexttool for PP_PROC.

2010-04-28 ODP/PP_PLOT was updated

This tool was updated to r3119 to add the status of the LEDs to the LYRA ql plot.

2010-04-28 SWTMR was updated

SWTMR: improve metadata FITS keywords writing

2010-04-29 EDG was updated

LY-EDG: use TLE derived PPT position; use ppt_time_unix2tai

5. Data reception & discussions with MOC

Overview of the received data.

This section overviews the recovery data from pass 1084 to pass 1150 (26-04-2010 / 02-05-2010).

House keeping data

On 2010-04-28T15:46:16.000, LY HK13 CUR 28V = -1.81889, which is outside the authorized range (min = -0.04; max = 0.5). This concerns a single measurement point

which doesn't look real: the 28V is the primary source from which the other voltages are obtained. If there really was a drop in its current, I would have expected that we see it on the other voltage sources as well. When looking at LYRA activities, this wrong value could be linked to the transition in acquisition mode.

No gaps in HK (or filled after reprocessing).

Science data

Globally, the number of corrupted data has been quite high this week, both for LYRA and SWAP:

in SWAP

Corrupted data:

- Pass 1086 : BINSWAP201004260435360000051162PROCESSED
- Pass 1072 (reprocessing from April 24):
 - BINSWAP201004241620240000051306PROCESSED
 - BINSWAP201004241337570000051327PROCESSED
 - BINSWAP201004241620240000051386PROCESSED
 - BINSWAP201004241337570000051407PROCESSED
- Pass 1123: BINSWAP201004292327170000054081PROCESSED
- Pass 1131: BINSWAP201004301959190000054747PROCESSED
- Pass 1142:
 - BINSWAP201005012326500000055523PROCESSED
 - BINSWAP201005012334450000055524PROCESSED

'Noticeable gaps in the data:

12 missing image NUMBERS in PSR_BIN_SWAP_1072.txt (runID = 21141)'

in LYRA

- Pass 1072: filenames don't match the naming convention ("- " in the name)
- Pass 1093: filenames don't match the naming conventions ("- " in the name, after a CRC error)
- Pass 1123: dates in the filename are inconsistent, corresponding to years 1913, 1919, 1929
- Pass 1142: date in the filename is inconsistent, corresponding to year 1940

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
DR	Destructive Readout
DSLIP	Dual Segmented Langmuir Probe

EIT	Extreme ultraviolet Imaging Telescope
FITS	Flexible Image Transport System
FOV	Field Of View FPA Focal Plane Assembly
FPGA	Field Programmable Gate Arrays
GPS	Global Positioning System
HAS	High Accuracy Star tracker
HK	Housekeeping
ICD	Interface Control Document
IIU	Instrument Interface Unit
IOS	Instrument Operations Sheet
LED	Light Emitting Diode
LEO	Low Earth Orbit
LYRA	Lyman Yield 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
OBET	On board Elapsed Time
OBSW	On board Software
PE	Proximity Electronics
PGA	Programmable Gain Amplifier
PI	Principal Investigator
P2SC	PROBA2 Science Center
PPT	Pointing, Positioning and Time (software module of P2SC)
ROB	Royal Observatory of Belgium
SAA	South Atlantic Anomaly
SCOS	Spacecraft Operation System
SEU	Single Event Upset
SOHO	Solar and Heliospheric Observatory
SWAP	Sun Watcher using APS detector and image Processing
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
TBW	To Be Written TC Telecommand
TPMU	Thermal Plasma Measurement Unit
UTC	Coordinated Universal Time
UV	Ultraviolet