P2SC-ROB-WR-128-20120903 Weekly report #128	**P2SC Weekly report**	
Period covered: Date: Written by: Approved by:	Mon Sep 03 to Sun Sep 09, 2012 12 Sep 2012 Erik Pylyser David Berghmans	Royal Observatory of Belgium PROBA2 Science Center
To:	LYRA PI, marie.dominique@sidc.be SWAP Deputy PI, dan.seaton@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, Stefano.Santandrea@esa.int	

1. Science

Solar & Space weather events

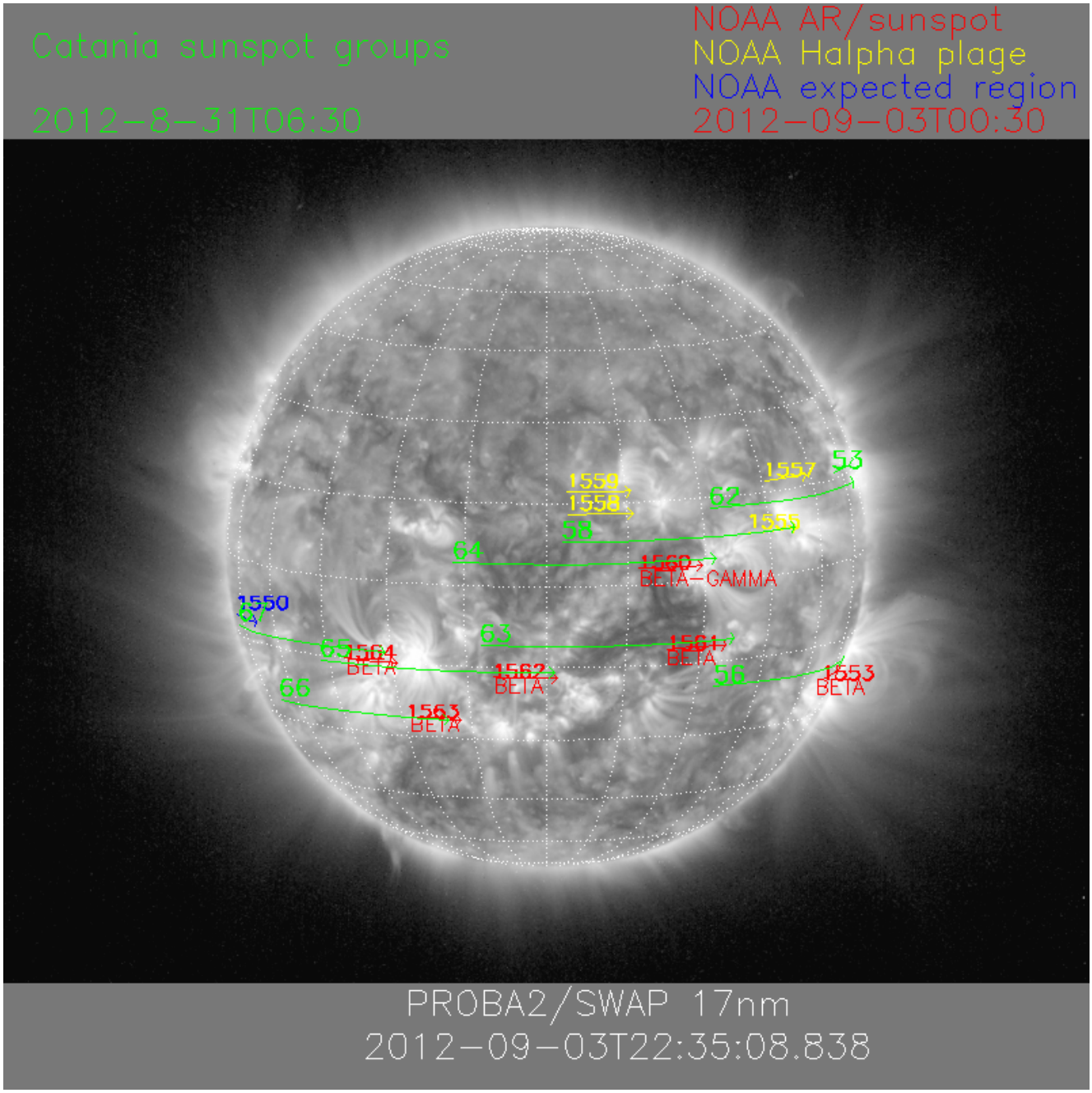
Overview

The level of solar activity[1] this week and associated M- and X-flares:

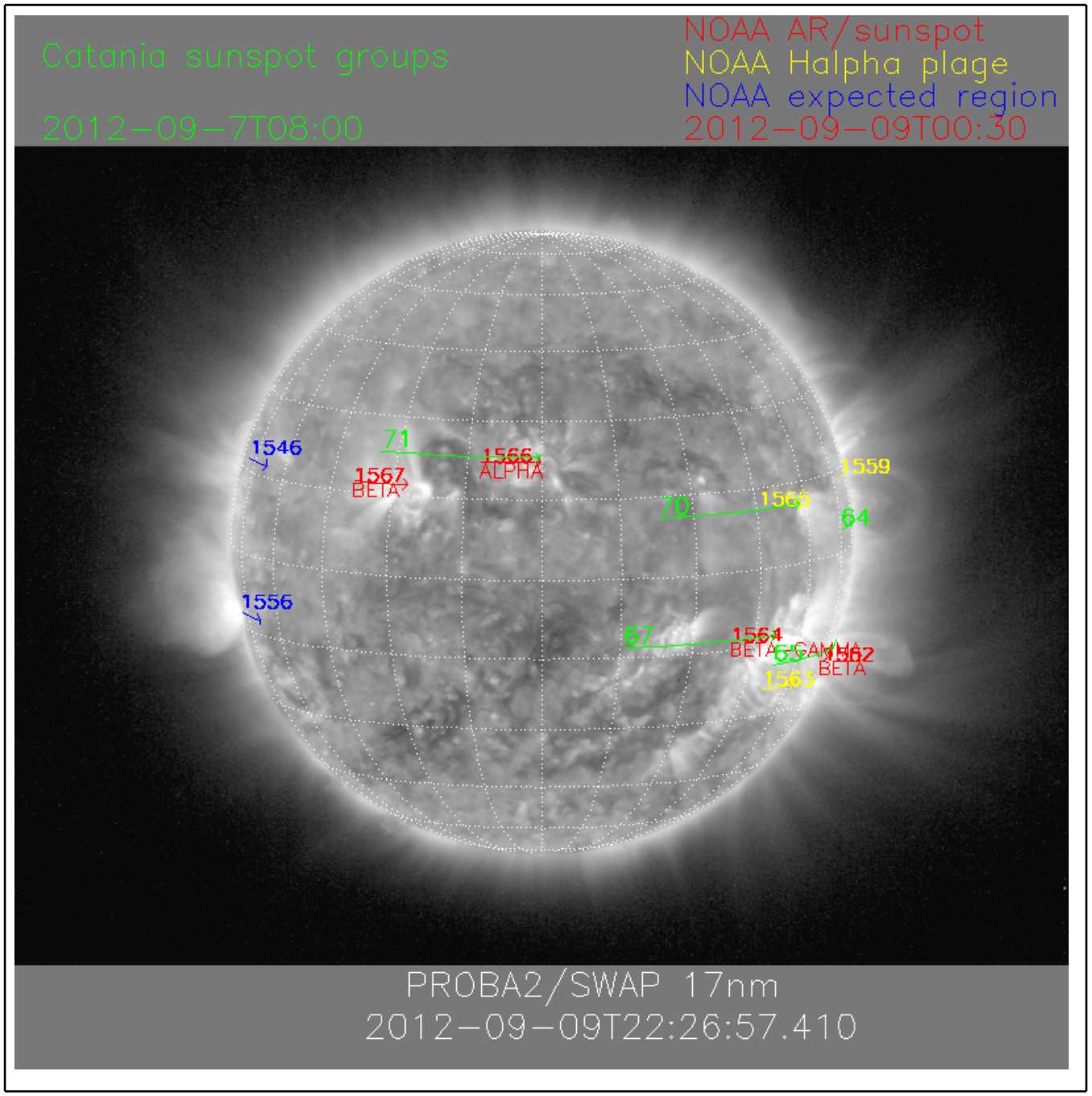
	Monday 03 Sep	Tuesday 04 Sep	Wednesday 05 Sep	Thursday 06 Sep	Friday 07 Sep	Saturday 08 Sep	Sunday 09 Sep
Activity	low	low	low	moderate	low	moderate	moderate
Flares	-	-	-	**M1.6@04:06**	-	**M1.4@17:35**	**M1.2@21:50**

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

The SWAP images of Sep 03 and Sep 09 are shown below, with annotated active regions.



http://sidc.be/html/CmapPage.html


Catania sunspot groups
2012-09-7T08:00
NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2012-09-09T00:30
1546
71
1566
1567
BETA
ALPHA
1559
70
1565
64
1556
67
1564
BETA
1562
BETA
1563
PROBA2/SWAP 17nm
2012-09-09T22:26:57.410

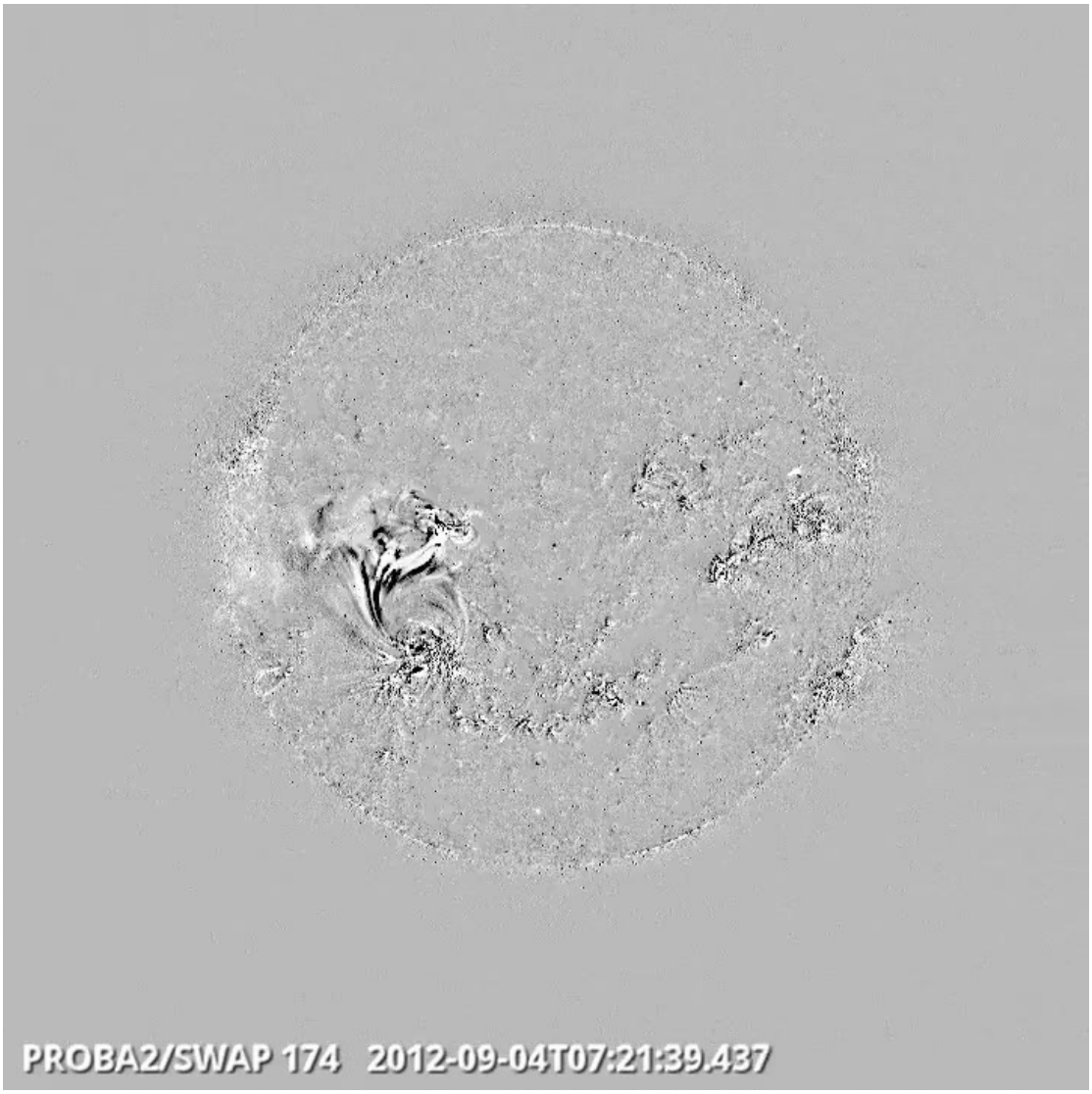
Solar Activity
This week, the Sun's activity level evolved from *Low* to *Moderate*. 3 M-flares occurred in the second part of the week.

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.

The M flares this week were not particularly spectacular events (in the SWAP images).

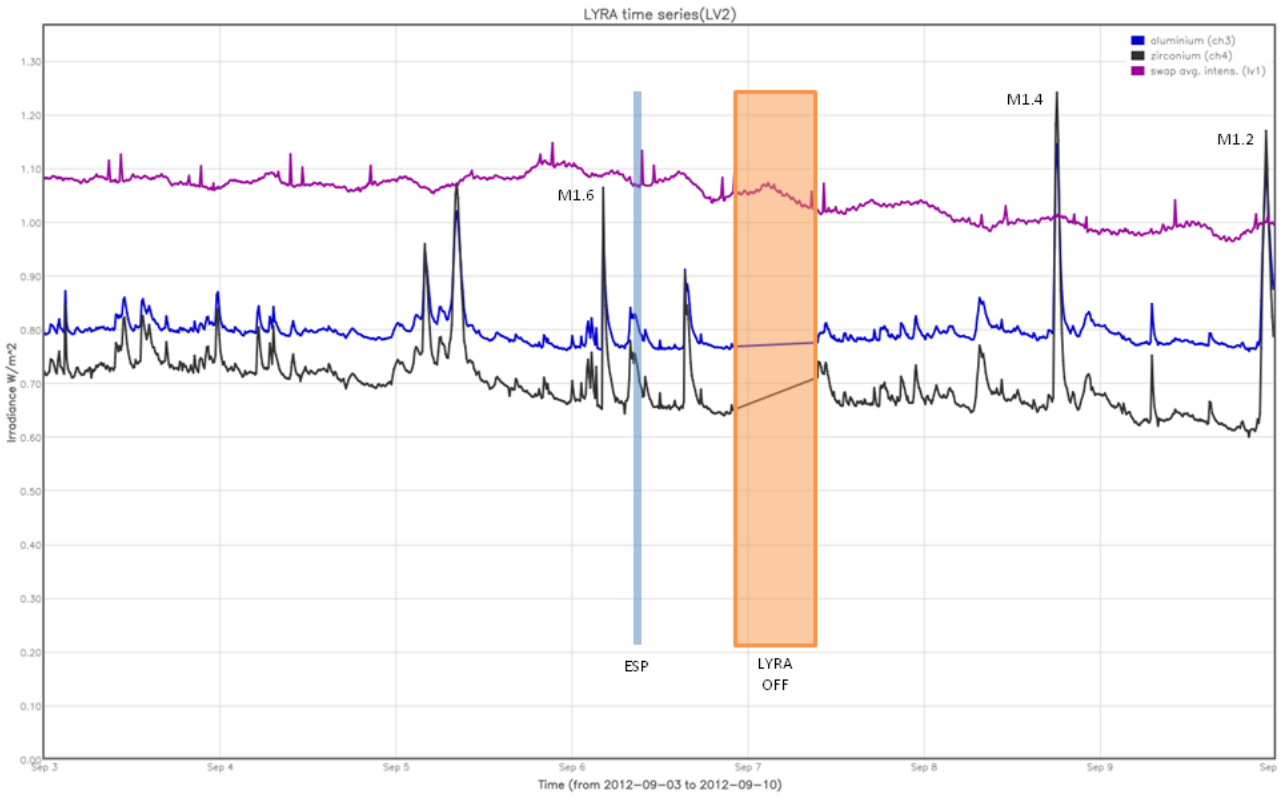
On Tuesday 4th of September two specific solar events occurred (see below):
- eruption on the South-East quadrant, from 07:10 until 07: 56
- eruption on the North-West limb which lasted about 5-6 hours, centered around 12:00.

The eruption which occurred in the SE quadrant was particularly visible in the SWAP difference movie (http://proba2.oma.be/swap/data/mpg/movies/20120904_swap_diff.mp4).



The NW limb prominence eruption was only slightly visible in SWAP, but very spectacular in lower level energies (see e.g. SDO/AIA/304 on HelioViewer.org; http://helioviewer.org/?movieId=Lxf55) or H-alpha.

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 (solar intensity derived from 'integrated' SWAP images)



The blue shaded periods correspond to, from left to right:
- ESP experiment on Thursday

The orange shaded periods correspond to, from left to right:
- LYRA instrument OFF from Thursday 6th 22:13 until Friday 7th 09:28.

The red shaded period corresponds to:
- None

Outreach, papers, presentations, etc.

- Specific interesting science topics (from section 1 above) are published in the weekly STCE bulletin.

- ‘De Zon en PROBA2’; (lecture at the flemish URANIA public observatory, Hove, Belgium); David Berghmans, 07/09/2012. The PROBA2 mock-up will be displayed at this observatory for several weeks as part of an exhibit on ‘The Sun’.

- "The Sun and Heliosphere", I. E.Dammasch, M. Dominique, M. Kretzschmar: “Two years of solar observations with PROBA2/Lyra: An overview”, Hvar, Croatia.

2. LYRA instrument status

Calibration

No calibration this week.

IOS & operations

Monday 03 Sep	Tuesday 04 Sep	Wednesday 05 Sep	Thursday 06 Sep	Friday 07 Sep	Saturday 08 Sep	Sunday 09 Sep
Nominal acquisition + daily U3 LYIOS00265	Nominal acquisition + daily U3 LYIOS00266	Nominal acquisition + daily U3 LYIOS00266	Nominal acquisition + daily U3 LYIOS00266	Nominal acquisition + daily U3 LYIOS00266 -> 267	Nominal acquisition+ daily U3 LYIOS00267	Nominal acquisition+ daily U3 LYIOS00267

- Except for the daily U3 campaign, no particular science campaigns this week.

On September 6th, 22:13, LYRA was automatically switched OFF on-board (cause is under investigation).
On September 7th, an IOS (267) was issued to re-initialise LYRA. At 09:28, telemetry confirmed that LYRA was back in nominal working mode.

LYRA detector temperature

LYRA detector 2 temperature fluctuated between 46.3 and 47 degrees (including the daily U3 activation periods). Minimum temperature during the LYRA OFF period was 38.9.

To be explored
/

3. SWAP instrument status

Calibration

No calibration this week.

MCPM errors

The number of MCPM recoverable errors increased from 3080 to 3264.

The number of MCPM unrecoverable errors is still 0.

IOS & operations

Monday 03 Sep	Tuesday 04 Sep	Wednesday 05 Sep	Thursday 06 Sep	Friday 07 Sep	Saturday 08 Sep	Sunday 09 Sep
Nominal acquisition IOS00411 497 images	Nominal acquisition IOS00411 648 images	Nominal acquisition IOS00411 596 images	Nominal acquisition + ESP IOS00412 641 images	Nominal acquisition IOS00412 612 images	Nominal acquisition IOS00412 589 images	Nominal acquisition IOS00412 548 images

No special operations for SWAP, this week.

SWAP detector temperature

The SWAP Cold Finger Temperature fluctuated between - 0.95 and - 1.61 degrees Celsius, under nominal operations. The LYRA OFF period decreased temperature down to -2.0. The LAR delay ‘misses’ (see below) resulted in temporary higher temperatures: -0.90 and -0.74 respectively.

LAR delays were missed on the following occasions:
- Wednesday 2012-09-05 - 04:15:00,
- Thursday 2012-09-06 - 05:00:00,

causing each time a temporary increase of temperature of an estimated 0.6-0.7 degrees.

To be explored

/

4. PROBA2 Science Center Status

The main operator is Koen Stegen.

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 8845 to 8903) was nominal, except for:
- None

Data coverage HK

All HK data files (LYRA_AD) have been received, except for:
- None

Data coverage SWAP

All SWAP Science data files (BINSWAP) have been received, except for:
- None

Total number of images between 2012 Sep 03 0UT and 2012 Sep 10 0UT: 4131
Highest cadence in this period: 130 seconds
Average cadence in this period: 146.39 seconds
Number of image gaps larger than 300 seconds: 1
Largest data gap: 34.33 minutes

The large gap is due to the ESP experiment on Thursday.

Data coverage LYRA

All LYRA Science data files (BINLYRA) have been received, except for:
- Passes 8878, 8879, 8880, 8881 (LYRA OFF, see section 2)

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
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
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
OBET	On board Elapsed Time
OBSW	On board Software
PE	Proximity Electronics
PI	Principal Investigator
P2SC	PROBA2 Science Center
ROB	Royal Observatory of Belgium
SAA	South Atlantic Anomaly
SEU	Single Event Upset
SOHO	Solar and Heliospheric Observatory
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

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)
(+ extreme?)