


P2SC-ROB-WR-152- 20130218 Weekly report #152	P2SC Weekly report	
Period covered: Date: Written by: Approved by:	Mon Feb 18 to Sun Feb 24, 2013 27 Feb 2013 Erik Pylyser Matthew West	Royal Observatory of Belgium PROBA2 Science Center
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On Saturday February 16th, at 05:15, the PROBA2 satellite went into Bdot mode, probably due to a navigation/GPS problem (under investigation).

SWAP and LYRA data became thereby unavailable/not useful.

On Monday February 18th, SWAP and LYRA science data reception resumed at 10:22 and 13:53 respectively.

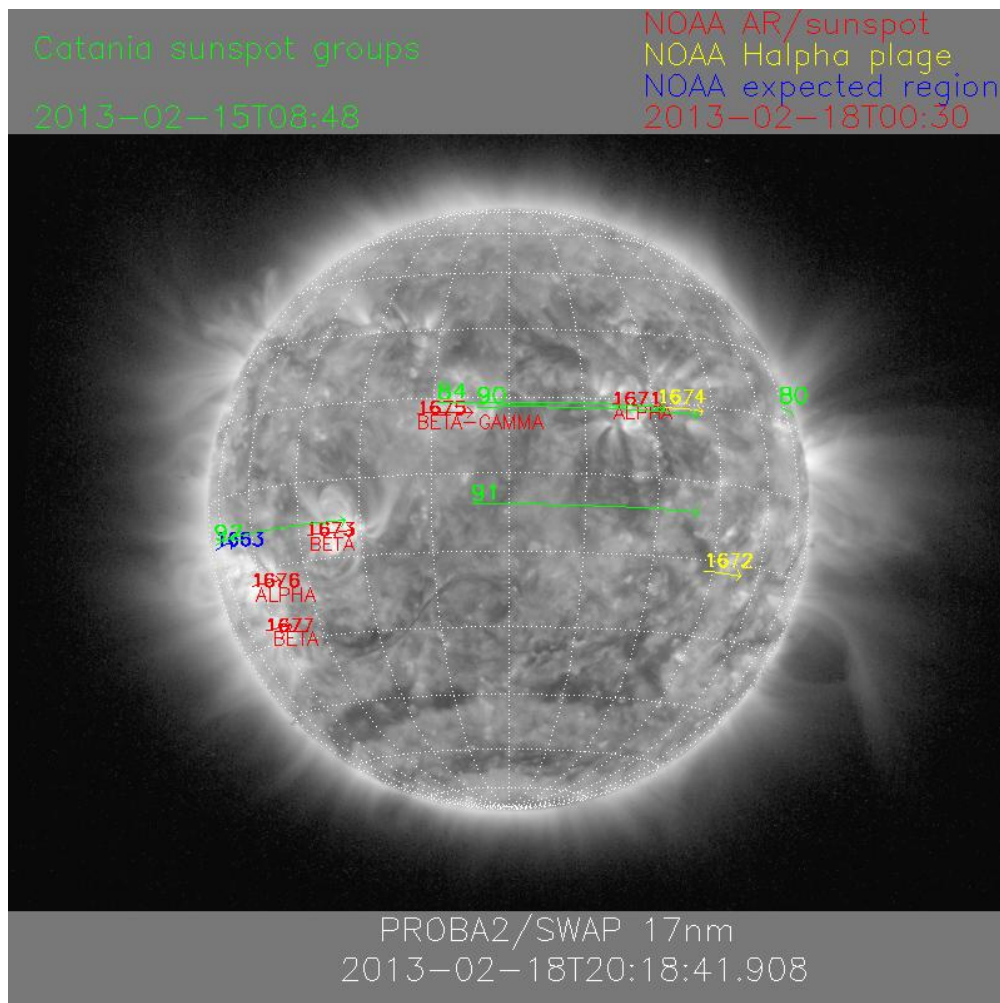
1. Science

Solar & Space weather events

The level of solar activity¹ this week. Only M- and X-flares are mentioned, the most energetic one(s) are presented in **bold**:

	Monday 18 Feb	Tuesday 19 Feb	Wednesday 20 Feb	Thursday 21 Feb	Friday 22 Feb	Saturday 23 Feb	Sunday 24 Feb
Activity	low	low	low	low	low	low	low
Flares	-	-	-	-	-	-	-

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



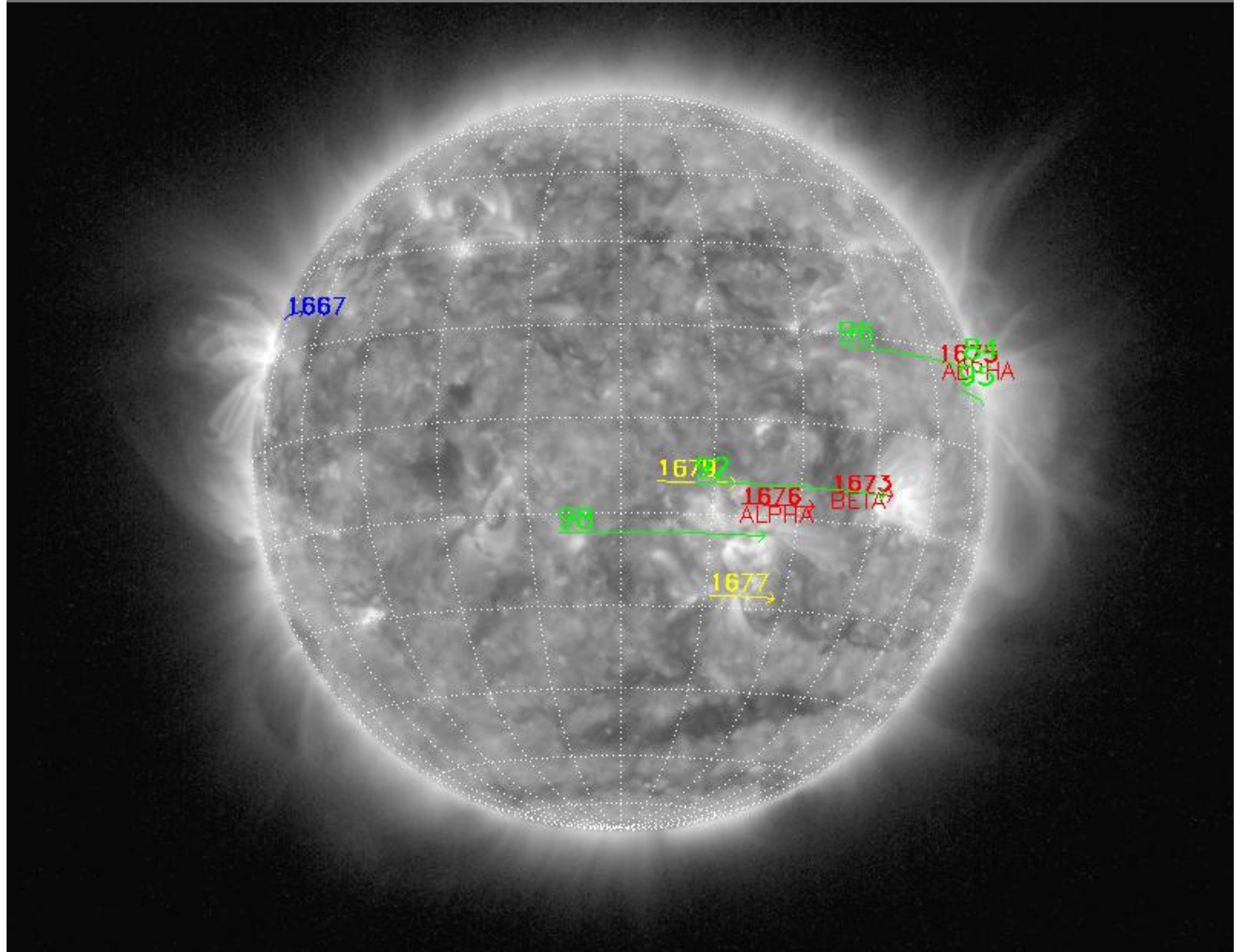
<http://sidc.be/html/CmapPage.html>

¹ See appendix. All timings are given in UT.

Catania sunspot groups

2013-02-22T08:18

NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2013-02-24T00:30



PROBA2/SWAP 17nm
2013-02-24T23:22:19.963

Solar Activity

Solar (flaring) activity was **low** during the whole week, the biggest flare being an C8.2 on Wednesday, originating from AR 11678.

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](#) (SWAP174/AIA304 combination; HelioViewer.org).

Details about some of the events in this movie can be found further below (limited to SWAP imaging).

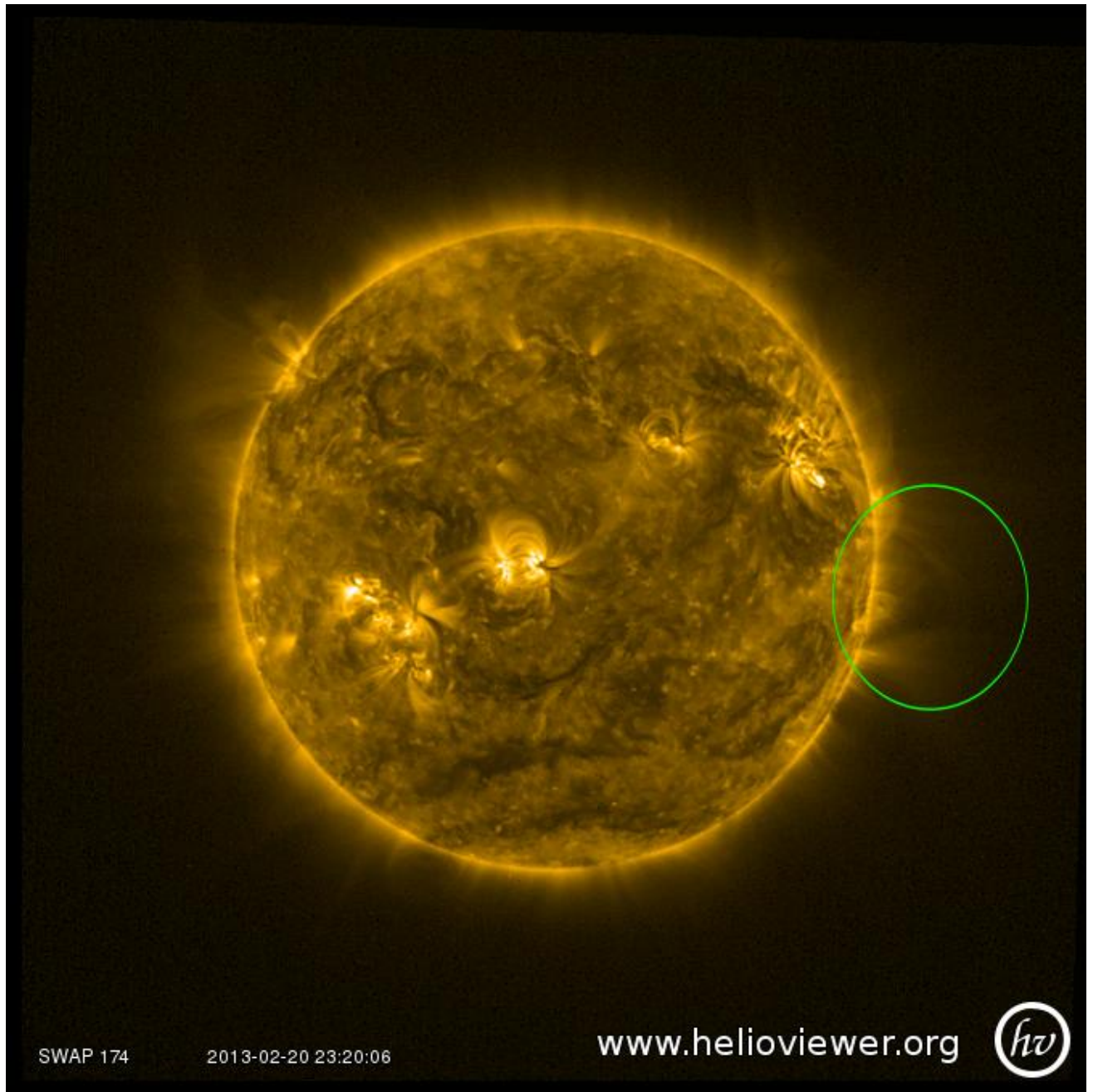
On Tuesday 19th, the following eruptions were seen by SWAP (difference images):



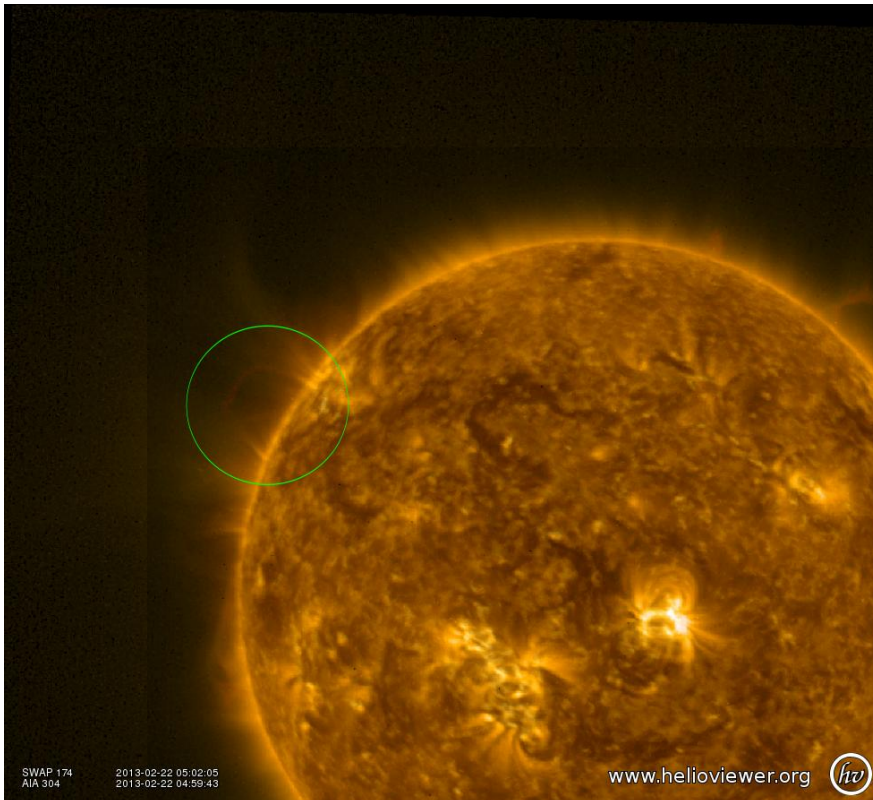


PROBA2/SWAP 174 2013-02-19T09:29:03.664

On Wednesday 20th - prominence eruption on the West limb:



On Friday 22nd, eruption on the NE limb (SWAP difference image & SWAP/AIA304 combination image):

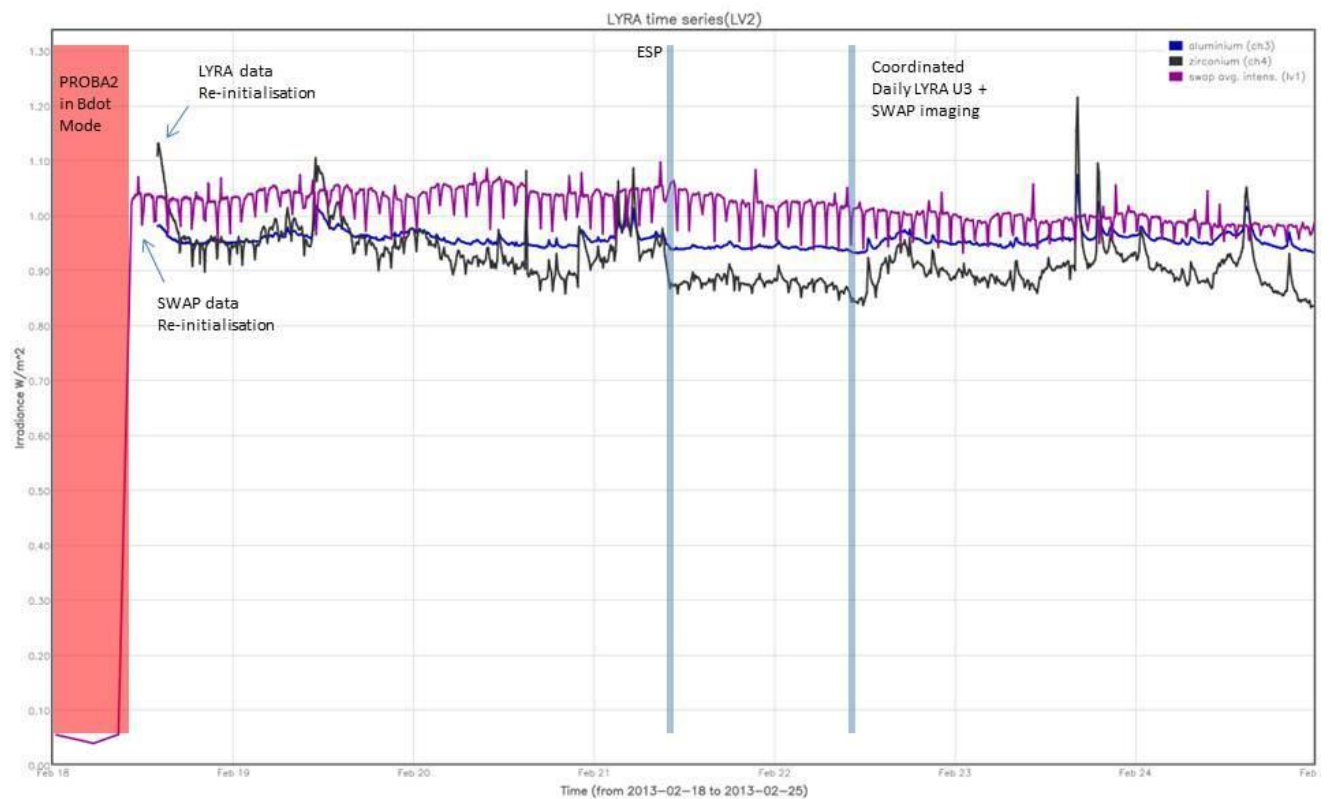


Several additional filament/prominence eruptions occurred during the week, but these were not/hardly visible by SWAP.

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
- Coordinated imaging campaign with LYRA daily U3 campaign on Friday and Saturday.

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

- None

The red shaded period corresponds to:

- PROBA2 in Bdot mode

Outreach, papers, presentations, etc.

- The scientific part of the contents of the “Solar Activity” section above is published in this week’s STCE Bulletin (see <http://www.stce.be/newsletter/newsletter.php>)

- On Friday 22nd, Andrew Inglis presented, to ROB, his activities and results obtained during his stay as a PROBA2 Guest Investigator (see subsection below): “Enhancing understanding of quasi-periodic pulsations (QPP) in solar flares using LYRA and RHESSI data”.

Please also 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.

Guest Investigator Program

Guest Investigator Andrew Inglis arrived at P2SC on February 10th, 2013. His stay will last until February 23rd, 2013. The topic of his program is ‘Enhancing understanding of pulsations in flares using LYRA data’.

2. LYRA instrument status

Calibration

No calibration this week.

IOS & operations

Monday 18 Feb	Tuesday 19 Feb	Wednesday 20 Feb	Thursday 21 Feb	Friday 22 Feb	Saturday 23 Feb	Sunday 24 Feb
Nominal acquisition from 13:53 on	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3
LYIOS00310 - > 311	LYIOS00311	LYIOS00311	LYIOS00312	LYIOS00312	LYIOS00312	LYIOS00312

The following science campaigns were performed by LYRA:
- the daily U3 campaign.

LYRA detector temperature

LYRA detector 2 temperature globally varied between 49.8 to 51.2 degrees C:
- after temperature stabilisation, following LYRA re-activation (PROBA2 in Bdot mode)
- including the daily U3 activation periods; the latter result in a temperature increase of about 0.6 degrees C.

To be explored

3. SWAP instrument status

Calibration

No calibration this week.

MCPM errors

The number of MCPM recoverable errors increased from 6811 to 6892.

The number of MCPM unrecoverable errors remained at 1127.

IOS & operations

Monday 18 Feb	Tuesday 19 Feb	Wednesday 20 Feb	Thursday 21 Feb	Friday 22 Feb	Saturday 23 Feb	Sunday 24 Feb
Nominal acquisition; from 10:22 on	Nominal acquisition	Nominal acquisition	Nominal acquisition + ESP	Nominal acquisition + SWAP/LYRA coord. camp.	Nominal acquisition	Nominal acquisition
IOS00453 -> 454 419 images	IOS00454 654 images	IOS00454 651 images	IOS00455 567images	IOS00455 517 images	IOS00455 507 images	IOS00455 556 images

Special operations for SWAP, this week:

- ESP jump
- Coordinated imaging campaign with LYRA daily U3 campaign on Friday.

SWAP detector temperature

The SWAP Cold Finger Temperature, globally varied between 1.2 and 2.4 degrees C, after temperature stabilisation, as a consequence of SWAP re-initialisation.

To be explored

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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 10280 to 10336) was nominal, except for:

- passes 10280 to 10284 included (PROBA2 in Bdot mode).

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 2013 Feb 18 0UT and 2013 Feb 25 0UT: 3912

Highest cadence in this period: 30 seconds

Average cadence in this period: 154.43 seconds

Number of image gaps larger than 300 seconds: 55

Largest data gap: 86.92 minutes

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

The number of (smaller) gaps is due to the implementation of the SWAP occultation jumps.

Data coverage LYRA

All LYRA Science data files (BINLYRA) have been received, except for:

- passes 10280 to 10284 included (PROBA2 in Bdot mode).

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
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

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?)