P2SC-ROB-WR-146-20130107 Weekly report #146	**P2SC Weekly report**	
Period covered: Date: Written by: Approved by:	Mon Jan 07 to Sun Jan 13, 2013 17 Jan 2012 Erik Pylyser David Berghmans	Royal Observatory of Belgium PROBA2 Science Center
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1. Science

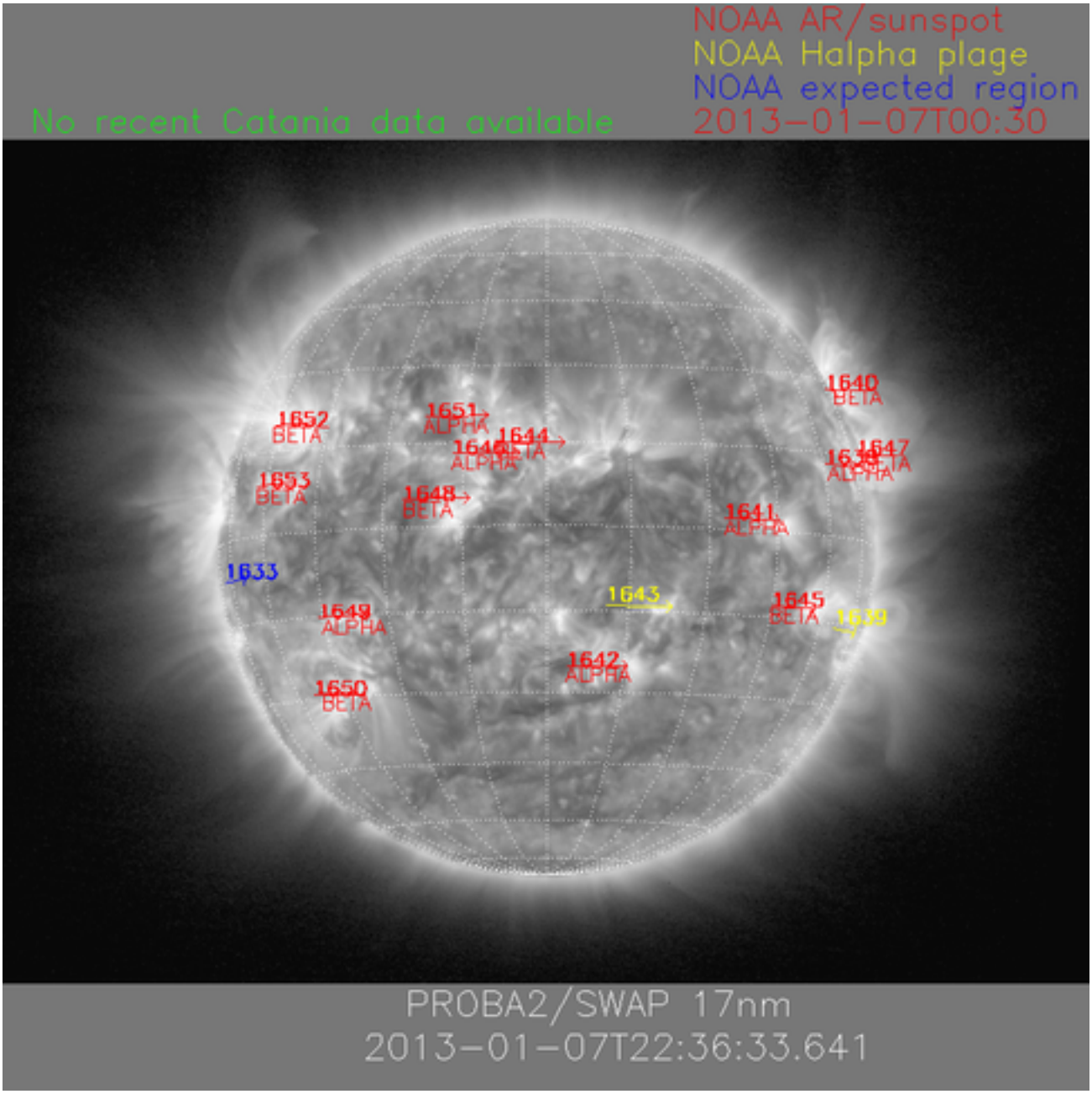
Solar & Space weather events

The level of solar activity[1] this week. Only M- and X-flares are mentioned, the most energetic one(s) are presented in **bold**:

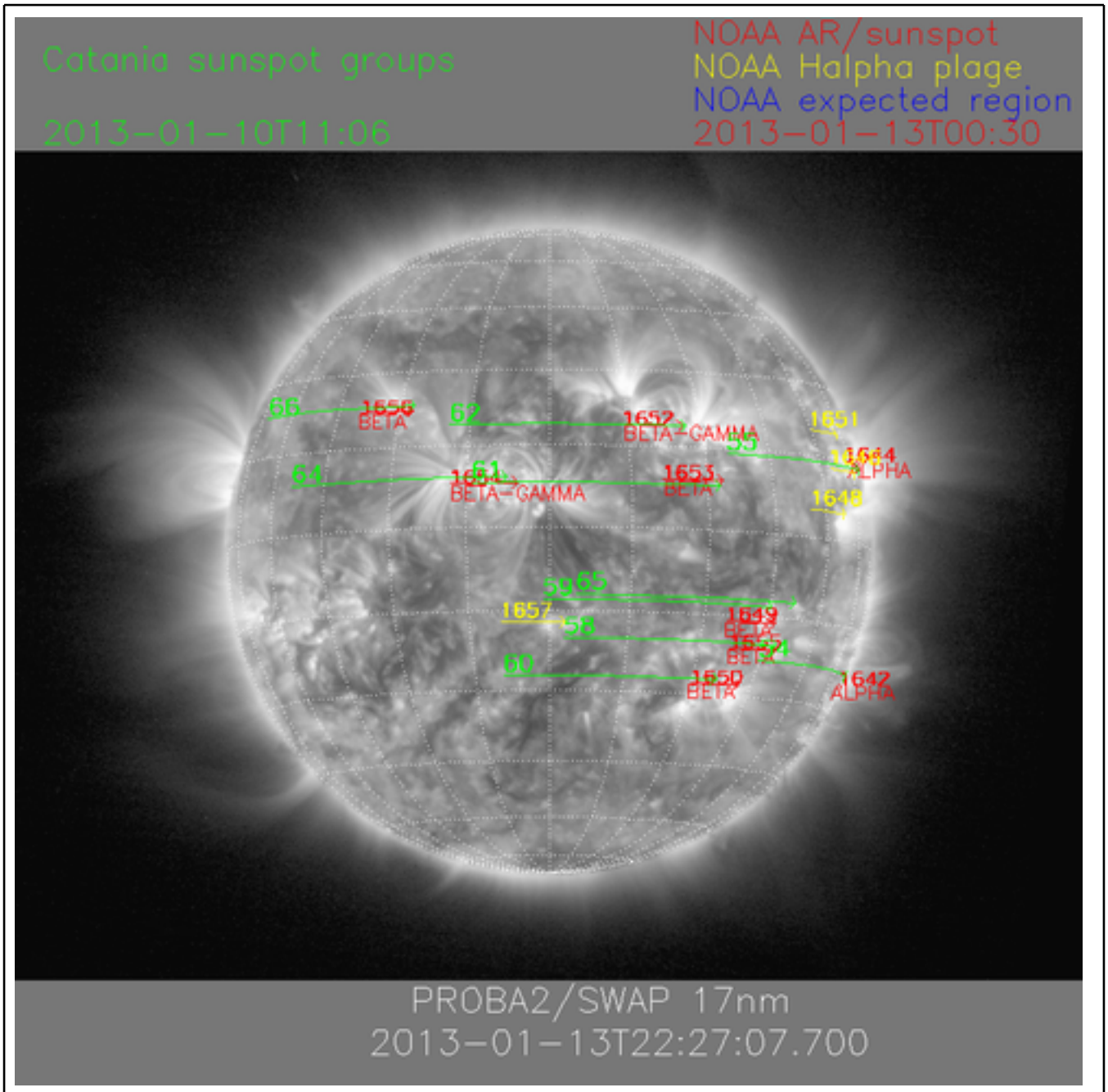
	Monday 07 Jan	Tuesday 08 Jan	Wednesday 09 Jan	Thursday 10 Jan	Friday 11 Jan	Saturday 12 Jan	Sunday 13 Jan
Activity	low	low	low	low	moderate	low	moderate
Flares	-	-	-	-	**M1.2@08:43** M1.0@14:51		M1.0@100:45 **M1.7 @ 08:35**

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

The SWAP images of January 07 and January 13 are shown below, with annotated active regions.



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


Catania sunspot groups
2013-01-10T11:06
NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2013-01-13T00:30
66
1656
BETA
62
1652
BETA-GAMMA
1651
63
1644
ALPHA
64
61
1654
BETA-GAMMA
1653
BETA
1648
59
65
1657
58
1649
BETA
1652
BETA
60
1650
BETA
1642
ALPHA
PROBA2/SWAP 17nm
2013-01-13T22:27:07.700

Solar Activity

Solar (flare) activity was **low** early in the week, until AR 11654 crossed the Eastern limb. From then on, flaring activity increased while the sunspot group was widening. On Friday, two M-flares originated from this AR. Sunday, two M-flares occurred in AR 11652.

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.

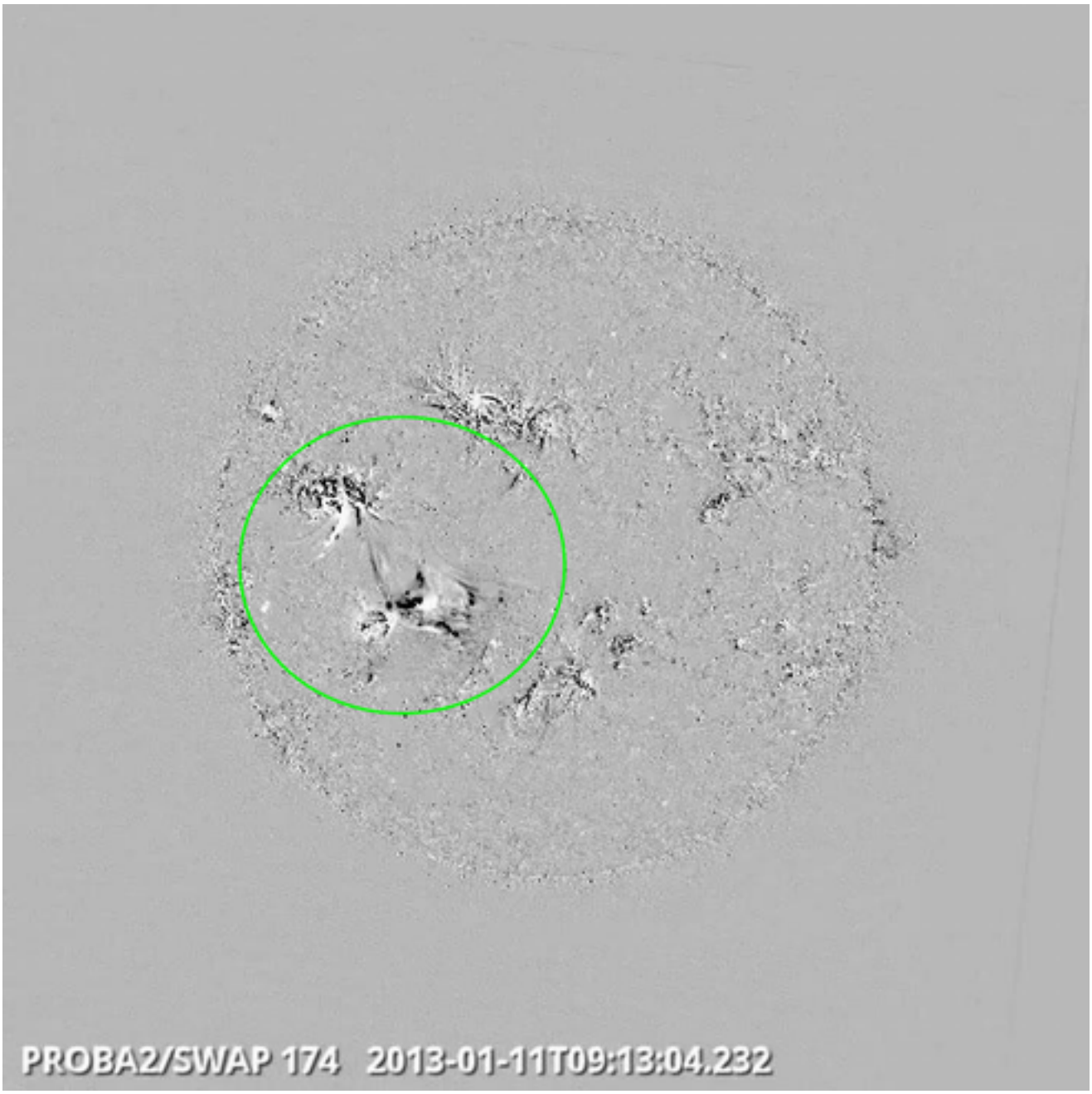
A weekly overview movie can be found here (SWAP174/AIA304 combination; HelioViewer.org).
Some details about the events in this movie can be found further below.

On Monday 4 prominence eruptions were identified, on of them is shown below in a SWAP difference image:

Another big prominence eruption started on Thursday evening lasting until Friday morning.
A movie of this eruption can be seen here (helioviewer.org; combination of SWAP174/AIA304/AIA171).

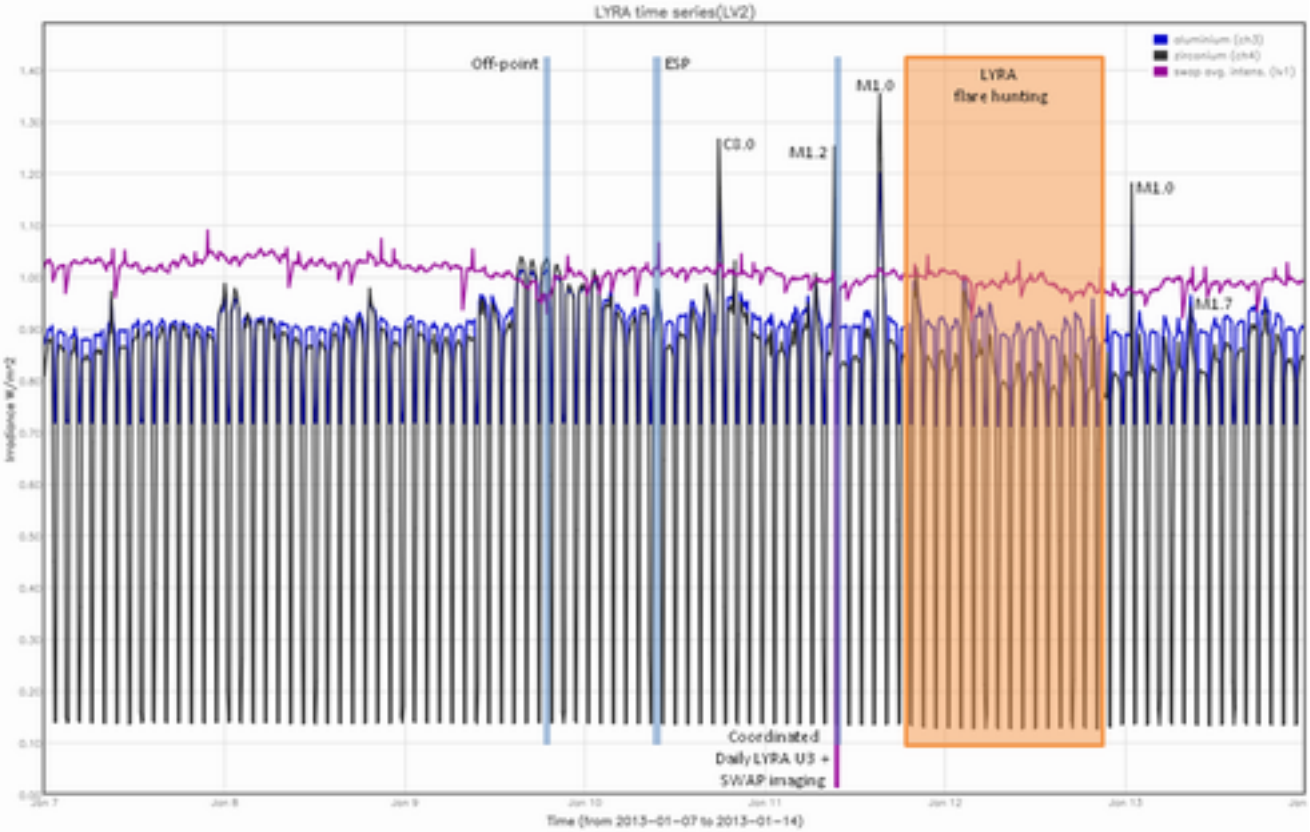
A SWAP difference picture is shown below:

The M1.2 flare, which occurred on Friday 11th, can be seen in the image below:



We invite you to watch the complete SWAP difference movie of Friday 11th here, where several events can be seen unfolding during the day.

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:
- Special SWAP off-pointing campaign (Wed 18:07 - 19:14)
- ESP experiment on Thursday
- Coordinated imaging campaign with LYRA daily U3 campaign on Friday.

The orange shaded periods correspond to, from left to right:
- 24 hour LYRA flare hunting campaign starting on Fri 18:00 (TBC)

The red shaded period corresponds to:
- None

Outreach, papers, presentations, etc.

- Presentations on Space Weather and PROBA2 @ KULAK & KUL, in the context of Junior College (follow-up of PROBA2@School), by Elke D'huys and Petra Vanlommel, on 08/01 and 10/01 respectively. In total, 4 sessions will be given - about 459 students of 5th and 6th year of secondary school and their teachers will be attending.

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 Muzhou Lu has arrived at P2SC on January 03, 2013. His stay will last until February 2nd, 2013. The topic of his program is 'Observations and Modeling of Solar Coronal Structures Using High-Resolution Eclipse Images and Space-based telescopes with Wide FOV'.

2. LYRA instrument status

Calibration

No LYRA calibration this week.

IOS & operations

Monday 07 Jan	Tuesday 08 Jan	Wednesday 09 Jan	Thursday 10 Jan	Friday 11 Jan	Saturday 12 Jan	Sunday 13 Jan
Nominal acquisition + daily U3 LYIOS00298	Nominal acquisition + daily U3 LYIOS00298	Nominal acquisition + daily U3 LYIOS00299	Nominal acquisition + daily U3 LYIOS00299	Nominal acquisition + daily U3 + 26hr flare hunting campaign LYIOS00299 -> 300	Nominal acquisition + daily U3 LYIOS00300	Nominal acquisition + daily U3 LYIOS00300

The following science campaigns were performed by LYRA:
- the daily U3 campaign.
- 26hr flare hunting campaign (starting on Fri 18:15 until Saturday 20:45)

LYRA detector temperature

LYRA detector 2 temperature fluctuated between 40.2 and 43.3 degrees C, including the daily U3 activation periods. The latter result in a temperature increase of about 0.4 degrees C.
During the flare hunting campaign on Fri/Sat, temperature rose to 44.5 degrees C.

To be explored

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3. SWAP instrument status

Calibration

No SWAP calibration this week.

MCPM errors

The number of MCPM recoverable errors increased from 5706 to 5814.

The number of MCPM unrecoverable errors remained at 1127.

IOS & operations

Monday 07 Jan	Tuesday 08 Jan	Wednesday 09 Jan	Thursday 10 Jan	Friday 11 Jan	Saturday 12 Jan	Sunday 13 Jan
Nominal acquisition IOS00440 571 images	Nominal acquisition IOS00440 556 images	Nominal acquisition + Off-pointing campaign IOS00441 -> 442 602 images	Nominal acquisition + ESP IOS00442 542 images	Nominal acquisition + SWAP/LYRA coord. camp. IOS00442 624 images	Nominal acquisition IOS00443 561 images	Nominal acquisition IOS00443 557 images

Special operations for SWAP, this week:
- Occultation jumps
- Special off-point campaign on Wednesday between 18:07 and 19:14.
- ESP jump
- Coordinated imaging campaign with LYRA daily U3 campaign on Friday.

SWAP detector temperature

The SWAP Cold Finger Temperature, under nominal operations, increased overall, fluctuating between -4.0 and -1.7 degrees Celsius.

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 9924 to 9981) 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 2013 Jan 07 0UT and 2013 Jan 14 0UT: 4013
Highest cadence in this period: 29 seconds
Average cadence in this period: 150.71 seconds
Number of image gaps larger than 300 seconds: 102
Largest data gap: 31.83 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:
- 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
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?)