P2SC-ROB-WR-139-20121119 Weekly report #139	**P2SC Weekly report**	
Period covered: Date: Written by: Approved by:	Mon Nov 19 to Sun Nov 25, 2012 30 Nov 2012 Erik Pylyser David Berghmans	Royal Observatory of Belgium PROBA2 Science Center
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1. Science

Solar & Space weather events

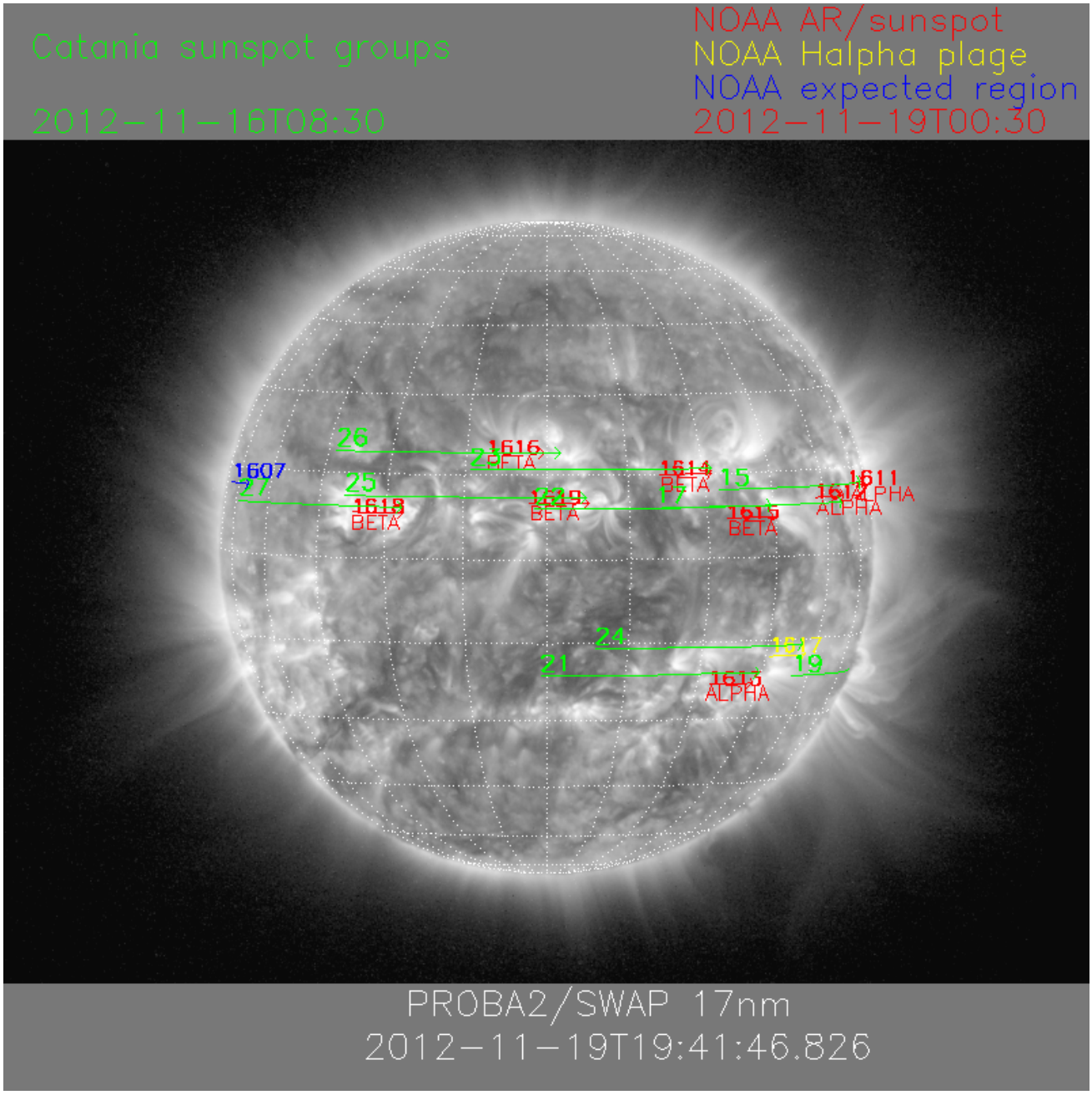
Overview

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

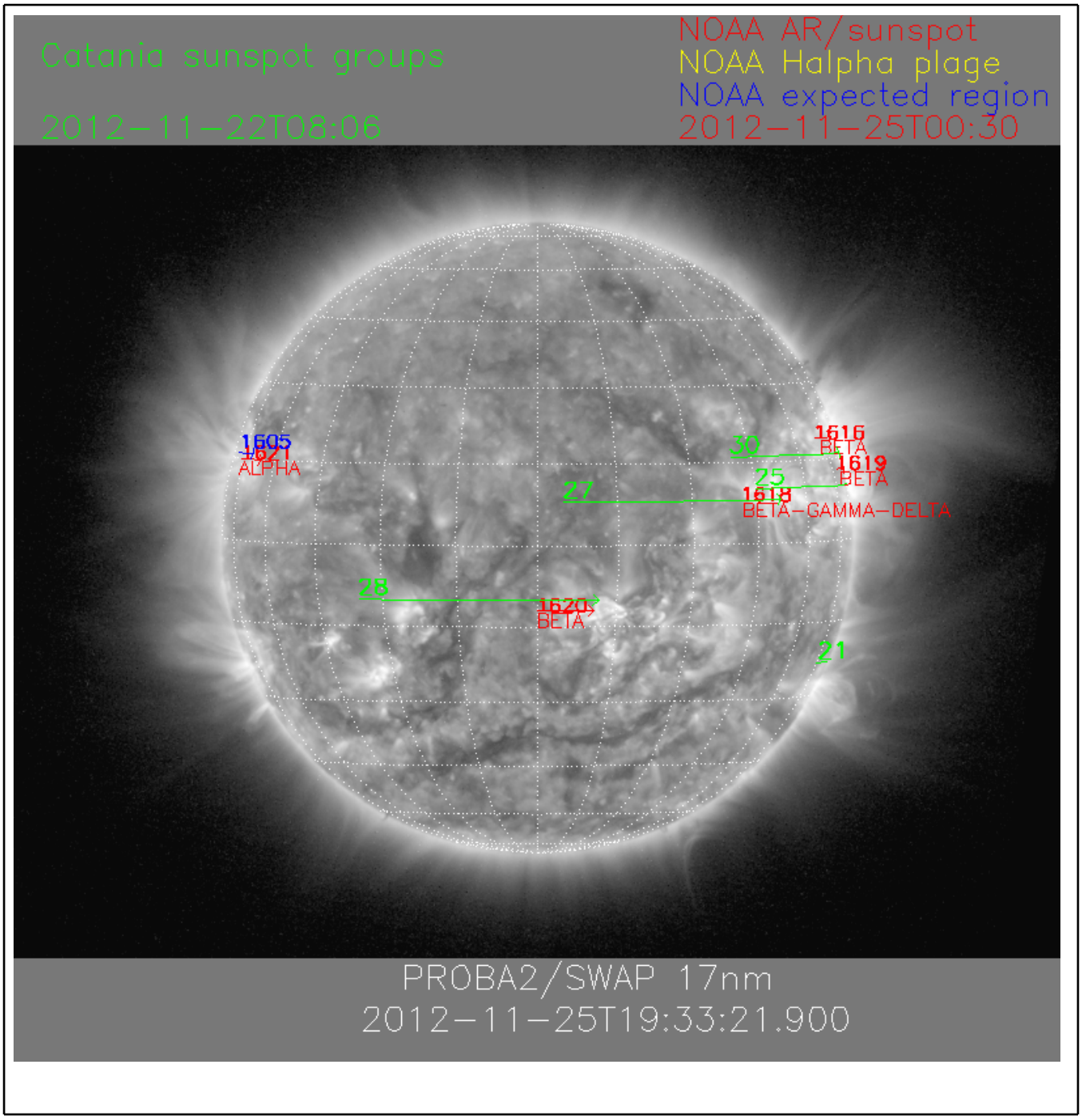
	Monday 19 Nov	Tuesday 20 Nov	Wednesday 21 Nov	Thursday 22 Nov	Friday 23 Nov	Saturday 24 Nov	Sunday 25 Nov
Activity	low	moderate	moderate	very low	low	low	low
Flares	-	M1.6@19:21 **M1.7@12:36**	M1.4@06:45 **M3.5@15:10**	-	-	-	-

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

The SWAP images of Nov 19 and Nov 25 are shown below, with annotated active regions.



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

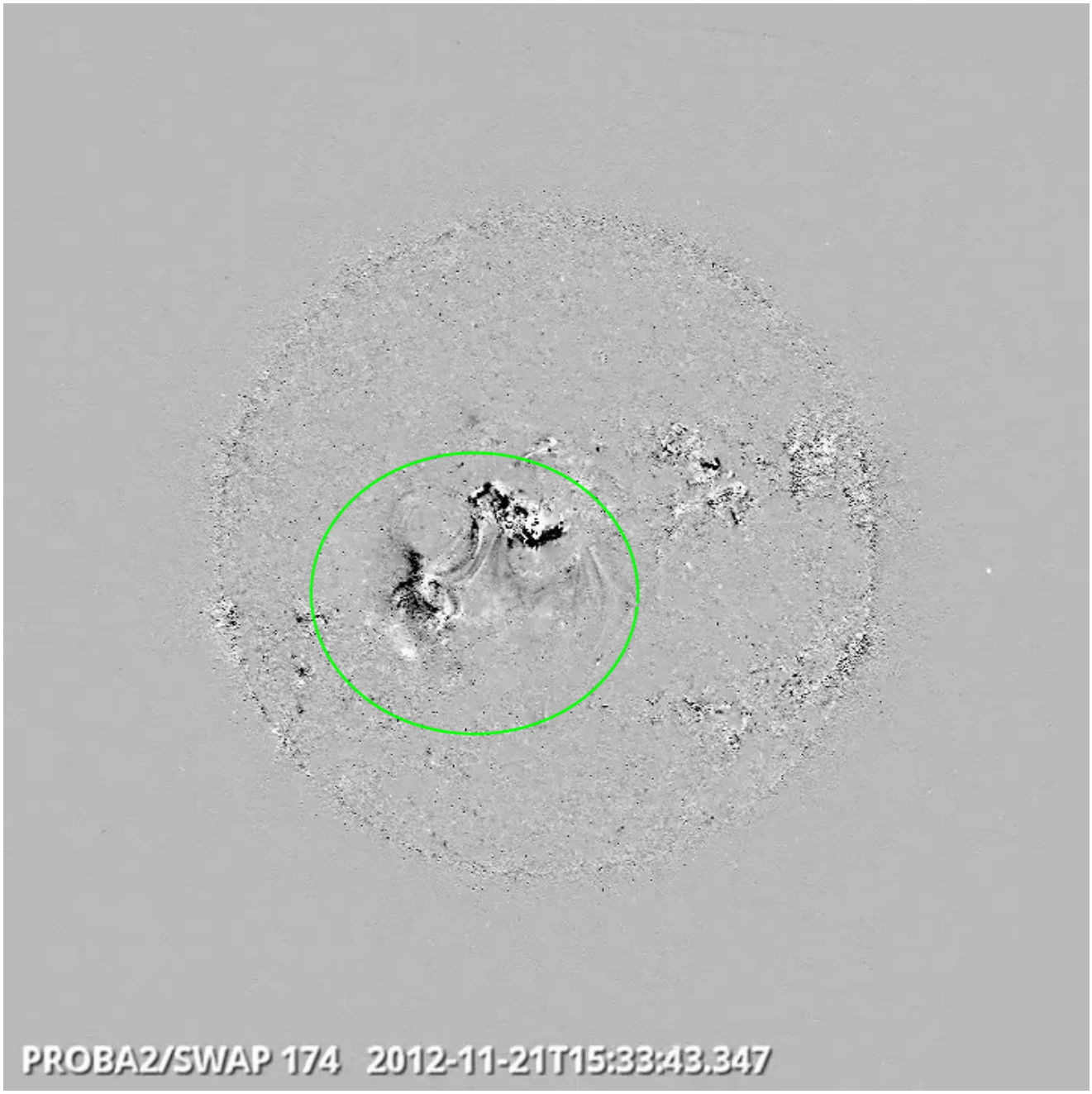

Catania sunspot groups
2012-11-22T08:06
NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2012-11-25T00:30
1605
ALPHA
30
1616
BETA
1619
BETA
25
27
1618
BETA-GAMMA-DELTA
28
1620
BETA
21
PROBA2/SWAP 17nm
2012-11-25T19:33:21.900

Solar Activity
This week, the Sun's activity level varied between *very low* and *moderate*. This week's M-flares all originated from AR11618.

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.

Some of the events of this week are presented below.

C7.0 flare eruption on Monday 19th...

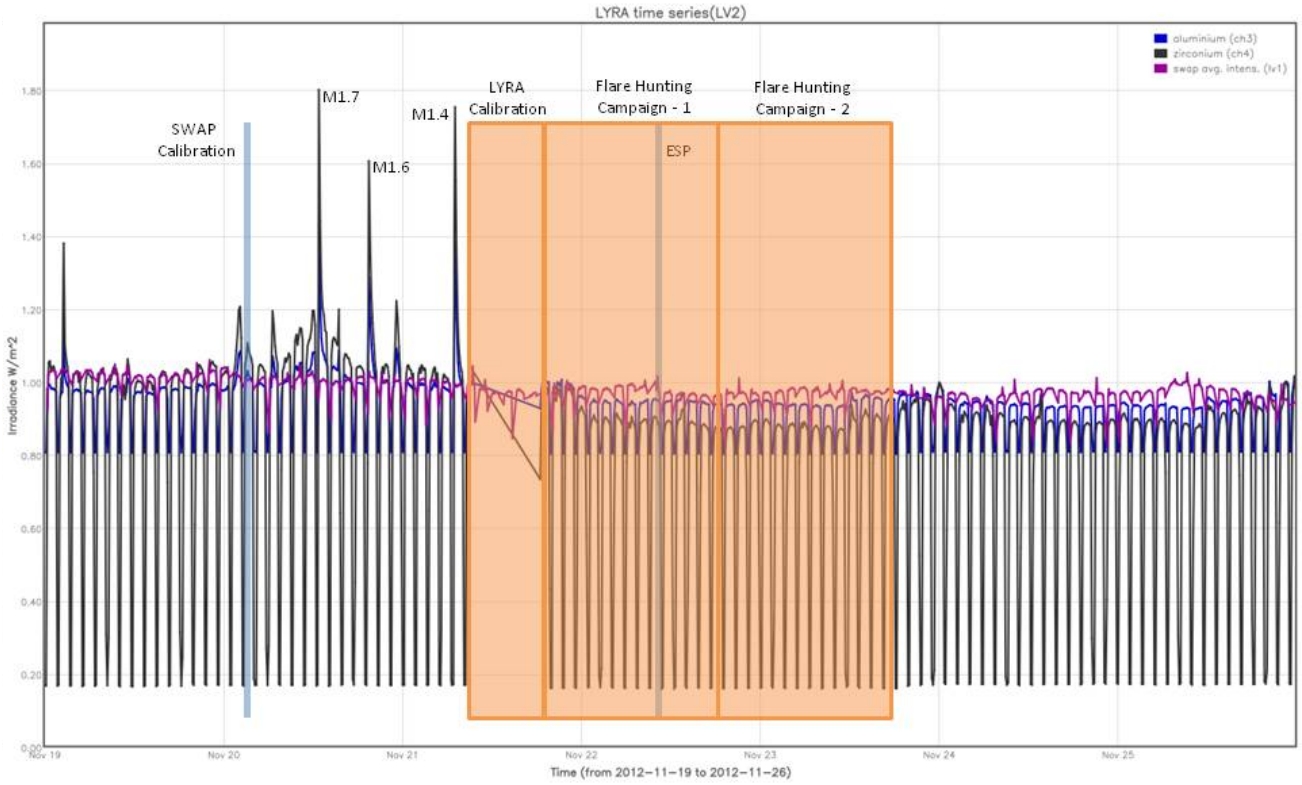


M3.5 flare (initiating a CME) on Wednesday, November 21.

A movie of this event can be found here.

Filament eruption on Friday, November 23

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:
- SWAP calibration on Tuesday
- ESP experiment on Thursday

The orange shaded periods correspond to, from left to right:
- LYRA calibration on Wednesday
- LYRA flare hunting campaign - 1
- LYRA flare hunting campaign - 2 (extension of campaign 1)

The red shaded period corresponds to:
- None

Outreach, papers, presentations, etc.

The following talks were given by Anik De Groof, over the last 3 weeks:
5 Nov 2012: ESWW-9 - Brussels - PROBA2 tutorial during the 'Space Weather Shopping'
6 Nov 2012: "PROBA2 Mission Overview" during the PROBA2 Science Working Team meeting at ESWW

8 Nov 2012: talk during the ESA Inter-Departemental Science Workshop, Volendam, The Netherlands : "PROBA2/SWAP observations of the large-scale, long-term evolution of the EUV corona "

14 Nov 2012: talk during the conference "Eclipse at the coral sea: Cycle 24 ascending", Palm Cove, QLD, Australia (http://moca.monash.edu/eclipse):
"THE SOLAR CORONA UP TO 2-3 R☉ AS SEEN THROUGH PROBA2/SWAP"

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 Programme

Farid Gorayev spent his second week @ P2SC.

2. LYRA instrument status

Calibration

Calibration on Wednesday.

IOS & operations

Monday 19 Nov	Tuesday 20 Nov	Wednesday 21 Nov	Thursday 22 Nov	Friday 23 Nov	Saturday 24 Nov	Sunday 25 Nov
Nominal acquisition + daily U3 LYIOS00285	Nominal acquisition + daily U3 LYIOS00285	Nominal acquisition + daily U3 + calibration + Flare campaign 1 LYIOS00286 -> 287	Nominal acquisition + daily U3 + Flare campaign 1&2 LYIOS00287 -> 288	Nominal acquisition + daily U3 + Flare campaign 2 LYIOS00288	Nominal acquisition + daily U3 LYIOS00288	Nominal acquisition + daily U3 LYIOS00289

The following science campaigns were performed by LYRA:
- the daily U3 campaign
- Flare hunting campaign 1 (Tue to Wed)
- Flare hunting campaign 2 (Wed to Thu)

LYRA detector temperature

LYRA detector 2 temperature fluctuated between 43.0 and 40.2 degrees, including the daily U3 activation periods. The latter result in a temperature increase of about 0.4 degrees.
During the flare hunting campaigns, the temperature went up to 44 degrees.

To be explored

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3. SWAP instrument status

Calibration

Calibration on Tuesday.

MCPM errors

The number of MCPM recoverable errors increased from 5258 to 5338.

The number of MCPM unrecoverable errors increased from 1127 to 1127.

IOS & operations

Monday 19 Nov	Tuesday 20 Nov	Wednesday 21 Nov	Thursday 22 Nov	Friday 23 Nov	Saturday 24 Nov	Sunday 25 Nov
Nominal acquisition IOS00426 569 images	Nominal acquisition + calibration IOS00427 612 images	Nominal acquisition IOS00427 568 images	Nominal acquisition + ESP IOS00427 553 images	Nominal acquisition IOS00427 567 images	Nominal acquisition IOS00428 564 images	Nominal acquisition IOS00428 567 images

Special operations for SWAP, this week:
- Occultation jumps
- ESP jump

SWAP detector temperature

The SWAP Cold Finger Temperature, under nominal operations, increased generally, fluctuating between - 2.0 and - 3.9 degrees Celsius.

LAR delays were missed on the following occasions:
- None

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

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 9510 to 9567) 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 Nov 19 0UT and 2012 Nov 26 0UT: 4000
Highest cadence in this period: 30 seconds
Average cadence in this period: 150.90 seconds
Number of image gaps larger than 300 seconds: 101
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
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?)