P2SC-ROB-WR-251 - 20150112 Weekly report #239	**P2SC Weekly report**	
Period covered: Date: Written by: Approved by:	Mon Jan 12 to Sun Jan 18, 2015 22 Jan 2015 Katrien Bonte Matthew West	Royal Observatory of Belgium - PROBA2 Science Center
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1. Science

Solar & Space weather events

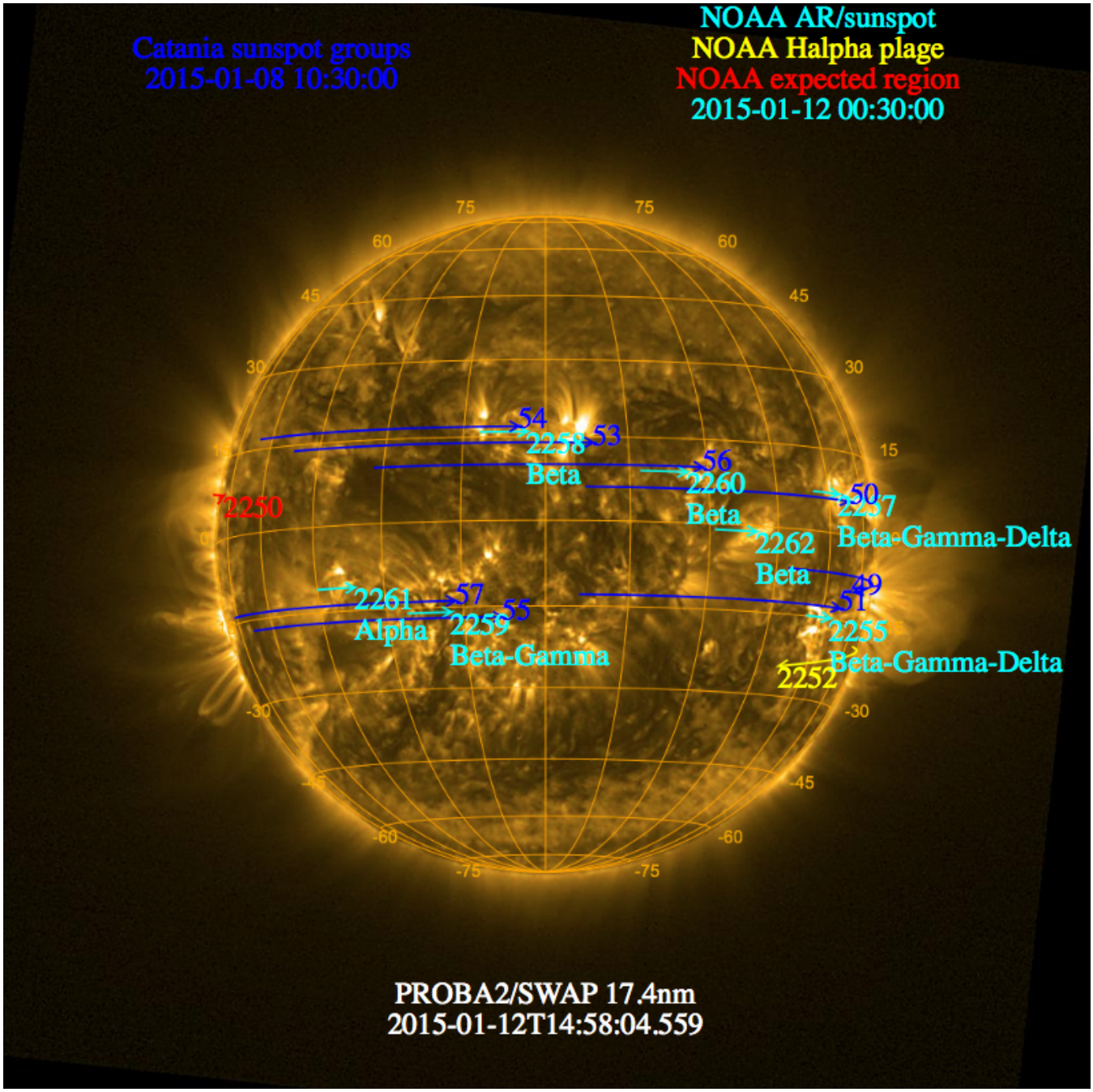
The level of solar activity[1] fluctuated between **quiet** and **moderate** this week.

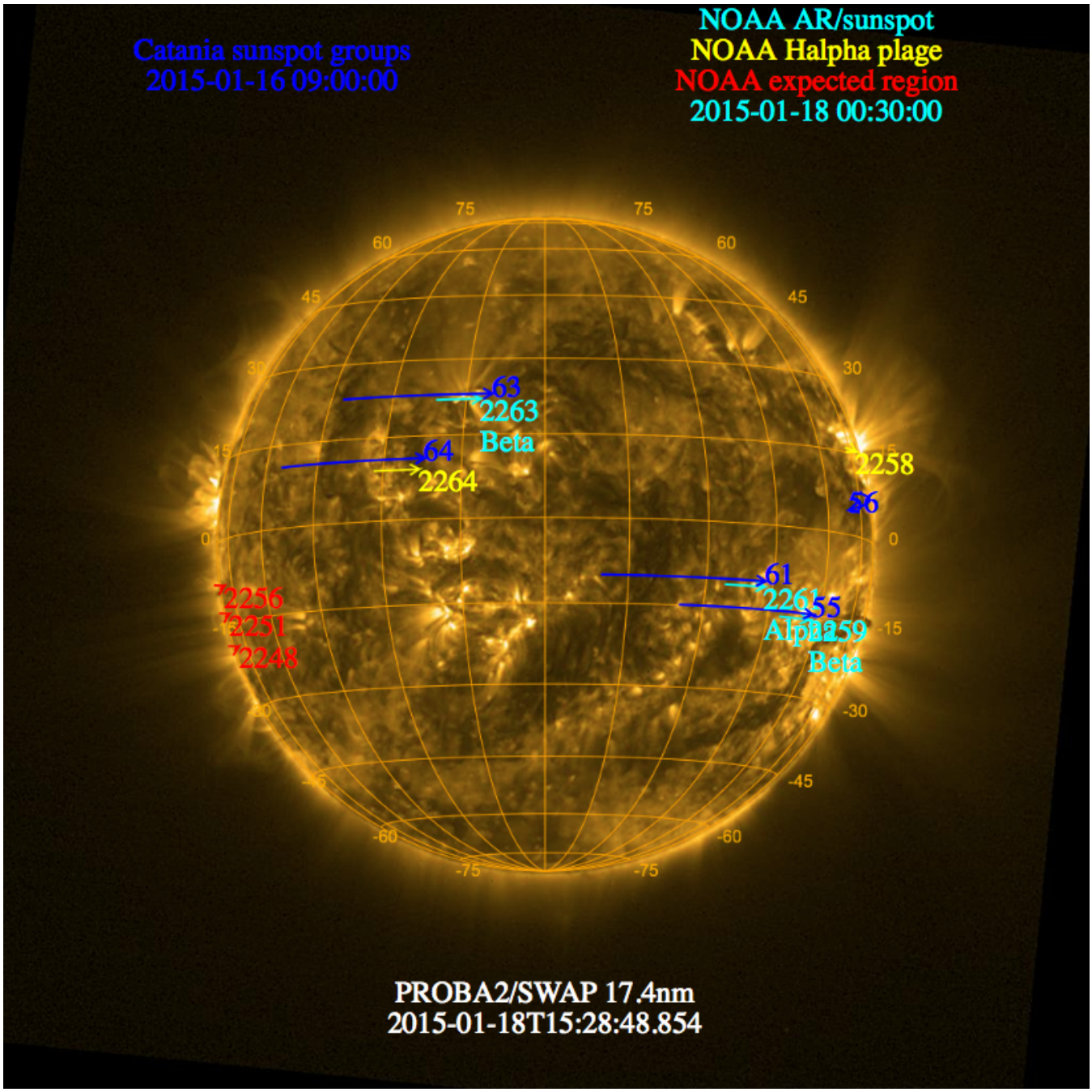
Only M- and X-flares are mentioned, the most energetic one(s) per day are presented in **bold**:

	Monday 12 Jan	Tuesday 13 Jan	Wednesday 14 Jan	Thursday 15 Jan	Friday 16 Jan	Saturday 17 Jan	Sunday 18 Jan
Activity	low	moderate	moderate	low	low	quiet	low
Flares	-	**M4.9 @04h58** **M5.6@04h24**	**M2.2@12h58**	-	-	-	-

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

The SWAP images of Jan 12 and Jan 18 are shown below, with annotated active regions.




Catania sunspot groups
2015-01-16 09:00:00
NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2015-01-18 00:30:00
63
2263
Beta
64
2264
2258
61
2256
2251
2248
Beta
PROBA2/SWAP 17.4nm
2015-01-18T15:28:48.854

Solar Activity

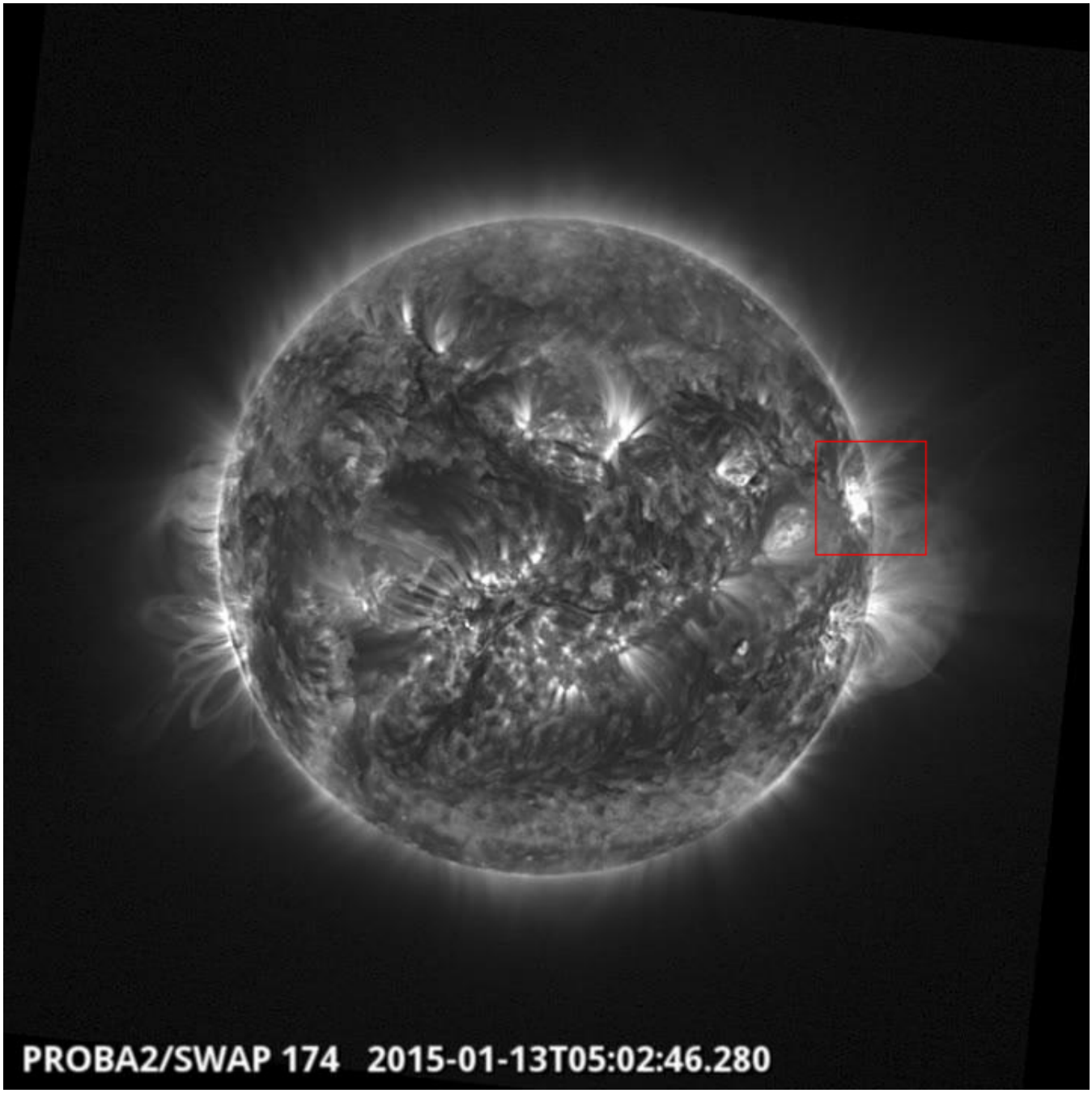
Solar flare activity fluctuated between quiet and moderate during the week.
In order to view the activity of this week in more detail, we suggest to go to the following website from which all the daily (normal and difference) movies can be accessed: http://proba2.oma.be/ssa
This page also lists the recorded flaring events.

A weekly overview movie can be found here (SWAP week 251).

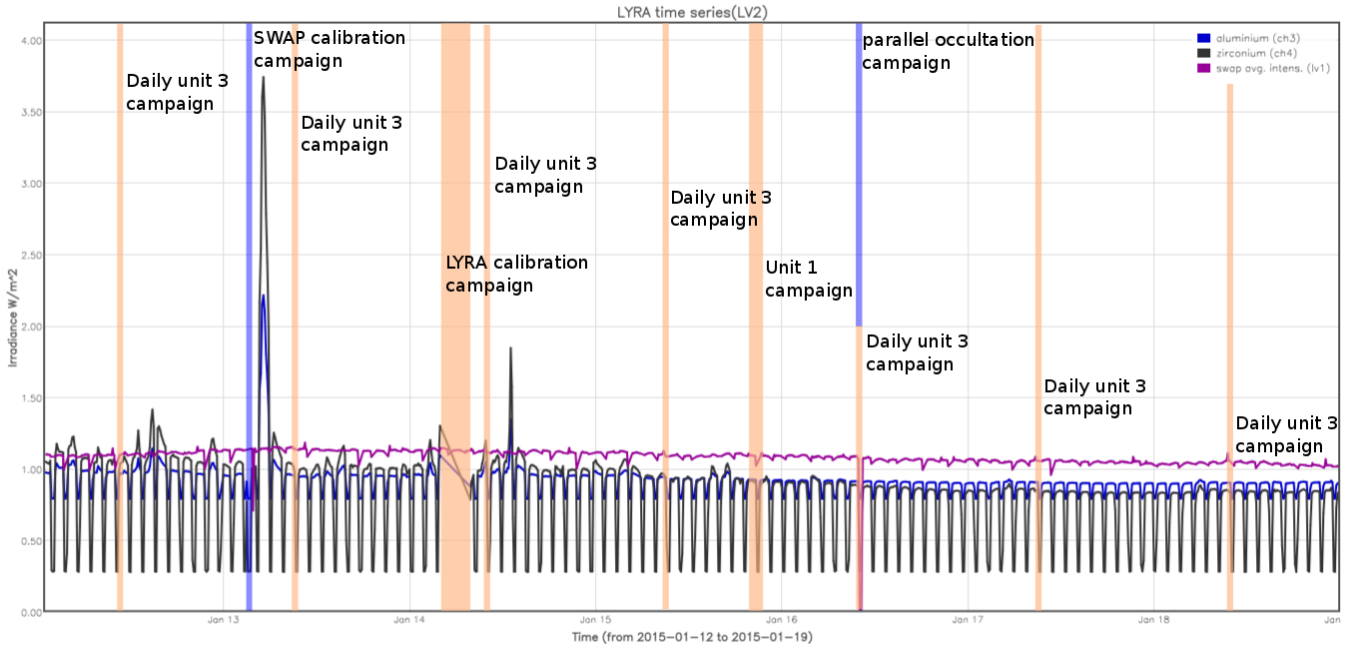
Below we provide SWAP images of the time when a strong M-flare occurred on 2015-Jan-13.

Tuesday Jan 13:

M4.9 flare peaking around 04h58



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 (SWAP Average Intensity; integrated solar intensity per SWAP image pixel)

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

- SWAP calibration on Jan 13
- SWAP occultation campaign parallel with LYRA on Jan 16

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

- LYRA daily unit 3 occultation campaigns, seven times
- LYRA short bi-weekly calibration on Jan 14
- LYRA monthly unit 1 campaign on Jan 15

Outreach, papers, presentations, etc.

Please 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.

The science section of this weekly report is also published in the weekly STCE newsletter (http://www.stce.be/newsletter/newsletter.php).

Guest Investigator Teams visiting the PROBA2 Science Center this week:

- D. Banerjee, SWAP, “Estimation of acceleration and evolution of angular width of Coronal Mass Ejections within SWAP FOV using CACTus.”
- J. Hutton, SWAP/LYRA, “Search for active region expansion using PROBA2/SWAP”.
- L. Hayes, LYRA, “Nature of red noise processes in solar flares and effect on observations of QPP”.

2. LYRA instrument status

Calibration

Short bi-weekly calibration campaign on Wednesday this week.

IOS & operations

Monday 12 Jan	Tuesday 13 Jan	Wednesday 14 Jan	Thursday 15 Jan	Friday 16 Jan	Saturday 17 Jan	Sunday 18 Jan
Nominal acquisition + daily U3 LYIOS00445	Nominal acquisition + daily U3 LYIOS00445	Nominal acquisition + daily U3 + calibration LYIOS00445	Nominal acquisition + daily U3 + U1 campaign LYIOS00445	Nominal acquisition + daily U3 LYIOS00446	Nominal acquisition + daily U3 LYIOS00446	Nominal acquisition + daily U3 LYIOS00446

The following science campaigns were performed by LYRA:

- Daily unit 3 occultation campaign
- Short bi-weekly calibration on Jan 14
- Monthly unit 1 campaign on Jan 15
- Continued daily dark observations with unit 3

LYRA detector temperature

LYRA detector 2 temperature globally varied between 47.70 and 46.15 °C, taking into account the daily U3 activation periods; the latter result in a temperature increase of about 0.6 °C.

3. SWAP instrument status

Calibration

SWAP calibration on Tuesday this week.

MCPM errors

The number of MCPM recoverable errors increased from 25454 to 25659.
The number of MCPM unrecoverable errors increased from 3749 to 3917.

IOS & operations

Monday 12 Jan	Tuesday 13 Jan	Wednesday 14 Jan	Thursday 15 Jan	Friday 16 Jan	Saturday 17 Jan	Sunday 18 Jan
Nominal acquisition IOS00560 573 images	Nominal acquisition + calibration IOS00560 606 images	Nominal acquisition IOS00560 630 images	Nominal acquisition IOS00560 516 images	Nominal acquisition + occultation IOS00561 700 images	Nominal acquisition IOS00561 524 images	Nominal acquisition IOS00561 608 images

Special operations for SWAP, this week:

- SWAP calibration on Jan 13
- Occultation campaign parallel with LYRA on Jan 16

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -2.97 and -0.97 °C.

4. PROBA2 Science Center Status

The main operator is Katrien Bonte.

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 16285 to 16343) was nominal, except for:

- None.

Data coverage HK

All HK data files (LYRA_AD) have been received, except:

- None.

Data coverage SWAP

All SWAP Science data files (BINSWAP) have been received, except:

- None.

Total number of images between 2015 Jan 12 0UT and 2015 Jan 19 0UT: 4286
Highest cadence in this period: 29 seconds
Average cadence in this period: 141.11 seconds
Number of image gaps larger than 300 seconds: 101
Largest data gap: 29.45 minutes

Data coverage LYRA

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

- 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
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
SoFAST	Solar Feature Automated Search Tool
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
VFC	Voltage to Frequency Converter

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)