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|---|---|---|
| P2SC-ROB-WR-125-20120813<br>Weekly report #125 | **P2SC Weekly report** |  |
| Period covered:<br>Date:<br>Written by:<br>Approved by: | Mon Aug 13 to Sun Aug 19, 2012<br>22 Aug 2012<br>Erik Pylyser<br>David Berghmans | Royal Observatory of Belgium<br>PROBA2 Science Center |
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## 1. Science

**Solar & Space weather events**

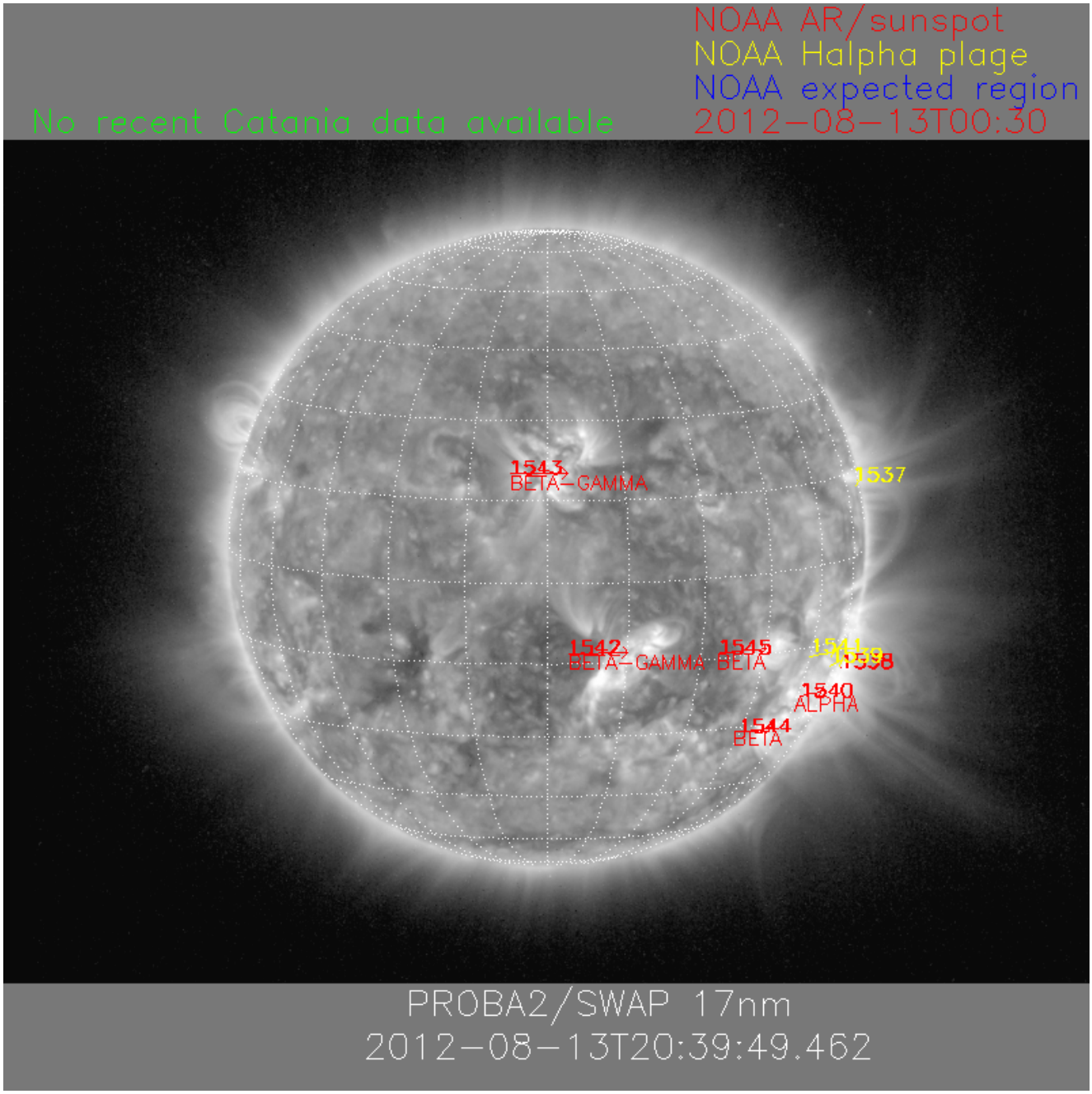
*Overview*

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

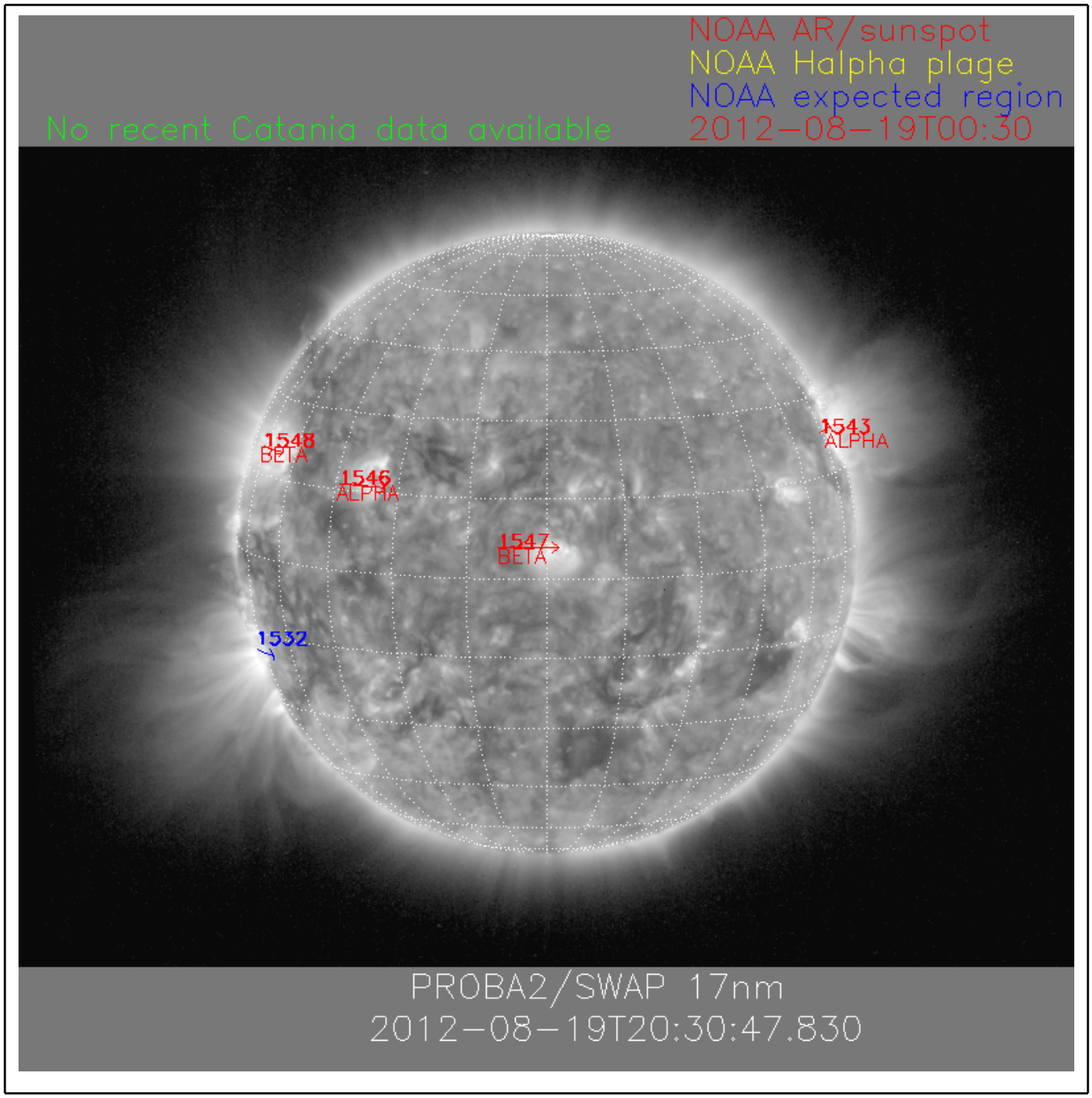
| | Monday 13 Aug | Tuesday 14 Aug | Wednesday 15 Aug | Thursday 16 Aug | Friday 17 Aug | Saturday 18 Aug | Sunday 19 Aug |
|---|---|---|---|---|---|---|---|
| Activity | low | low | very low | low | moderate | moderate | low |
| Flares | - | - | - | - | **M2.4@13:12**<br>M1.0@17:08 | **M5.5@00:24**<br>M1.8@03:17<br>M2.0@16:02<br>M1.0@22:46<br>M1.3@23:15 | - |

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

The SWAP images of Aug 13 and Aug 19 are shown below, with annotated active regions.




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


NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2012-08-19T00:30
No recent Catania data available
1548
BETA
1546
ALPHA
1547
BETA
1543
ALPHA
1532
PROBA2/SWAP 17nm
2012-08-19T20:30:47.830

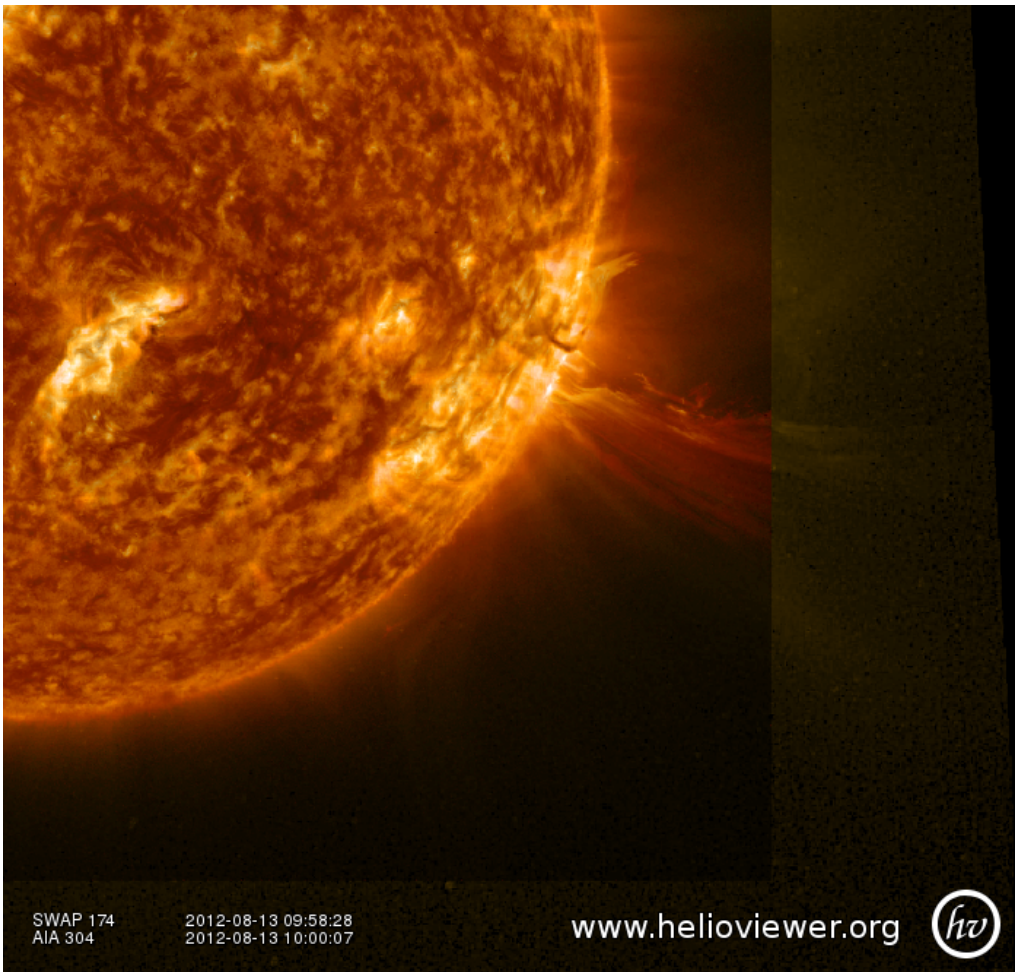
**Solar Activity**
Early this week, the Sun's activity level was *Low*, until AR 11548 was closing in from behind the east limb. *Moderate* activity was generated by this AR with several M-flares on Friday and Saturday (see table above). On Sunday, when the AR had rounded the limb, the activity went back to *Low*.

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.

Most of the M-flares were occurring behind the east limb on Friday and Saturday and so there was only limited viewing available.

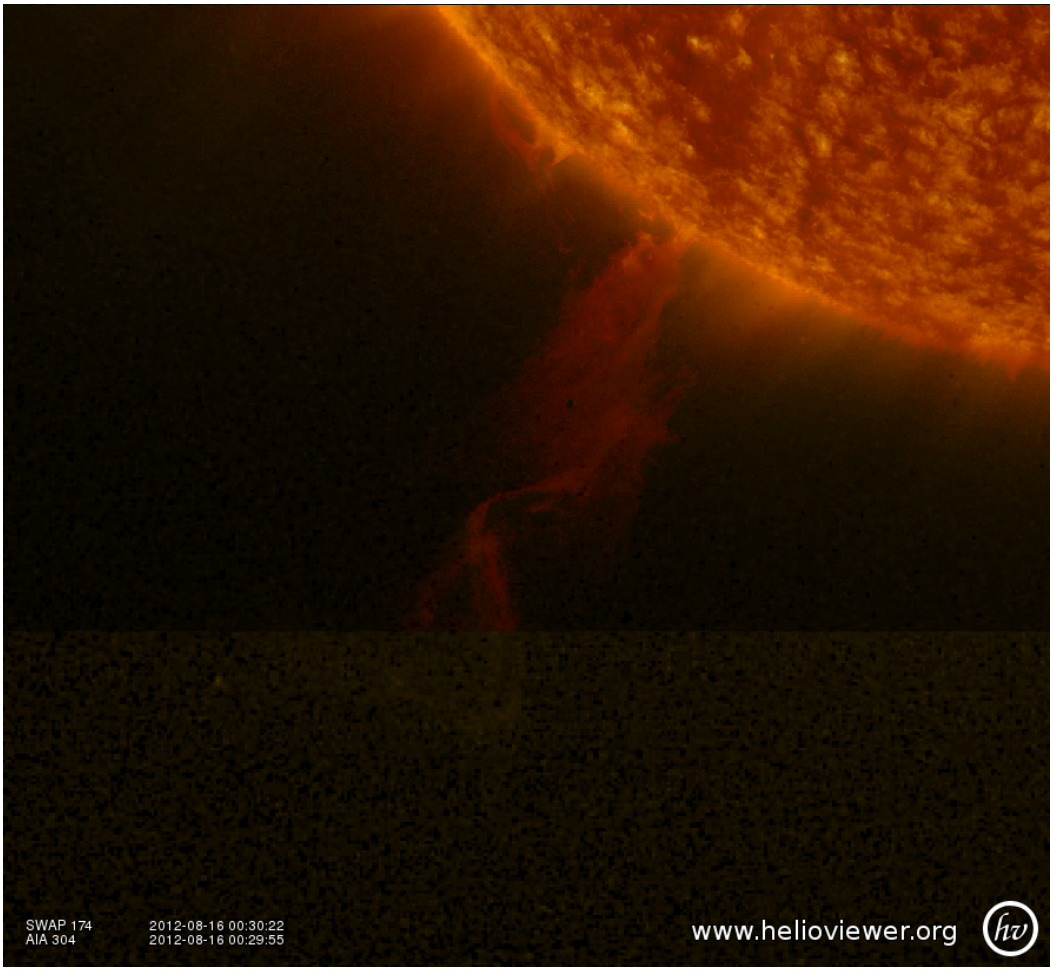
However, another couple of interesting phenomena occurred on Monday 13th as well as around midnight on the 15th/16th.

**Monday 13/08**



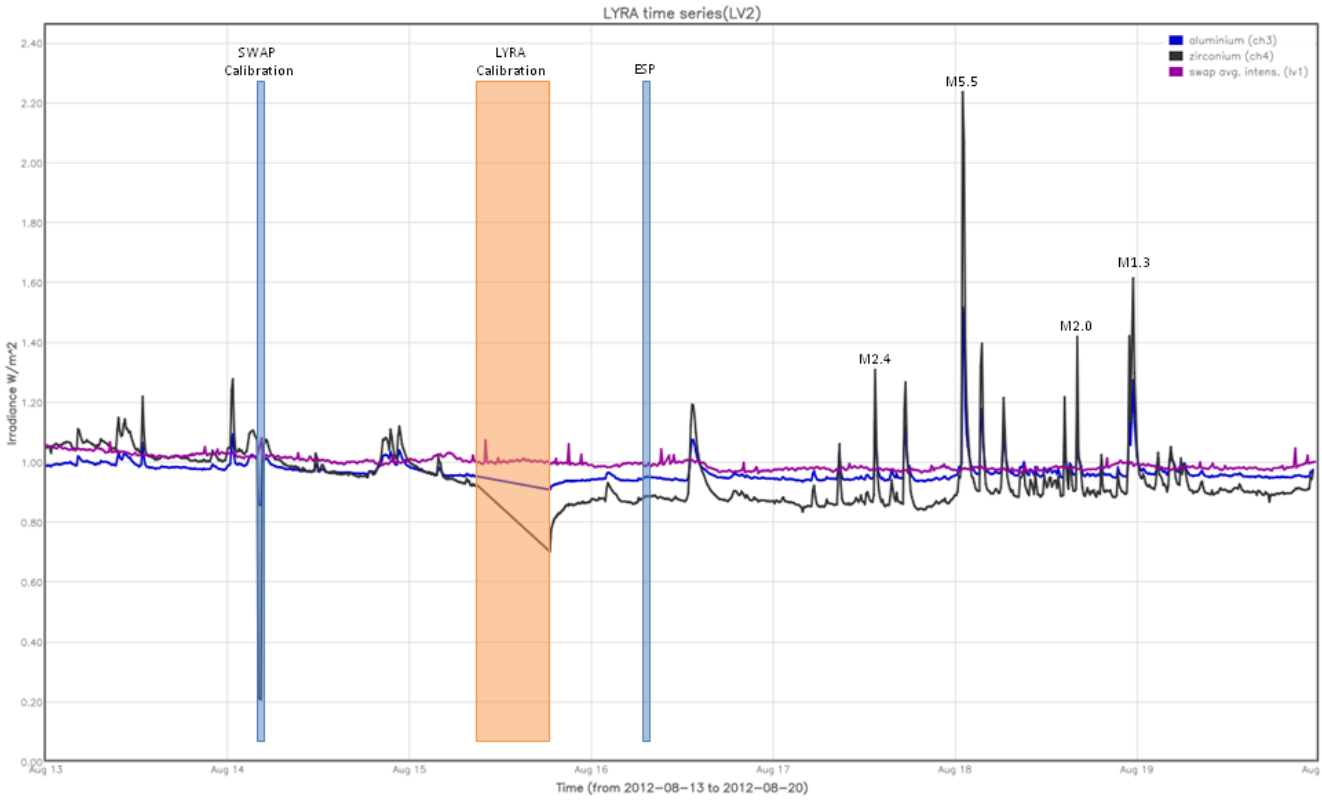

A movie of the Monday 13 expulsion can be found here. The movie was generated with HelioViewer, using (colored) SWAP and AIA 304 images.

**Wed/Thu 15-16/08**




The movie can be found here. It was generated with HelioViewer, using (colored) SWAP and AIA 304 images.

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

The red shaded period corresponds to:
- None.

**Scientific campaigns**

***LYRA***
The following scientific LYRA campaigns were performed this week:
- None

***SWAP***
The following scientific SWAP campaign was performed this week:
- None

***Interesting, campaign associated, solar activity:***
- None

**Outreach, papers, presentations, etc.**
- None

## 2. LYRA instrument status

**Calibration**

Calibration on Wednesday.

**IOS & operations**

| Monday 13 Aug | Tuesday 14 Aug | Wednesday 15 Aug | Thursday 16 Aug | Friday 17 Aug | Saturday 18 Aug | Sunday 19 Aug |
|---|---|---|---|---|---|---|
| Nominal acquisition + daily U3<br><br>LYIOS00263 | Nominal acquisition + daily U3<br><br>LYIOS00263 | Nominal acquisition + daily U3 + calibration<br><br>LYIOS00263 | Nominal acquisition + daily U3<br><br>LYIOS00263 | Nominal acquisition + daily U3<br><br>LYIOS00263 | Nominal acquisition+ daily U3<br><br>LYIOS00263 | Nominal acquisition+ daily U3<br><br>LYIOS00263 |

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

**LYRA detector temperature**

LYRA detector 2 temperature fluctuated between 45.5 and 46.5 degrees. During calibration on Wednesday, temperature went down to 44.2 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 2566 to 2715.

The number of MCPM unrecoverable errors is still 0.

**IOS & operations**

| Monday 13 Aug | Tuesday 14 Aug | Wednesday 15 Aug | Thursday 16 Aug | Friday 17 Aug | Saturday 18 Aug | Sunday 19 Aug |
|---|---|---|---|---|---|---|
| Nominal acquisition<br><br>IOS00408<br>579 images | Nominal acquisition + calibration<br><br>IOS00408<br>690 images | Nominal acquisition<br><br>IOS00408<br>613 images | Nominal acquisition + ESP<br><br>IOS00408 -> 409<br>597 images | Nominal acquisition<br><br>IOS00409<br>665 images | Nominal acquisition<br><br>IOS00409<br>623 images | Nominal acquisition<br><br>IOS00409<br>577 images |

**SWAP detector temperature**

The SWAP Cold Finger Temperature fluctuated between - 1.5 and - 2.2 degrees Celsius, under nominal operations.

A slow increase (followed by decrease) of temperature until -1.1 degrees is noticed on Wednesday between 14:00 and 22:00. This seems to be a bi-weekly phenomenon and could be due to the LYRA calibration, occurring at that time (to be further checked).

**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 8657 to 8720) 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 Aug 13 0UT and 2012 Aug 20 0UT: 4344
Highest cadence in this period: 30 seconds
Average cadence in this period: 139.23 seconds
Number of image gaps larger than 300 seconds: 27
Largest data gap: 32.17 minutes

**Data coverage LYRA**

All LYRA Science data files (BINLYRA) have been received, except for:
- none

## 6. APPENDIX Frequently used acronyms

| | |
|---|---|
| ADP | Ancillary Data Processor |
| 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 |
| DR | Destructive Readout |
| DSLP | Dual Segmented Langmuir Probe |
| 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 |
| ICD | Interface Control Document |
| IIU | Instrument Interface Unit |
| IOS | Instrument Operations Sheet |
| LED | Light Emitting Diode |
| LEO | Low Earth Orbit |
| 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 |
| PGA | Programmable Gain Amplifier |
| PI | Principal Investigator |
| P2SC | PROBA2 Science Center |
| PPT | Pointing, Positioning and Time (software module of P2SC) |
| 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?)