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| P2SC-ROB-WR-124-20120806<br>Weekly report #124 | **P2SC Weekly report** |  |
| Period covered:<br>Date:<br>Written by:<br>Approved by: | Mon Aug 06 to Sun Aug 12, 2012<br>13 Aug 2012<br>Koen Stegen & Marie Dominique<br>David Berghmans | Royal Observatory of Belgium<br>PROBA2 Science Center |
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## 1. Science

**Solar & Space weather events**

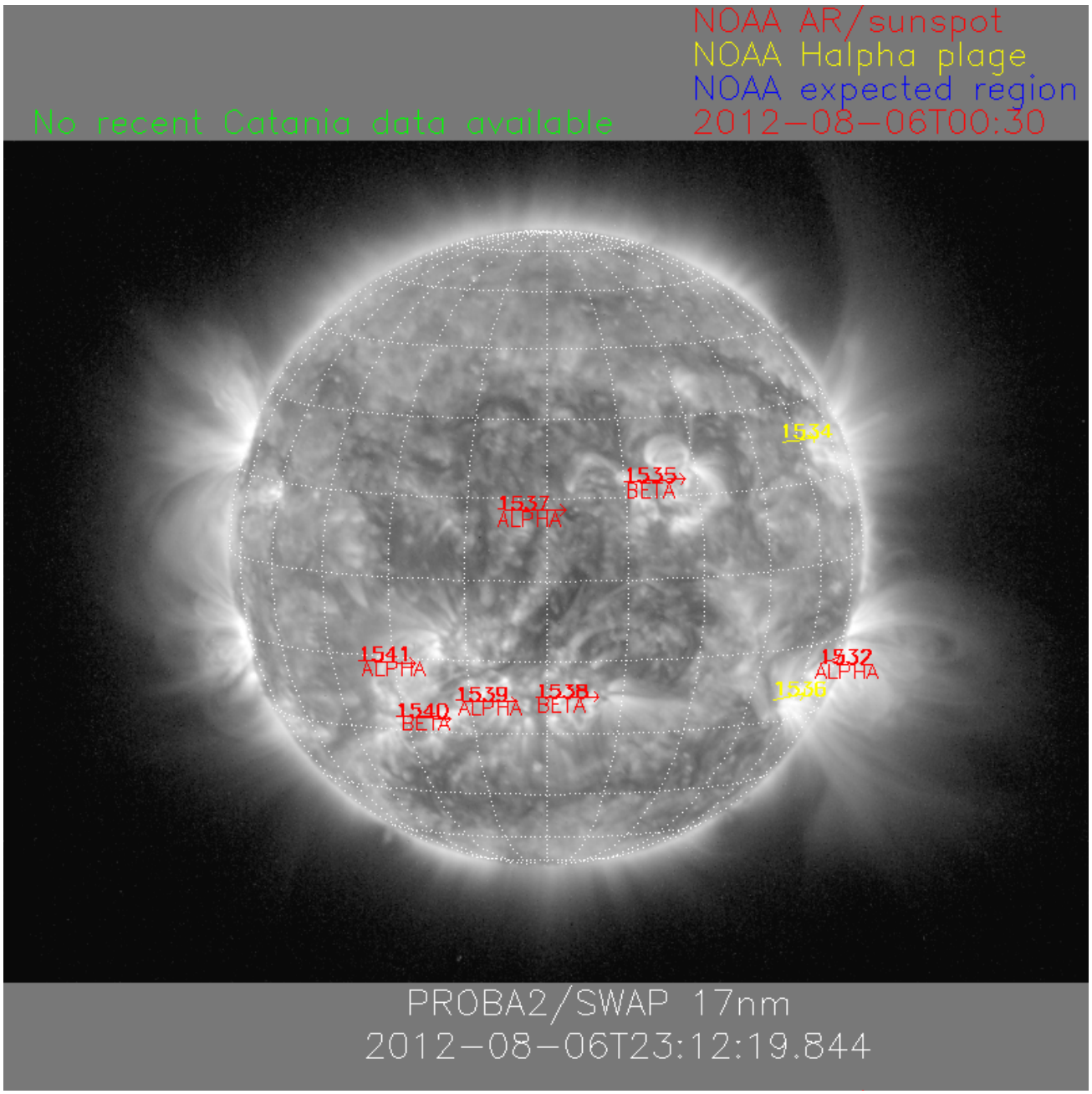
*Overview*

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

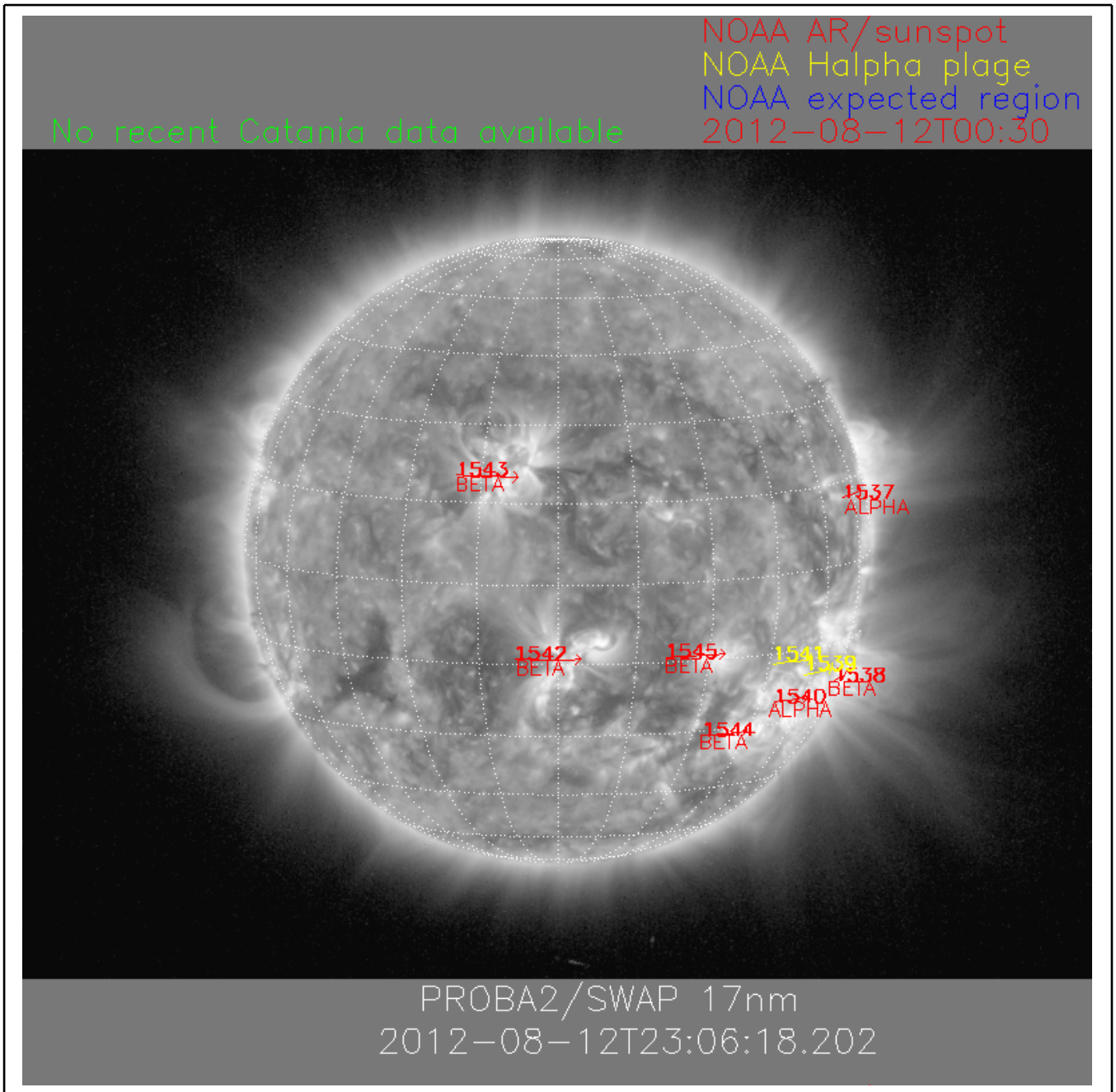
| | Monday 06 Aug | Tuesday 07 Aug | Wednesday 08 Aug | Thursday 09 Aug | Friday 10 Aug | Saturday 11 Aug | Sunday 12 Aug |
|---|---|---|---|---|---|---|---|
| Activity | moderate | low | low | low | low | moderate | low |
| Flares | **M1.6@04:38** | – | – | – | – | **M1.0@12:20** | – |

The annotated SWAP images from Aug 06 and Aug 12 below show the main regions of activity for the week.

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




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


NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2012-08-12T00:30
No recent Catania data available
1543
BETA
1537
ALPHA
1542
BETA
1545
BETA
1538
BETA
1540
ALPHA
1544
BETA
PROBA2/SWAP 17nm
2012-08-12T23:06:18.202

**Solar Activity**

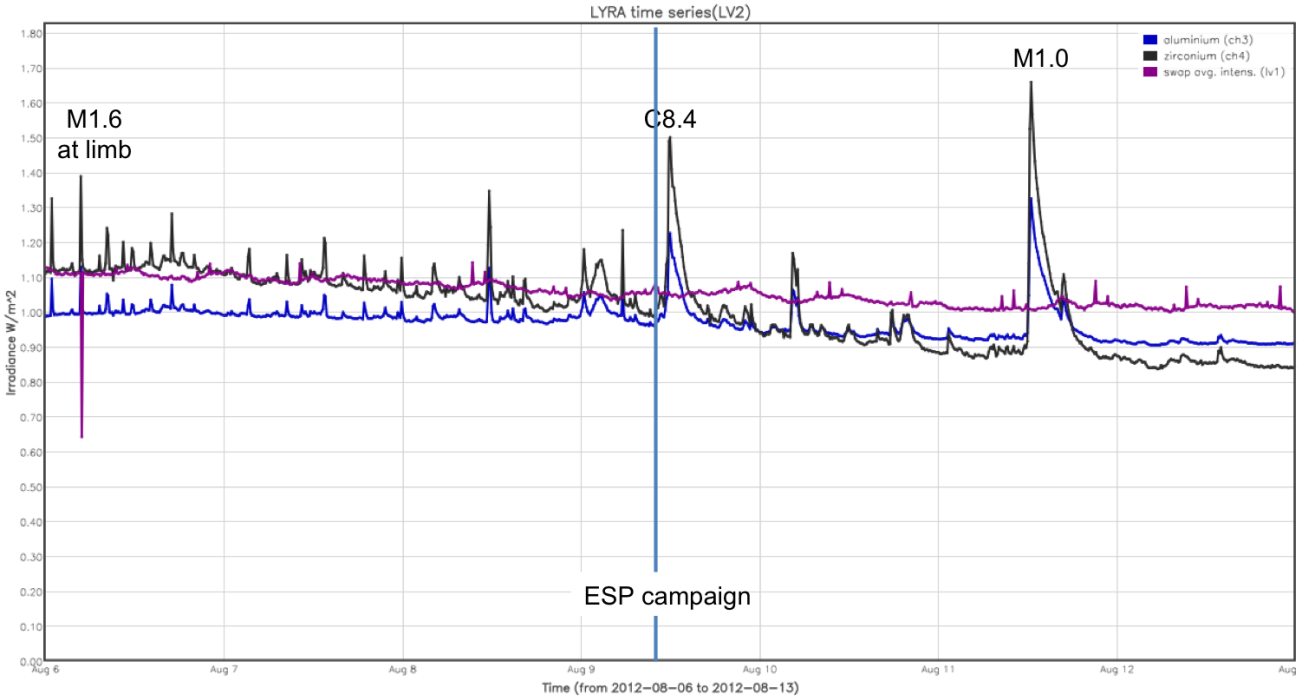
Solar activity remains quite low this week, with only two flares of level M: an M1.6 flare on Monday 06 August and an M1.0 flare on Saturday 11 August. The M1.6 flare was observed at the very east limb (it was originating from AR 1542, located on the back-side of the Sun), and therefore appears attenuated on LYRA time series. The M1.0 flare was a long-duration event from AR 1540.

AR 1542 also produced another such long-duration event on August 09, of level C8.4 in GOES scale.

Let's also mention a very nice filament near the solar central meridian in the southern hemisphere that produced several partial eruptions from Monday to Wednesday.
PROBA2's Space Situational Awareness Service provides an overview of daily activity for the entire week, including links to daily movies and a list of all recorded flares.

An overview of the weekly LYRA & SWAP data is provided below. The three colored curves correspond to:

- Black: Zirconium Channel LYRA Unit 2
- Blue: Aluminium Channel of LYRA Unit 2
- Violet: SWAVINT (SWAP Average Intensity; DN/s/px computed from SWAP images)




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

1. ESP campaign

**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**

/

**IOS & operations**

| Monday 06 Aug | Tuesday 07 Aug | Wednesday 08 Aug | Thursday 09 Aug | Friday 10 Aug | Saturday 11 Aug | Sunday 12 Aug |
|---|---|---|---|---|---|---|
| Nominal acquisition + daily U3 | Nominal acquisition + daily U3 | Nominal acquisition + daily U3 | Nominal acquisition + daily U3 | Nominal acquisition + daily U3 | Nominal acquisition + daily U3 | Nominal acquisition + daily U3 |
| LYIOS00262 | LYIOS00262 | LYIOS00262 | LYIOS00262 | LYIOS00262 | LYIOS00262 -> 263 | LYIOS00263 |

Activities performed this week with LYRA:
- daily U3 campaign.

**LYRA detector temperature**

LYRA detector 2 temperature fluctuated between 45.36 and 46.15 degrees.

**To be explored**
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## 3. SWAP instrument status

**Calibration**

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**MCPM errors**

The number of MCPM recoverable errors increased from 2351 to 2566.

The number of MCPM unrecoverable errors is still 0.

**IOS & operations**

| Monday 06 Aug | Tuesday 07 Aug | Wednesday 08 Aug | Thursday 09 Aug | Friday 10 Aug | Saturday 11 Aug | Sunday 12 Aug |
|---|---|---|---|---|---|---|
| Nominal acquisition<br><br>IOS00408<br>664 images | Nominal acquisition<br><br>IOS00408<br>635 images | Nominal acquisition<br><br>IOS00408<br>635 images | Nominal acquisition +ESP<br><br>IOS00408<br>617 images | Nominal acquisition<br><br>IOS00408<br>616 images | Nominal acquisition<br><br>IOS00408<br>559 images | Nominal acquisition<br><br>IOS00408<br>547 images |

**SWAP detector temperature**

The SWAP Cold Finger Temperature fluctuated between –2.01 and –0.73 degrees Celsius, under nominal operations.

**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 8596 to 8656) was nominal, except for:
- pass 8608: we expect to find 67 images. There seem to be 3 images missing.

**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 06 0UT and 2012 Aug 13 0UT: 4273
Highest cadence in this period: 130 seconds
Average cadence in this period: 141.53 seconds
Number of image gaps larger than 300 seconds: 1

**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?)