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|---|---|---|
| P2SC-ROB-WR-116-20120611<br>Weekly report #116 | **P2SC Weekly report** |  |
| Period covered:<br>Date:<br>Written by:<br>Approved by: | Mon Jun 11 to Sun Jun 17, 2012<br>20 June 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**

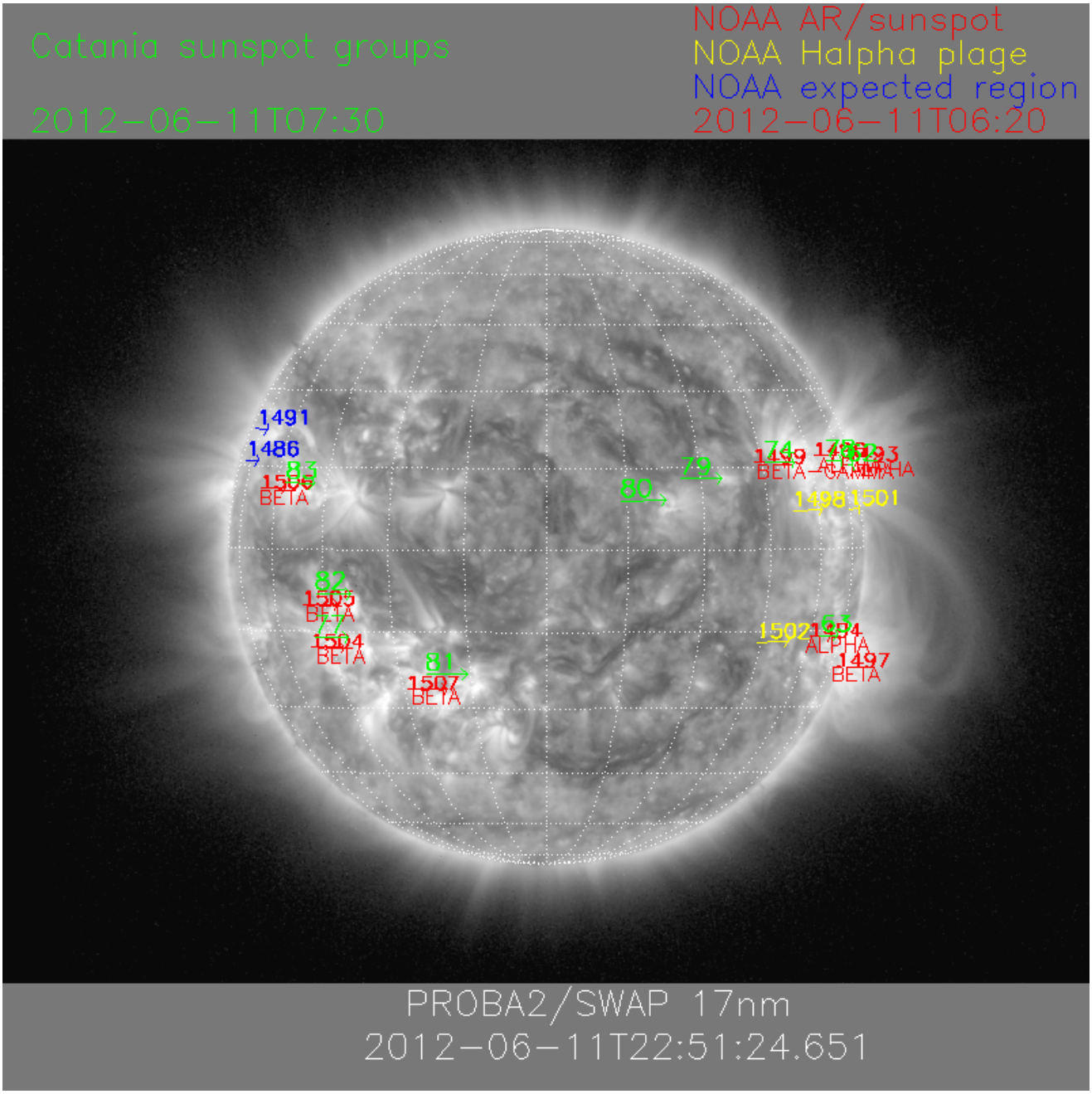
*Overview*

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

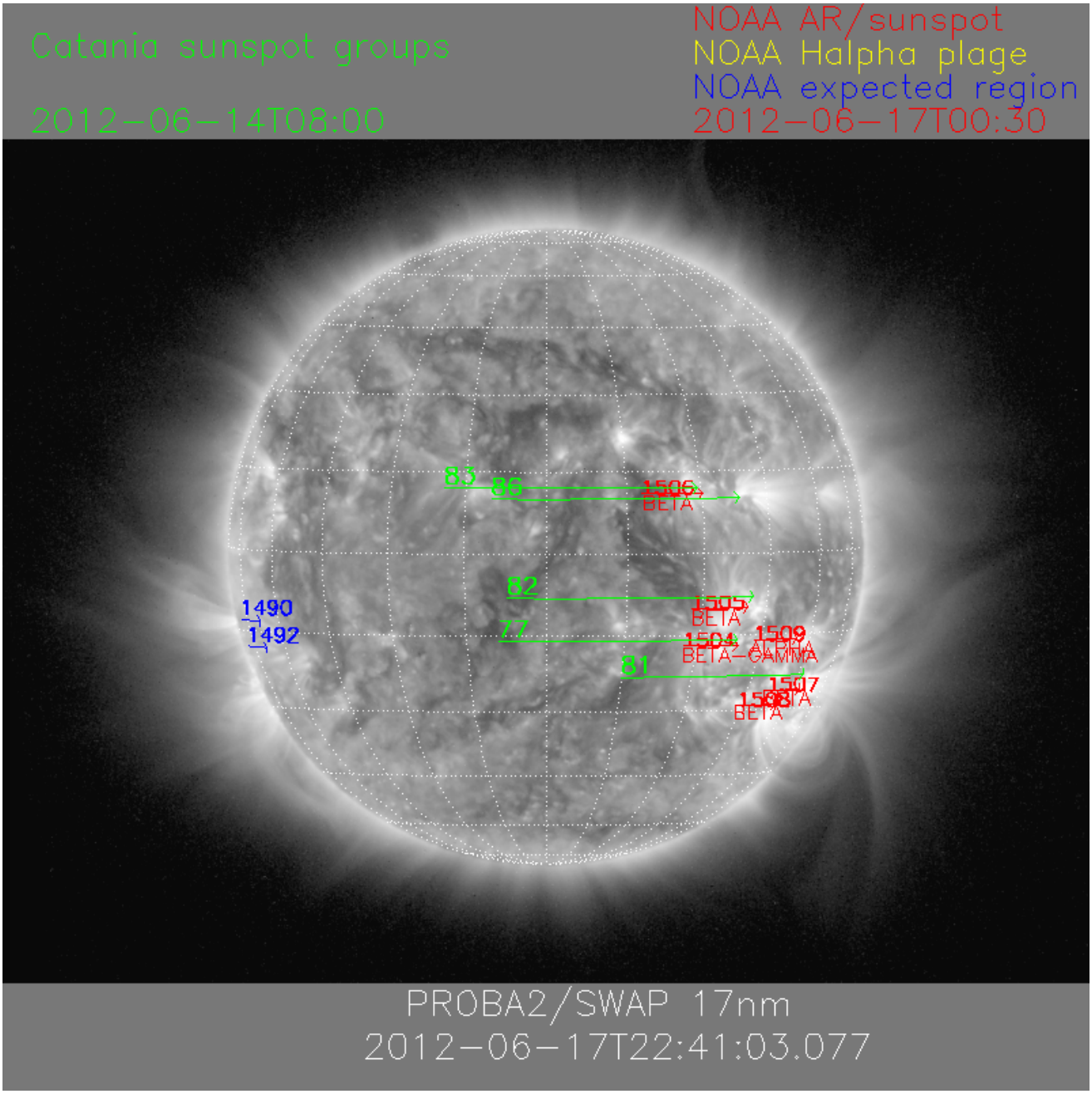
| | Monday 11 Jun | Tuesday 12 Jun | Wednesday 13 Jun | Thursday 14 Jun | Friday 15 Jun | Saturday 16 Jun | Sunday 17 Jun |
|---|---|---|---|---|---|---|---|
| Activity | low | low | moderate | moderate | low | low | low |
| Flares | - | - | M1.2@11:29 | M1.9@12:52 | - | - | - |

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

The SWAP images of Jun 11 and Jun 17 are shown below, with annotated active regions.



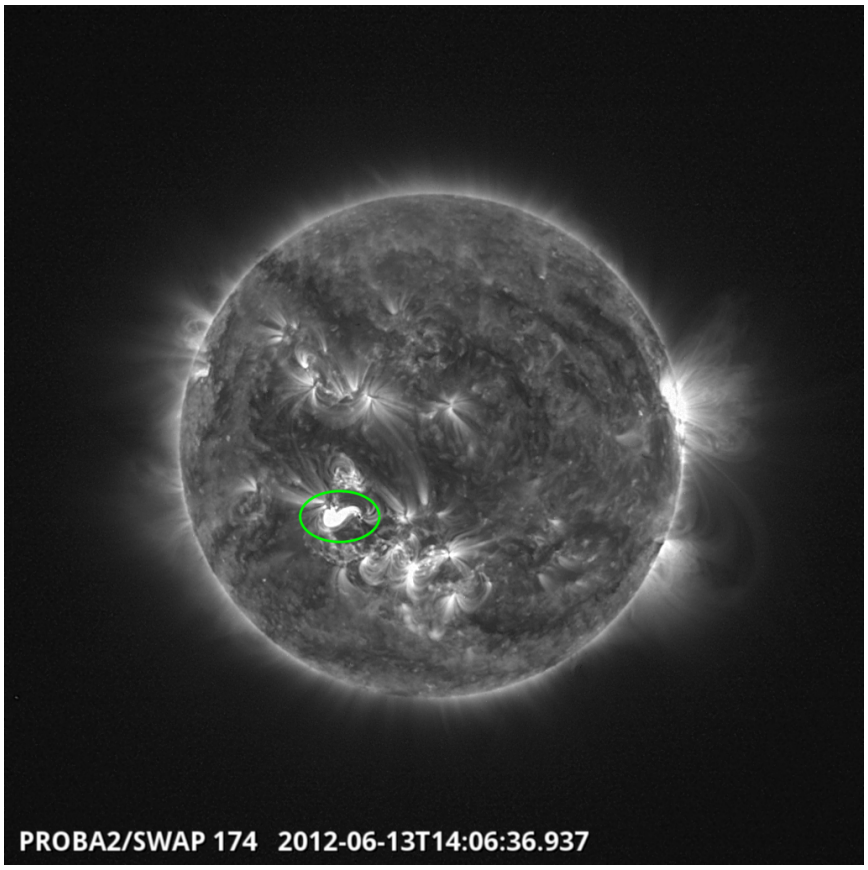

http://sidc.be/html/CmapPage.html


Catania sunspot groups
2012-06-14T08:00
NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2012-06-17T00:30
83
86
1506
BETA
82
1505
BETA
1490
1492
77
1504
1509
BETA-GAMMA
81
1507
BETA
PROBA2/SWAP 17nm
2012-06-17T22:41:03.077

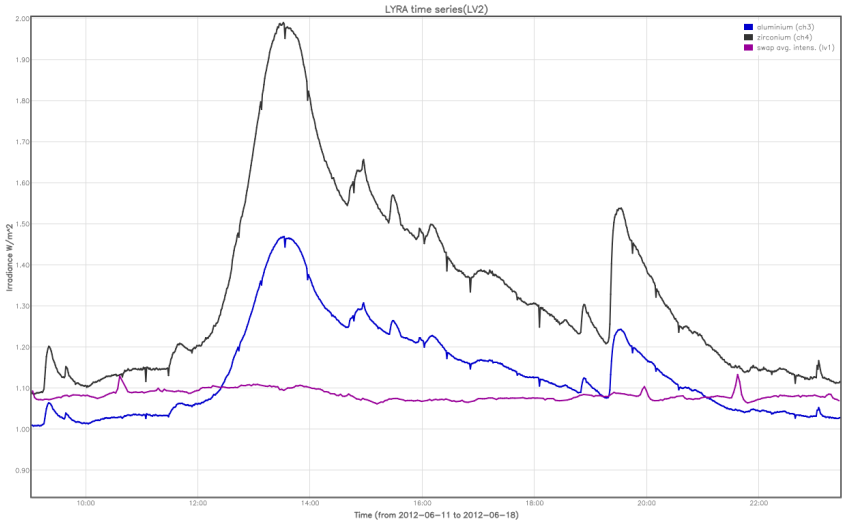
**Solar Activity**

This week, the Sun's activity level was 'low', slightly increasing to moderate[2], with 2 M-flares occurring on Wednesday 13th (1) and Thursday 14th (1).

On Wednesday 13th, at 11:29 UT, an M1.2 flare occurred in AR11504.



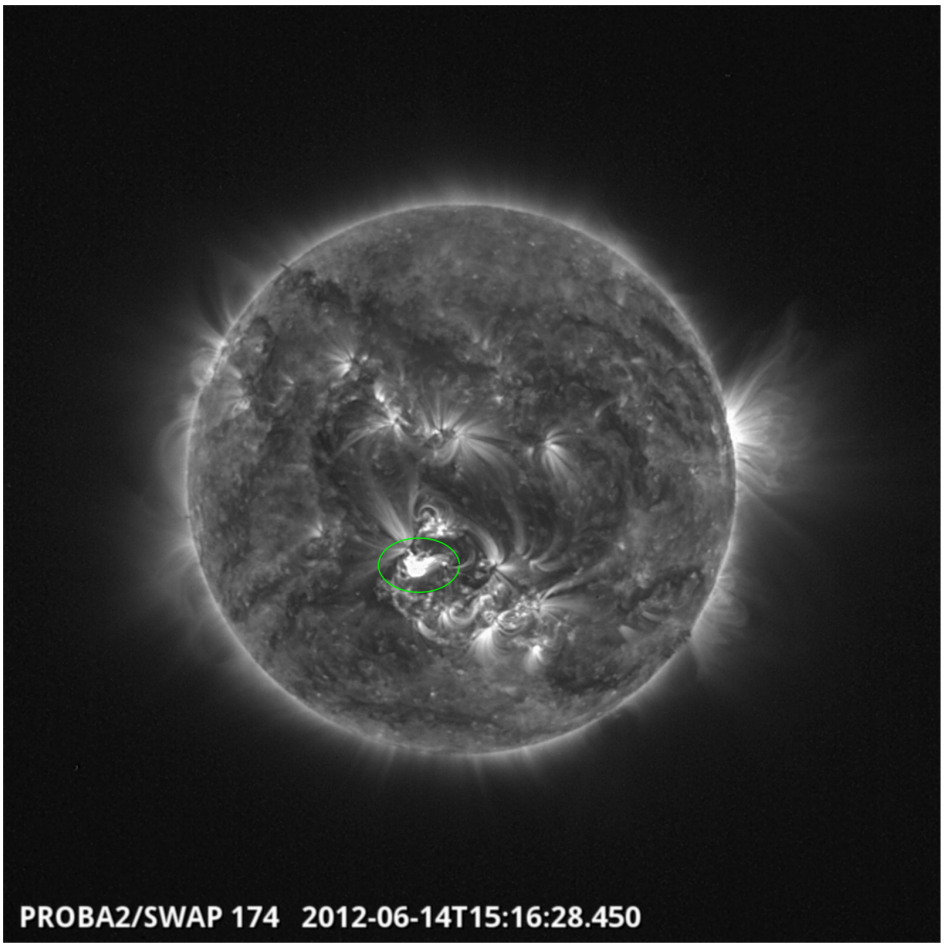

**M1.2 flare as imaged by SWAP, 13/06 @ 14:06**



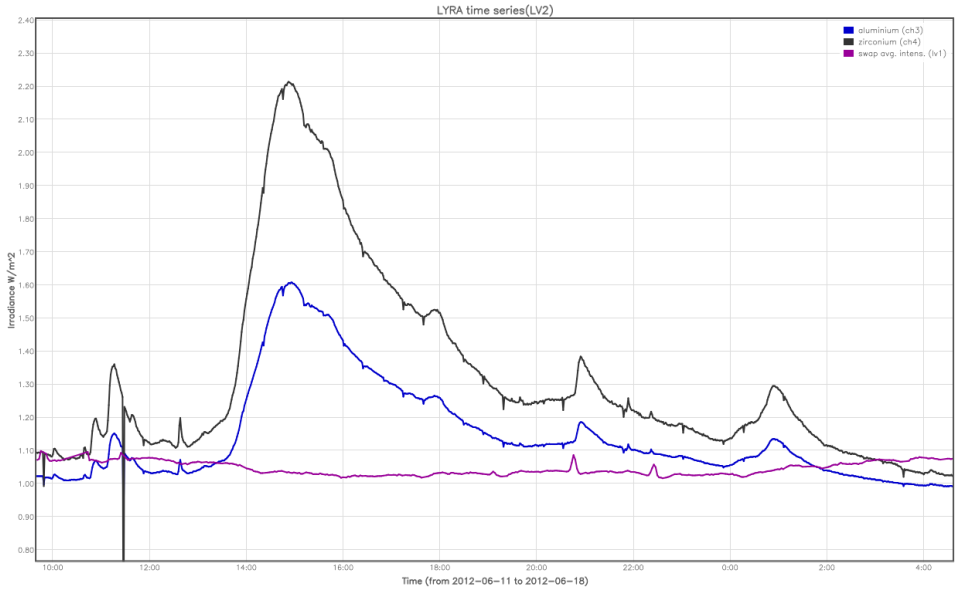

**M1.2 flare as recorded by LYRA, 13/06, started @ 11:29**

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

On Thursday 14th, at 12:52 UT, an M1.9 flare occurred in AR11504.

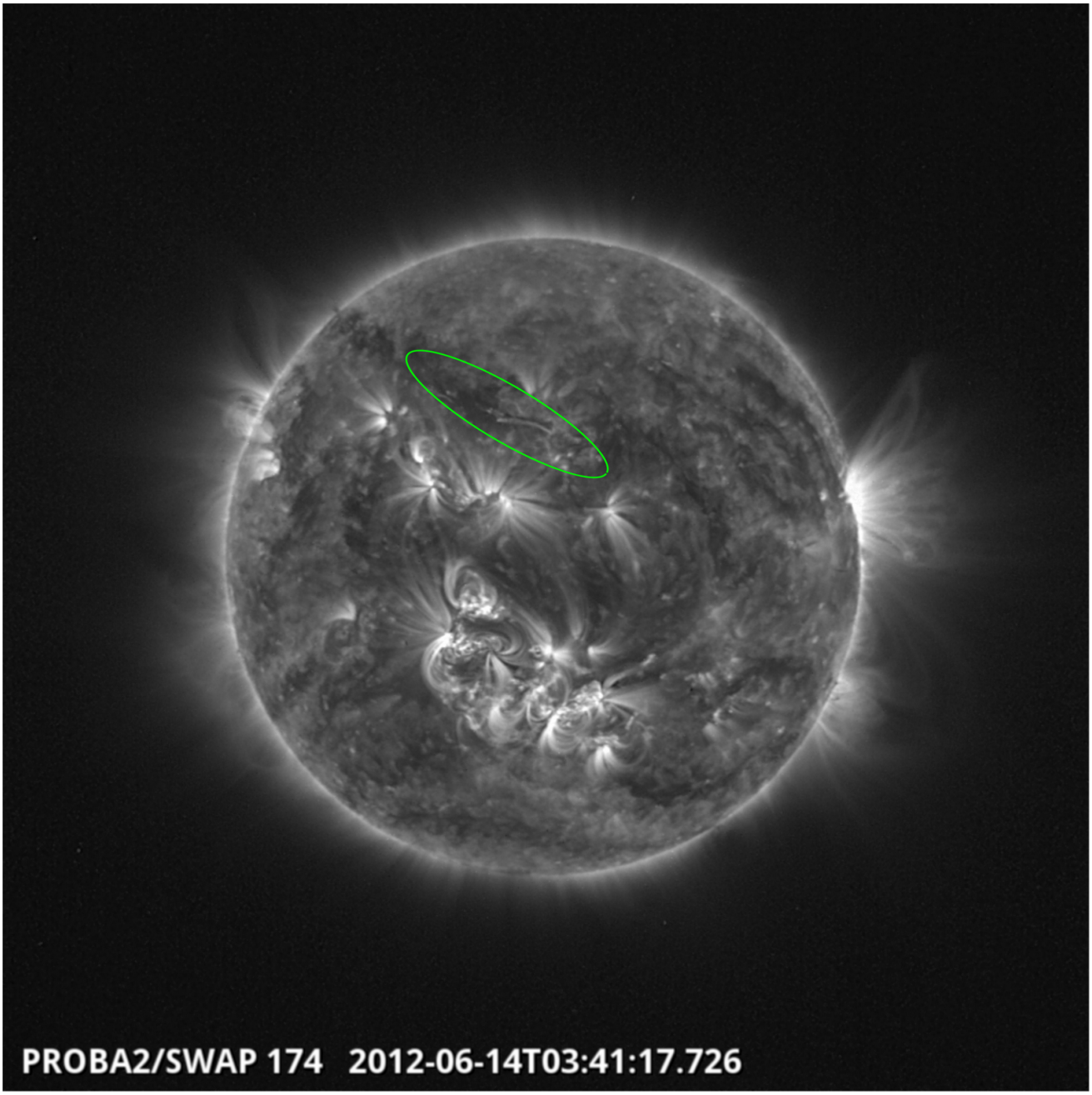



**M1.9 flare as imaged by SWAP, 14/06 @ 15:16**



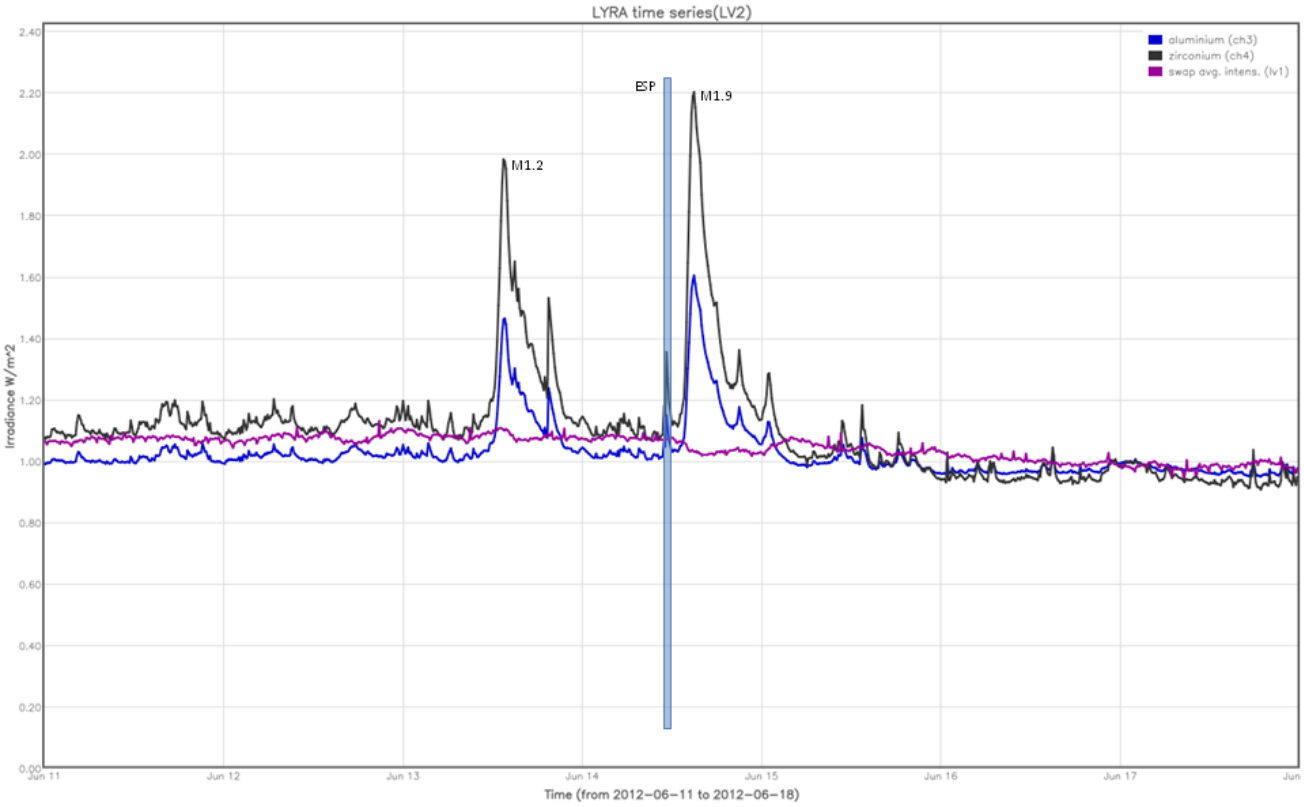

**M1.9 flare as recorded by LYRA, 14/06, started @ 12:52**

Also on Thursday 14th, a filament brightening was visible during a period around 03:30.




Movies of the phenomenon can be found here.

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 period corresponds to a SWAP data gap for ESP campaign.

The orange shaded periods correspond to, from left to right, LYRA data acquisition campaigns for:
- None.

The red shaded period corresponds to:
- None.

**Scientific campaigns**

The following LYRA and SWAP specific scientific campaigns have been performed this week:
- Daily LYRA Unit 3 campaign

**Outreach, papers, presentations, etc.**

- None.

## 2. LYRA instrument status

**Calibration**

No calibration of LYRA this week.

**IOS & operations**

| Monday 11 Jun | Tuesday 12 Jun | Wednesday 13 Jun | Thursday 14 Jun | Friday 15 Jun | Saturday 16 Jun | Sunday 17 Jun |
|---|---|---|---|---|---|---|
| Nominal acquisition<br><br>LYIOS00249 | Nominal acquisition + daily U3<br><br>LYIOS00250 | Nominal acquisition + daily U3<br><br>LYIOS00250 | Nominal acquisition + daily U3<br><br>LYIOS00250 | Nominal acquisition + daily U3<br><br>LYIOS00250 | Nominal acquisition + daily U3<br><br>LYIOS00250 | Nominal acquisition + daily U3<br><br>LYIOS00250 |

The following LYRA campaign was performed this week:
- Daily Unit 3 campaign

**LYRA detector temperature**

LYRA detector 2 temperature fluctuated between 45.2 and 46.1 during nominal operations.

**To be explored**
/

## 3. SWAP instrument status

**Calibration**

No calibration of SWAP this week.

**MCPM errors**
The number of MCPM recoverable errors increased from 1093 to 1272.
A jump of 21 in the numbers of MCPM recoverable errors was found between 2 consecutive ‘readings’, on June 126h, between 21:10:20 and 21:10:50.
After detailed analysis, no apparent causes for or consequences of this jump were found in the data.

The number of MCPM unrecoverable errors is still 0.

**IOS & operations**

| Monday 11 Jun | Tuesday 12 Jun | Wednesday 13 Jun | Thursday 14 Jun | Friday 15 Jun | Saturday 16 Jun | Sunday 17 Jun |
|---|---|---|---|---|---|---|
| Nominal acquisition<br><br>IOS00401<br>659 images | Nominal acquisition<br><br>IOS00401<br>563 images | Nominal acquisition<br><br>IOS00401<br>664 images | Nominal acquisition<br><br>IOS00401<br>648 images | Nominal acquisition<br><br>IOS00401<br>644 images | Nominal acquisition<br><br>IOS00401<br>580 images | Nominal acquisition<br><br>IOS00401<br>543 images |

The following specific SWAP campaign was performed this week:
- None

**SWAP detector temperature**
The SWAP Cold Finger Temperature fluctuated between -0.90 and -1.75 degrees Celsius, under nominal operations.

**To be explored**
/

## 4. PROBA2 Science Center Status

The main operator is Koen Stegen.

The following changes were made to the P2SC:

**Complete Update of Repository:**
13/06/2012: r4542

**SWBSDG**
13/06/2012: r4542 (minor bug fixes, new swap response file for SSW)

## 5. Data reception & discussions with MOC

**Passes**

The delivery of the passes for this week (passes 8108 to 8171) 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

All SWAP Science data files (BINSWAP) have been processed successfully, except for:
- None

Total number of images between 2012 Jun 11 0UT and 2012 Jun 18 0UT: 4389
Highest cadence in this period: 130 seconds
Average cadence in this period: 137.82 seconds
Number of image gaps larger than 300 seconds: 2
Largest data gap: 34.33 minutes (ESP test)

**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?)