


P2SC-ROB-WR-175- 20130729 Weekly report #175	<b>P2SC Weekly report</b>	
Period covered: Date:  Written by: Approved by:	Mon July 29 to Sun August 04, 2013 07 Aug 2013  Erik Pylyser Matthew West	Royal Observatory of Belgium - PROBA2 Science Center
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## 1. Science

### Solar & Space weather events

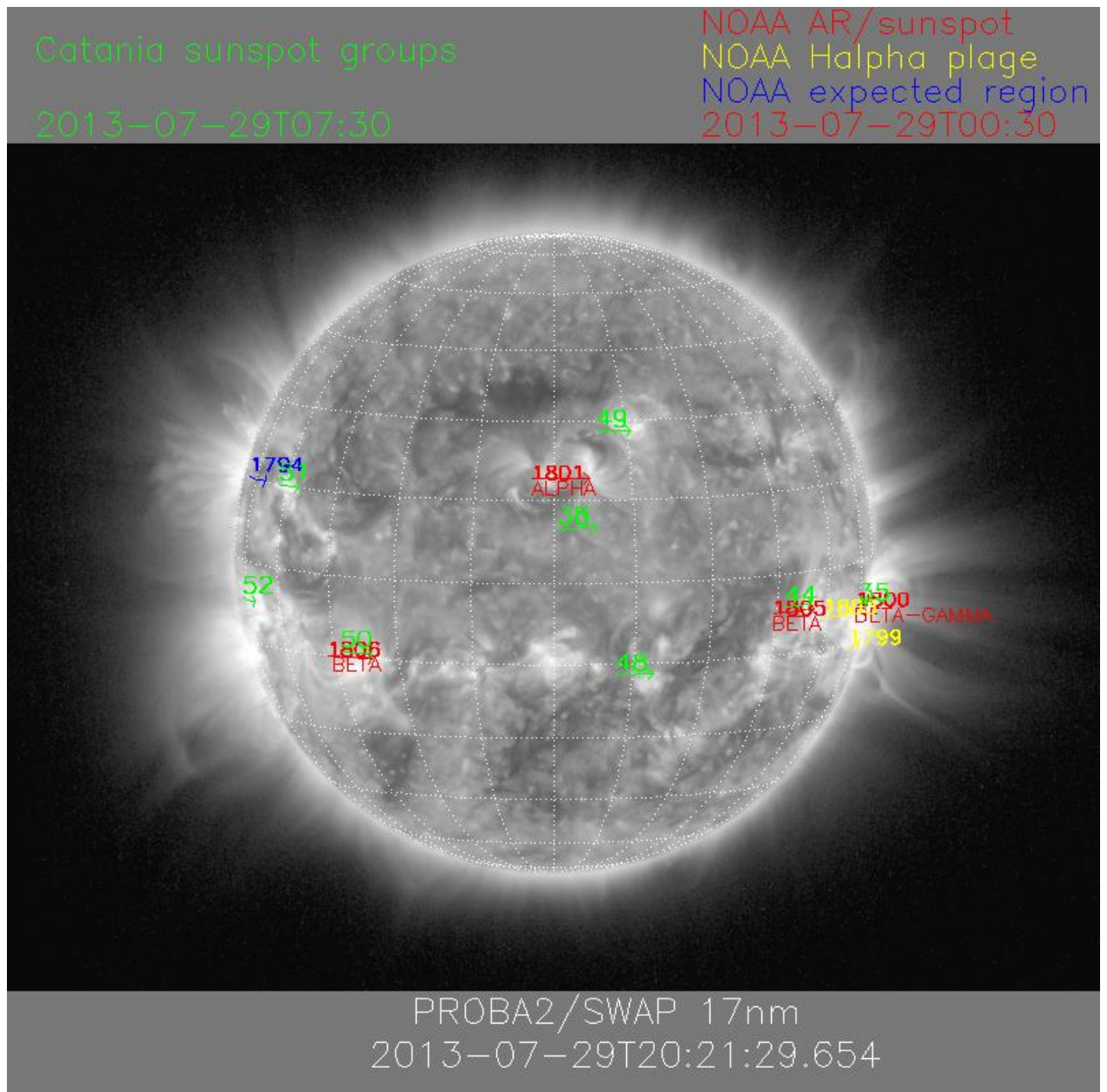
The level of solar activity<sup>1</sup> this week evolved from **very low to low** this week.

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

	Monday 29 Jul	Tuesday 30 Jul	Wednesday 31 Jul	Thursday 01 Aug	Friday 02 Aug	Saturday 03 Aug	Sunday 04 Aug
Activity	low	low	low	very low	very low	very low	very low
Flares	-	-	-	-	-	-	-

<sup>1</sup> See appendix. All timings are given in UT.

The SWAP images of July 29 and Aug 04 are shown below, with annotated active regions.

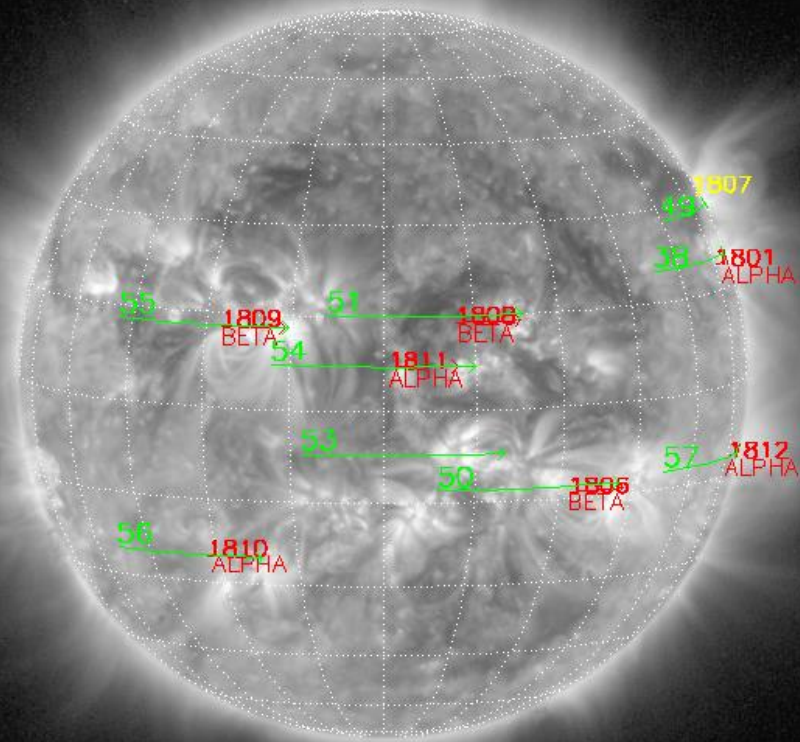


<http://sidc.be/html/CmapPage.html>

Catania sunspot groups

2013-08-2T09:30

NOAA AR/sunspot  
NOAA Halpha plage  
NOAA expected region  
2013-08-04T00:30



PROBA2/SWAP 17nm  
2013-08-04T20:15:35.181

### **Solar Activity**

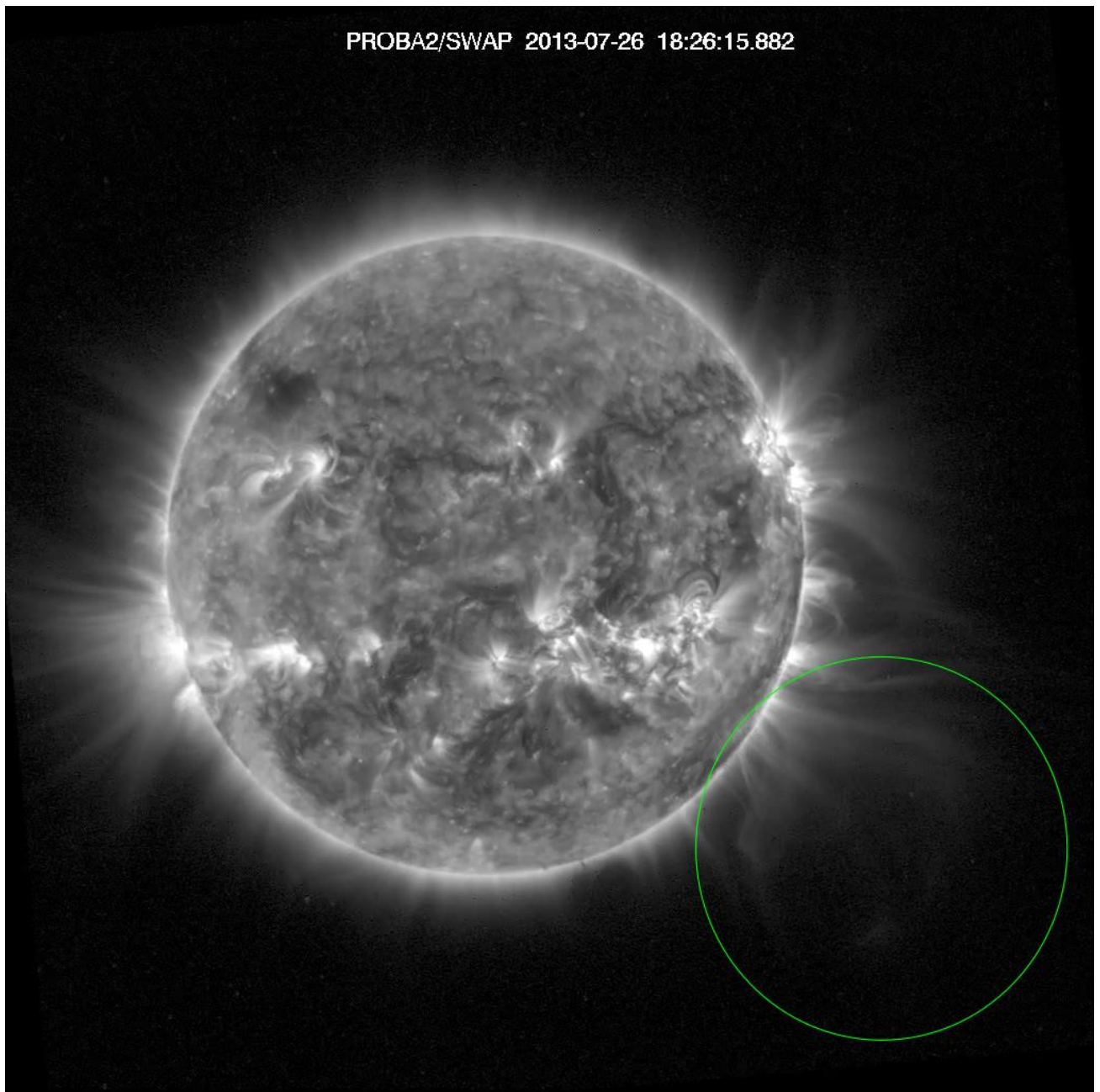
Solar (flaring) activity evolved from low to very low during the week.

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.

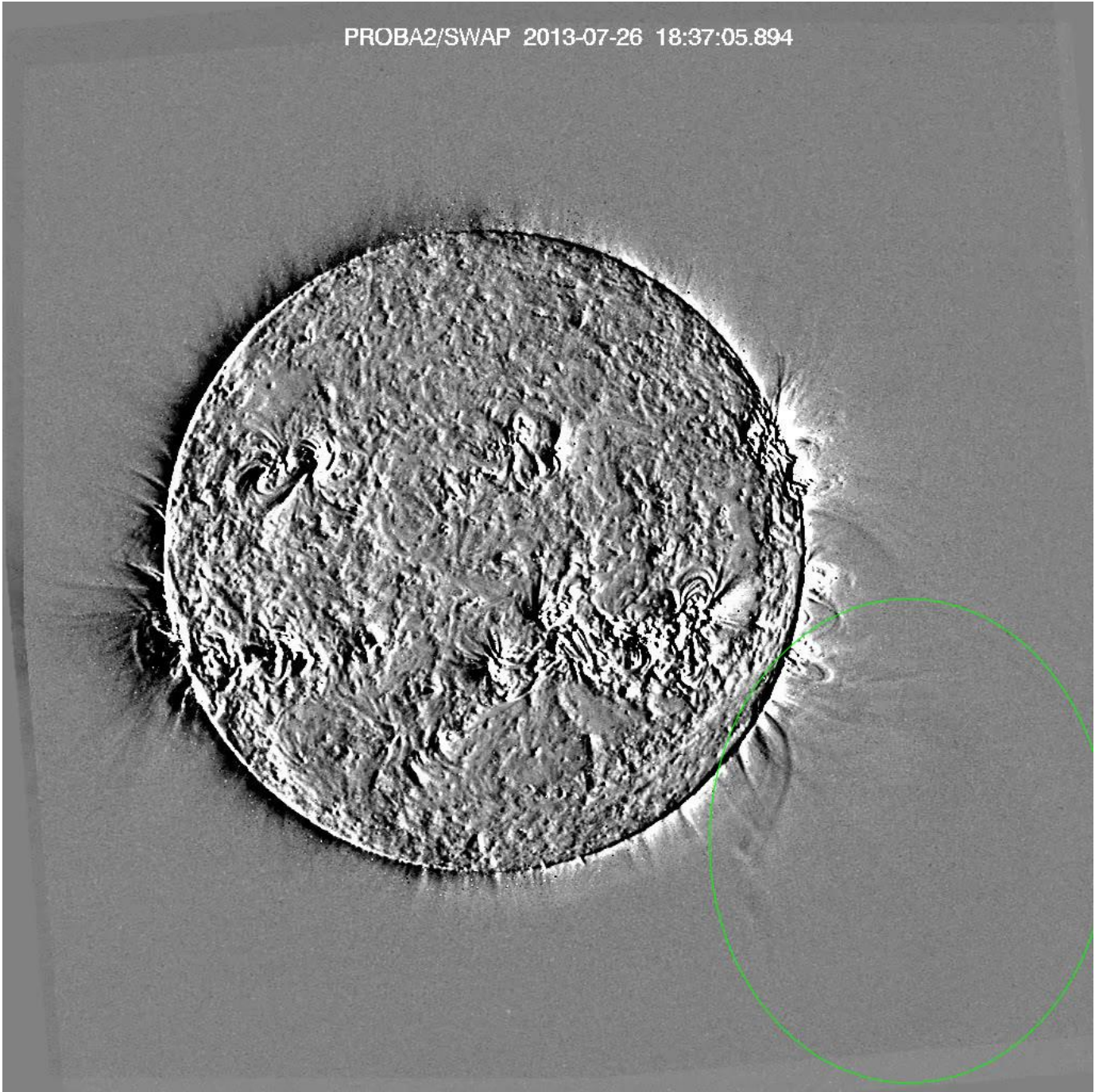
A weekly overview movie can be found [here](#) (SWAP174; HelioViewer.org).

Before providing details about this week's event, a follow-on on previous week's Friday July 26th prominence eruption is presented, after some extra processing:



**Prominence Eruption on South West Limb @ 18:26 - SWAP processed image**

PROBA2/SWAP 2013-07-26 18:37:05.894



**Prominence Eruption on South West Limb @ 18:37 - SWAP processed difference image**

Find a movie of the event [here](#) (SWAP processed difference movie)

Details about some of this week's events can be found further below.

Monday July 29th:



**Eruption in South West Quadrant @ 14:43 - SWAP difference image**

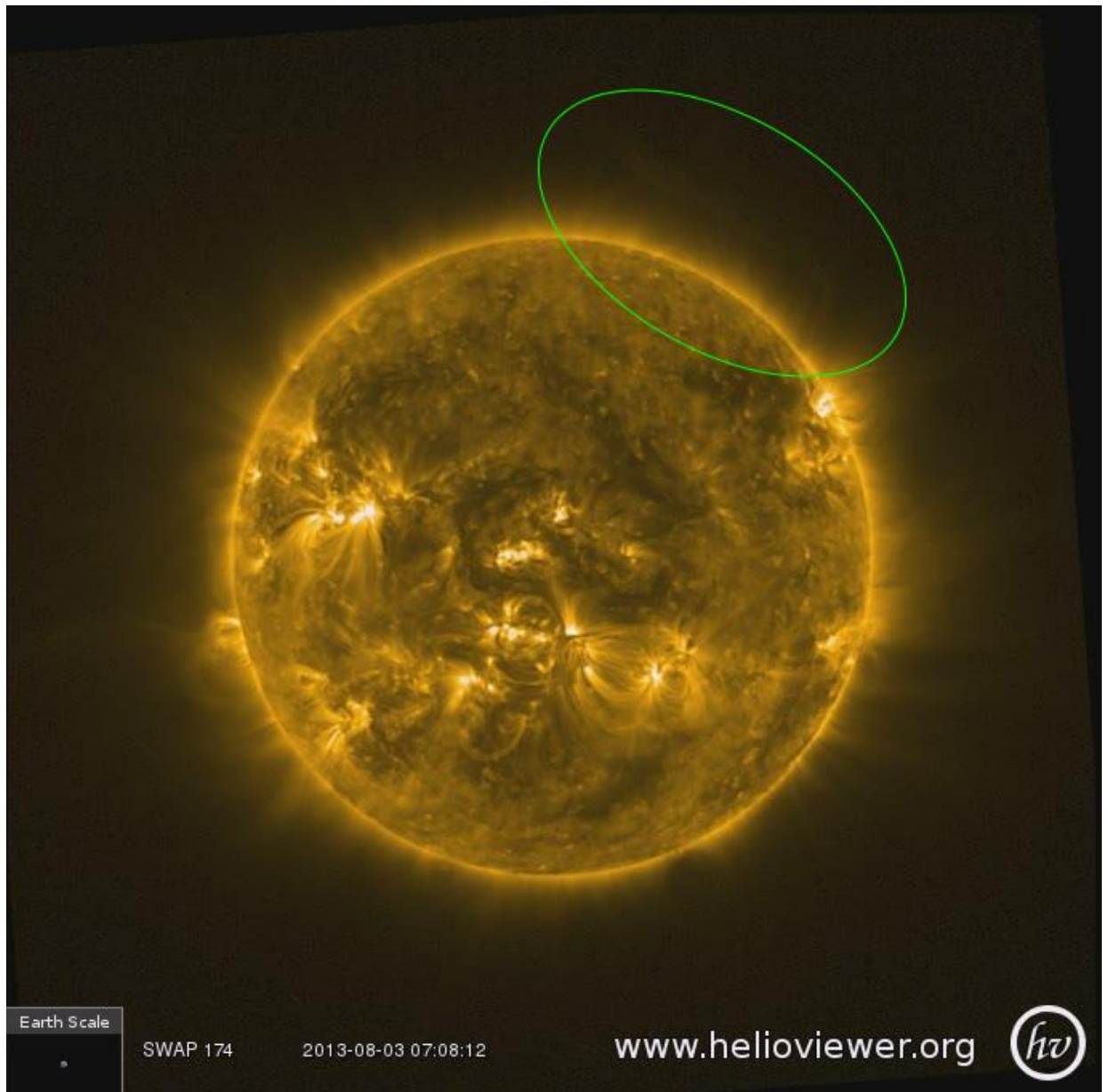
Friday August 2th:



**Eruption in South West Quadrant @ 13:13 - SWAP difference image**

Find a movie of the event [here](#) (SWAP difference movie)

Saturday August 3rd:



**Prominence Eruption on North West Limb @ 07:08 - SWAP normal image**  
Find a movie of the event [here](#) (SWAP normal movie)



Sunday August 4th:

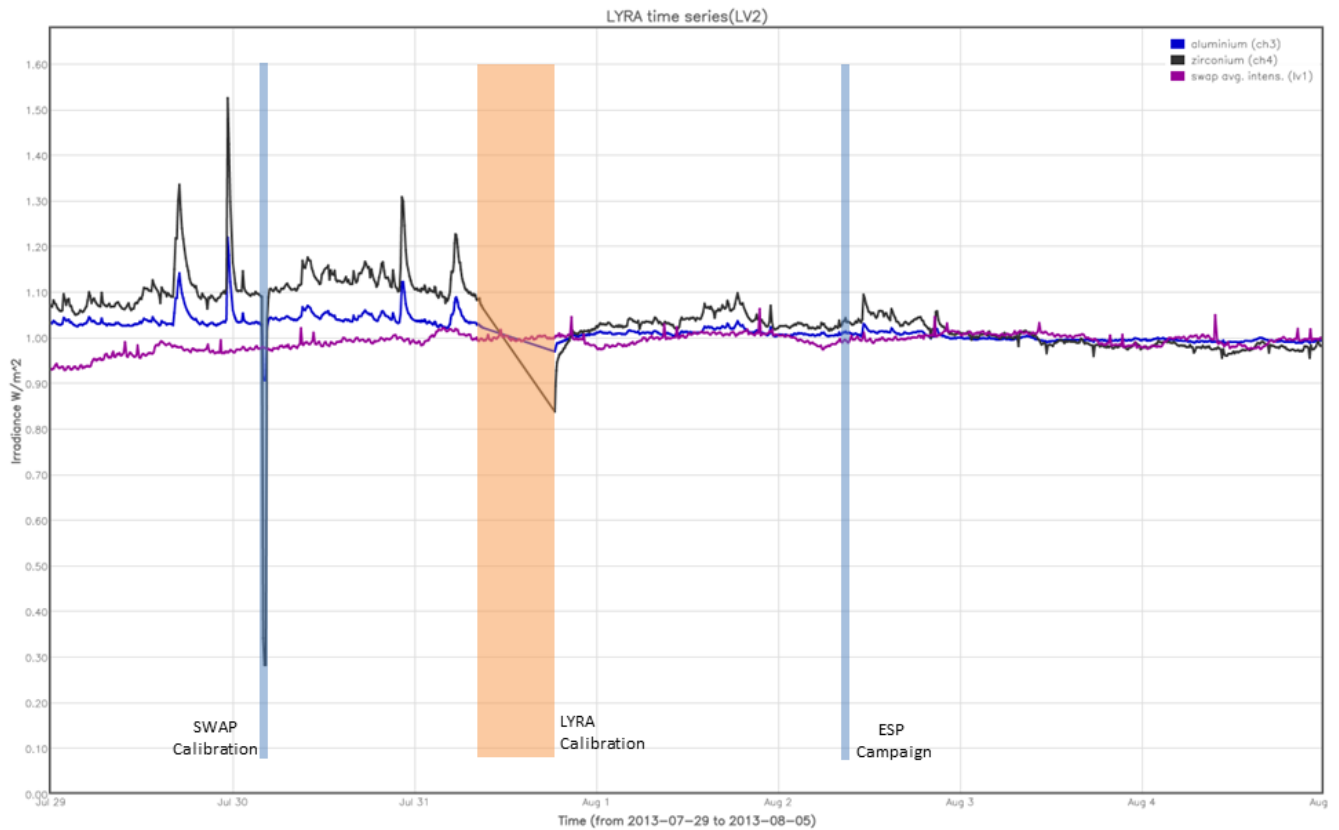


**Eruption in South East Quadrant @ 22:58 - SWAP difference image**

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 campaign on Thursday

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

- LYRA calibration on Tuesday

The red shaded period corresponds to:

- None

## **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>).

ESA issued an item on the ESA Operations website about Proba2 supporting the Space Situational Awareness program ([http://www.esa.int/Our\\_Activities/Operations/Highlights/Violent\\_Sun](http://www.esa.int/Our_Activities/Operations/Highlights/Violent_Sun)).

## **Guest Investigator Program**

- None

## 2. LYRA instrument status

### Calibration

Calibration on Wednesday this week.

### IOS & operations

Monday 29 Jul	Tuesday 30 Jul	Wednesday 31 Jul	Thursday 01 Aug	Friday 02 Aug	Saturday 03 Aug	Sunday 04 Aug
Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3 + calibration	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3
LYIOS00336	LYIOS00336	LYIOS00337	LYIOS00337	LYIOS00337	LYIOS00337	LYIOS00337

The following science campaigns were performed by LYRA:

- daily U3 observations campaign

### LYRA detector temperature

LYRA detector 2 temperature globally varied between 46.5 and 47.2 degrees C, taking into account the daily U3 activation periods; the latter result in a temperature increase of about 0.6 degrees C. During calibration LYRA temperature dropped to 45.2 degrees C.

### To be explored

- None

### 3. SWAP instrument status

#### Calibration

Calibration on Tuesday this week.

#### MCPM errors

The number of MCPM recoverable errors increased from 10213 to 10448.

The number of MCPM unrecoverable errors remained at 1127.

#### IOS & operations

Monday 29 Jul	Tuesday 30 Jul	Wednesday 31 Jul	Thursday 01 Aug	Friday 02 Aug	Saturday 03 Aug	Sunday 04 Aug
Nominal acquisition + off-point (end)	Nominal acquisition + calibration	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition
IOS00472 537 images	IOS00472 600 images	IOS00473 662 images	IOS00473 607 images	IOS00473 665 images	IOS00473 517 images	IOS00473 459 images

Special operations for SWAP, this week:

- None

#### SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -1.69 and -0.73 degrees C.

#### To be explored

- None

#### **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 11664 to 11723) 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 2013 Jul 29 0UT and 2013 Aug 05 0UT: 4112

Highest cadence in this period: 30 seconds

Average cadence in this period: 147.07 seconds

Number of image gaps larger than 300 seconds: 1

Largest data gap: 34.33 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
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)