P2SC-ROB-WR-134-20121014 Weekly report #134	**P2SC Weekly report**	
Period covered: Date: Written by: Approved by:	Mon Oct 15 to Sun Oct 21, 2012 24 Oct 2012 Erik Pylyser David Berghmans	Royal Observatory of Belgium PROBA2 Science Center
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1. Science

Solar & Space weather events

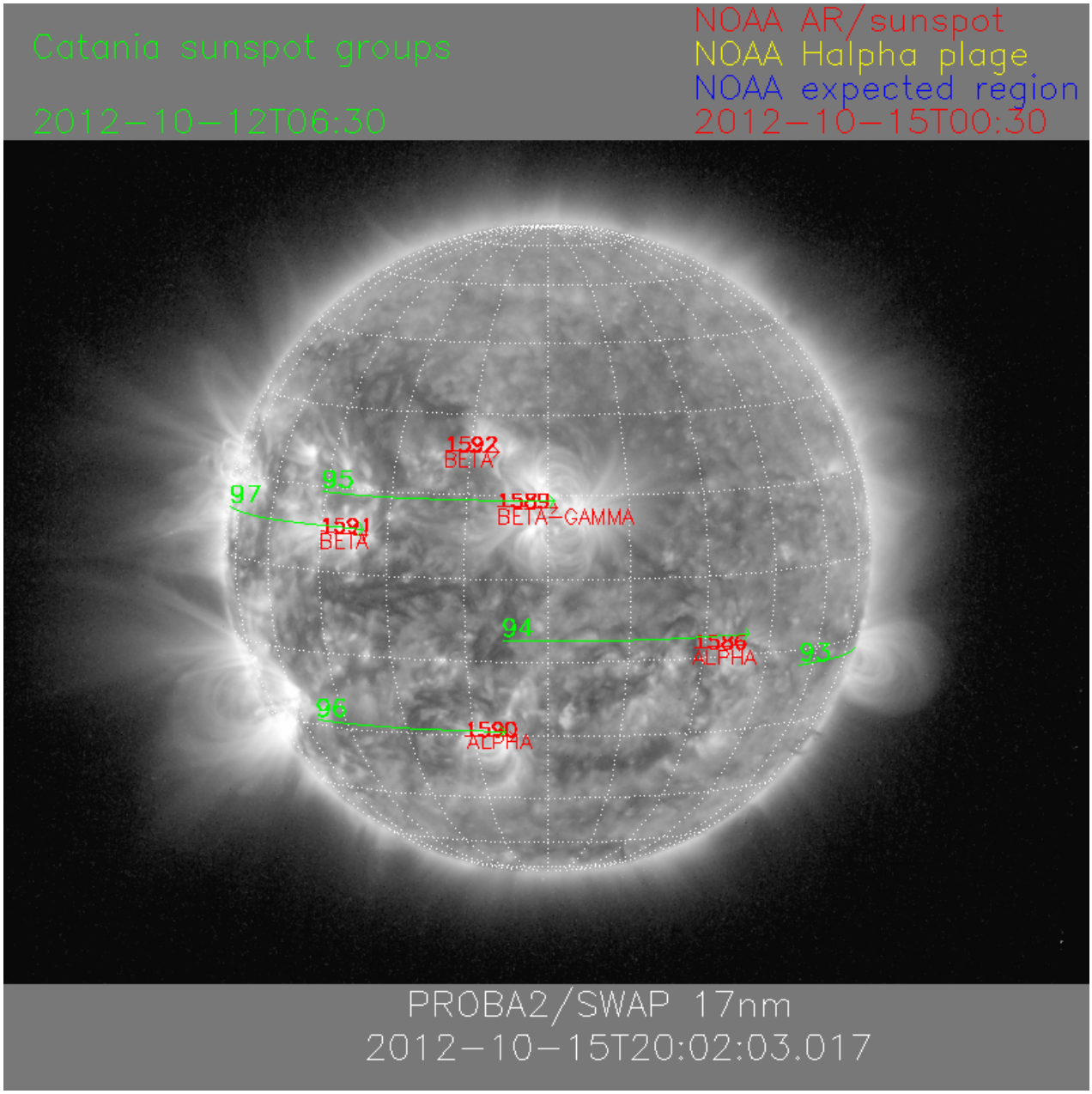
Overview

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

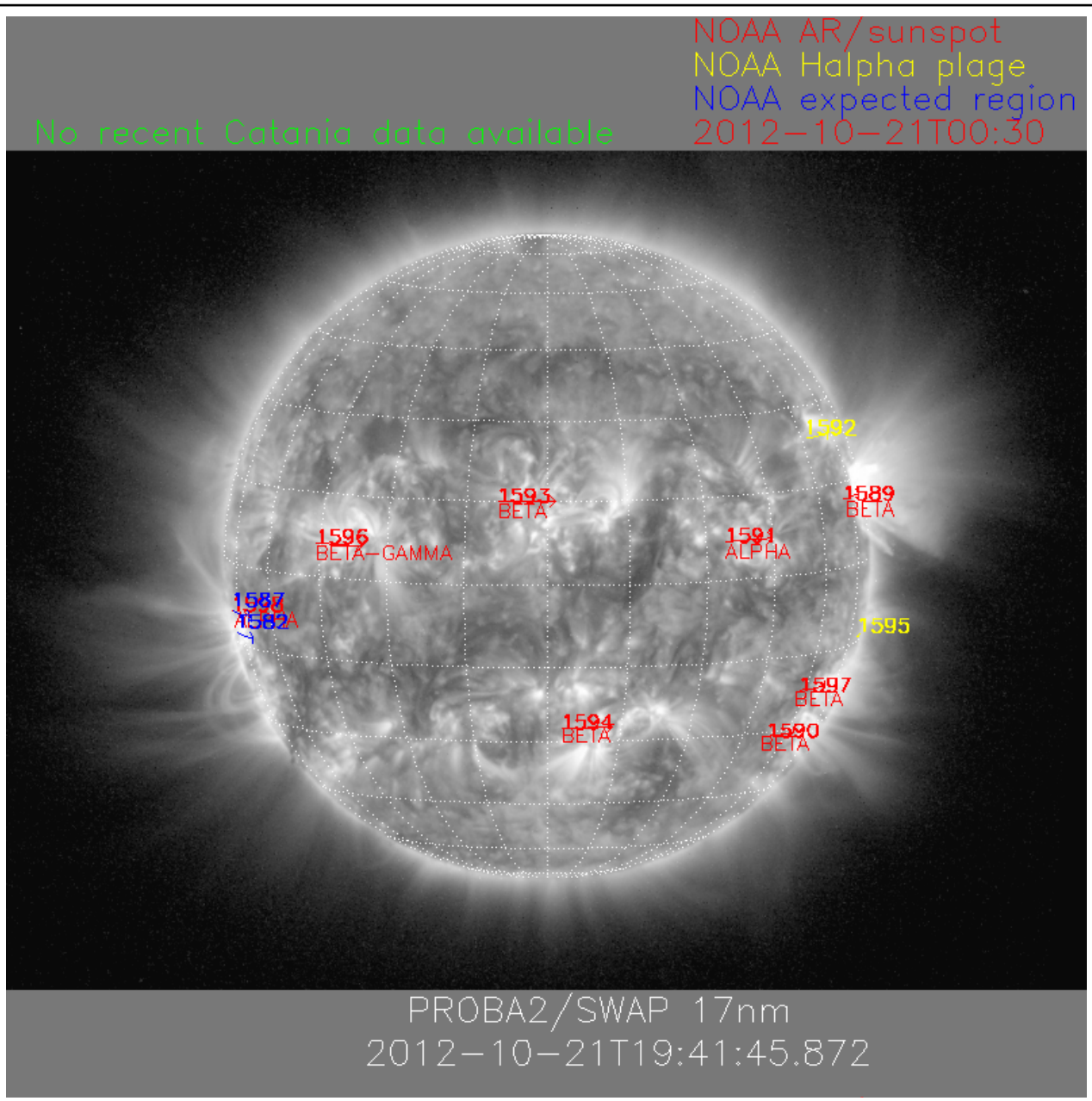
	Monday 15 Oct	Tuesday 16 Oct	Wednesday 17 Oct	Thursday 18 Oct	Friday 19 Oct	Saturday 20 Oct	Sunday 21 Oct
Activity	low	low	low	low	low	moderate	moderate
Flares	-	-	-	-	-	**M9.0@18:05**	**M1.3@19:46**

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

The SWAP images of Oct 15 and Oct 21 are shown below, with annotated active regions.



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

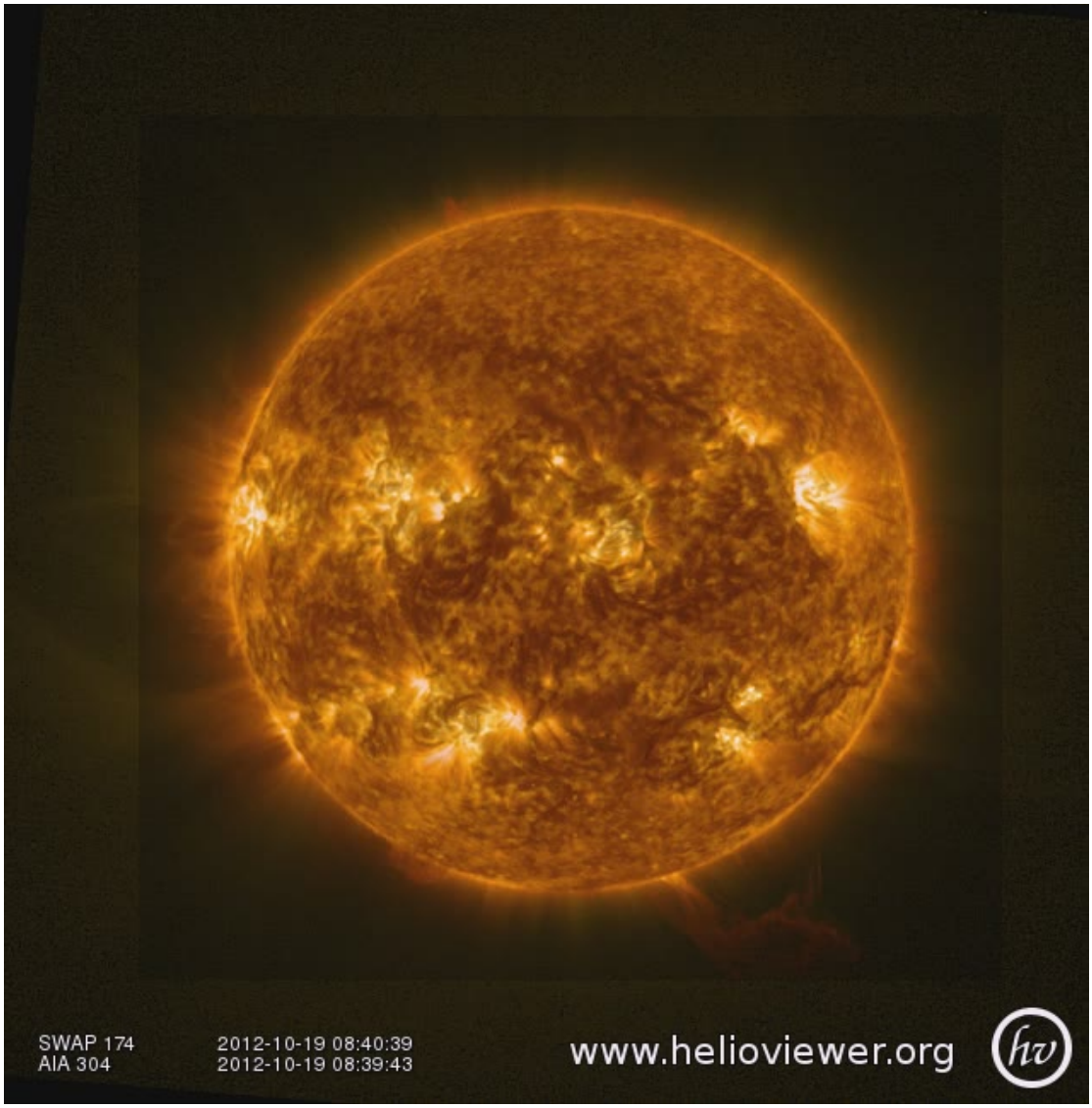

NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2012-10-21T00:30
No recent Catania data available
1592
1593
BETA
1589
BETA
1596
BETA-GAMMA
1591
ALPHA
1587
1582
1595
1597
BETA
1594
BETA
1590
BETA
PROBA2/SWAP 17nm
2012-10-21T19:41:45.872

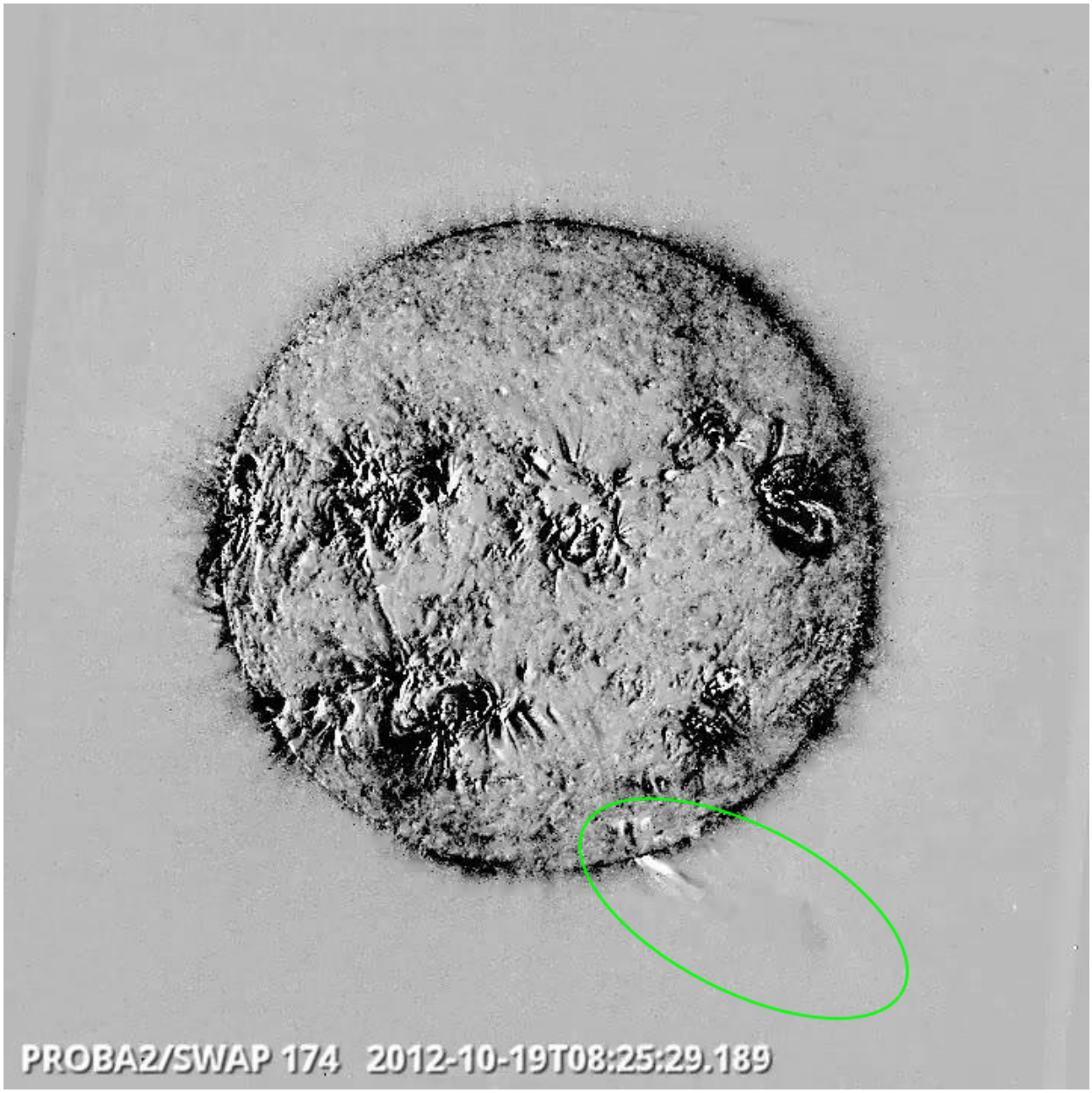
Solar Activity

This week, the Sun's activity level was *Low* until the weekend. On Saturday and Sunday, a new active region (11598) started to appear on the East limb and generated an M9.0 and M1.3 respectively (*Moderate* activity).

In order to view the activity of this week in more detail, we suggest going 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.

October 19th
On October 19th, a rather spectacular prominence eruption occurred on the south limb (see images below).

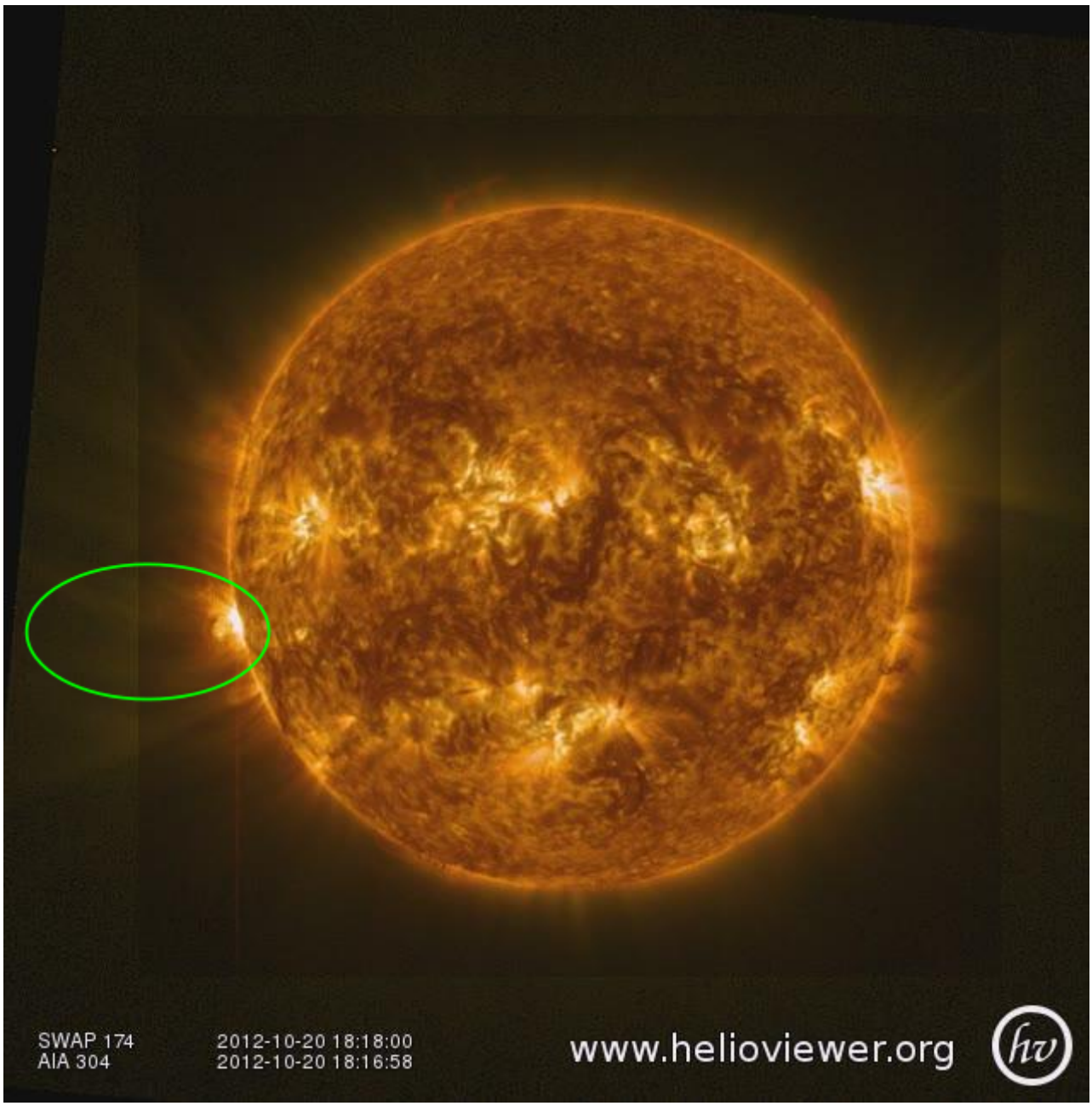




Also, along the east limb, quite some activity can be observed from an active region behind the limb.

These events can be seen unfolding here (SWAP/AIA movie - HelioViewer) and here (SWAP difference movie).

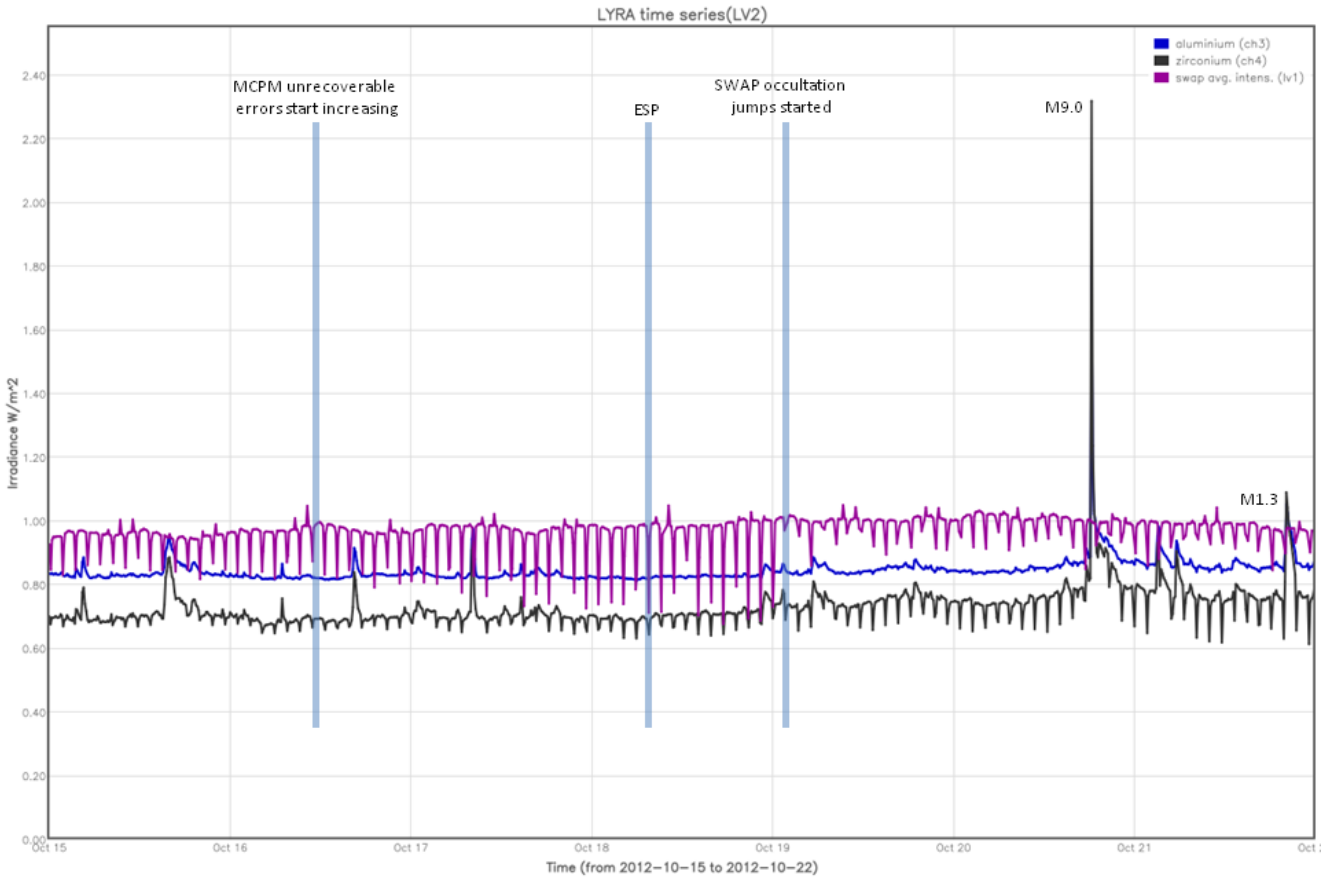
October 20th
On October 20th, the aforementioned active region approached the east limb, thereby better revealing the intensity of its activity. Even though the AR did not yet round the east limb, it displayed M9.0 flare activity during the evening (see pictures below).


SWAP 174
AIA 304
2012-10-20 18:18:00
2012-10-20 18:16:58
www.helioviewer.org
hv

Movies of this event can be seen here (SWAP movie) and here (SWAP difference movie).

October 21st
The same active region also generated a (not so visible) M1.3 flare.

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:
- Start of the increasing number of MCPM unrecoverable errors (more details in section 3, below)
- ESP experiment on Thursday
- Start of the implementation of SWAP occultation jumps (more details in section 3, below).

The orange shaded periods correspond to, from left to right:
- None

The red shaded period corresponds to:
- None

Outreach, papers, presentations, etc.

- ”Statistical Analysis of LYRA recorded flares“ ; PROBA2 Guest Investigator Jack Ireland; presentation & discussion @ ROB (FAST meeting) on his activities during his stay @ ROB,

Please also 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 document is adapted/published (weekly) in the STCE Newsletter (http://www.stce.be/newsletter/newsletter.php).

Guest Investigator Programme

On Friday October 19th, Jack Ireland (GI program 2011-2012) finished his Guest Investigator period of 2 weeks.

2. LYRA instrument status

Calibration

No calibration, this week.

IOS & operations

Monday 15 Oct	Tuesday 16 Oct	Wednesday 17 Oct	Thursday 18 Oct	Friday 19 Oct	Saturday 20 Oct	Sunday 21 Oct
Nominal acquisition + daily U3 LYIOS00274	Nominal acquisition + daily U3 LYIOS00274	Nominal acquisition + daily U3 LYIOS00274	Nominal acquisition + daily U3 LYIOS00274	Nominal acquisition + daily U3 LYIOS00274	Nominal acquisition+ daily U3 LYIOS00274	Nominal acquisition+ daily U3 LYIOS00274

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

LYRA detector temperature

LYRA detector 2 temperature fluctuated between 48.7 and 49.9 degrees, including the daily U3 activation periods. The latter result in a temperature increase of about 0.4 degrees.

To be explored

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3. SWAP instrument status

Calibration

No calibration, this week.

MCPM errors

The number of MCPM recoverable errors increased from 4153 to 4292.

The number of MCPM unrecoverable errors increased from 0 to 931.

For the first time since the launch, the number of MCPM unrecoverable errors started increasing. This happened on October 16th, 11:43. Since then, the number of unrecoverable errors has been increasing by 7 every hour, corresponding to the hourly scans of the memory scrubber.
This is likely due to the failure of a (number of) memory addresses on the MCPM on-board. A potential recovery procedure is being analysed.

IOS & operations

Monday 15 Oct	Tuesday 16 Oct	Wednesday 17 Oct	Thursday 18 Oct	Friday 19 Oct	Saturday 20 Oct	Sunday 21 Oct
Nominal acquisition IOS00416 664 images	Nominal acquisition IOS00416 665 images	Nominal acquisition IOS00416 664 images	Nominal acquisition + ESP IOS00417 638 images	Nominal acquisition IOS00417 589 images	Nominal acquisition + occultation jumps IOS00418 516 images	Nominal acquisition IOS00418 569 images

Special operations for SWAP, this week:
- Operational measures have been taken, from Friday 19th on, to avoid taking SWAP images during a large part of the occultations (so-called ‘SWAP occultation jumps’). These jumps will be performed during the whole occultation season, i.e. until middle of February. This results in occasional data gaps, but allows SWAP to operate at higher cadence during non-occulted periods.

- ESP jump

SWAP detector temperature

The SWAP Cold Finger Temperature, under nominal operations, increased, generally fluctuating between 0.78 and 2.05 degrees Celsius.

No LAR delays were missed.

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:

Complete update of repository
16/10/2012: r4602

PTI
18/10/2012: r4610 Adapt automatic IOS generation to current acquisition table.

SWBSDG
16/10/2012: r4602 (minor improvements in performance and consistency)

5. Data reception & discussions with MOC

Passes

The delivery of the passes for this week (passes 9208 to 9268) 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 Oct 15 0UT and 2012 Oct 22 0UT: 4305
Highest cadence in this period: 130 seconds
Average cadence in this period: 140.46 seconds
Number of image gaps larger than 300 seconds: 44
Largest data gap: 34.33 minutes

The large gap is due to the ESP experiment on Thursday.

The number of (smaller) gaps is due to the implementation of the SWAP occultation jumps.

Data coverage LYRA

All LYRA Science data files (BINLYRA) have been received, except for:
- 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
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
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
OBET	On board Elapsed Time
OBSW	On board Software
PE	Proximity Electronics
PI	Principal Investigator
P2SC	PROBA2 Science Center
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?)