


P2SC-ROB-WR-120-20120709 Weekly report #120	P2SC Weekly report	
Period covered: Date: Written by: Approved by:	Mon Jul 09 to Sun Jul 15, 2012 18 July 2012 Erik Pylyser David Berghmans	Royal Observatory of Belgium PROBA2 Science Center
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1. Science

Solar & Space weather events

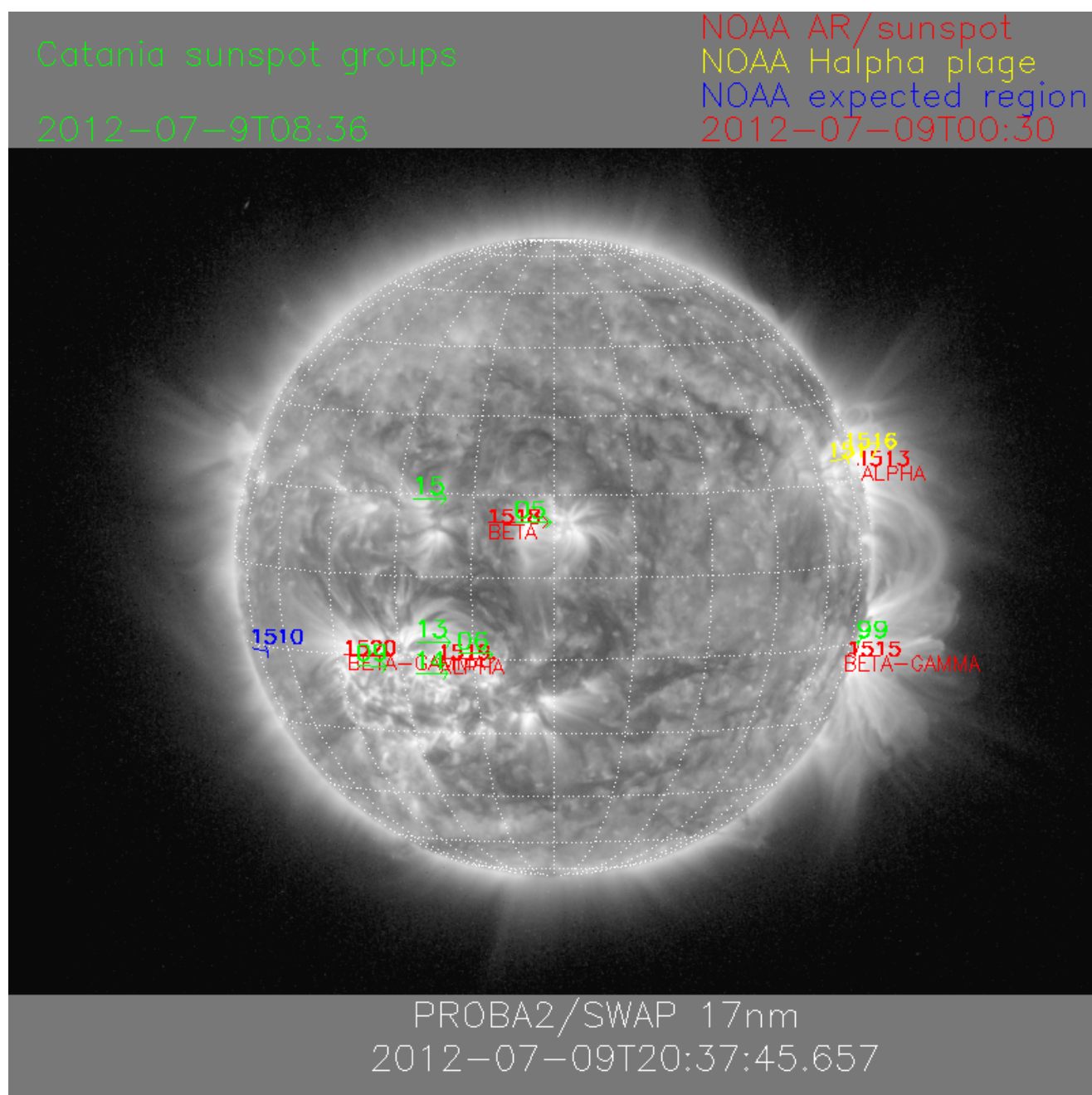
Overview

The level of solar activity this week¹ and associated M- and X-flares:

	Monday 09 Jul	Tuesday 10 Jul	Wednesday 11 Jul	Thursday 12 Jul	Friday 13 Jul	Saturday 14 Jul	Sunday 15 Jul
Activity	moderate	moderate	low	high	low	moderate	low
Flares	M1.1@23:03	M2.0@06:05 M1.7@04:58	-	X1.4@15:37	-	M1.0@04:51	-

¹ See appendix. All timings are given in UT.

The SWAP images of Jul 09 and Jul 15 are shown below, with annotated active regions.

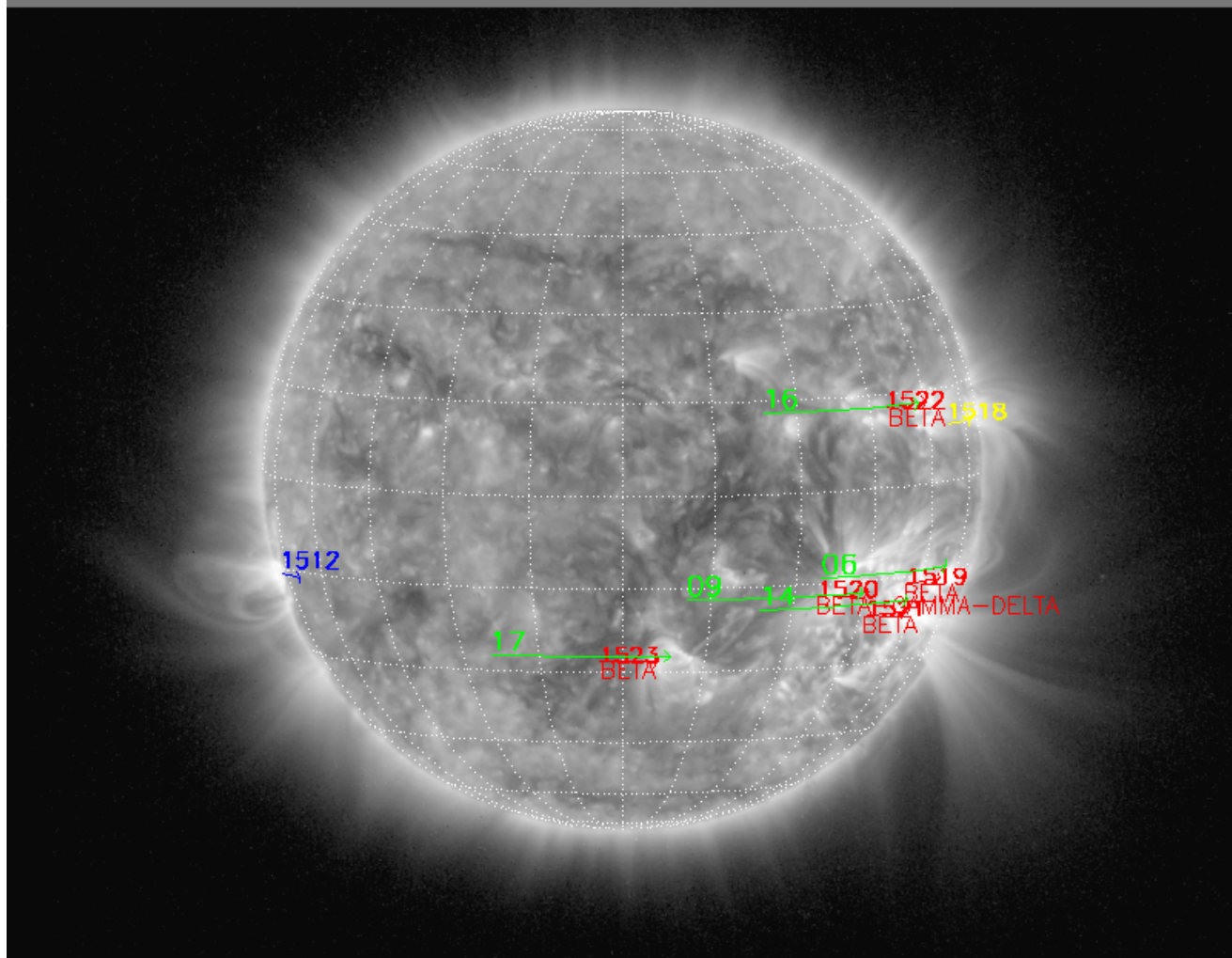


<http://sidc.be/html/CmapPage.html>

Catania sunspot groups

2012-07-13T07:36

NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2012-07-15T00:30



PROBA2/SWAP 17nm
2012-07-15T20:29:34.012

Solar Activity

This week, the Sun's activity level was alternating between *Moderate* and *low*, with a *high* on Thursday (X1.4 flare). All higher level activity originated from the adjacent active regions 11520 and 11521.

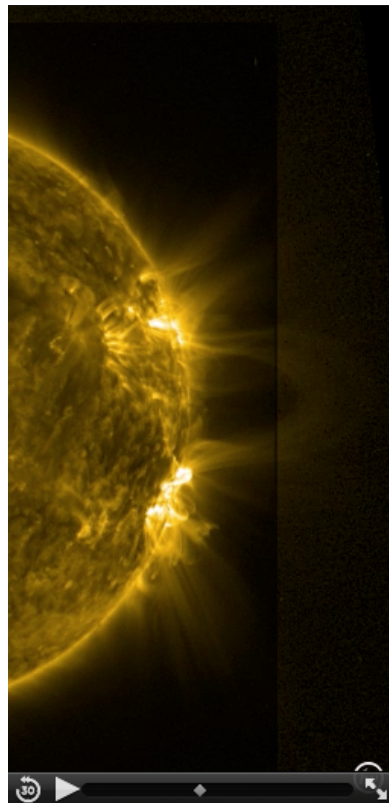
In order to view the activity of this week in more detail, we suggest to go to the following website from which all the daily (normal and difference) movies can be accessed: <http://p2web.oma.be/ssa>
This page also lists the recorded flaring events.

At the beginning of the week, the highly active and complex AR 11515 crossed the West limb producing a series of spectacular eruptions.

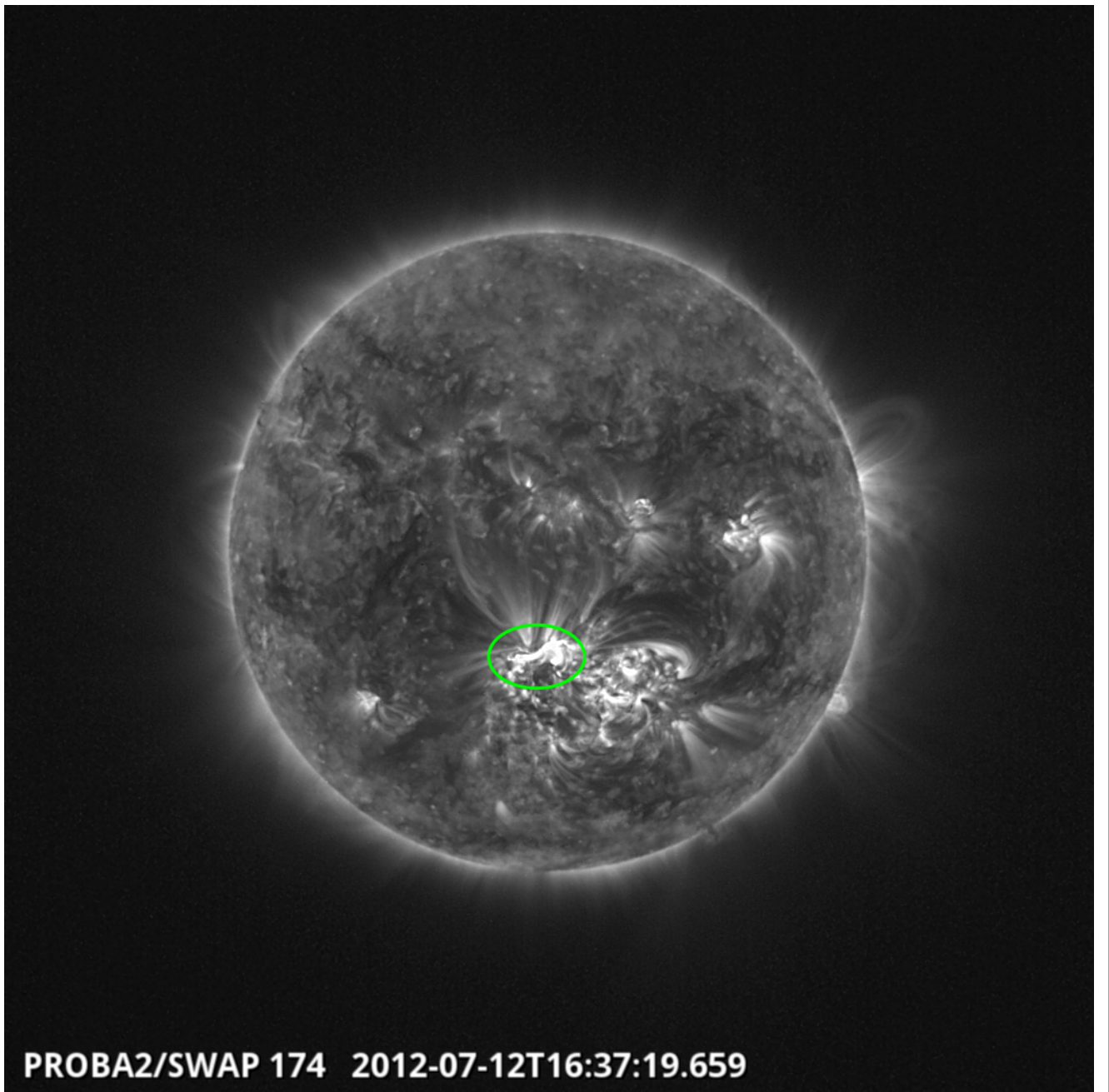
A movie, spanning 1 week of activity on the west limb centered around July 9th, mainly generated by AR 11515, can be found [here](#). The movie was generated with HelioViewer, using (colored) SWAP images.

For comparison purposes, the same SWAP movie was generated with the addition of the SDO AIA image sequence (see [here](#)), thereby showing the differences in the FOV of both instruments, and revealing the usefulness of the additional FOV range of SWAP.

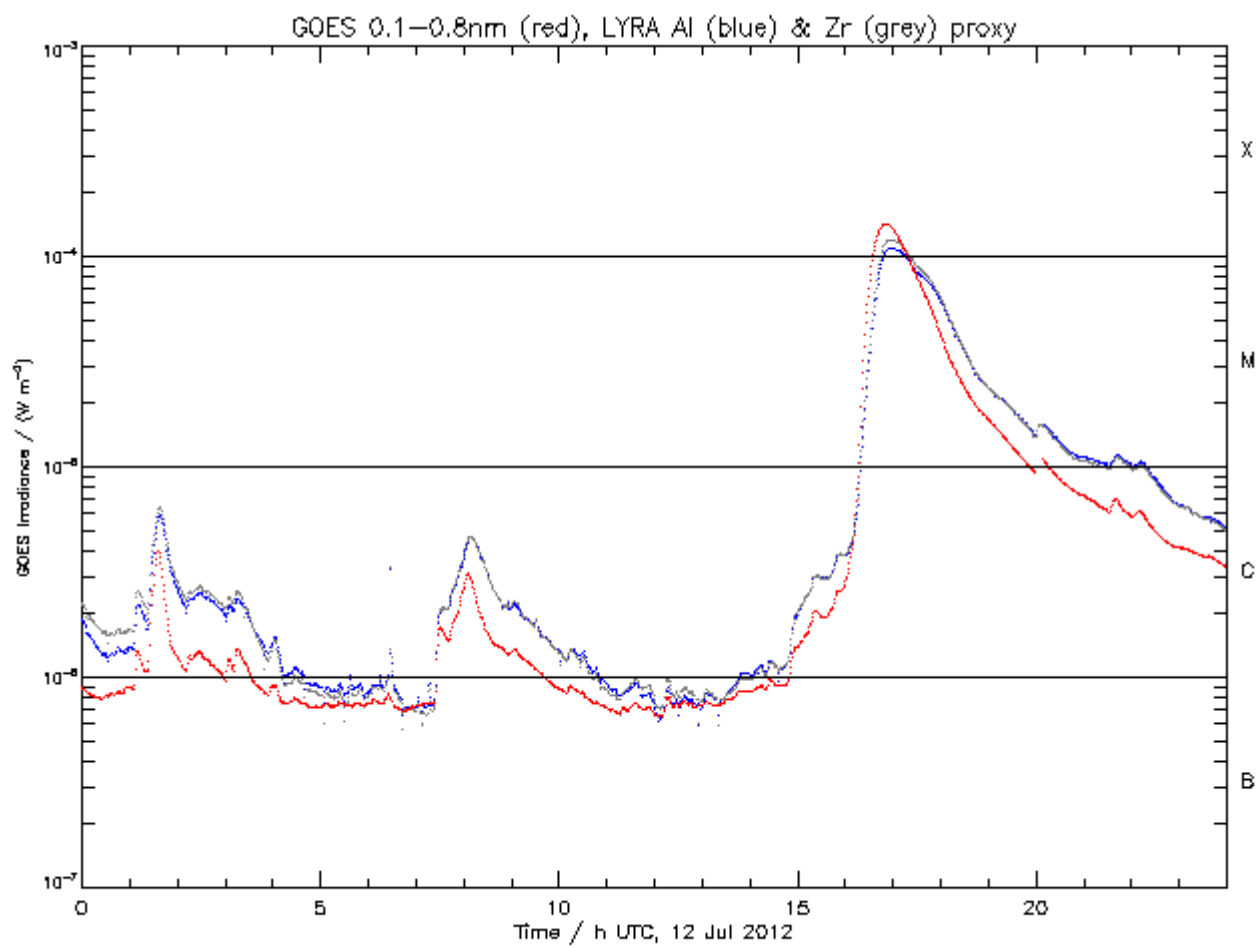
One illustrative frame of this 'composite' movie is shown below:



The SWAP image and the LYRA/GOES curves below shows the main event of this week's solar activity, the X1.4 flare.



SWAP Image - X1.4 flare on Thursday 12/07; at 16:37



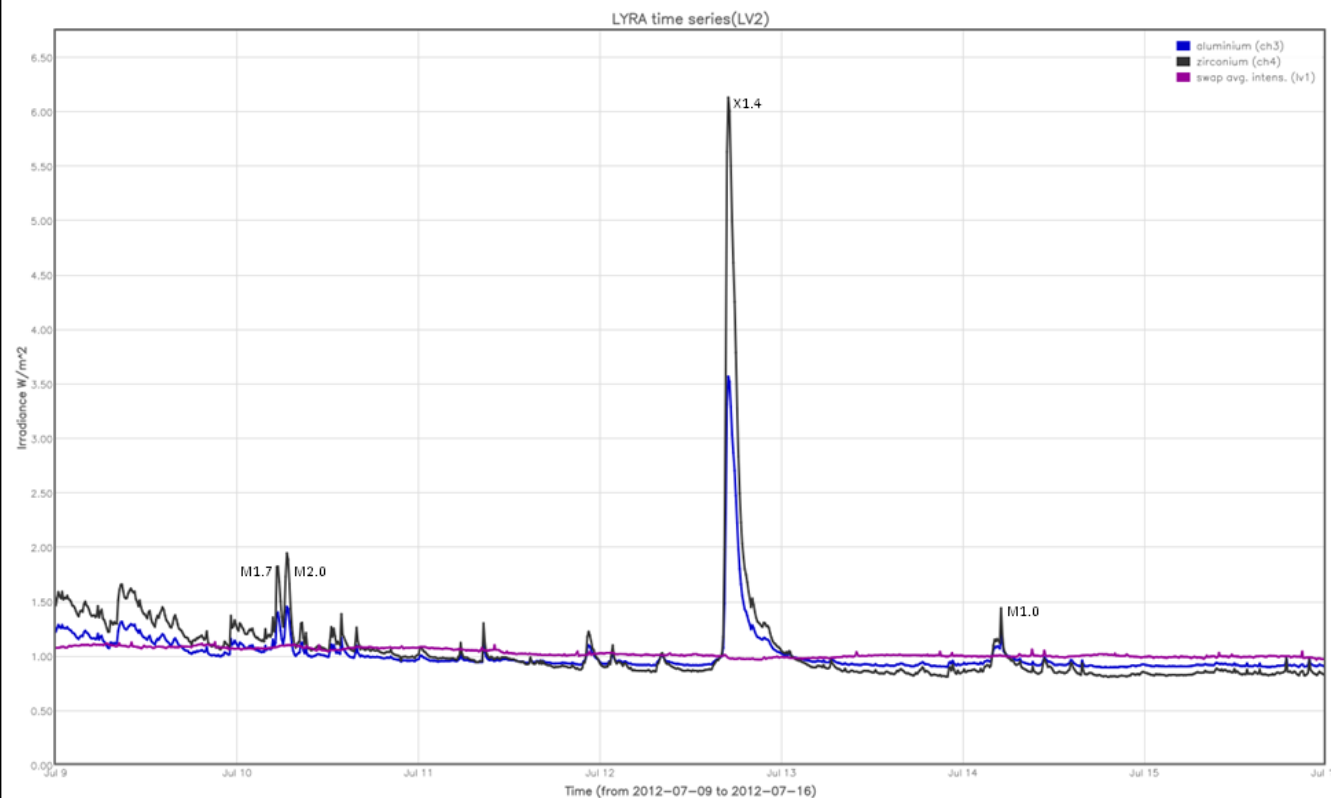
ROB/SIDC, Brussels, Belgium

LYRA/GOES Curves - X1.4-flare on Thursday 12/07

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:

- None

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

- None

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.

- P2SC presentation, at P2SC, by K. Stegen to visitors from the Regional Warning Center (RWC) of South-Africa (Sansa).

2. LYRA instrument status

Calibration

No calibration this week.

IOS & operations

Monday 09 Jul	Tuesday 10 Jul	Wednesday 11 Jul	Thursday 12 Jul	Friday 13 Jul	Saturday 14 Jul	Sunday 15 Jul
Nominal acquisition + daily U3 LYIOS00258	Nominal acquisition + daily U3 LYIOS00258	Nominal acquisition + daily U3 LYIOS00258	Nominal acquisition + daily U3 + LYIOS00258	Nominal acquisition + daily U3 LYIOS00258	Nominal acquisition LYIOS00258	Nominal acquisition LYIOS00258

On Saturday and Sunday, no daily U3 campaign was performed.

LYRA detector temperature

LYRA detector 2 temperature fluctuated between 45.20 and 45.88 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 1780 to 1943.
The number of MCPM unrecoverable errors is still 0.

IOS & operations

Monday 09 Jul	Tuesday 10 Jul	Wednesday 11 Jul	Thursday 12 Jul	Friday 13 Jul	Saturday 14 Jul	Sunday 15 Jul
Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition
IOS00403 664 images	IOS00403 564 images	IOS00403 553 images	IOS00404 577 images	IOS00404 641 images	IOS00404 603 images	IOS00404 569 images

SWAP detector temperature

The SWAP Cold Finger Temperature fluctuated between -1.2 and -2.0 degrees Celsius, under nominal operations.
During a short period (about 1 hour), an increase of about 0.5 degrees was identified on July 9th, around 5:30 (see below). There are currently no indications to what this increase is due, it is not related to the SWAP or LYRA instruments or to their operation. Further investigation is needed.

SW HK T CF vs TIME

The graph displays the SWAP Cold Finger Temperature (SW HK T CF) in degrees Celsius over a period from July 9th to July 18th, 2012. The y-axis ranges from -2.162 to -0.337, and the x-axis shows time in HH:MM:SS format. The temperature generally fluctuates between -1.2 and -2.0 degrees Celsius, with a significant spike to approximately -0.5 degrees Celsius around July 9th at 05:30. The legend indicates the data series is 'SW HK T CF'.

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:

LMAT-UI:

10/07/2012: [r4549](#) - Set default state of check-boxes to most frequent operator use case.

5. Data reception & discussions with MOC

Passes

The delivery of the passes for this week (passes 8354 to 8415) 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 Jul 09 0UT and 2012 Jul 16 0UT: 4197
Highest cadence in this period: 0 seconds
Average cadence in this period: 144.09 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
DSLIP	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)
MCMPM	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)