P2SC-ROB-WR-121-20120716 Weekly report #121	**P2SC Weekly report**	
Period covered: Date: Written by: Approved by:	Mon Jul 16 to Sun Jul 22, 2012 25 July 2012 Erik Pylyser David Berghmans	Royal Observatory of Belgium PROBA2 Science Center
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1. Science

Solar & Space weather events

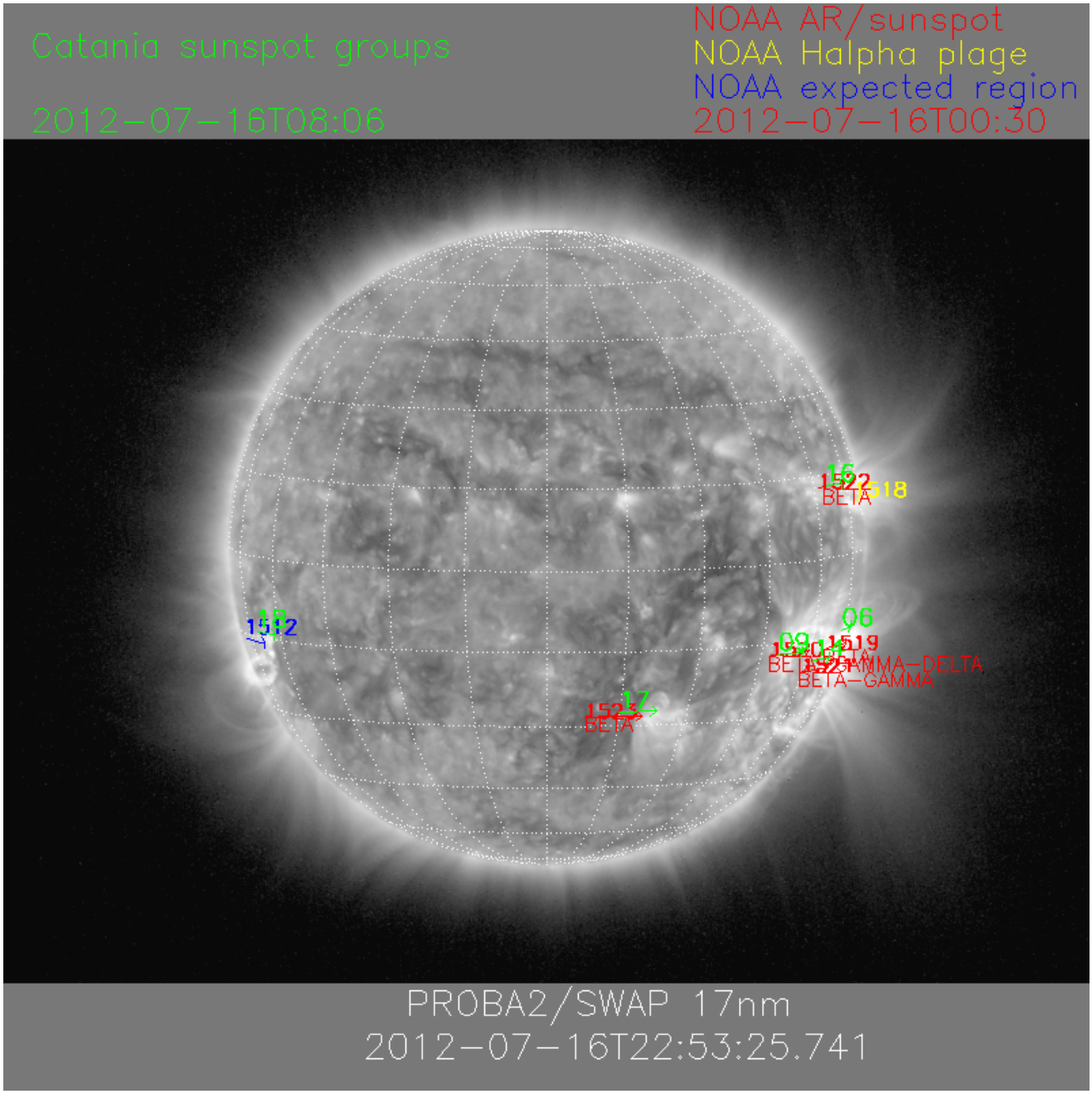
Overview

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

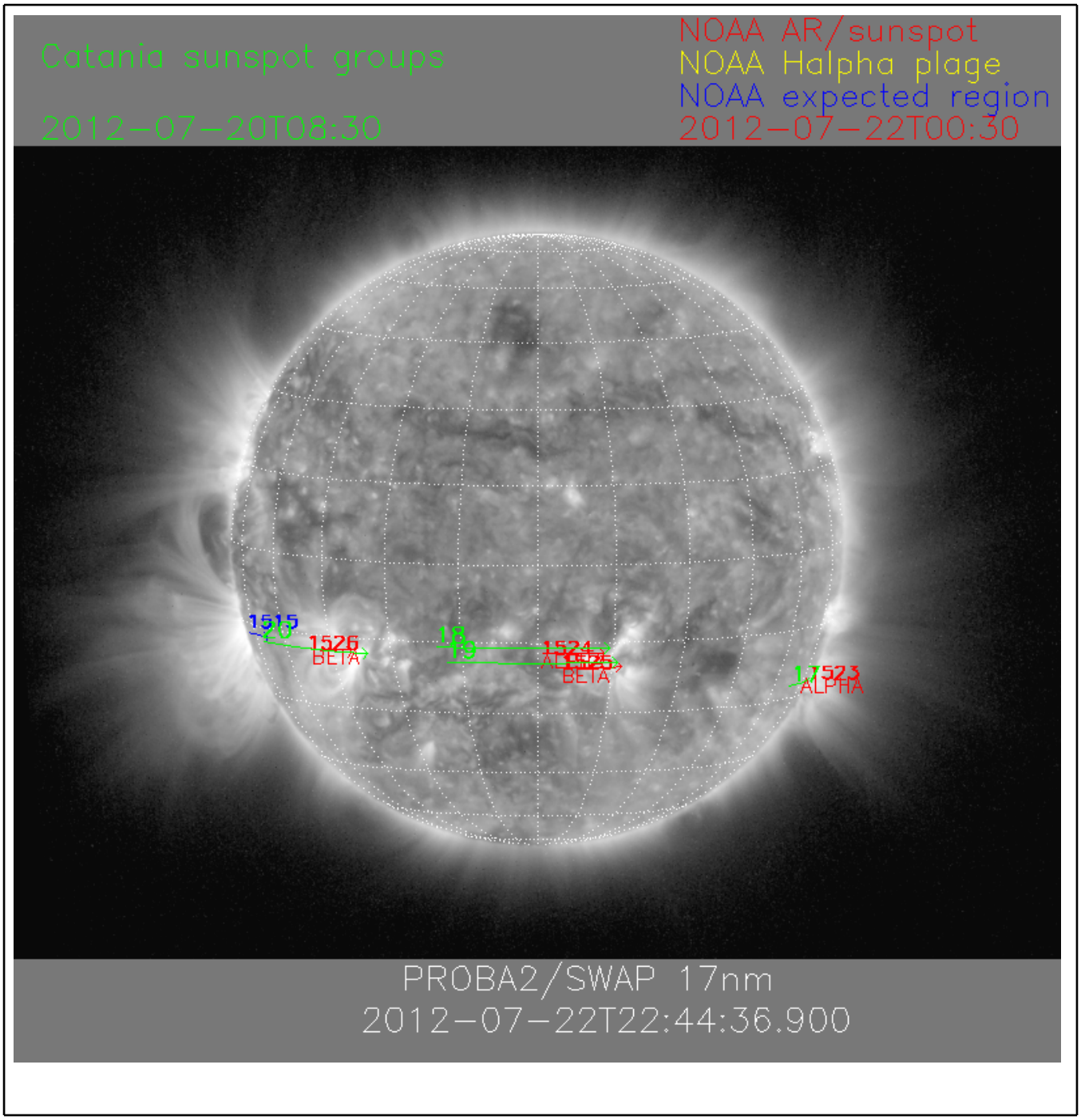
	Monday 16 Jul	Tuesday 17 Jul	Wednesday 18 Jul	Thursday 19 Jul	Friday 20 Jul	Saturday 21 Jul	Sunday 22 Jul
Activity	low	moderate	low	moderate	very low	low	very low
Flares	-	M1.7@12:03	-	M7.7@04:17	-	(1 C flare)	-

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

The SWAP images of Jul 16 and Jul 22 are shown below, with annotated active regions.



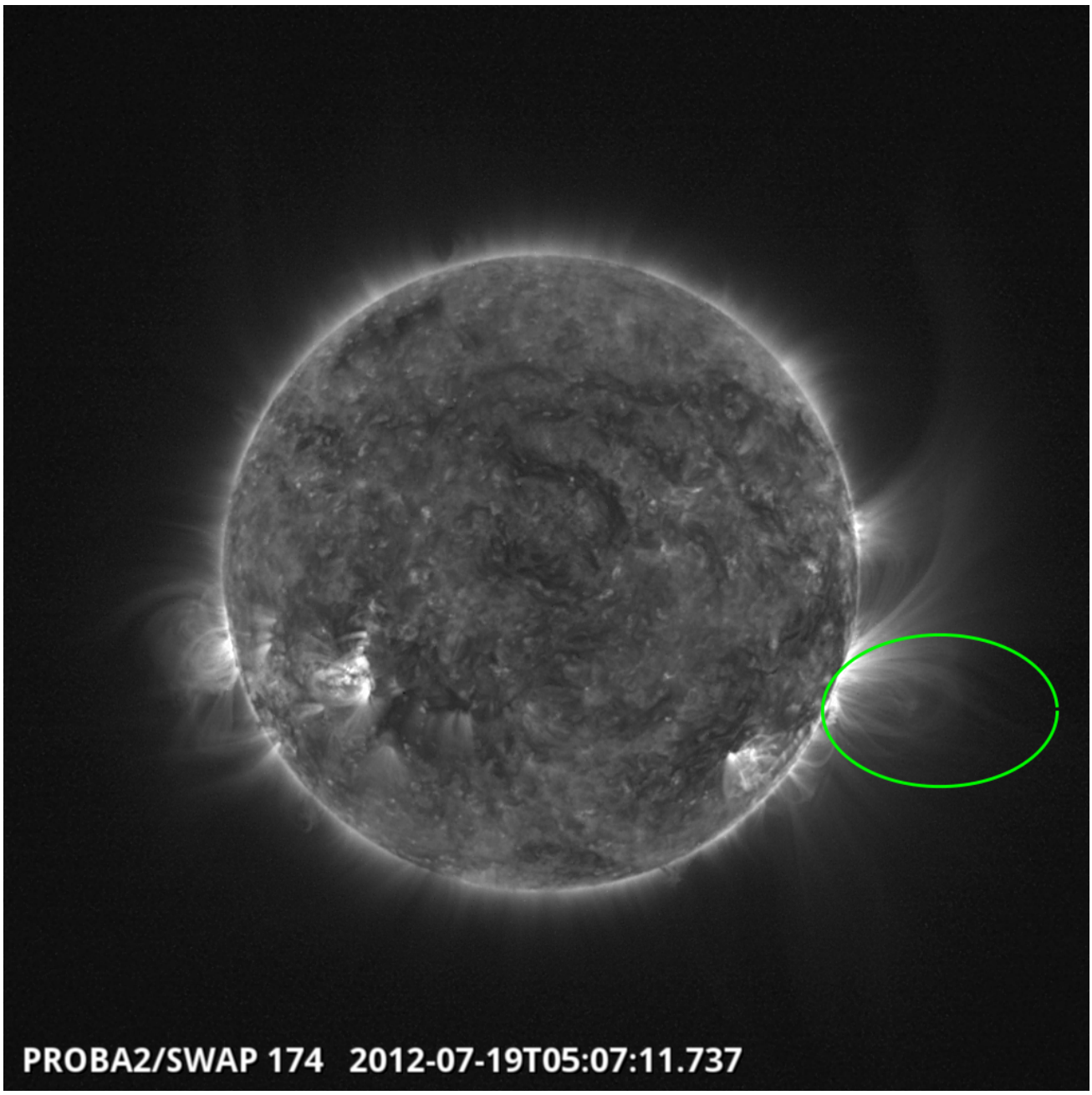
http://sidc.be/html/CmapPage.html


Catania sunspot groups
2012-07-20T08:30
NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2012-07-22T00:30
1515
1526
BETA
1524
BETA
17523
ALPHA
PROBA2/SWAP 17nm
2012-07-22T22:44:36.900

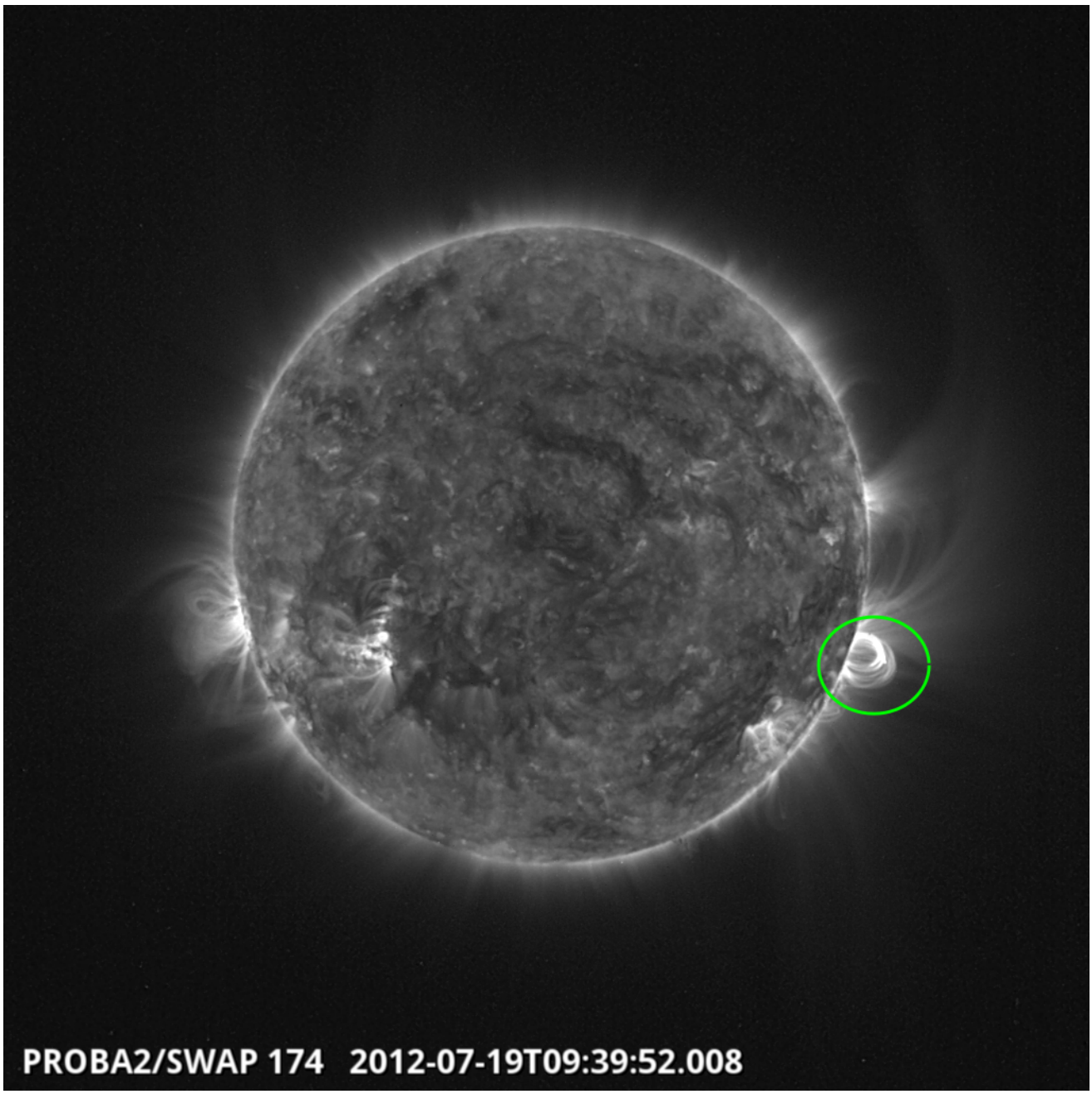
Solar Activity
This week, the Sun's activity level was alternating between *Moderate* and *Low*, until AR 11520 disappeared behind the west limb. Then, solar activity was decreasing rapidly to *very low*, with the exception of a single C-flare on Saturday.
2 M-flares were recorded, one of which (M7.7) originated slightly behind the limb and which might well have been an X-flare. It generated an off-limb post-flare arcade.

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.

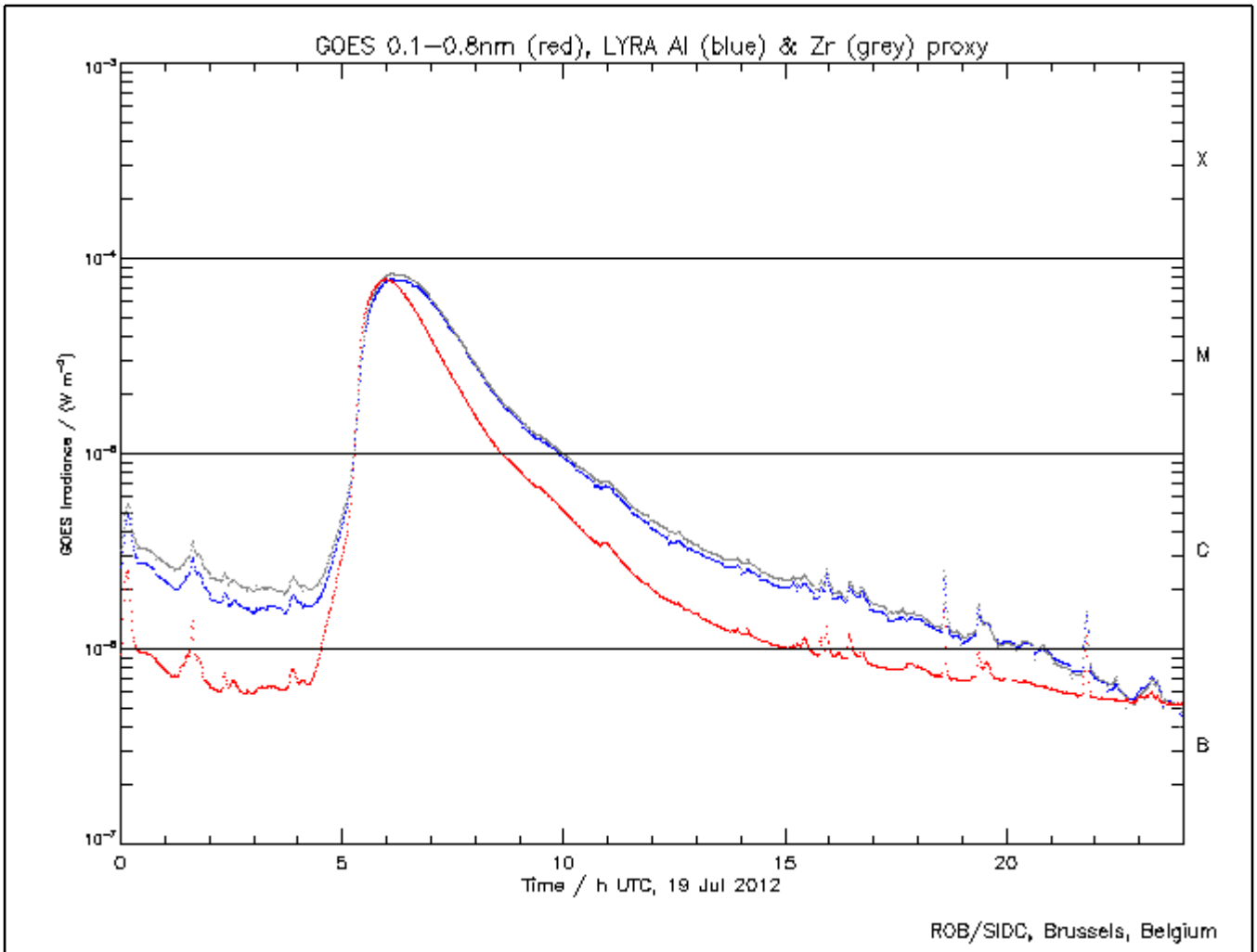
Below the main event of this week's solar activity is shown, the M7.7 flare. The full movie of this occurrence can be seen here, a composite of AIA & SWAP data, generated in HelioViewer.



SWAP Image - M7.7 flare eruption on Thursday 19/07; at 05:07

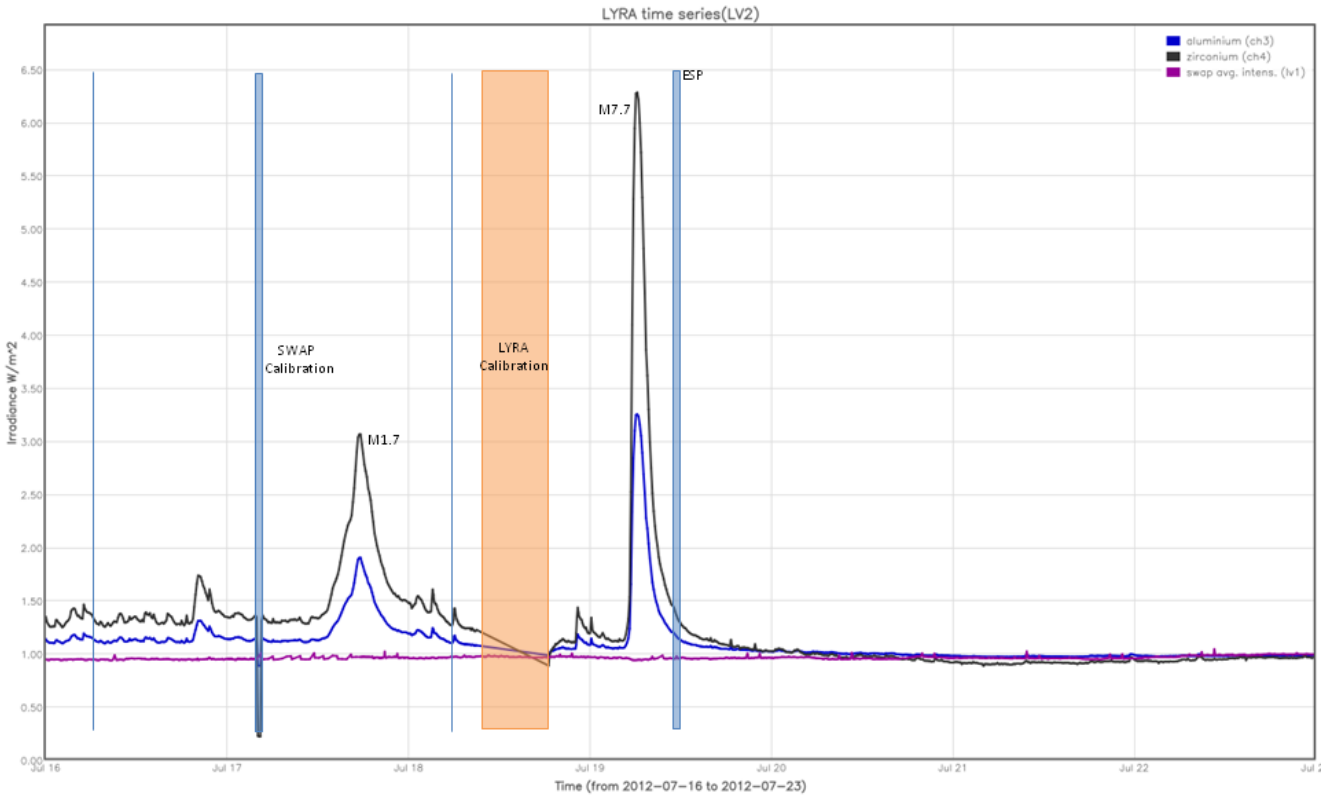


SWAP Image - M7.7 flare post-flare loops on Thursday 19/07; at 09:39 - still growing



LYRA/GOES Curves - M7.7-flare Thursday 19/07

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:
- SWAP sudden temperature increase
- SWAP Calibration
- SWAP sudden temperature increase
- ESP jump

The orange shaded periods correspond to, from left to right:
- LYRA Calibration

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.

- Some P2SC members are at the COSPAR meeting in India. Their contributions there will be listed next week.

2. LYRA instrument status

Calibration

Calibration on Wednesday.

IOS & operations

Monday 16 Jul	Tuesday 17 Jul	Wednesday 18 Jul	Thursday 19 Jul	Friday 20 Jul	Saturday 21 Jul	Sunday 22 Jul
Nominal acquisition LYIOS00258 -> 259	Nominal acquisition + daily U3 LYIOS00259	Nominal acquisition + daily U3 + Calibration LYIOS00259	Nominal acquisition + daily U3 + LYIOS00259	Nominal acquisition + daily U3 LYIOS00259 -> 260	Nominal acquisition + daily U3 LYIOS00260	Nominal acquisition + daily U3 LYIOS00260

On Monday, no daily U3 campaign was performed.

LYRA detector temperature

LYRA detector 2 temperature fluctuated between 45 and 46 degrees. During calibration, temperature decreased to 43.7.

To be explored

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3. SWAP instrument status

Calibration

Calibration on Tuesday.

MCPM errors

The number of MCPM recoverable errors increased from 1943 to 2049.

The number of MCPM unrecoverable errors is still 0.

IOS & operations

Monday 16 Jul	Tuesday 17 Jul	Wednesday 18 Jul	Thursday 19 Jul	Friday 20 Jul	Saturday 21 Jul	Sunday 22 Jul
Nominal acquisition IOS00404 621 images	Nominal acquisition + Calibration IOS00404->406 401 images	Nominal acquisition IOS00406 664 images	Nominal acquisition + ESP jump IOS00406 650 images	Nominal acquisition IOS00406 665 images	Nominal acquisition IOS00406 656 images	Nominal acquisition IOS00406 567 images

On Thursday, the weekly ESP jump was executed between 09:03 and 09:35.

SWAP detector temperature

The SWAP Cold Finger Temperature fluctuated between -1.12 and -2.23 degrees Celsius, under nominal operations.

At two occasions (16th and 18th) the SWAP instrument temperature increased above the expected values (see also P2SC Weekly Report #120, concerning July 10th).
At each of these occurrences, REDU station found out that a LAR, to be executed around 4:30 was executed without the nominal 7 minutes delay. These occurrences are currently under investigation at Qinetiq.

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 8416 to 8478) 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 16 0UT and 2012 Jul 23 0UT: 4224
Highest cadence in this period: 30 seconds
Average cadence in this period: 143.16 seconds
Number of image gaps larger than 300 seconds: 27
Largest data gap: 32.17 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?)