


P2SC-ROB-WR-141-20121203 Weekly report #141	<b>P2SC Weekly report</b>	
Period covered: Date: Written by: Approved by:	Mon Dec 03 to Sun Dec 09, 2012 12 Dec 2012 Erik Pylyser David Berghmans	Royal Observatory of Belgium PROBA2 Science Center
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## 1. Science

### Solar & Space weather events

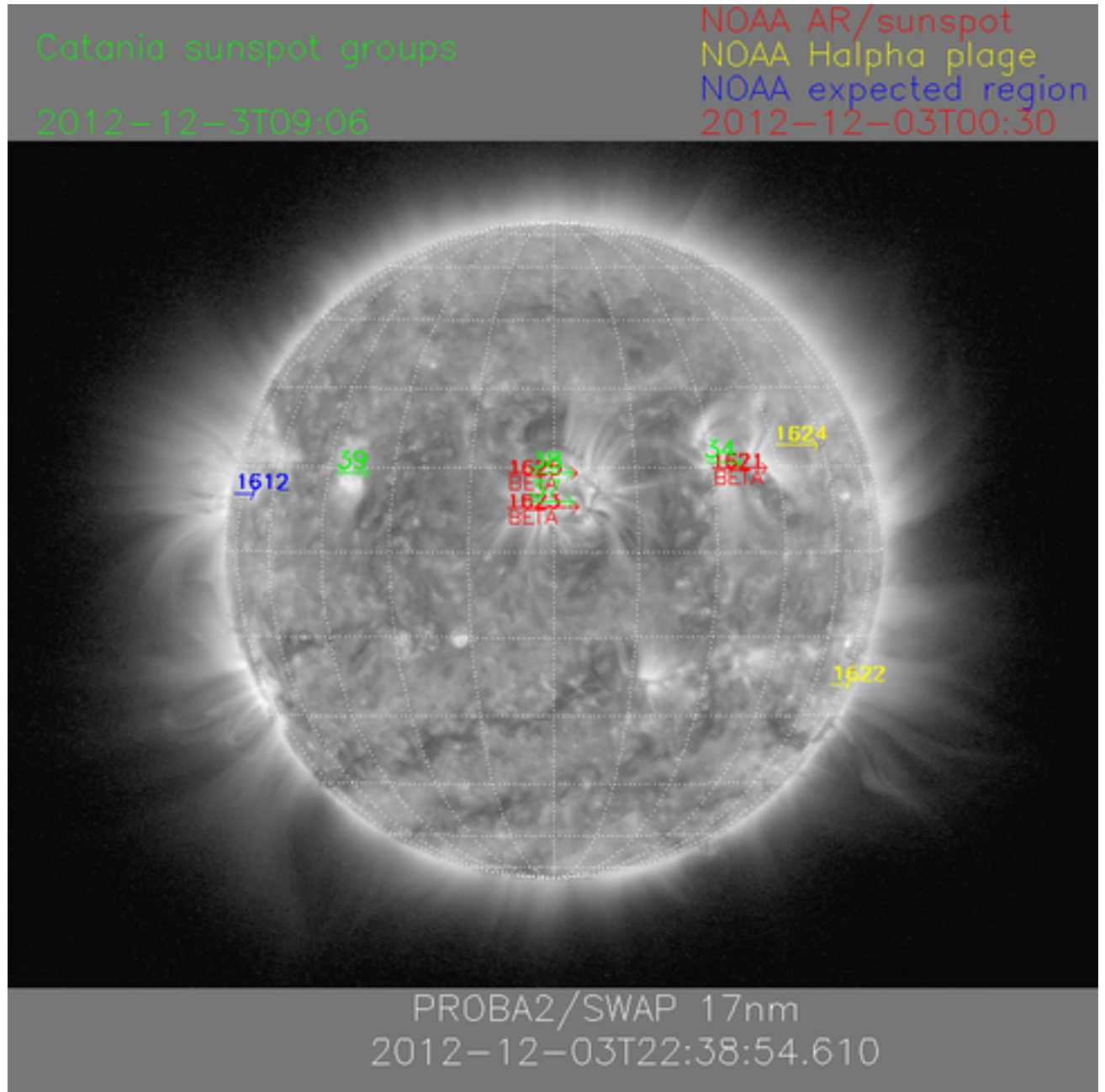
#### Overview

The level of solar activity<sup>1</sup> this week. Only M- and X-flares are mentioned:

	Monday 03 Dec	Tuesday 04 Dec	Wednesday 05 Dec	Thursday 06 Dec	Friday 07 Dec	Saturday 08 Dec	Sunday 09 Dec
Activity	low	very low	low	very low	low	very low	low
Flares	-	-	-	-	-	-	-

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

The SWAP images of Dec 03 and Dec 09 are shown below, with annotated active regions.

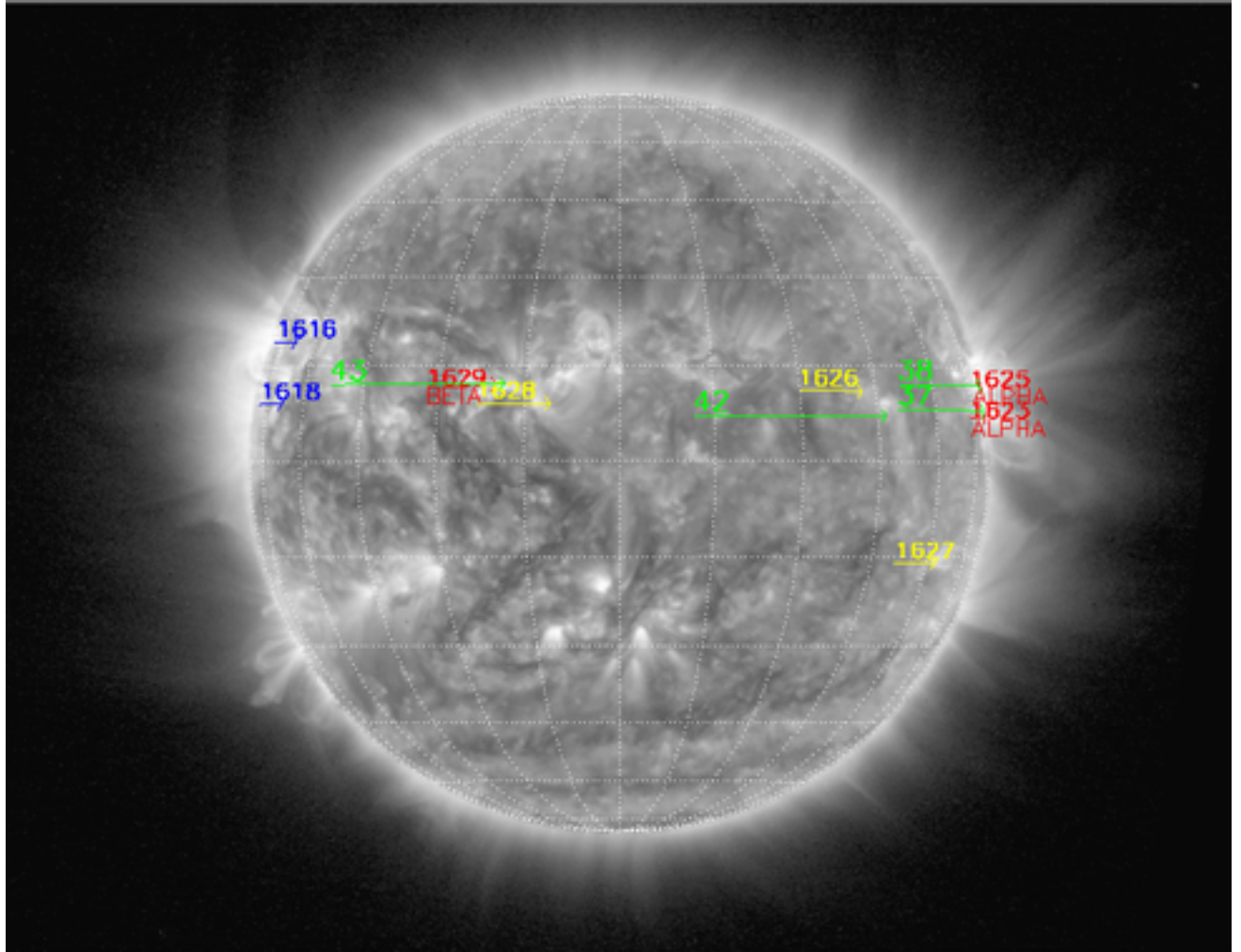


<http://sidc.be/html/CmapPage.html>

Catania sunspot groups

2012-12-7T08:06

NOAA AR/sunspot  
NOAA Halpha plage  
NOAA expected region  
2012-12-09T00:30



PROBA2/SWAP 17nm  
2012-12-09T22:29:33.429

## Solar Activity

It was a very calm week on the Sun. With a single C1 flare on Monday, solar activity switched daily between \*low\* and \*very low\*. Only 4 C1-level flares were recorded during the whole 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.

Some minor events of this week are presented below:



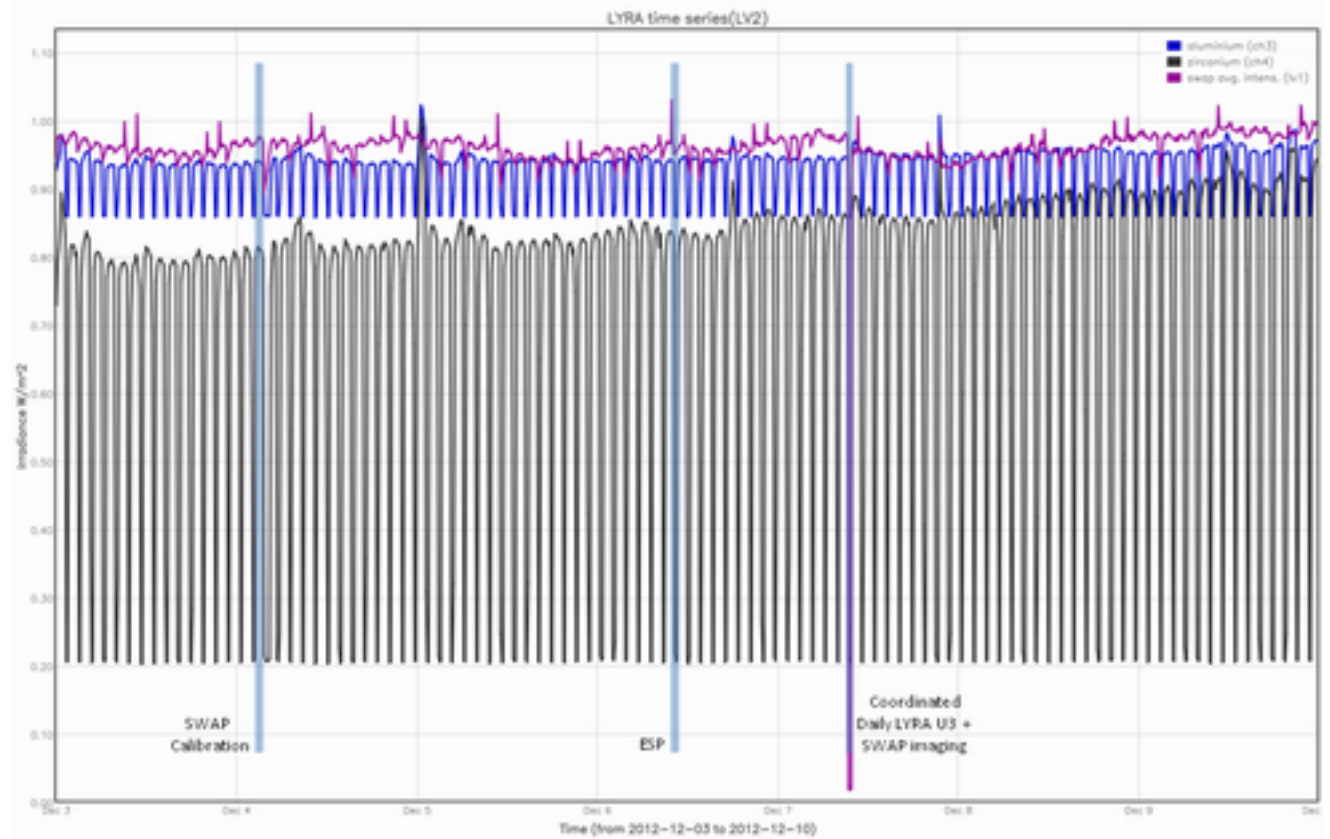
**A C1 flare eruption on the N-E limb, on Wednesday 05, 00:20 UT.**

On Sunday 09th, a filament activation occurred in the NE quadrant: see the SWAP difference movie on [http://proba2.oma.be/swap/data/mpg/movies/campaign\\_movies/20121209\\_FilaErup\\_0700-1000\\_swap\\_diff.mp4](http://proba2.oma.be/swap/data/mpg/movies/campaign_movies/20121209_FilaErup_0700-1000_swap_diff.mp4) and in H-alpha: <http://halph.nso.edu/keep/ham/201212/20121209/20121209000000Uj.html>

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 experiment on Thursday
- Coordinated imaging campaign with LYRA daily U3 campaign on Friday.

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

- None

The red shaded period corresponds to:

- None

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

- None

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.

**Guest Investigator Programme**

Farid Gorayev left P2SC on December 4th.

## 2. LYRA instrument status

### Calibration

LYRA calibration on Wednesday.

### IOS & operations

Monday 03 Dec	Tuesday 04 Dec	Wednesday 05 Dec	Thursday 06 Dec	Friday 07 Dec	Saturday 08 Dec	Sunday 09 Dec
Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3 + SWAP/LYRA coordinated	Nominal acquisition + daily U3	Nominal acquisition + daily U3
LYIOS00291	LYIOS00291	LYIOS00292	LYIOS00292	LYIOS00292	LYIOS00292	LYIOS00292

The following science campaigns were performed by LYRA:  
- the daily U3 campaign.

### LYRA detector temperature

LYRA detector 2 temperature fluctuated between 41.3 and 38.9 degrees C, 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

SWAP calibration on Tuesday.

#### MCPM errors

The number of MCPM recoverable errors increased from 5375 to 5449.

The number of MCPM unrecoverable errors remained at 1127.

#### IOS & operations

Monday 03 Dec	Tuesday 04 Dec	Wednesday 05 Dec	Thursday 06 Dec	Friday 07 Dec	Saturday 08 Dec	Sunday 09 Dec
Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition + ESP	Nominal acquisition	Nominal acquisition	Nominal acquisition
IOS00430 562 images	IOS00430 577 images	IOS00430 566 images	IOS00431 533 images	IOS00432 620 images	IOS00432 549 images	IOS00432 564 images

Special operations for SWAP, this week:

- Occultation jumps
- ESP jump
- Coordinated imaging campaign with LYRA daily U3 campaign on Friday.

#### SWAP detector temperature

The SWAP Cold Finger Temperature, under nominal operations, increased generally, fluctuating between - 3.2 and - 4.6 degrees Celsius.

#### 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 9626 to 9686) 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 Dec 03 0UT and 2012 Dec 10 0UT: 3974

Highest cadence in this period: 29 seconds

Average cadence in this period: 152.20 seconds

Number of image gaps larger than 300 seconds: 102

Largest data gap: 32.38 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?)