


P2SC-ROB-WR-143-20121217 Weekly report #143	<b>P2SC Weekly report</b>	
Period covered: Date: Written by: Approved by:	Mon Dec 17 to Sun Dec 23, 2012 10 Jan 2012 Erik Pylyser David Berghmans	Royal Observatory of Belgium PROBA2 Science Center
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## 1. Science

### Solar & Space weather events

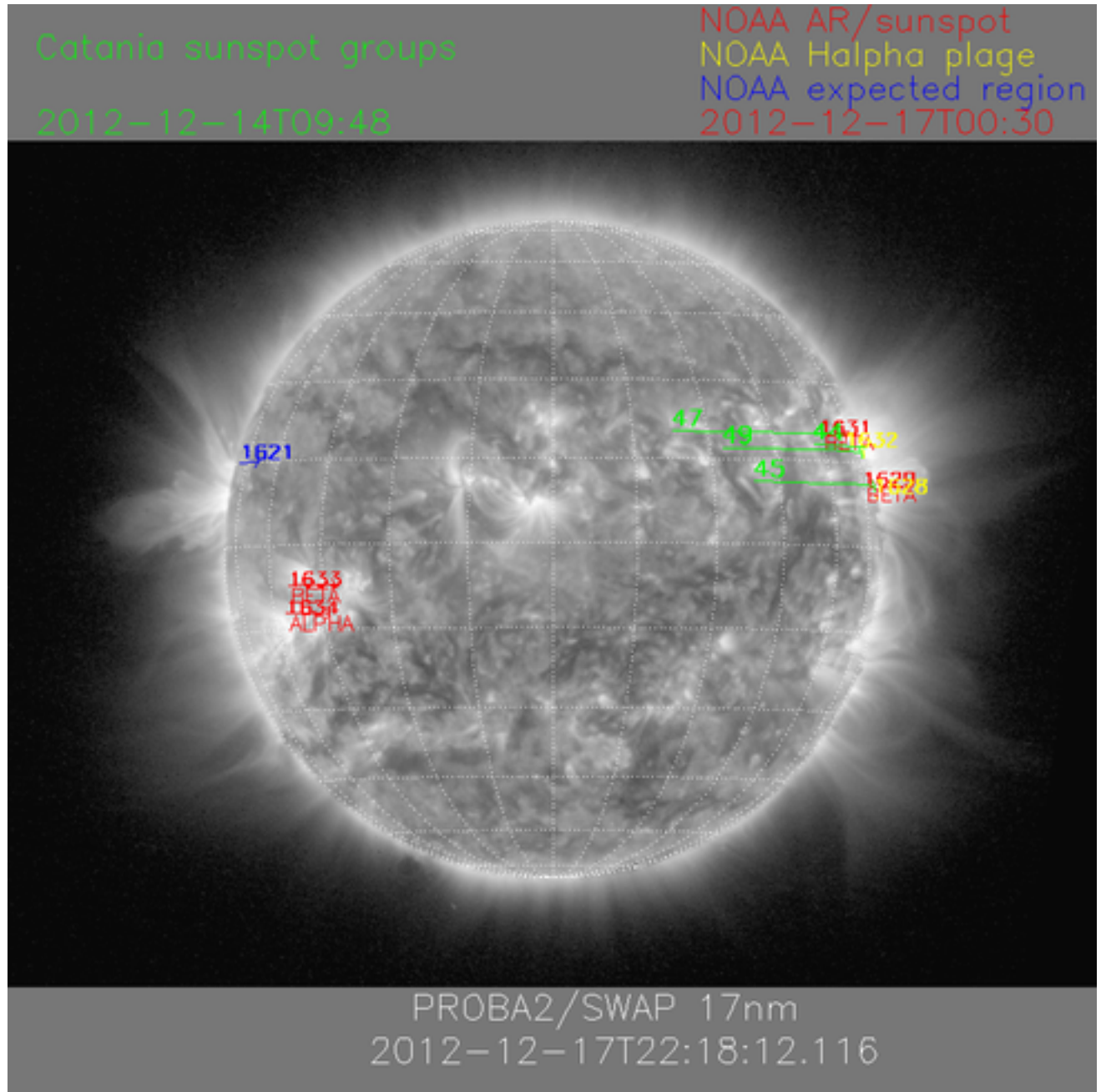
#### Overview

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

	Monday 17 Dec	Tuesday 18 Dec	Wednesday 19 Dec	Thursday 20 Dec	Friday 21 Dec	Saturday 22 Dec	Sunday 23 Dec
Activity	low	low	very low	very low	low	low	low
Flares	-	-	-	-	-	-	-

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

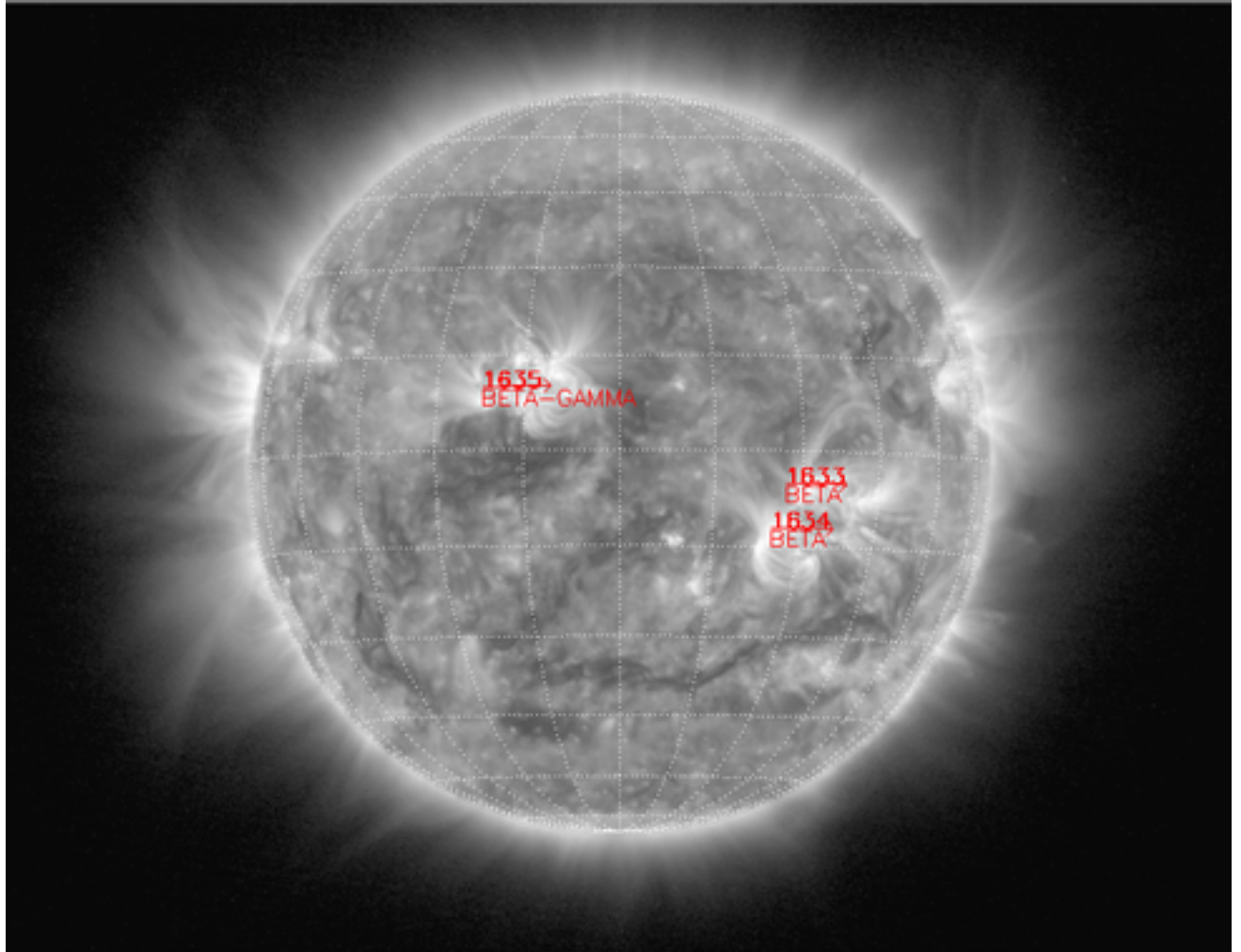
The SWAP images of Dec 17 and Dec 23 are shown below, with annotated active regions.



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

No recent Catania data available

NOAA AR/sunspot  
NOAA Halpha plage  
NOAA expected region  
2012-12-23T00:30



PROBA2/SWAP 17nm  
2012-12-23T20:29:06.753

## Solar Activity

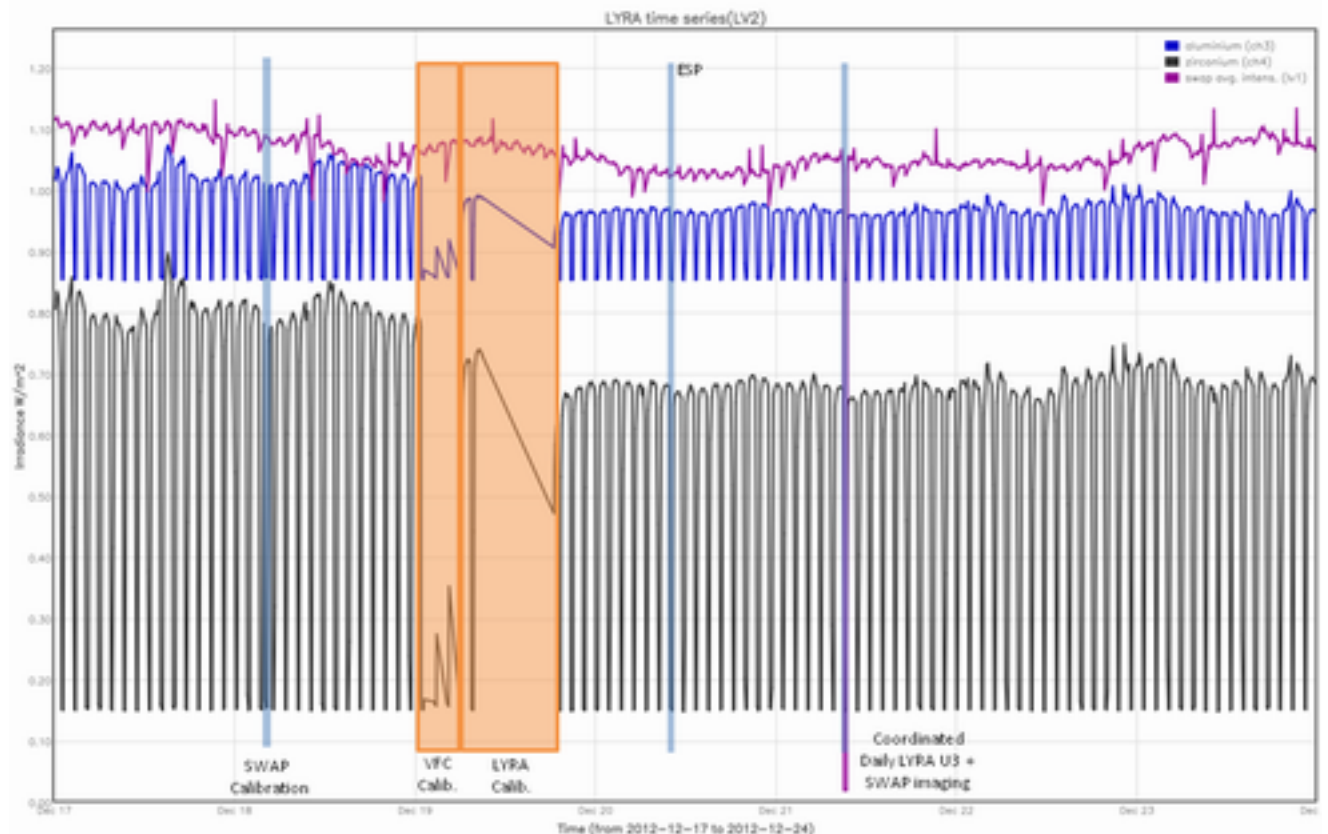
It was a calm week on the Sun, i.e. with generally \*low\* activity, and 2 days of \*very low\* activity. In order to view the activity of this week in more detail, we suggest to go to the following website from which all the daily (normal and difference) movies can be accessed: <http://proba2.oma.be/ssa>. This page also lists the recorded flaring events.

Although a few filament eruptions occurred during this week (e.g. on 17/12/2012; 07:00; North West quadrant, visible in SDO/304 or H-alpha), they were not visible in the SWAP images, and no further particularly noteworthy events could be identified.

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:

- bi-weekly SWAP Calibration
- weekly ESP experiment on Thursday
- weekly coordinated imaging campaign with LYRA's daily U3 campaign on Friday.

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

- special calibration (on Wednesday), followed by
- normal calibration (on Wednesday)

### Outreach, papers, presentations, etc.

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 SWAP eclipse observations of Nov 13/14 were published in a composite image on the <http://esa.int> website (see fig below).



### Guest Investigator Program

- None

## 2. LYRA instrument status

<p><b>Calibration</b></p> <p>Bi-weekly LYRA calibration, preceded by a VFC calibration on Wednesday.</p>																											
<p><b>IOS &amp; operations</b></p> <table border="1"> <thead> <tr> <th>Monday 17 Dec</th> <th>Tuesday 18 Dec</th> <th>Wednesday 19 Dec</th> <th>Thursday 20 Dec</th> <th>Friday 21 Dec</th> <th>Saturday 22 Dec</th> <th>Sunday 23 Dec</th> </tr> </thead> <tbody> <tr> <td>Nominal acquisition + daily U3</td> <td>Nominal acquisition + daily U3</td> <td>Nominal acquisition + daily U3 + VFC calibration + normal calibration</td> <td>Nominal acquisition + daily U3</td> <td>Nominal acquisition + daily U3</td> <td>Nominal acquisition + daily U3</td> <td>Nominal acquisition + daily U3</td> </tr> <tr> <td>LYIOS00294</td> <td>LYIOS00295</td> <td>LYIOS00295</td> <td>LYIOS00295</td> <td>LYIOS00295</td> <td>LYIOS00296</td> <td>LYIOS00296</td> </tr> </tbody> </table> <p>The following science campaigns were performed by LYRA: - the daily U3 campaign.</p>							Monday 17 Dec	Tuesday 18 Dec	Wednesday 19 Dec	Thursday 20 Dec	Friday 21 Dec	Saturday 22 Dec	Sunday 23 Dec	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3 + VFC calibration + normal calibration	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	LYIOS00294	LYIOS00295	LYIOS00295	LYIOS00295	LYIOS00295	LYIOS00296	LYIOS00296
Monday 17 Dec	Tuesday 18 Dec	Wednesday 19 Dec	Thursday 20 Dec	Friday 21 Dec	Saturday 22 Dec	Sunday 23 Dec																					
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LYIOS00294	LYIOS00295	LYIOS00295	LYIOS00295	LYIOS00295	LYIOS00296	LYIOS00296																					
<p><b>LYRA detector temperature</b></p> <p>LYRA detector 2 temperature fluctuated between 38.7 and 41.2 degrees C, including the daily U3 activation periods. The latter resulted in a temperature increase of about 0.4 degrees. During the calibration, LYRA temperature decreased down to 37.0 degrees C.</p>																											
<p><b>To be explored</b></p> <p>/</p>																											

### 3. SWAP instrument status

#### Calibration

SWAP calibration on Tuesday.

#### MCPM errors

The number of MCPM recoverable errors increased from 5497 to 5572.

The number of MCPM unrecoverable errors remained at 1127.

#### IOS & operations

Monday 17 Dec	Tuesday 18 Dec	Wednesday 19 Dec	Thursday 20 Dec	Friday 21 Dec	Saturday 22 Dec	Sunday 23 Dec
Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition + ESP	Nominal acquisition + SWAP/LYRA coordination	Nominal acquisition	Nominal acquisition
IOS00434 562 images	IOS00435 571 images	IOS00435 560 images	IOS00435 533 images	IOS00435 614 images	IOS00436 551 images	IOS00436 556 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 - 4.8 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:

### Complete Update of Repository

- 19/12/2012: r4674
- 21/12/2012: r4676

### SWBSDG

- 19/12/2012: r4674 (upgrade flat field cal file)
- 21/12/2012: r4676 (upgrade dark coefs for 2012)

## 5. Data reception & discussions with MOC

### Passes

The delivery of the passes for this week (passes 9745 to 9803) 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 17 0UT and 2012 Dec 24 0UT: 3949

Highest cadence in this period: 29 seconds

Average cadence in this period: 153.01 seconds

Number of image gaps larger than 300 seconds: 102

Largest data gap: 31.83 minutes

The large gap is due to the execution of 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	BaseBand Equipment
CME	Coronal Mass Ejection
COGEX	Cool Gas Generator Experiment
CRC	Cyclic Redundancy Check
EIT	Extreme ultraviolet Imaging Telescope
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
OBET	On board Elapsed Time
OBSW	On board Software
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?)