


P2SC-ROB-WR-148-20130121 Weekly report #148	P2SC Weekly report	
Period covered: Date: Written by: Approved by:	Mon Jan 21 to Sun Jan 27, 2013 30 Jan 2012 Erik Pylyser Matthew J. West	Royal Observatory of Belgium PROBA2 Science Center
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1. Science

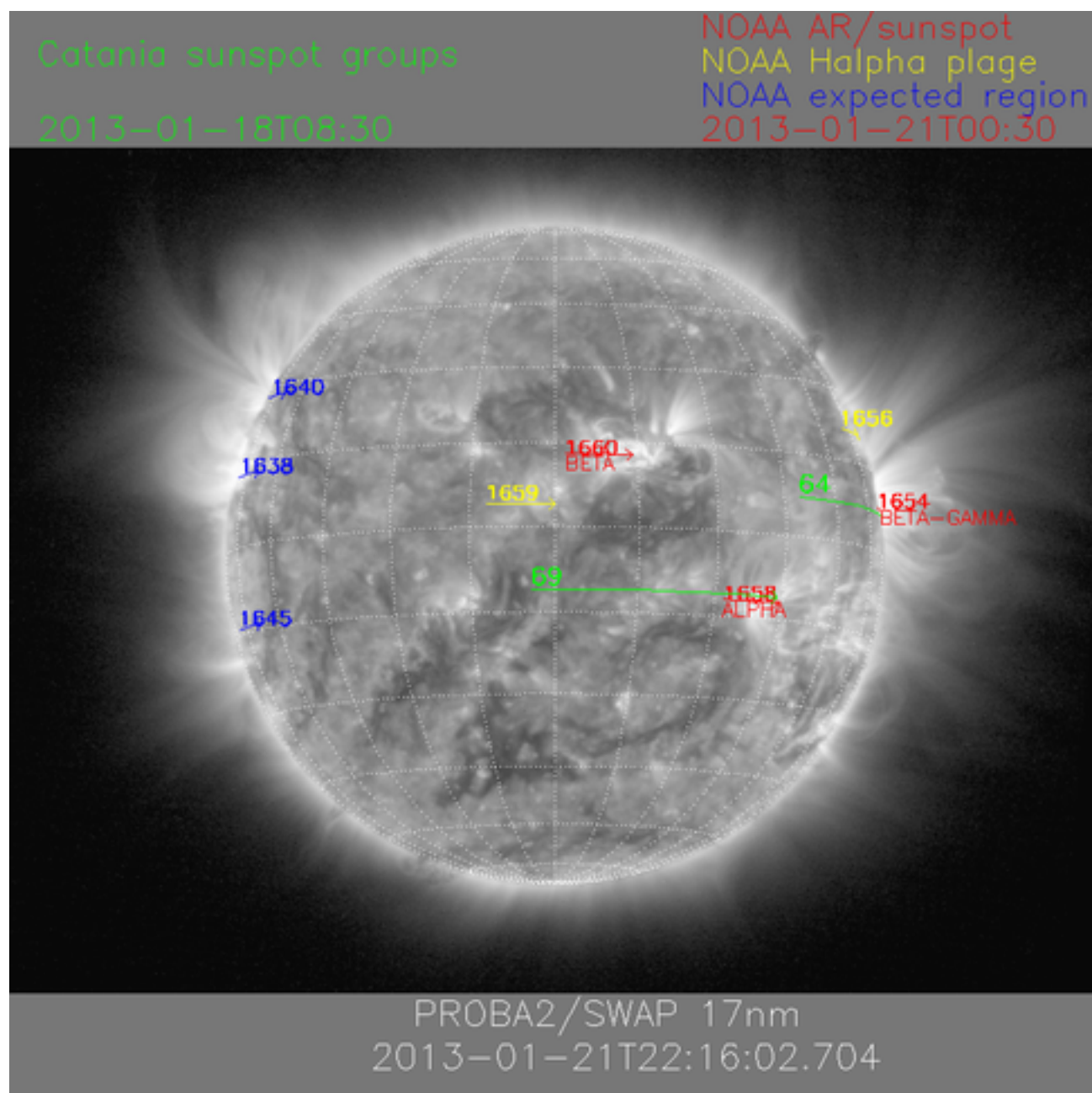
Solar & Space weather events

The level of solar activity¹ this week. Only M- and X-flares are mentioned, the most energetic one(s) are presented in **bold**:

	Monday 21 Jan	Tuesday 22 Jan	Wednesday 23 Jan	Thursday 24 Jan	Friday 25 Jan	Saturday 26 Jan	Sunday 27 Jan
Activity	very low	very low	very low	very low	very low	very low	very low
Flares	-	-	-	-	-	-	(None)

¹ See appendix. All timings are given in UT.

The SWAP images of January 21 and January 27 are shown below, with annotated active regions.

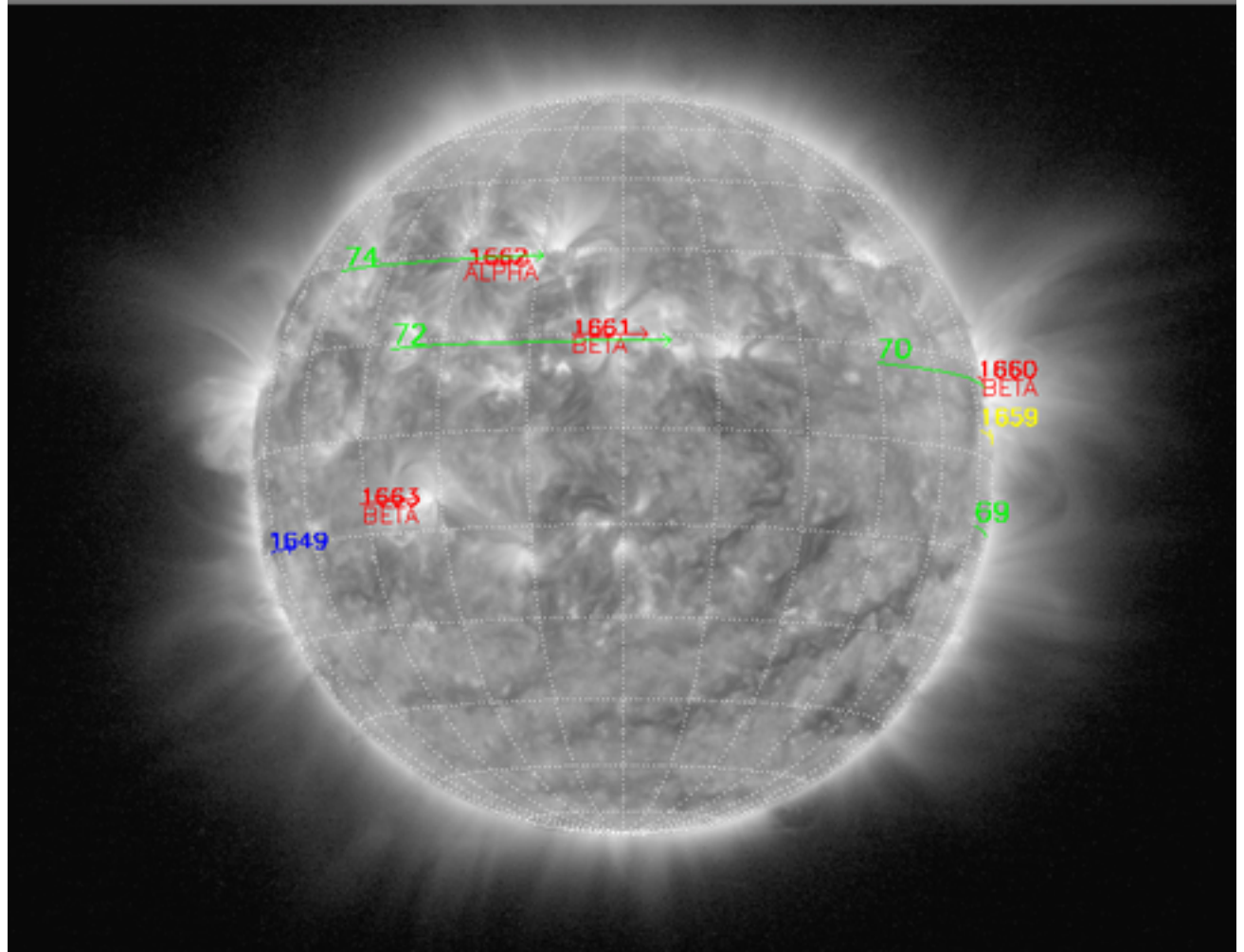


<http://sidc.be/html/CmapPage.html>

Catania sunspot groups

2013-01-24T08:06

NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2013-01-27T00:30



PROBA2/SWAP 17nm
2013-01-27T22:08:01.252

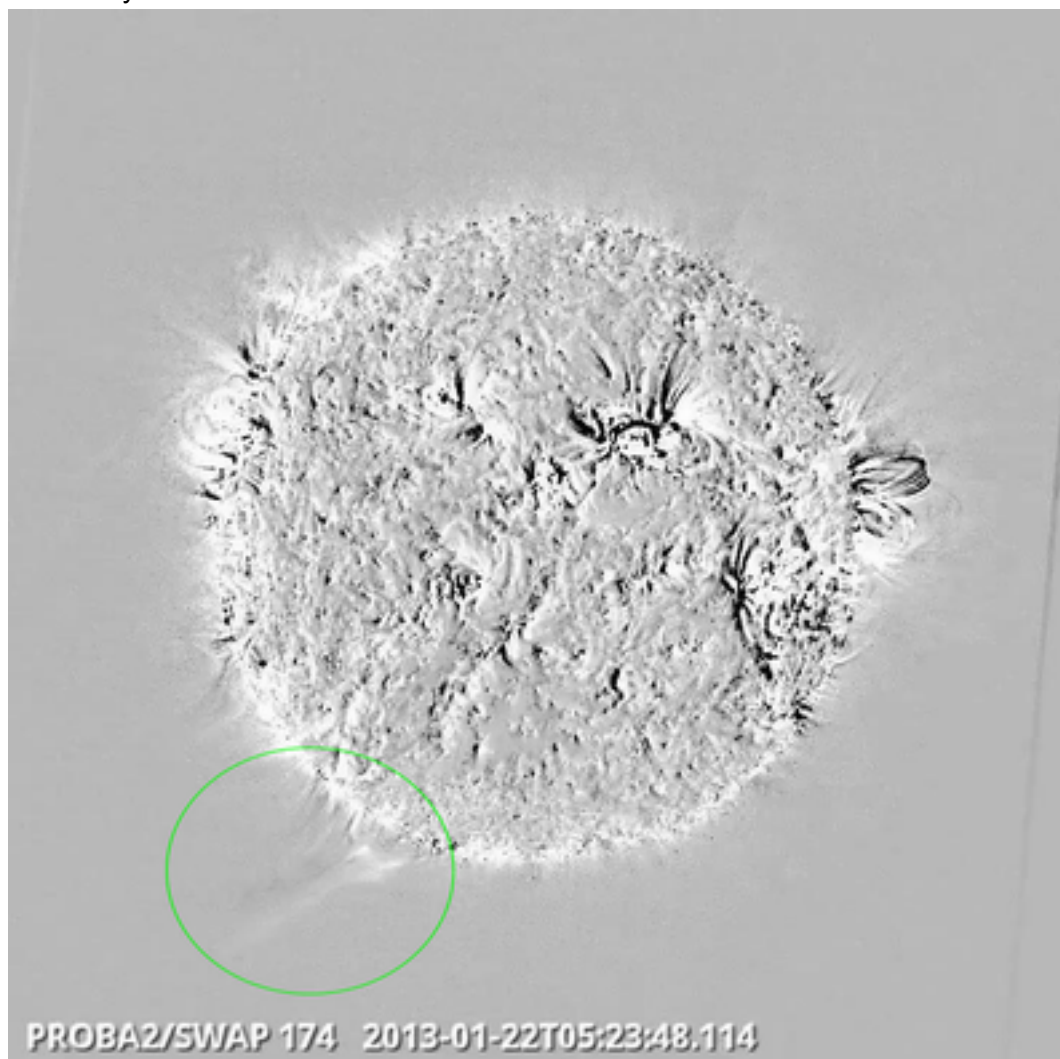
Solar Activity

Solar (flaring) activity was **very low** during the whole week. Background EUV radiation decreased steadily during the 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.

A weekly overview movie can be found [here](#) (SWAP174/AIA304 combination; HelioViewer.org). Details about some of the events in this movie can be found further below. This week, 4 worthwhile prominences occurred, 3 of them being visible by SWAP.

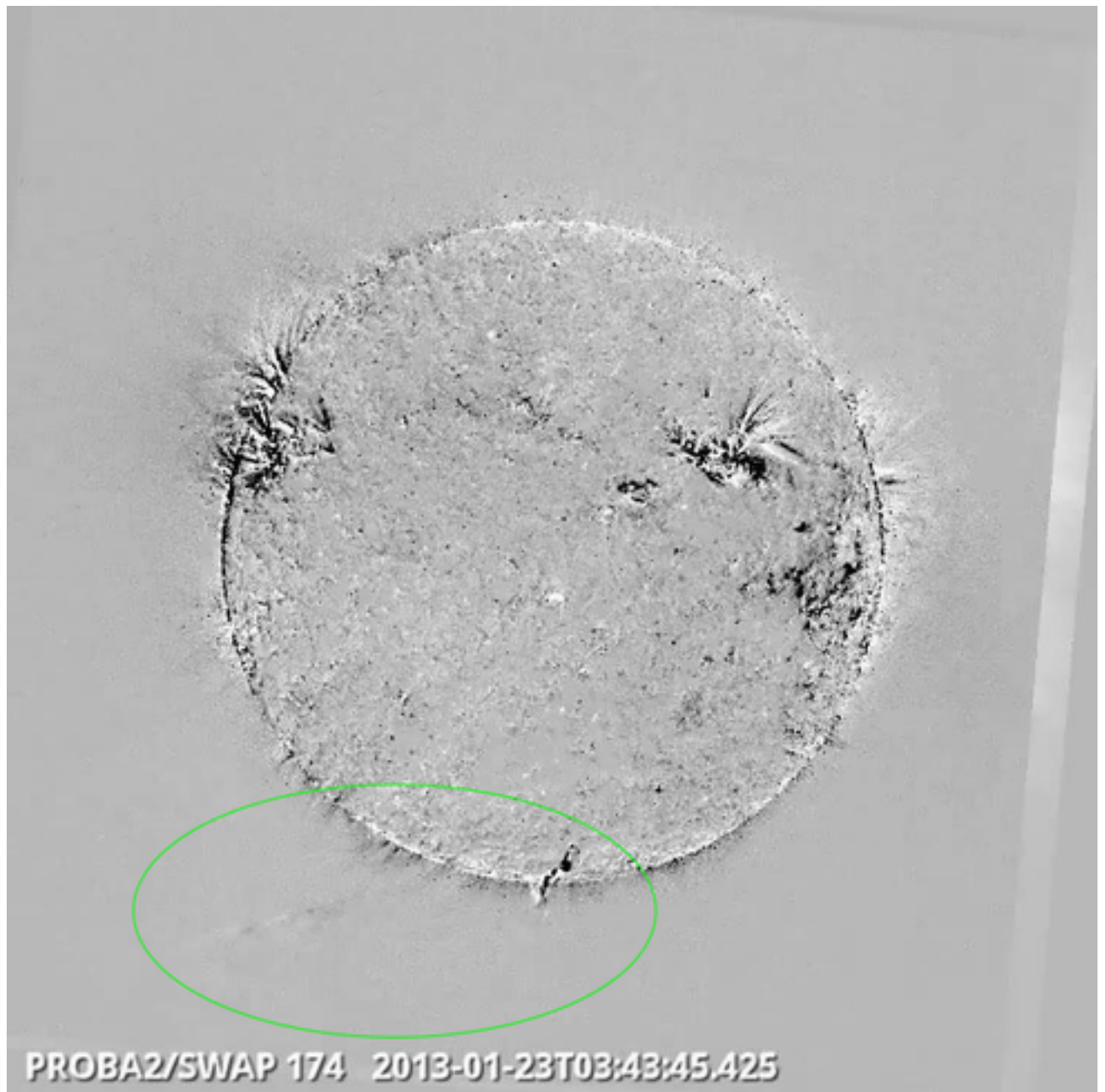
On 22nd of January:



Prominence Eruption on 22nd of January, 05:23 UT

See also [here](#) for a HelioViewer.org movie (SWAP174/AIA304 combination) as well as [here](#), for a normal - colored - SWAP movie.

On 23nd of January:



Prominence Eruption on 23nd of January, 03:43 UT

At about the same time of the above eruption, an eruption occurs in the North West quadrant. This can be better seen in [this SWAP difference movie](#).

(see also [here](#) for a HelioViewer.org movie (SWAP174/AIA304 combination)).



Prominence Eruption on 23nd of January, 13:44 UT

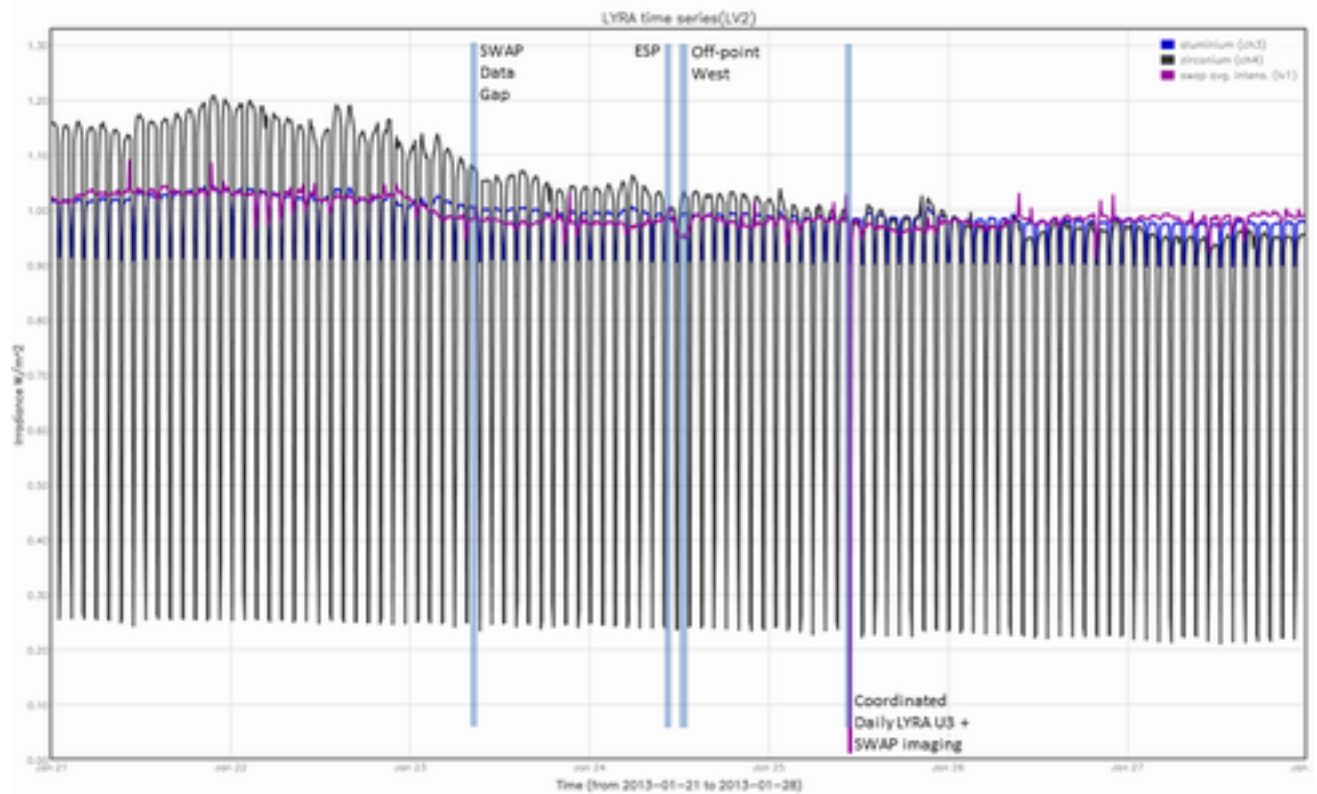
A - colored - movie of this event can be seen [here](#). A SWAP difference movie of the above event can be found [here](#).

On Sunday, a beautiful prominence display/eruption can be seen along the North limb in this [HelioViewer.org movie](#).

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:

- small SWAP data gap on Wednesday (between 09:16 and 10:06).
- ESP experiment on Thursday
- SWAP off-pointing to Solar West limb (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.

- A TV crew (TV Bruxelles) made an item on P2SC, interviewing Erik Pylyser and Koen Stegen on Monday 21st and Tuesday 22nd of January.

- "A solar tornado triggered by flares?" N. K. Panesar, D. E. Innes¹, S. K. Tiwari and B. C. Low published in A&A

- The scientific part of the contents of the "Solar Activity" section above is published in this week's STCE Bulletin (see <http://www.stce.be/newsletter/newsletter.php>)

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 Program

Guest Investigator Muzhou Lu arrived at P2SC on January 03, 2013. His stay will last until February 2nd, 2013. The topic of his program is 'Observations and Modeling of Solar Coronal Structures Using High-Resolution Eclipse Images and Space-based telescopes with Wide FOV'.

2. LYRA instrument status

Calibration

No calibration this week.

IOS & operations

Monday 21 Jan	Tuesday 22 Jan	Wednesday 23 Jan	Thursday 24 Jan	Friday 25 Jan	Saturday 26 Jan	Sunday 27 Jan
Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3
LYIOS00301	LYIOS00302	LYIOS00302	LYIOS00302	LYIOS00302	LYIOS00303	LYIOS00303

The following science campaigns were performed by LYRA:

- the daily U3 campaign.

LYRA detector temperature

LYRA detector 2 temperature globally increased from 43.4 and 47.8 degrees C, including the daily U3 activation periods. The latter result in a temperature increase of about 0.4 degrees C.

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 5956 to 6192.

The number of MCPM unrecoverable errors remained at 1127.

IOS & operations

Monday 21 Jan	Tuesday 22 Jan	Wednesday 23 Jan	Thursday 24 Jan	Friday 25 Jan	Saturday 26 Jan	Sunday 27 Jan
Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition + ESP	Nominal acquisition + SWAP/LYRA coord. camp.	Nominal acquisition	Nominal acquisition
IOS00444 583 images	IOS00445 577 images	IOS00445 525 images	IOS00445 -> 446 598 images	IOS00446 663 images	IOS00447 588 images	IOS00447 584 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 overall, fluctuating between -2.2 and 1.2 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 10040 to 10098) was nominal, except for:

- Pass 10061 failed; all SWAP images were lost; LYRA & (partial) HK data was recovered.

Data coverage HK

All HK data files (LYRA_AD) have been received, except for:

- Pass 10061 (Wednesday 23th); data missing between 09:16 and 10:06

Data coverage SWAP

All SWAP Science data files (BINSWAP) have been received, except for:

- Pass 10061; all SWAP images for this pass were lost.

Total number of images between 2013 Jan 21 0UT and 2013 Jan 28 0UT: 4094

Highest cadence in this period: 30 seconds

Average cadence in this period: 147.58 seconds

Number of image gaps larger than 300 seconds: 126

Largest data gap: 32.80 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
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
OBSW	On board Software
PI	Principal Investigator
P2SC	PROBA2 Science Center
ROB	Royal Observatory of Belgium
SAA	South Atlantic Anomaly
SEU	Single Event Upset
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?)