P2SC-ROB-WR-253 - 20150126 Weekly report #253	P2SC Weekly report	
Period covered: Date:	Mon Jan 26 to Sun Feb 01, 2015 04 feb 2015	Royal Observatory of Belgium - PROBA2 Science Center
Written by: Approved by:	Katrien Bonte Matthew West	
To:	LYRA PI, marie.dominique@sidc.be SWAP PI, dseaton@sidc.be	http://proba2.sidc.be ++ 32 (0) 2 3730559
cc:	ROB DIR, ronald@oma.be ESA Redu, Etienne.Tilmans@esa.int ESA D/SRE, Joe.Zender@esa.int ESA D/TEC, Juha-Pekka.Luntama@esa.int	

1. Science

**Solar & Space weather events**

The level of solar activity[1] fluctuated between **low** and **moderate** this week.

Only M- and X-flares are mentioned, the most energetic one(s) per day are presented in **bold**:

	Monday 26 Jan	Tuesday 27 Jan	Wednesday 28 Jan	Thursday 29 Jan	Friday 30 Jan	Saturday 31 Jan	Sunday 01 Feb
Activity	moderate	low	moderate	moderate	moderate	low	low
Flares	**M1.1@16h53**	-	**M1.0@21h37** **M1.4@04h41**	**M2.1@11h42**	**M2.4@12h16** **M1.7@05h36** **M2.0@00h44**	-	-

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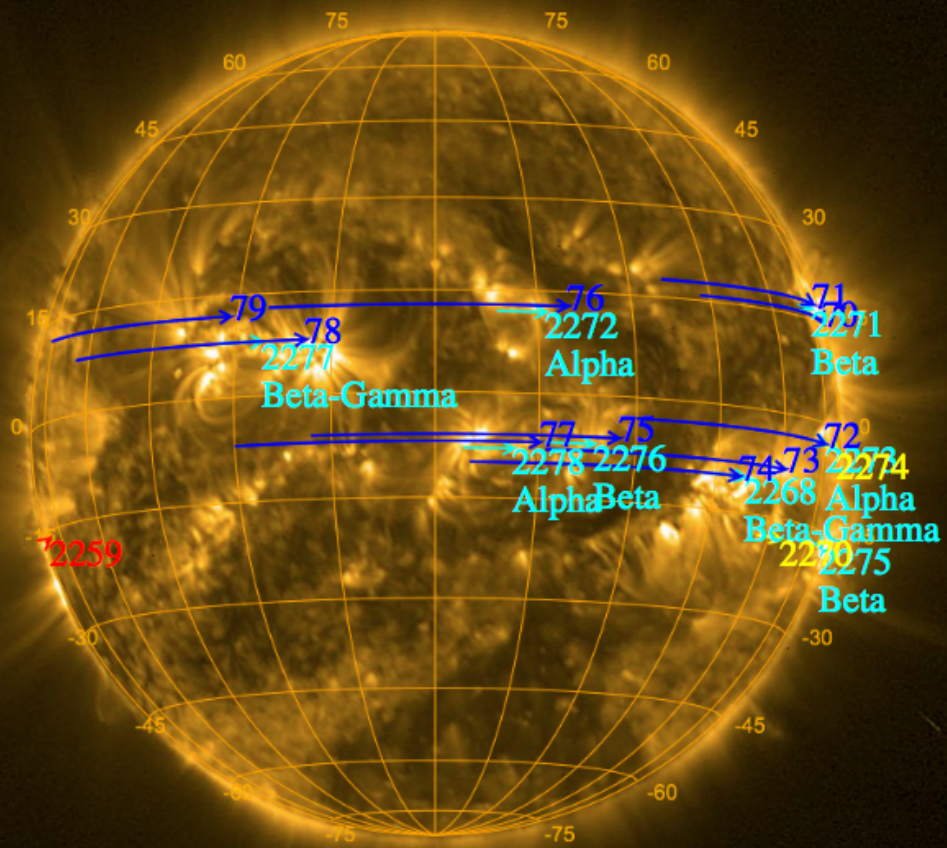[1] See appendix. All timings are given in UT.

The SWAP images of Jan 26 and Feb 01 are shown below, with annotated active regions.
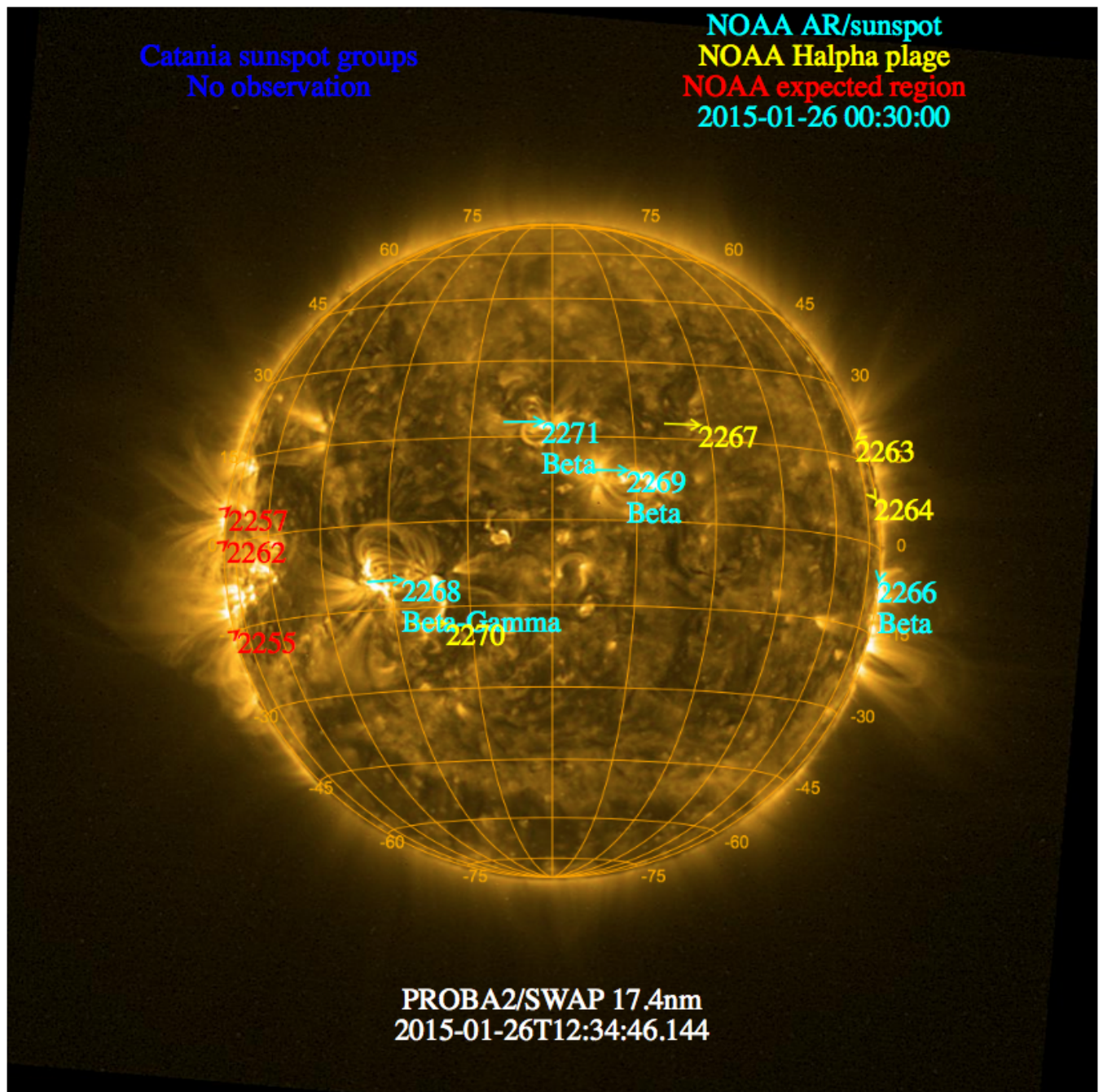
Solar Activity

Solar flare activity fluctuated between low and moderate 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 (SWAP week 253).

Below we provide a SWAP image showing the well observed M1.4 flare that occurred on 2015-01-28 at the centre of the disk. We also provide a link to the daily movie of that day, to highlight an eruptive event occurring at the East limb at the same time as the M1.0 flare.
The daily movie of 2015-01-30 shows the three M-class flares observed by SWAP that day.

Wednesday Jan 28:
M1.4 flare peaking around 04h41 (S10E08)
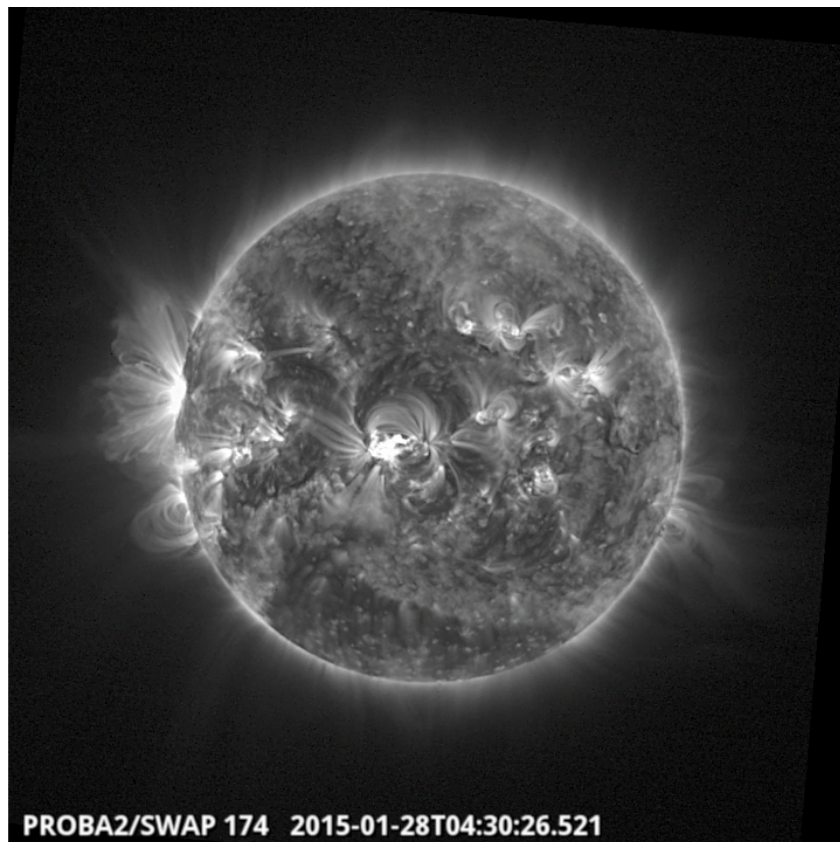
M1.0 flare peaking around 21h37 (N07E74)
See SWAP daily movie of 2015-01-28 here, also showing the earlier mentioned eruptive event.
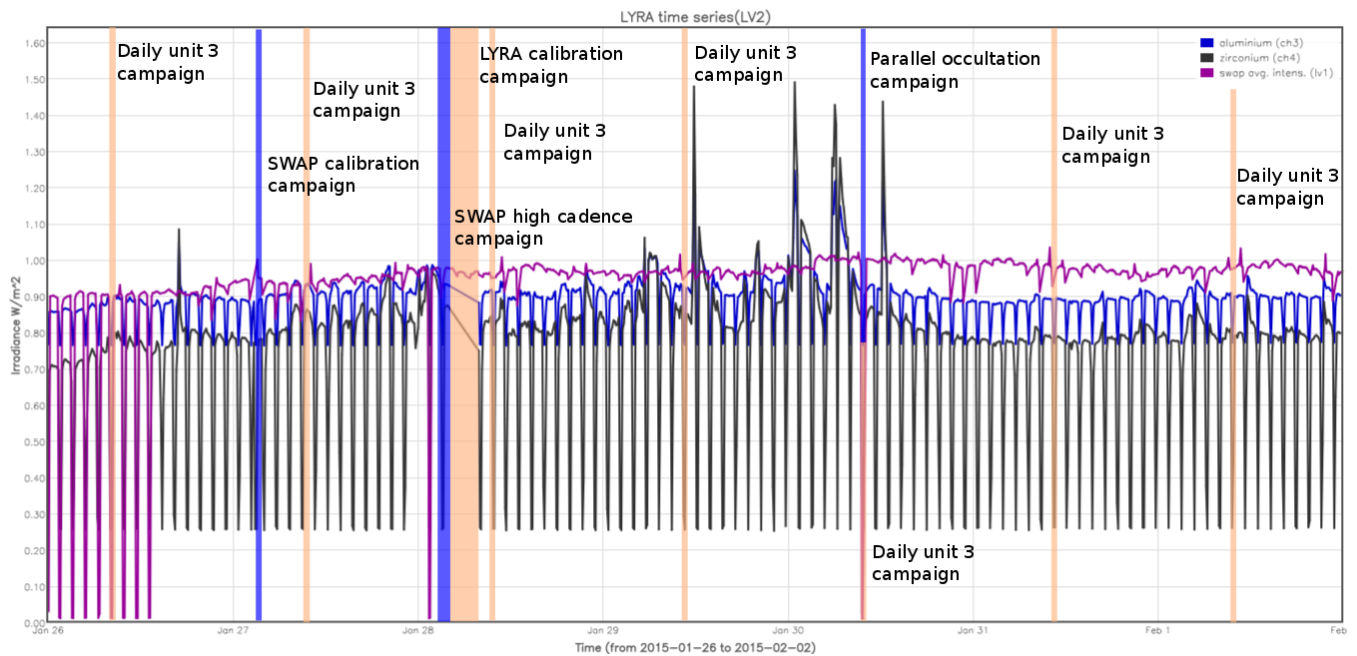
Friday Jan 30:
M2.0 flare peaking around 00h44 (S13W16)
M1.7 flare peaking around 05h36 (S12W19)
M2.4 flare peaking around 12h16 (N07E52)
See SWAP daily movie of 2015-01-30 here

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 (SWAP Average Intensity; integrated solar intensity per SWAP image pixel)

The blue shaded periods correspond to, from left to right:
- SWAP bi-weekly calibration campaign on 2015-01-27
- SWAP high cadence campaign for Guest Investigator Joe Hutton on 2015-01-28
- Parallel LYRA and SWAP occultation campaign on 2015-01-30

The orange shaded periods correspond to, from left to right:
- LYRA daily U3 occultation campaigns, two times
- LYRA short bi-weekly calibration on 2015-01-28
- LYRA daily U3 occultation campaigns, five times

Outreach, papers, presentations, etc.

Please 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 science section of this weekly report is also published in the weekly STCE newsletter (http://www.stce.be/newsletter/newsletter.php).

Guest Investigator Program
- D. Banerjee, SWAP, Estimation of acceleration and evolution of angular width of Coronal Mass Ejections within SWAP FOV using CACTus.

2. LYRA instrument status

Calibration

Short bi-weekly calibration campaign on Wednesday this week.

IOS & operations

Monday 26 Jan	Tuesday 27 Jan	Wednesday 28 Jan	Thursday 29 Jan	Friday 30 Jan	Saturday 31 Jan	Sunday 01 Feb
Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3 + calibration	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3
LYIOS00447	LYIOS00447	LYIOS00447	LYIOS00447	LYIOS00448	LYIOS00448	LYIOS00448

The following science campaigns were performed by LYRA:
- Daily unit 3 occultation campaigns
- Continued dark observations with unit 3 (more or less continuously)
- Short bi-weekly calibration on 2015-01-28

LYRA detector temperature

LYRA detector 2 temperature globally varied between 46.61 and 53.68 °C, taking into account the daily U3 activation periods; the latter result in a temperature increase of about 0.6 °C.

3. SWAP instrument status

Calibration

Calibration campaign on Tuesday this week.

MCPM errors
The number of MCPM recoverable errors increased from 25886 to 26106.
The number of MCPM unrecoverable errors increased from 4085 to 4253.

IOS & operations

Monday 26 Jan	Tuesday 27 Jan	Wednesday 28 Jan	Thursday 29 Jan	Friday 30 Jan	Saturday 31 Jan	Sunday 01 Feb
Nominal acquisition	Nominal acquisition + calibration	Nominal acquisition + high cadence campaign	Nominal acquisition	Nominal acquisition + parallel occultation	Nominal acquisition	Nominal acquisition
IOS00563 556 images	IOS00563 588 images	IOS00563 645 images	IOS00563 570 images	IOS00564 610 images	IOS00564 628 images	IOS00564 568 images

Special operations for SWAP, this week:
- Occultation jumps
- Bi-weekly calibration campaign on 2015-01-27
- High cadence campaign for Guest Investigator Joe Hutton on 2015-Jan-28
- Parallel LYRA and SWAP occultation campaign on 2015-01-30

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -0.5 and 3.51 °C.

4. PROBA2 Science Center Status

The main operator is Katrien Bonte.

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 16406 to 16469) was nominal, except for:
- None.

Data coverage HK

All HK data files (LYRA_AD) have been received, except:
- None.

Data coverage SWAP

All SWAP Science data files (BINSWAP) have been received, except:
- None.

Total number of images between 2015 Jan 26 0UT and 2015 Feb 02 0UT: 4314
Highest cadence in this period: 30 seconds
Average cadence in this period: 140.16 seconds
Number of image gaps larger than 300 seconds: 101
Largest data gap: 27.60 minutes

Data coverage LYRA

All LYRA Science data files (BINLYRA) have been received, except:
- 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
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
SoFAST	Solar Feature Automated Search Tool
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
VFC	Voltage to Frequency Converter

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)