P2SC-ROB-WR-306 - 20160201 Weekly report #306	**P2SC Weekly report**	
Period covered: Date: Written by: Approved by:	Mon Feb 01 to Sun Feb 07, 2016 12 Feb 2016 Katrien Bonte Matthew West	Royal Observatory of Belgium - PROBA2 Science Center
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1. Science

Solar & Space weather events

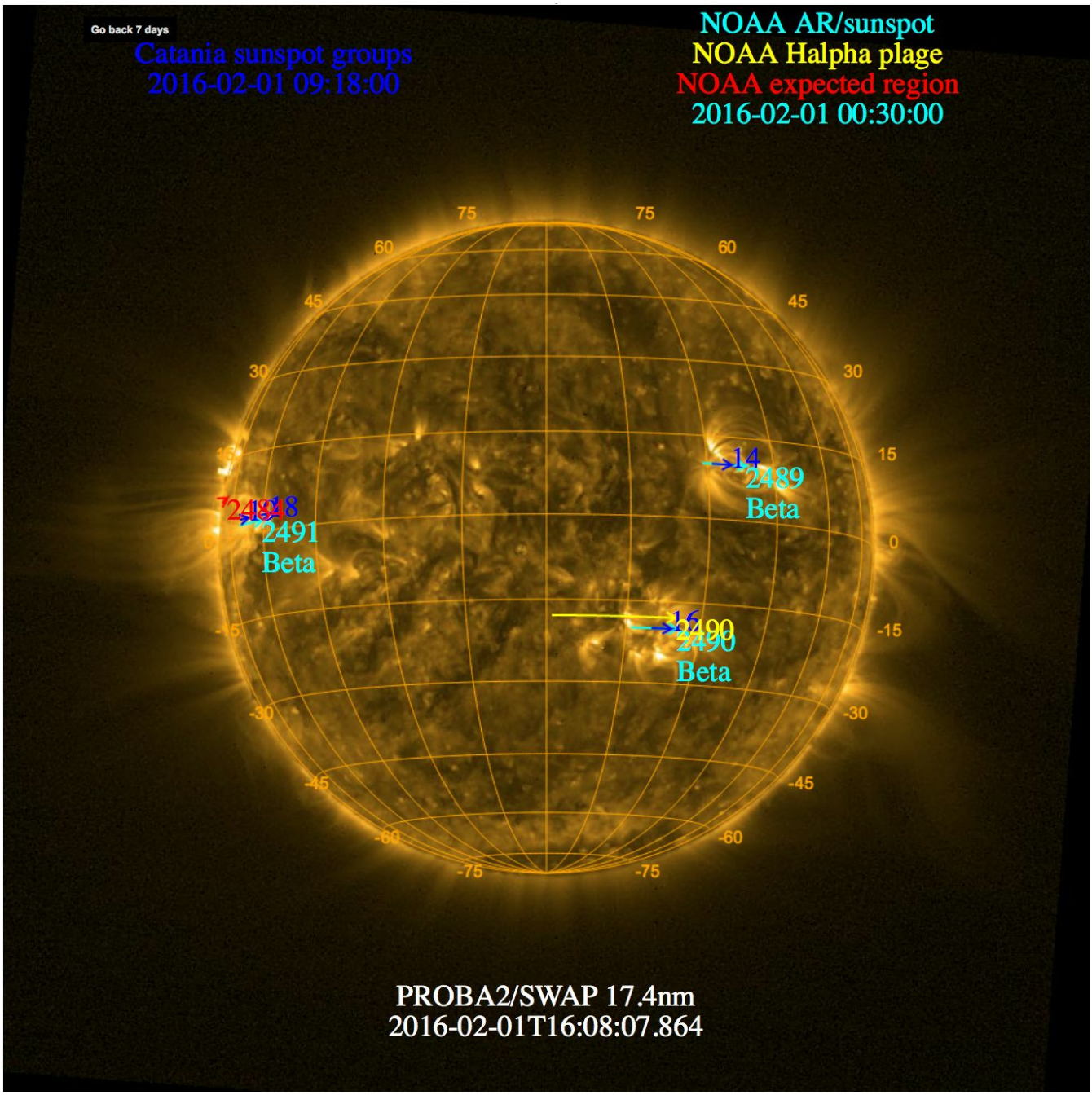
The level of solar activity[1] was **low** this week.

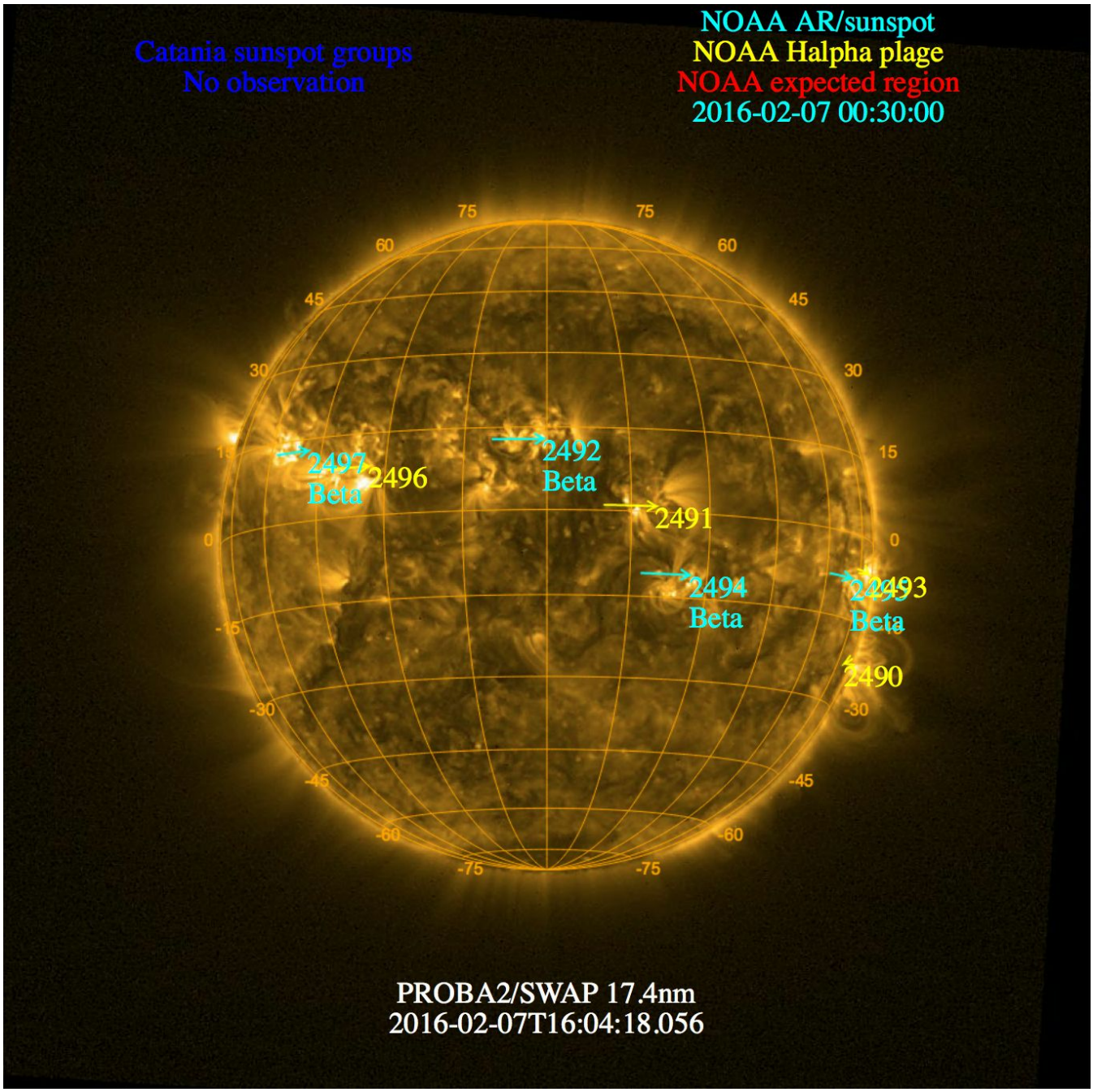
Only M- and X-flares are mentioned, the most energetic one(s) per day are presented in **bold**:

	Monday 01 Feb	Tuesday 02 Feb	Wednesday 03 Feb	Thursday 04 Feb	Friday 05 Feb	Saturday 06 Feb	Sunday 07 Feb
Activity	low	low	low	low	low	low	low
Flares	-	-	-	-	-	-	-

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

The SWAP images of Feb 01 and Feb 07 are shown below, with annotated active regions.




Catania sunspot groups
No observation
NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2016-02-07 00:30:00
2497
Beta
2496
2492
Beta
2491
2494
Beta
2493
Beta
2490
PROBA2/SWAP 17.4nm
2016-02-07T16:04:18.056

Solar Activity

Solar flare activity was low 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 306).

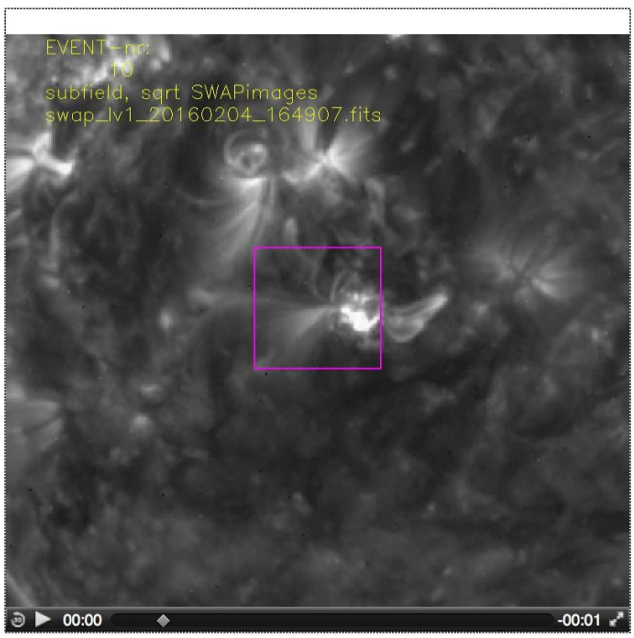
We did not observe any M or X-class flares this week, but many C-class flares. NOAA Active Region (AR) 2494 was the most productive one, producing a series of C-class flares between the fourth and sixth of February 2016. Below we provide SWAP images showing examples of solar activity observed from this region.

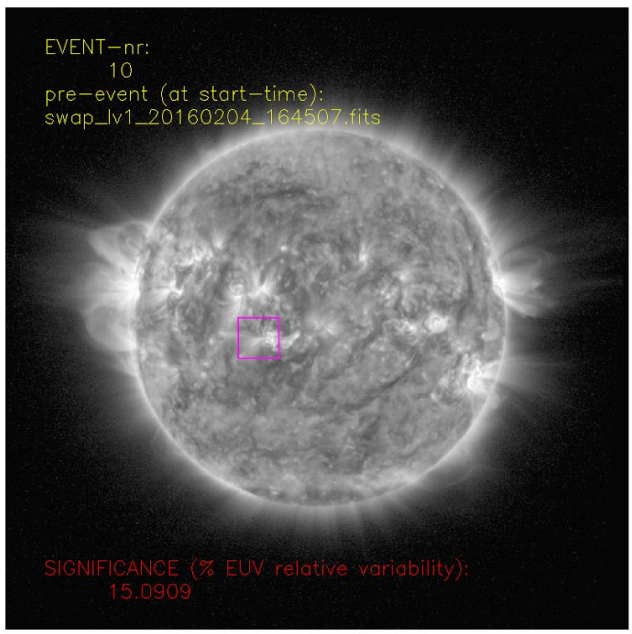
The annotated snapshots are produced by the Solar Feature Automated Search Tool (SoFAST). This tool detects dynamic solar events in EUV images from SWAP in near real-time. The snapshots illustrate the location of the flare on the solar disk (right) and a zoomed image (left).

The complete SoFAST online event list and additional plots are available at: http://www.sidc.be/sofast.

2016-Feb-04, AR 2494:

C3.6 peaking around 16:49 UT

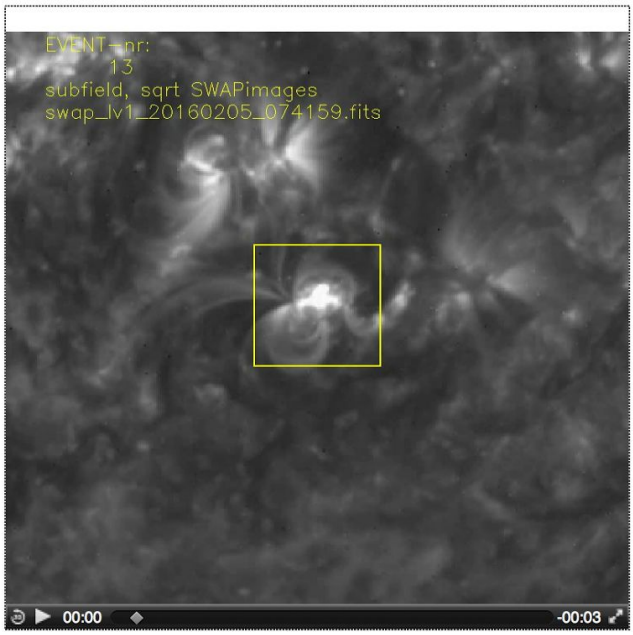


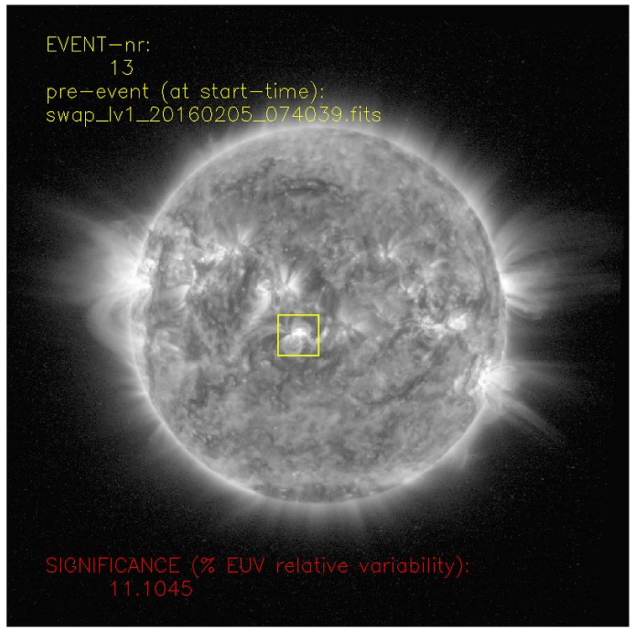


A movie of the event can be found here

2016-Feb-05, AR 2494:

C2.9 peaking around 07:22 UT

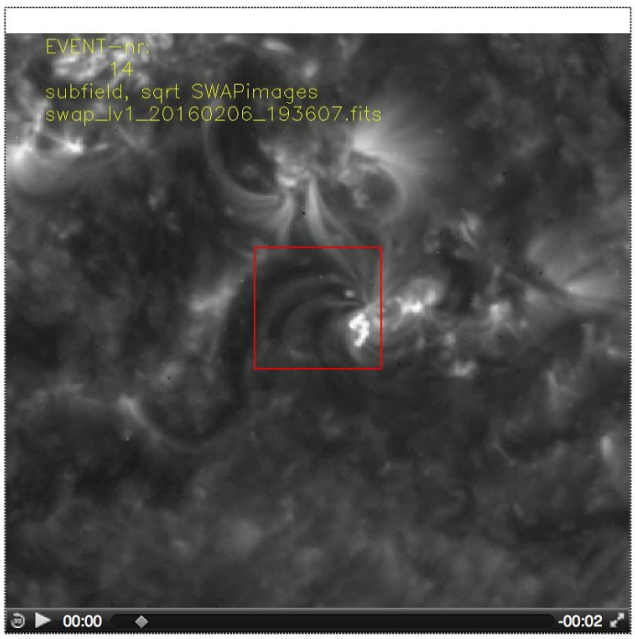


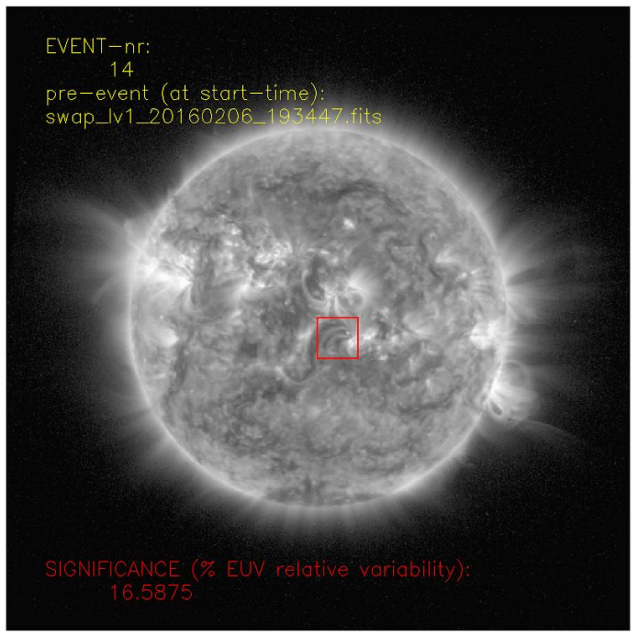


A movie of the event can be found here

2016-Feb-06, AR 2494:

C1.0 peaking around 19:38 UT

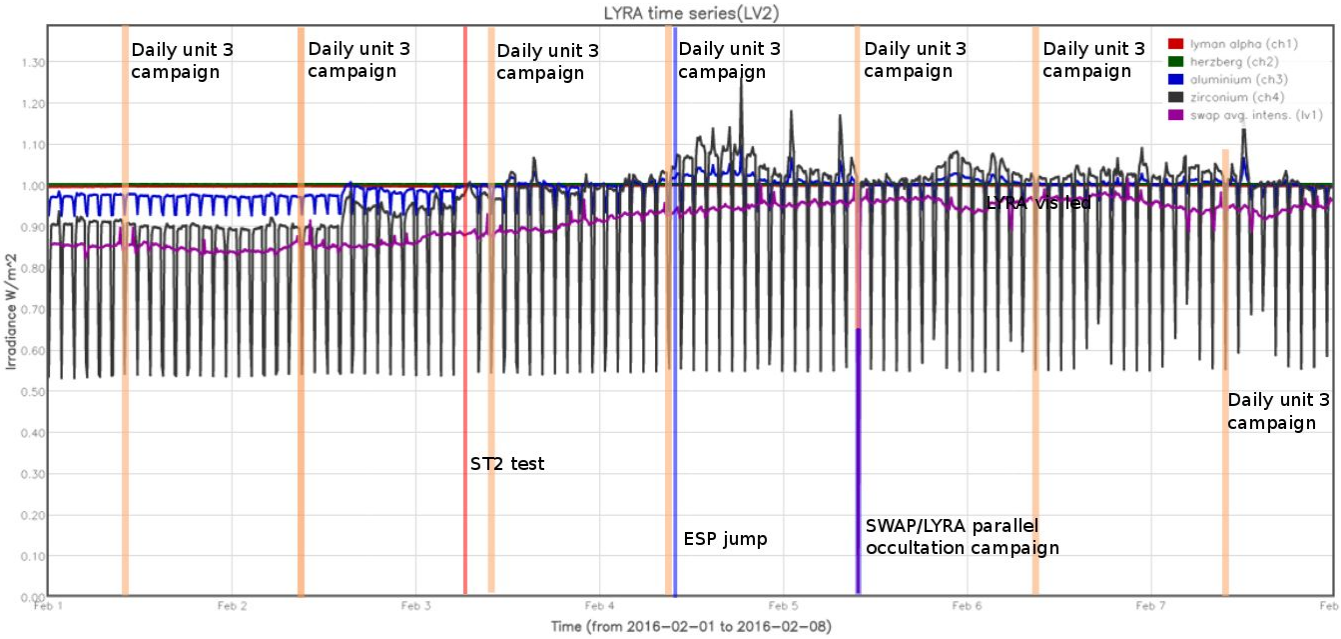




A movie of the event can be found here

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 monthly ESP experiment on 2016-Feb-04
- SWAP/LYRA parallel occultation campaign on 2016-Feb-05

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

- LYRA daily unit 3 occultation campaign on 2016-Feb-01
- LYRA daily unit 3 occultation campaign on 2016-Feb-02
- LYRA daily unit 3 occultation campaign on 2016-Feb-03
- LYRA daily unit 3 occultation campaign on 2016-Feb-04
- SWAP/LYRA parallel occultation campaign on 2016-Feb-05
- LYRA daily unit 3 occultation campaign on 2016-Feb-06
- LYRA daily unit 3 occultation campaign on 2016-Feb-07

The red shaded period corresponds to:

- SWAP and LYRA data gap due to Star Tracker 2 test (both instruments were commanded to IDLE mode) on 2016-Feb-03

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).

- K. Bonte gave a presentation entitled “PROBA2 operations”, at the department of Solar Physics, Royal Observatory of Belgium (ROB).
- At the Osher Lifelong Learning Institute in Huntsville Alabama (USA), L. Rachmeler contributed a lecture 'The dynamic nature of our Sun' to a continuing education course (entitled 'Our place in the Universe'), where she talked about SWAP measurements and showed movies.

Guest Investigator Program

- None

2. LYRA instrument status

Calibration

No calibration campaign this week.

IOS & operations

Monday 01 Feb	Tuesday 02 Feb	Wednesday 03 Feb	Thursday 04 Feb	Friday 05 Feb	Saturday 06 Feb	Sunday 07 Feb
Nominal acquisition + daily U3 LYIOS00524	Nominal acquisition + daily U3 LYIOS00524	Nominal acquisition + daily U3 + ST2 campaign LYIOS00524	Nominal acquisition + daily U3 LYIOS00524	Nominal acquisition + daily U3 LYIOS00525	Nominal acquisition + daily U3 LYIOS00525	Nominal acquisition + daily U3 LYIOS00525

Special operations for LYRA this week:

- Daily U3 occultation campaigns
- IDLE mode for ST2 test on 2016-Feb-03

LYRA detector temperature

LYRA detector 2 temperature globally varied between 50.74 and 54.18 °C.

3. SWAP instrument status

Calibration

No calibration campaign this week.

MCPM errors

The number of MCPM recoverable errors increased from 1174 to 1299.
The number of MCPM unrecoverable errors remained at 0.

IOS & operations

Monday 01 Feb	Tuesday 02 Feb	Wednesday 03 Feb	Thursday 04 Feb	Friday 05 Feb	Saturday 06 Feb	Sunday 07 Feb
Nominal acquisition IOS00625 714 images	Nominal acquisition IOS00625 620 images	Nominal acquisition + ST2 campaign IOS00625 686 images	Nominal acquisition + ESP experiment IOS00625 585 images	Nominal acquisition + occultation campaign IOS00626 645 images	Nominal acquisition IOS00626 568 images	Nominal acquisition IOS00626 585 images

Special operations for SWAP this week:

- IDLE mode for ST2 test on 2016-02-03
- monthly ESP experiment on 2016-02-04
- parallel occultation campaign on 2016-02-05

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between 1.11 and 4.23 °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 19714 to 19778) 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:

- 19736. During pass 19736, no SWAP data was downloaded in order to have the maximum bandwidth available for a special data-dump (for ST2 activation/diagnosis).

Total number of images between 2016 Feb 01 00:00 UT and 2016 Feb 08 00:00 UT: 4403
Highest cadence in this period: 30 seconds
Average cadence in this period: 137.11 seconds
Number of image gaps larger than 300 seconds: 106
Largest data gap: 41.47 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)