


P2SC-ROB-WR-323 - 20160530 Weekly report #323	P2SC Weekly report	
Period covered: Date: Written by: Approved by:	Mon May 30 to Sun Jun 05, 2016 15 Jun 2016 Robbe Vansintjan Matthew West	Royal Observatory of Belgium - PROBA2 Science Center
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1. Science

Solar & Space weather events

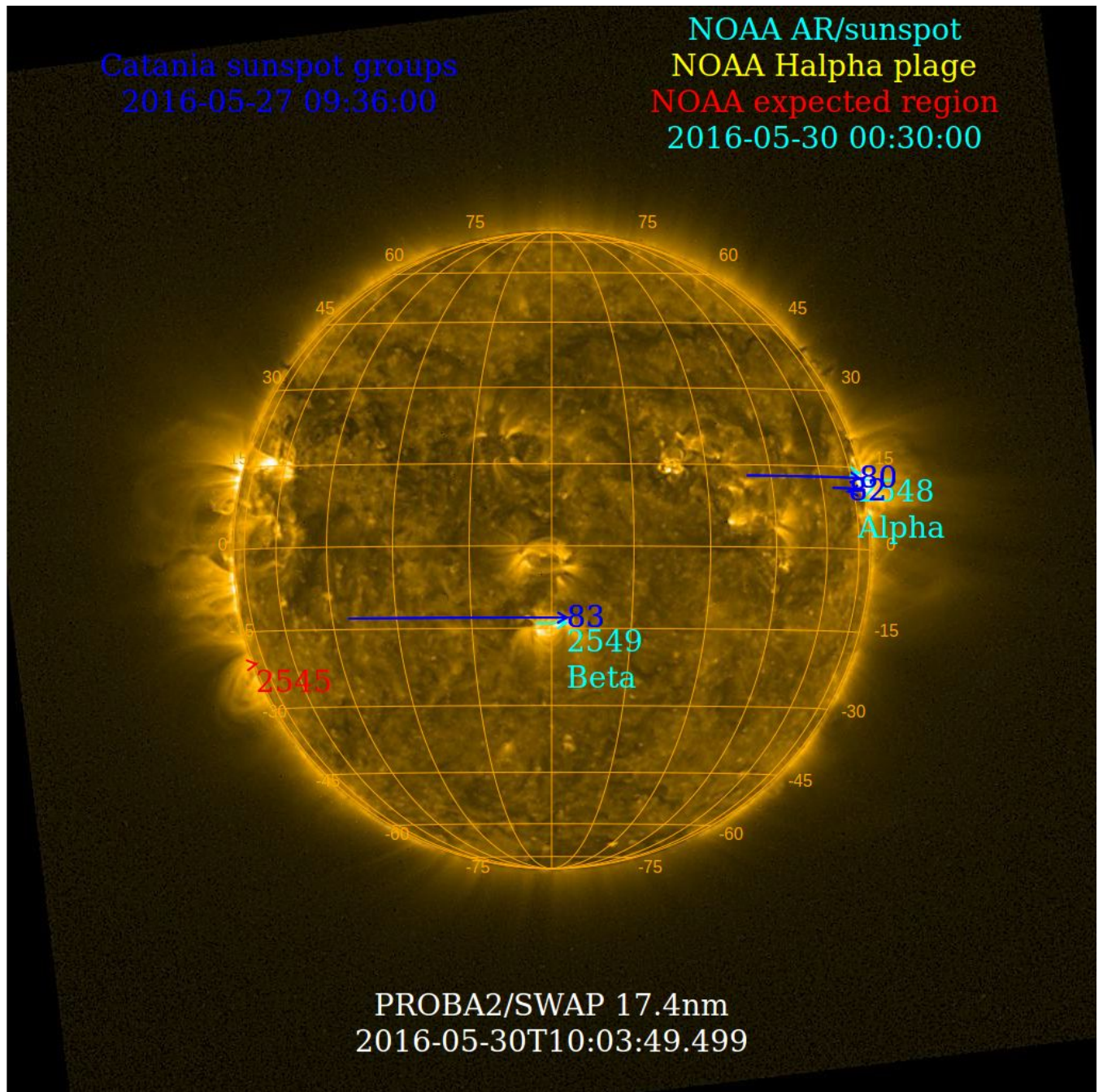
The level of solar activity¹ fluctuated between **very low** and **low** this week.

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

	Monday 30 May	Tuesday 31 May	Wednesday 01 Jun	Thursday 02 Jun	Friday 03 Jun	Saturday 04 Jun	Sunday 05 Jun
Activity	low	very low	very low	very low	very low	very low	very low
Flares	-	-	-	-	-	-	-

¹ See appendix. All timings are given in UT.

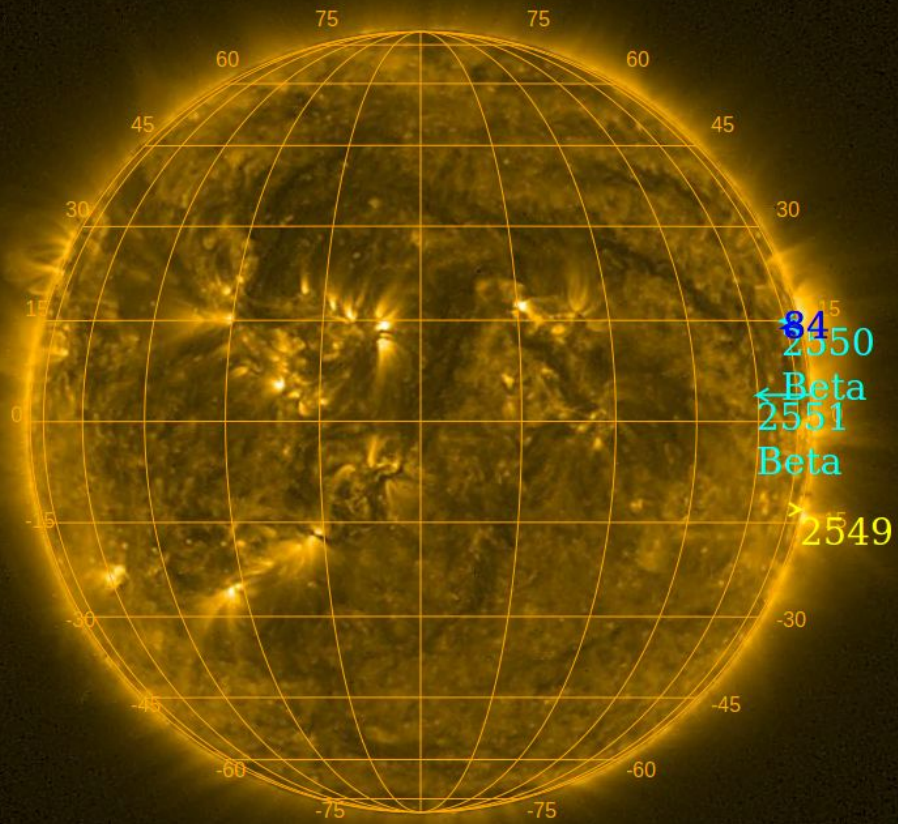
The SWAP images of May 30 and Jun 05 are shown below, with annotated active regions.



<http://sidc.be/soteria/soteria.php>

Catania sunspot groups
2016-06-03 07:06:00

NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2016-06-03 00:30:00



PROBA2/SWAP 17.4nm
2016-06-05T09:59:57.308

Solar Activity

Solar flare activity fluctuated between very low and low during the week.

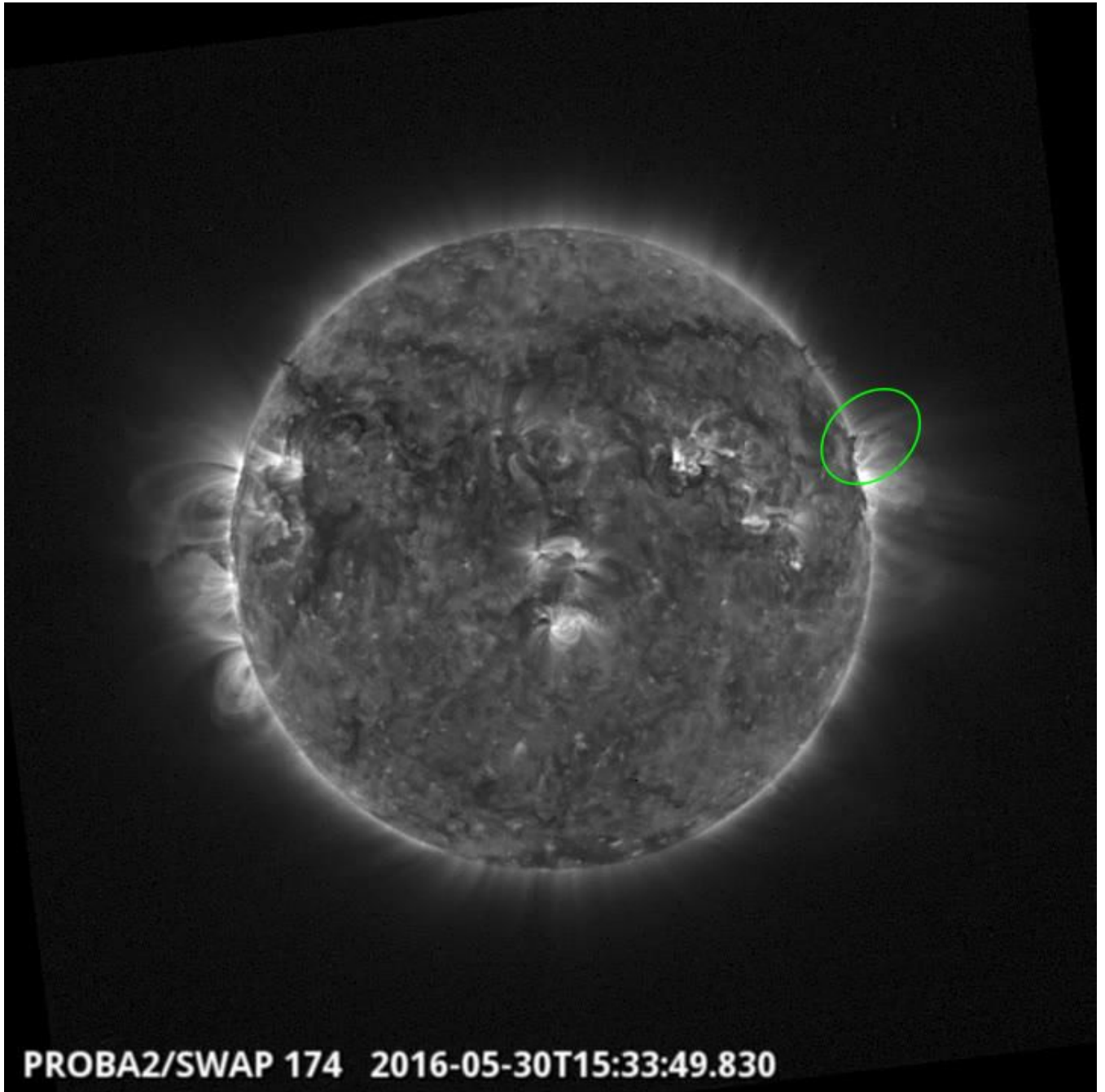
In order to view the activity of this week in more detail, we suggest to go to the following website from which all the daily (normal and difference) movies can be accessed: <http://proba2.oma.be/ssa>

This page also lists the recorded flaring events.

A weekly overview movie can be found [here](#) (SWAP week 323).

Details about some of this week's events, can be found further below.

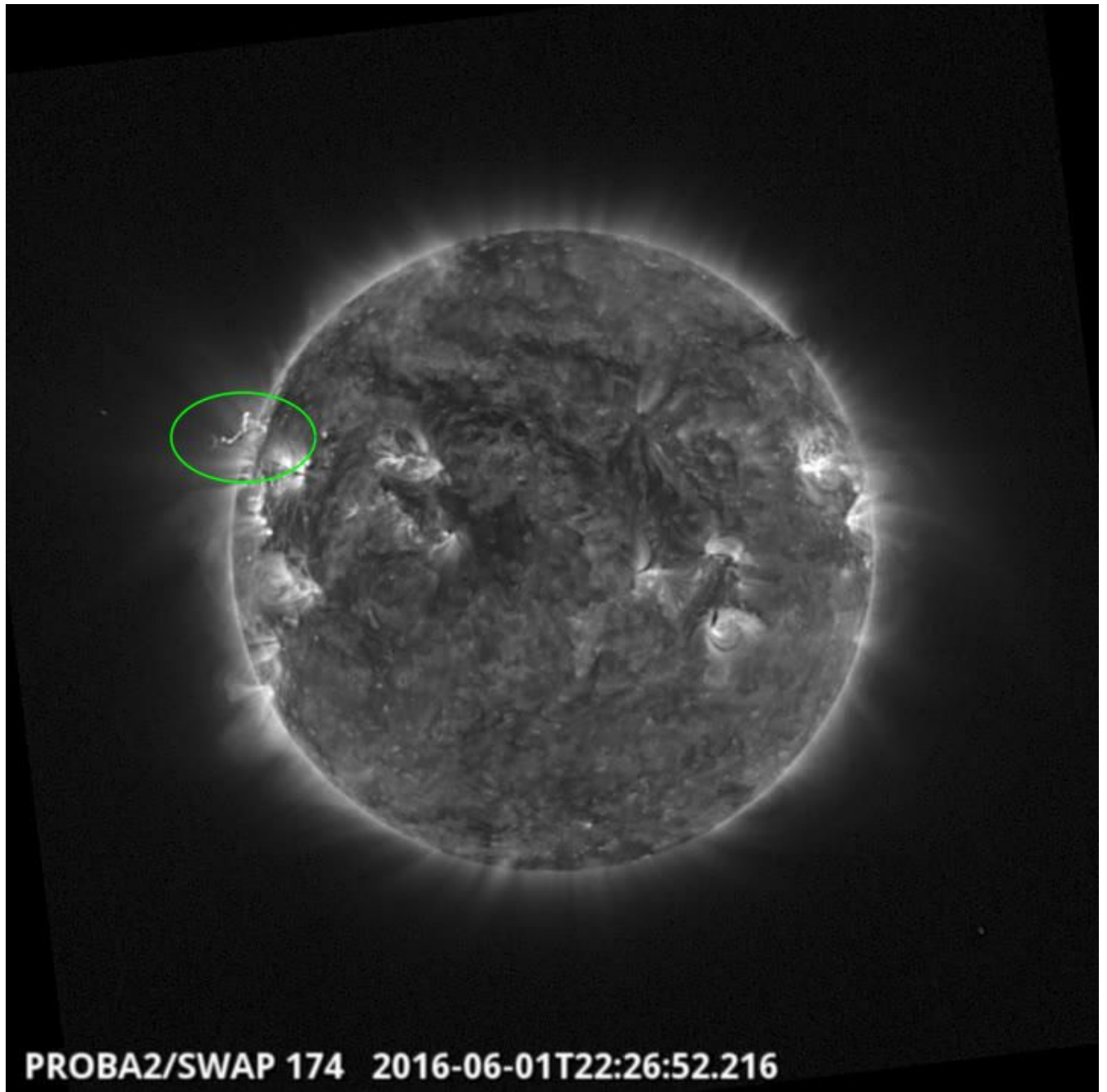
Monday May 30



PROBA2/SWAP 174 2016-05-30T15:33:49.830

An eruption was observed by SWAP on the west limb of the Sun on 2016-May-30 at 15:33 UT
Find a movie of the events [here](#) (SWAP movie)

Wednesday Jun 01

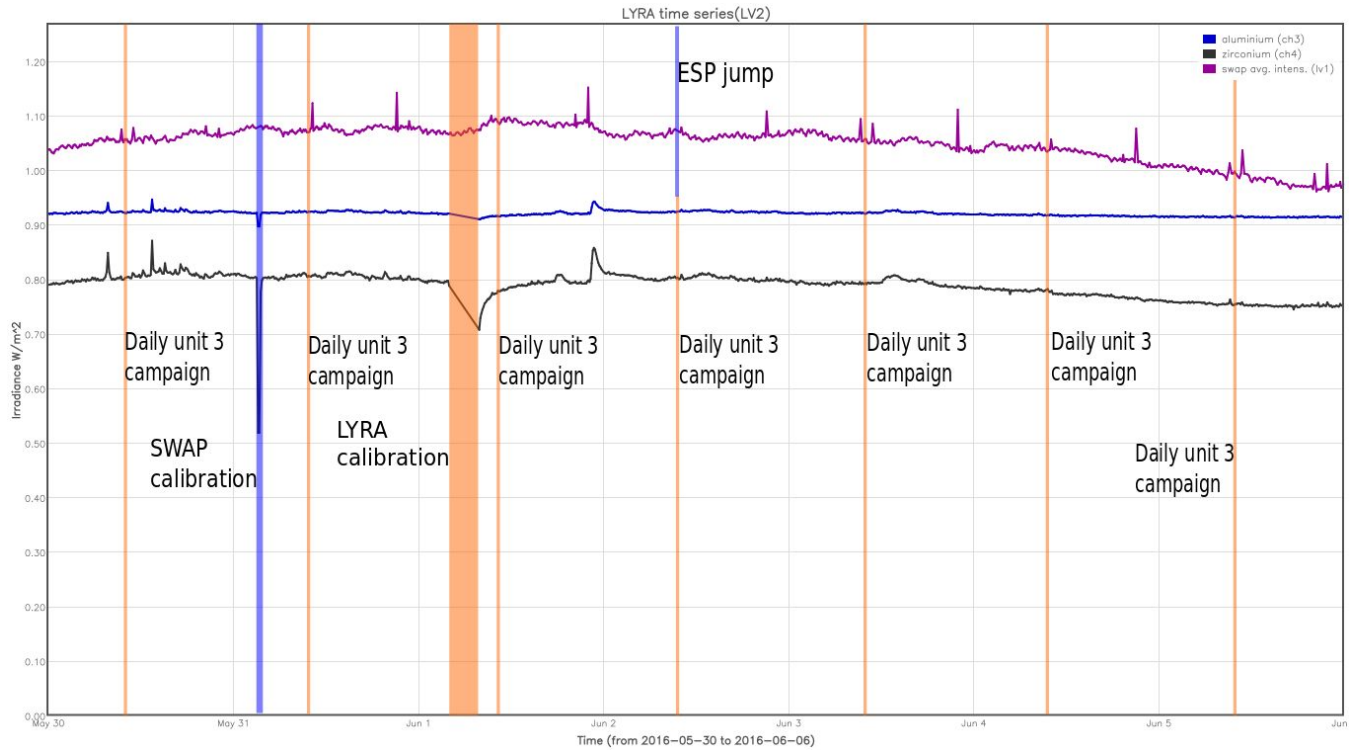


An eruption was observed by SWAP on the east limb of the Sun on 2016-Jun-01 at 22:26 UT
Find a movie of the events [here](#) (SWAP movie)

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



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

- SWAP calibration campaign, 2016-May-31
- ESP jump, 2016-Jun-02

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

- Daily unit 3 campaign, 2016-May-30
- Daily unit 3 campaign, 2016-May-31
- Bi-weekly calibration campaign, 2016-Jun-01
- Daily unit 3 campaign, 2016-Jun-01
- Daily unit 3 campaign, 2016-Jun-02
- Daily unit 3 campaign, 2016-Jun-03
- Daily unit 3 campaign, 2016-Jun-04
- Daily unit 3 campaign, 2016-Jun-05

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>).

The following presentations were presented at SPD 2016 May 31 - Jun 03:

- PhD student Nathalia Alzate presented "Low-Coronal Sources of Stealth CMEs" which discussed SWAP observations.
- Dan Ryan (NASA GSFC) presented "The Effects of Flare Definitions on the Statistics of Derived Flare Distributions" which used LYRA observations.
- Daniel Seaton (NOAA CIRES) presented "The Solar Ultraviolet Imager on GOES-R: Science and Space Weather" which discussed SWAP observations
- Laurel Rachmeler (NASA MSFC) presented "Tracking a large pseudostreamer to pinpoint the southern polar magnetic field reversal", which was based on SWAP analysis.
- Matthew West (Royal Observatory Belgium) presented "Post Flare Giant Arches and Run-Away Reconnection" which relied on SWAP and LYRA observations.
- Recently graduated Elke D'Huys (Royal Observatory Belgium) presented "Observing the Unobservable: Identification and Characterisation of Stealth Coronal Mass Ejections" which used SWAP observations.
- Jay Pasacoff presented "Early Evaluation of the Corona at the 2016 March 9 Total Solar Eclipse", which used SWAP observations
- Sabrina Savage (NASA MSFC) presented "Observational Signatures of Magnetic Reconnection in the Extended Corona", which used SWAP observations

Guest Investigator Program

- None

2. LYRA instrument status

Calibration

Calibration campaign on Wednesday this week.

IOS & operations

Monday 30 May	Tuesday 31 May	Wednesday 01 Jun	Thursday 02 Jun	Friday 03 Jun	Saturday 04 Jun	Sunday 05 Jun
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
LYIOS00551	LYIOS00551 -> LYIOS00552	LYIOS00552	LYIOS00552	LYIOS00553	LYIOS00553	LYIOS00553

The following science campaigns were performed by LYRA:

- daily U3 observations campaign

On 2016-Jun-01

- Bi-weekly calibration campaign

LYRA detector temperature

LYRA detector 2 temperature globally varied between 46.4 and 48.7 °C.

3. SWAP instrument status

Calibration

Calibration campaign on Tuesday this week.

MCPM errors

The number of MCPM recoverable errors increased from 3566 to 3581.

The number of MCPM unrecoverable errors remained at 0.

IOS & operations

Monday 30 May	Tuesday 31 May	Wednesday 01 Jun	Thursday 02 Jun	Friday 03 Jun	Saturday 04 Jun	Sunday 05 Jun
Nominal acquisition	Nominal acquisition + calibration	Nominal acquisition	Nominal acquisition + ESP jump	Nominal acquisition	Nominal acquisition	Nominal acquisition
IOS00647 569 images	IOS00647 631 images	IOS00647 626 images	IOS00647 688 images	IOS00647 676 images	IOS00647 696 images	IOS00647 549 images

Special operations for SWAP, this week:

On 2016-May-31

- Bi-weekly calibration campaign

On 2016-Jun-02

- ESP jump

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -0.96 and -0.01 °C.

4. PROBA2 Science Center Status

The main operator is Robbe Vansintjan.

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 20799 to 20861) 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 2016 May 30 00:00 UT and 2016 Jun 06 00:00 UT: 4474

Highest cadence in this period: 30 seconds

Average cadence in this period: 135.20 seconds

Number of image gaps larger than 300 seconds: 164

Largest data gap: 33.67 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)