P2SC-ROB-WR-182- 20130916 Weekly report #182	**P2SC Weekly Report**	
Period covered: Date: Written by: Approved by:	Mon Sep 16 to Sun Sep 22, 2013 25 Sep 2013 Erik Pylyser Matthew West	Royal Observatory of Belgium - PROBA2 Science Center
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1. Science

Solar & Space weather events

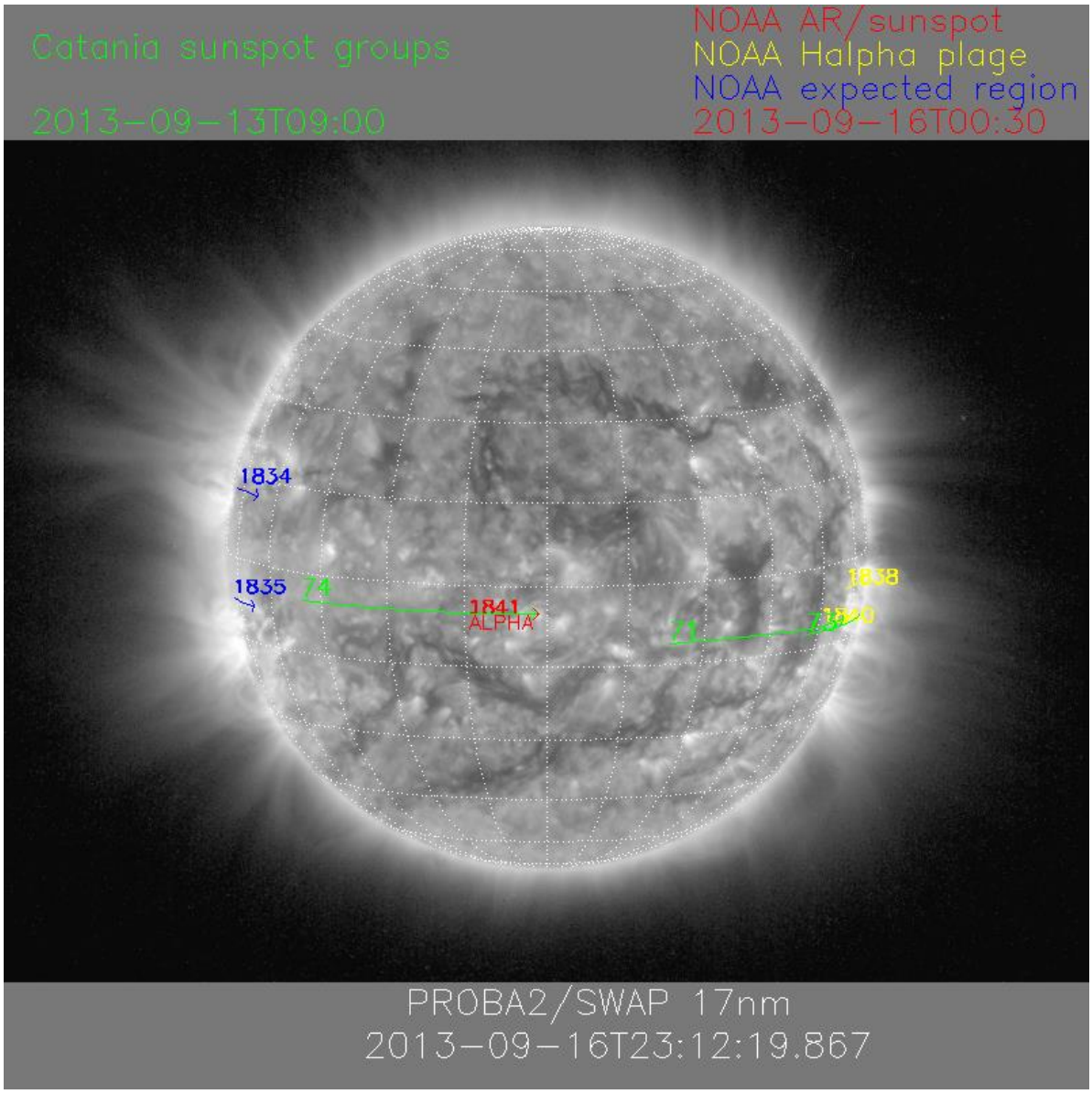
The level of solar activity[1] evolved from **very low to low** until Sunday, when activity decreased back to **very low**.

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

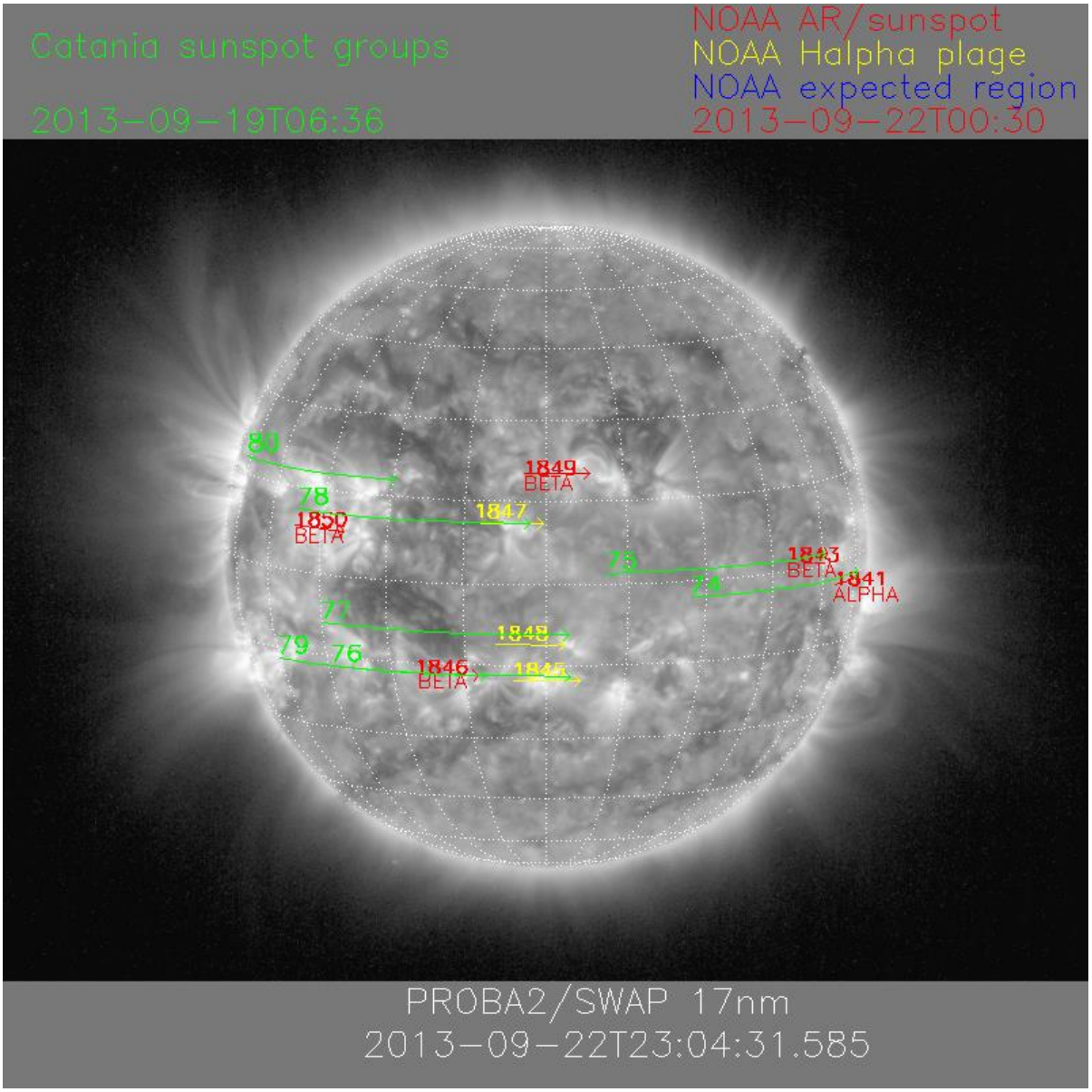
	Monday 16 Sep	Tuesday 17 Sep	Wednesday 18 Sep	Thursday 19 Sep	Friday 20 Sep	Saturday 21 Sep	Sunday 22 Sep
Activity	very low	very low	low	low	low	low	very low
Flares	-	-	-	-	-	-	-

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

The SWAP images of Sep 16 and Sep 22 are shown below, with annotated active regions.



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


Catania sunspot groups
2013-09-19T06:36
NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2013-09-22T00:30
80
1849
BETA
78
1847
1850
BETA
73
1843
BETA
74
1841
ALPHA
77
1848
79
76
1846
BETA
1845
PROBA2/SWAP 17nm
2013-09-22T23:04:31.585

Solar Activity
Solar (flaring) activity evolved from very low to low, until Saturday and back to very low on Sunday.
In order to view the activity of this week in more detail, we suggest going 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.

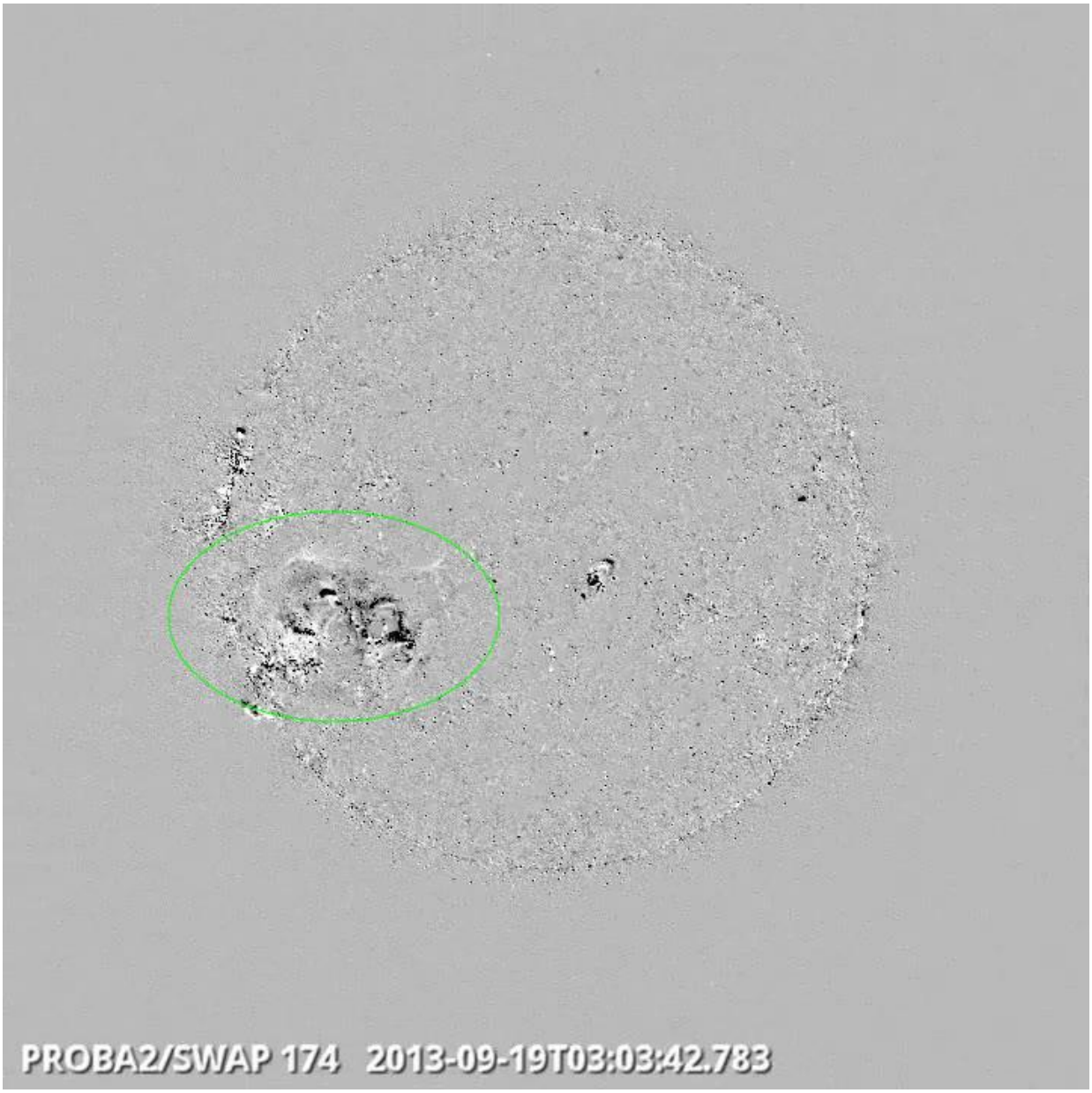
A weekly overview movie can be found here (SWAP174; in-house movie).

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

Wednesday 18th Sep:

Eruption on South East Limb @ 03:07 - SWAP difference image

Thursday 19th Sep:



Prominence Eruption in South East Quadrant @ 03:03 - SWAP difference image

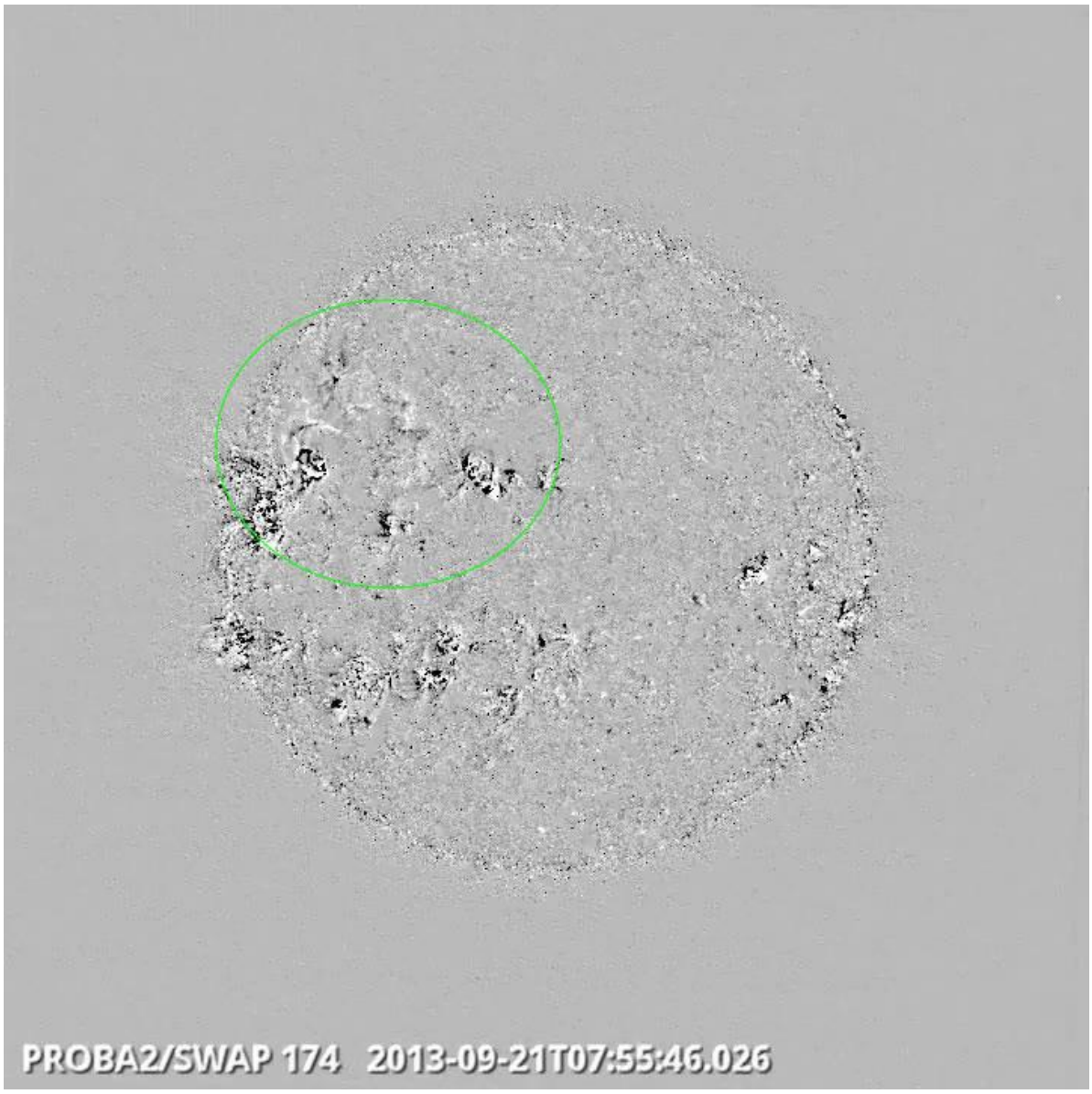
Find a movie of the events **here** (SWAP difference movie)

Friday Sep 20th:

Prominence Eruption on South East Limb @ 21:44 - SWAP difference image

Find a movie of the event **here** (SWAP difference movie)

Saturday Sep 21th:



Eruption in North East Quadrant @ 07:55 - SWAP difference image

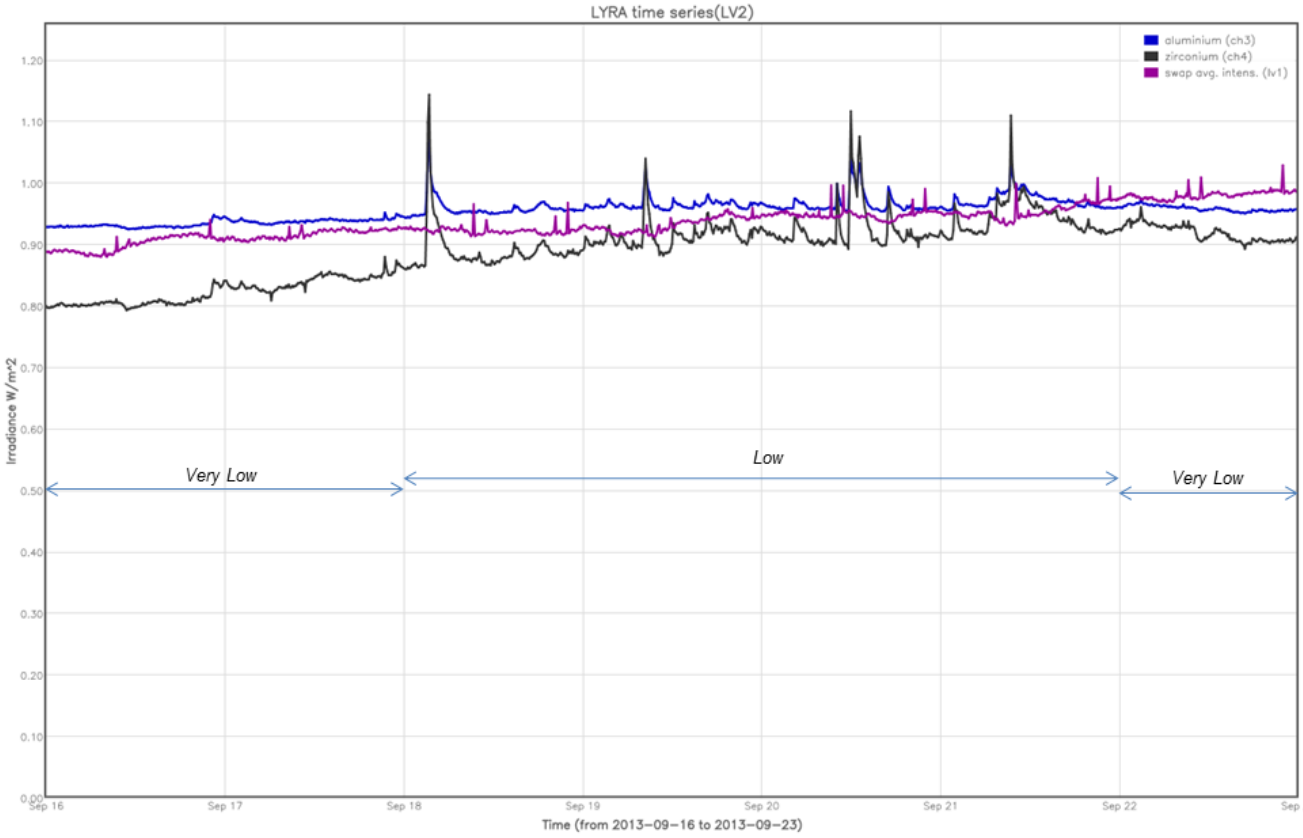
Find a movie of a sequence of events leading to the eruption **here** (SWAP difference movie)

Sunday Sep 22th:

Prominence Eruption on South West limb @ 04:45 - SWAP difference image
Find a movie of this event **here** (SWAP difference movie)

An overview of the weekly LYRA & SWAP data is provided below:
The following curves are visible:

- black: Zirconium Channel LYRA Unit 2
- blue: Aluminum Channel of LYRA Unit 2
- purple: SWAVINT (solar intensity derived from ‘integrated’ SWAP images)



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

- None

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

- None

The red shaded period corresponds to:

- None

Activity level periods are indicated per day by horizontal arrows.

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).

'Automation and Flexibility at the PROBA2 Science Centre'; David Berghmans et al; SCIENCE OPERATIONS 2013: "Working Together in Support of Science", An ESA/ESO Conference ESAC Madrid / Spain, 10 - 13 September 2013.

Several contributions by Dan Seaton and Laurel Rachmeler to the 'Space Science Training Week 2013: Data Driven Modeling and Forecasting'; http://wis.kuleuven.be/CHARM/events/school/SSTW2013/program.

Guest Investigator Program

- None

2. LYRA instrument status

Calibration

No calibration this week.

IOS & operations

Monday 16 Sep	Tuesday 17 Sep	Wednesday 18 Sep	Thursday 19 Sep	Friday 20 Sep	Saturday 21 Sep	Sunday 22 Sep
Nominal acquisition + daily U3 LYIOS00341	Nominal acquisition + daily U3 LYIOS00341	Nominal acquisition + daily U3 LYIOS00341	Nominal acquisition + daily U3 LYIOS00341	Nominal acquisition + daily U3 LYIOS00341	Nominal acquisition + daily U3 LYIOS00341	Nominal acquisition + daily U3 LYIOS00341

The following science campaigns were performed by LYRA:

- daily U3 observations campaign

LYRA detector temperature

LYRA detector 2 temperature globally varied between 47.54 and 48.8 degrees C, taking into account the daily U3 activation periods; the latter result in a temperature increase of about 0.6 degrees C. Temperature increases steadily and noticeably (seasonal effect).

3. SWAP instrument status

Calibration

No calibration this week.

MCPM errors

The number of MCPM recoverable errors increased from 12082 to 12360.
The number of MCPM unrecoverable errors remained at 1127.

IOS & operations

Monday 16 Sep	Tuesday 17 Sep	Wednesday 18 Sep	Thursday 19 Sep	Friday 20 Sep	Saturday 21 Sep	Sunday 22 Sep
Nominal acquisition IOS00475 664 images	Nominal acquisition IOS00475 596 images	Nominal acquisition IOS00475 578 images	Nominal acquisition IOS00475 606 images	Nominal acquisition IOS00475 547 images	Nominal acquisition IOS00475 523 images	Nominal acquisition IOS00475 544 images

Special operations for SWAP, this week:

- None

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -1.04 and 0.06 degrees C.
Temperature increases steadily and noticeably (seasonal effect).

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 12026 to 12084) 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 2013 Sep 16 0UT and 2013 Sep 23 0UT: 4091
Highest cadence in this period: 130 seconds
Average cadence in this period: 147.80 seconds
Number of image gaps larger than 300 seconds: 1
Largest data gap: 6.50 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
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)