P2SC-ROB-WR-135-20121022 Weekly report #135	**P2SC Weekly report**	
Period covered: Date: Written by: Approved by:	Mon Oct 22 to Sun Oct 28, 2012 31 Oct 2012 Erik Pylyser David Berghmans	Royal Observatory of Belgium PROBA2 Science Center
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1. Science

Solar & Space weather events

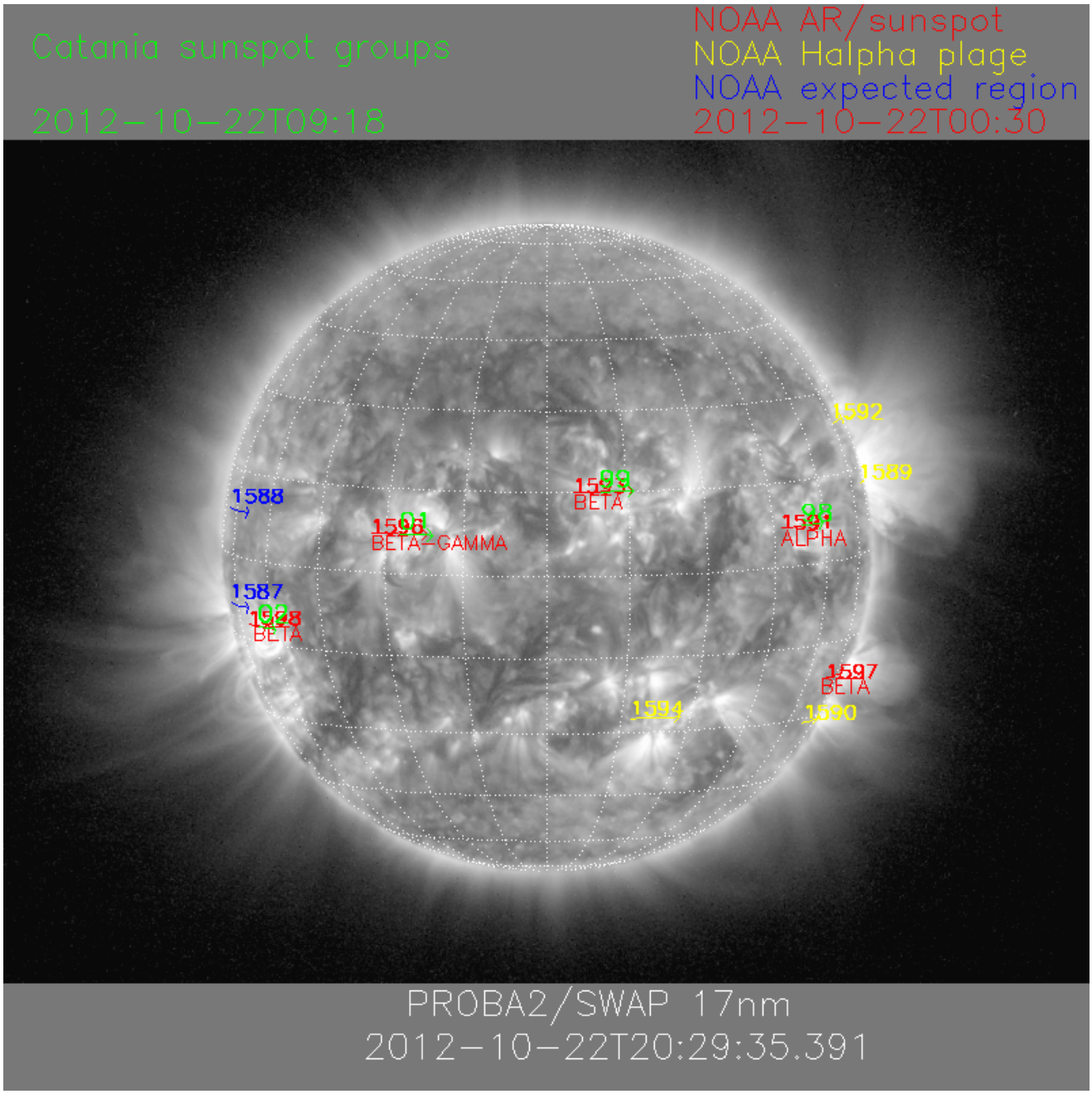
Overview

The level of solar activity[1] this week and associated M- and X-flares:

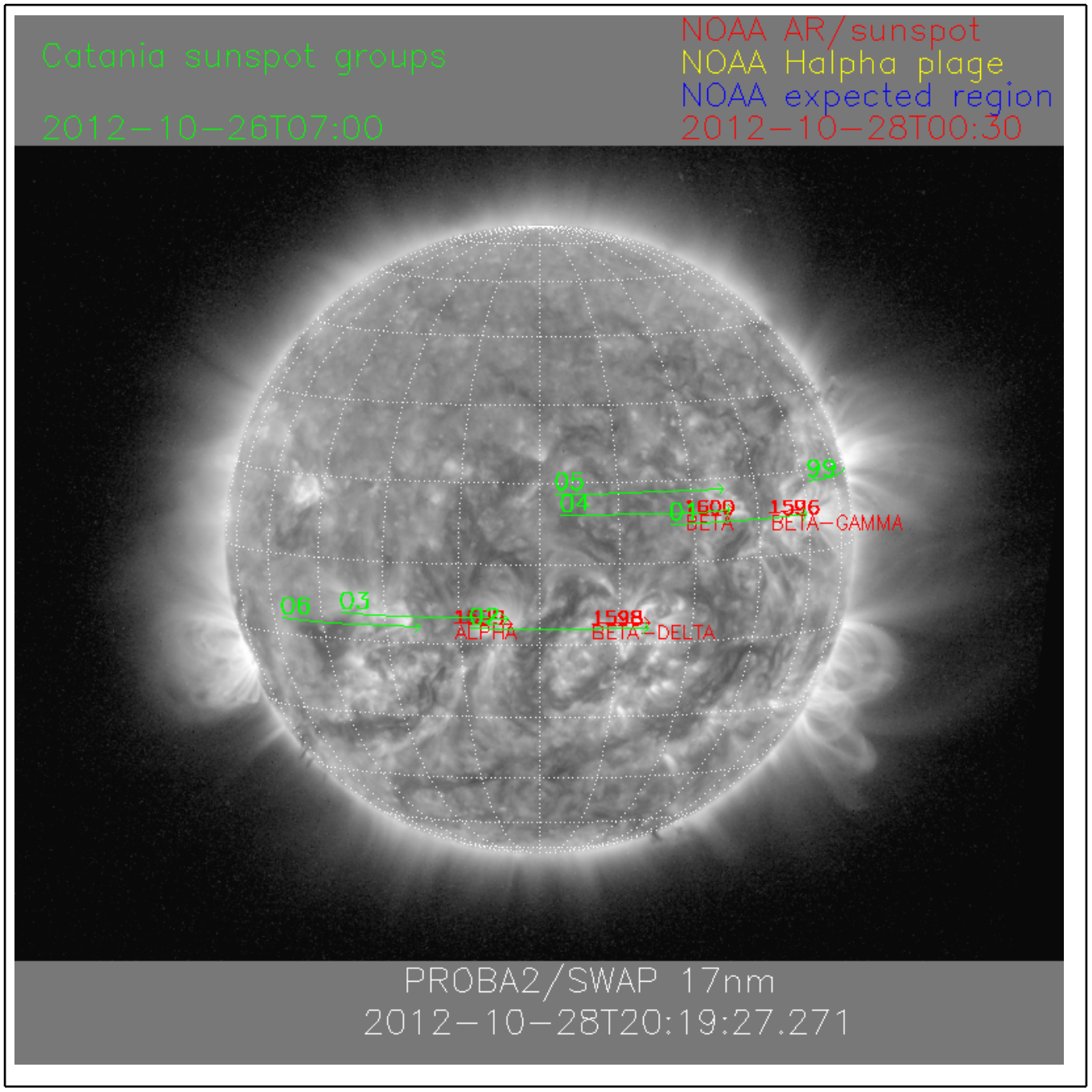
	Monday 22 Oct	Tuesday 23 Oct	Wednesday 24 Oct	Thursday 25 Oct	Friday 26 Oct	Saturday 27 Oct	Sunday 28 Oct
Activity	moderate	high	low	low	low	low	low
Flares	**M5.0@18:38**	**X1.8@03:13**	-	-	-	-	-

The SWAP images of Oct 22 and Oct 28 are shown below, with annotated active regions.

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



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


Catania sunspot groups
2012-10-26T07:00
NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2012-10-28T00:30
05
04
99
1600
BETA
1596
BETA-GAMMA
06
03
1601
ALPHA
1598
BETA-DELTA
PROBA2/SWAP 17nm
2012-10-28T20:19:27.271

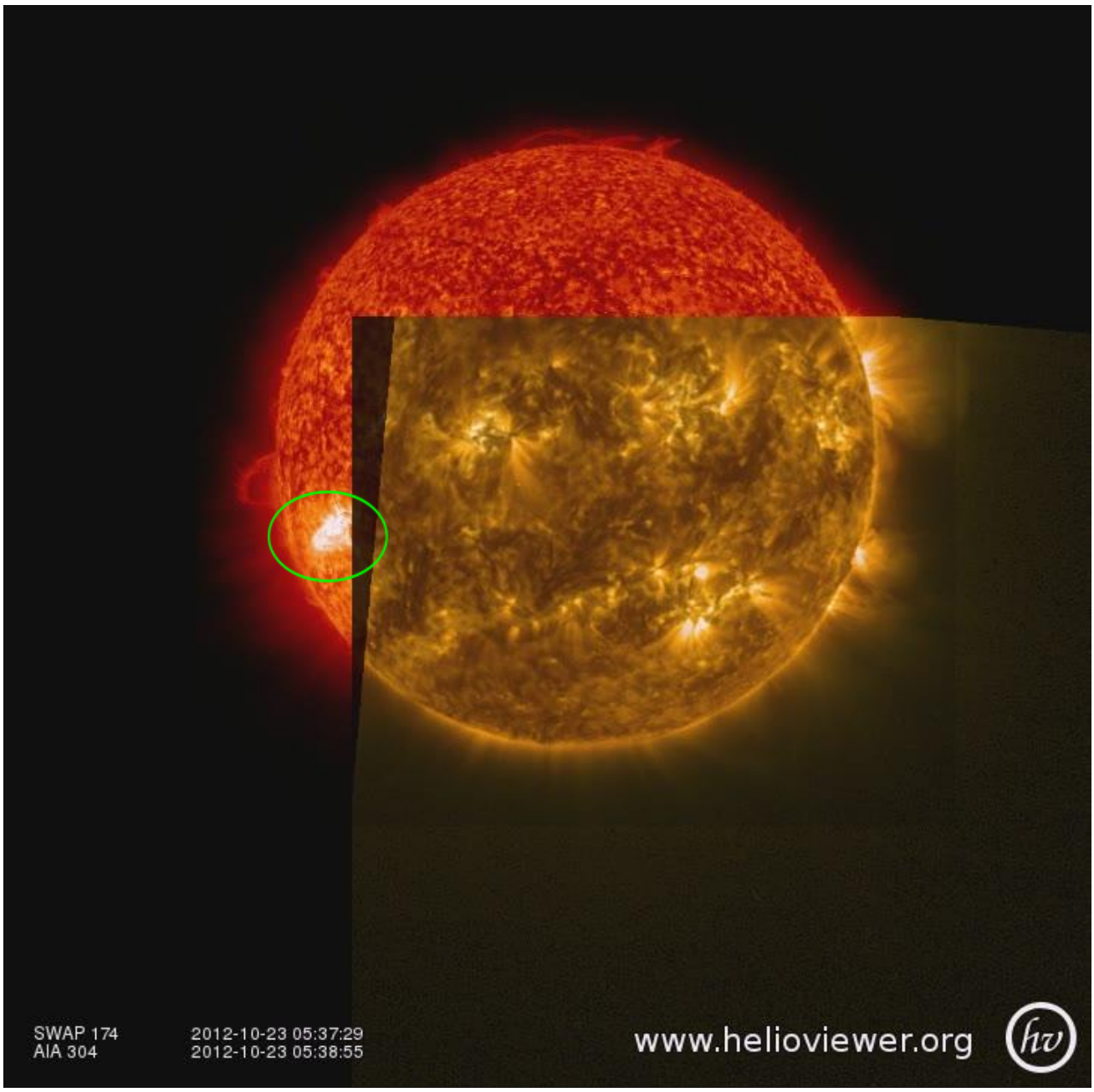
Solar Activity

Early this week, the Sun's activity continued on its elan from the week-end.
An M5.0 flare was recorded on Monday (*Moderate* activity) and an X1.8 flare on Tuesday (*High* activity). Activity went down to *Low* and remained low for the rest of the week.

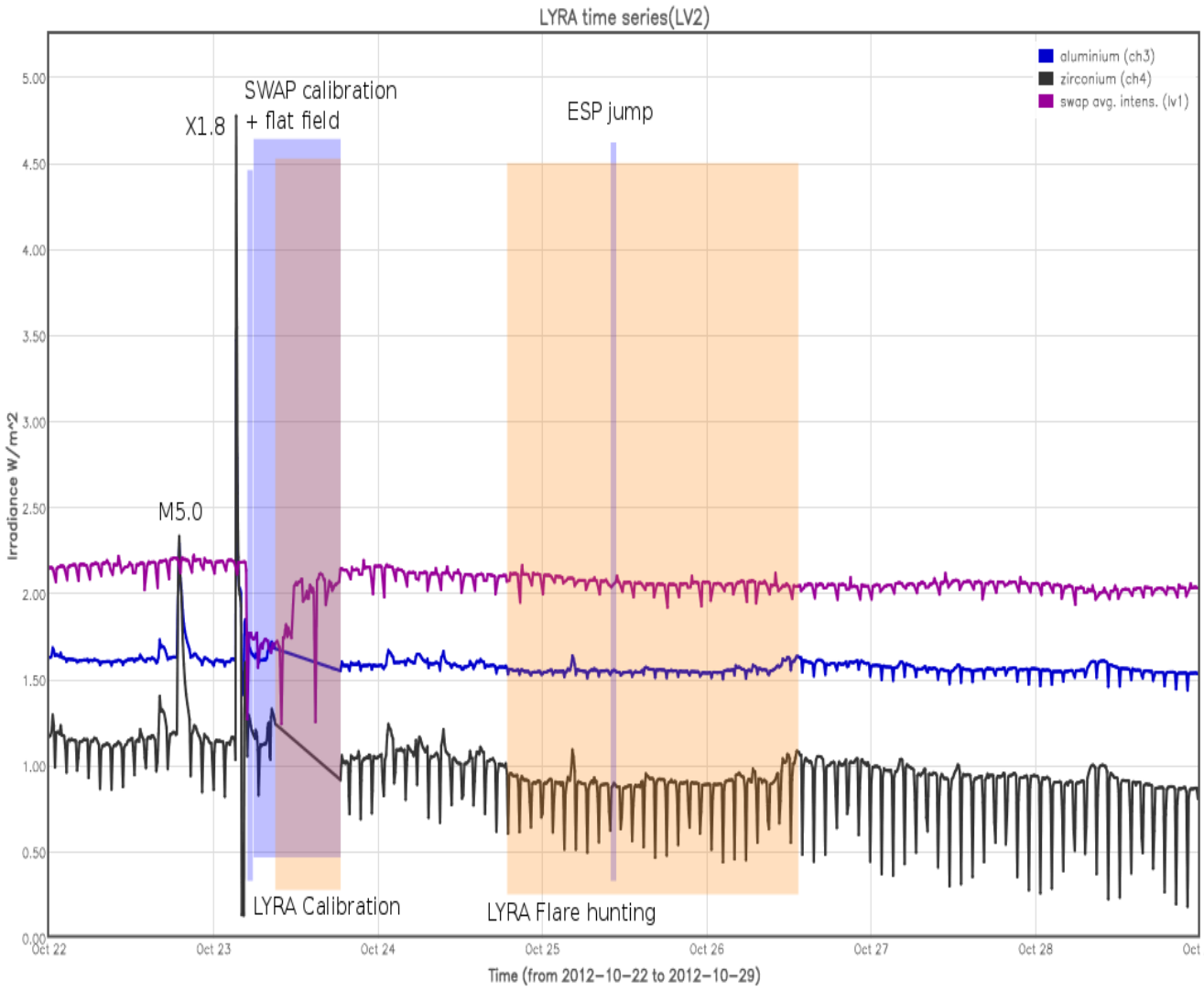
In order to view the activity of this week in more detail, we suggest to go to the following website from which all the daily (normal and difference) movies can be accessed: http://proba2.oma.be/ssa.
This page also lists the recorded flaring events.

October 22nd
An M5.0 flare occurred in AR 11598 at 18:38. It was a short event (< 25 mins) and visually unimpressive.

October 23rd
AR11598 generated an X1.8 flare at 03:13. Again, it is a very short event (8 mins), followed by the generation of coronal magnetic arches. Unfortunately, part of the latter was not observed by SWAP due to an on-going (off-pointing) campaign.
A (HelioViewer SWAP174/AIA304) movie of the X1.8 occurrence (as well as the off-point campaign) can be found here.
Below is an image extracted from the 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:
- SWAP calibration on Tuesday
- flat field campaign on Tuesday (off-pointing)
- ESP experiment on Thursday

The orange shaded periods correspond to, from left to right:
- LYRA calibration on Tuesday
- flare hunting campaign from Oct 24th to Oct 25th

The red shaded period corresponds to:
- None

Outreach, papers, presentations, etc.

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 Programme

Currently there are no guest investigators at P2SC.

2. LYRA instrument status

Calibration

Calibration on Tuesday (in parallel with SWAP calibration and flat-field campaign).

IOS & operations

Monday 22 Oct	Tuesday 23 Oct	Wednesday 24 Oct	Thursday 25 Oct	Friday 26 Oct	Saturday 27 Oct	Sunday 28 Oct
Nominal acquisition + daily U3 LYIOS00274	Nominal acquisition + daily U3 + calibration LYIOS00275	Nominal acquisition + daily U3 + flare hunting campaign LYIOS00276 -> 277->278	Nominal acquisition + daily U3 LYIOS00278 -> 279	Nominal acquisition + daily U3 LYIOS00279	Nominal acquisition+ daily U3 LYIOS00279	Nominal acquisition+ daily U3 LYIOS00279

- Daily U3 campaign
- Flare hunting with U3, from:
    1. Oct 24th, 12:10 until Oct 25th, 13:20. (IOS 278)
    2. extension to Oct 26th, 12:20 (IOS 279) Note: Only dark data was acquired with unit 3 due to a door that was closed instead of remaining open.

LYRA detector temperature

LYRA detector 2 temperature fluctuated between 46.1 and 49.6 degrees, including the daily U3 activation periods. The latter result in a temperature increase of about 0.4 degrees.

To be explored

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3. SWAP instrument status

Calibration

Calibration on Tuesday.

MCPM errors

The number of MCPM recoverable errors increased from 4292 to 4489.

The number of MCPM unrecoverable errors increased from 931 to 1127 between 2012-10-22T00:00:00 and 2012-10-23T03:43:26. After this period the number of MCPM unrecoverable errors remained stable at 1127. It is assumed that normal operations have overwritten the problematic memory locations with new data and valid checksums.

IOS & operations

Monday 22 Oct	Tuesday 23 Oct	Wednesday 24 Oct	Thursday 25 Oct	Friday 26 Oct	Saturday 27 Oct	Sunday 28 Oct
Nominal acquisition IOS00418 546 images	Nominal acquisition + calibration + off-point campaign IOS00419 625 images	Nominal acquisition IOS00419 543 images	Nominal acquisition + ESP IOS00419 572 images	Nominal acquisition IOS00419 636 images	Nominal acquisition IOS00419 598 images	Nominal acquisition IOS00419 503 images

Special operations for SWAP, this week:
- Occultation jumps.
- Flat Field campaign on 23rd (off-pointing)
- ESP jump

SWAP detector temperature

The SWAP Cold Finger Temperature, under nominal operations, increased generally, fluctuating between 1.35 and 2.79 degrees Celsius.

LAR delays were missed on the following occasions:
- None

causing each time a temporary increase of temperature of an estimated 0.6-0.7 degrees.

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:
LYCLOG tool added to LMAT-UI.
Adapted severity level for MCPM_NB_UNRECOV_ER.

5. Data reception & discussions with MOC

Passes

The delivery of the passes for this week (passes 9269 to 9330) was nominal, except for:
- None

On Wednesday 24th, IOS LYIOS277 failed to uplink during pass 9291, due to a failure to establish the uplink.

Data coverage HK

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

Data coverage SWAP

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

Total number of images between 2012 Oct 22 0UT and 2012 Oct 29 0UT: 4023
Highest cadence in this period: 30 seconds
Average cadence in this period: 150.35 seconds
Number of image gaps larger than 300 seconds: 111
Largest data gap: 32.17 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
FITS	Flexible Image Transport System
FOV	Field Of View FPA Focal Plane Assembly
FPGA	Field Programmable Gate Arrays
GPS	Global Positioning System
HAS	High Accuracy Star tracker
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
OBET	On board Elapsed Time
OBSW	On board Software
PE	Proximity Electronics
PI	Principal Investigator
P2SC	PROBA2 Science Center
ROB	Royal Observatory of Belgium
SAA	South Atlantic Anomaly
SEU	Single Event Upset

SOHO	Solar and Heliospheric Observatory
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?)