


P2SC-ROB-WR-217- 20140519 Weekly report #217	<b>P2SC Weekly report</b>	
Period covered: Date:  Written by: Approved by:	Mon May 19 to Sun May 25, 2014 28 May 2014  Erik Pylyser Matthew West	Royal Observatory of Belgium - PROBA2 Science Center
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## 1. Science

### Solar & Space weather events

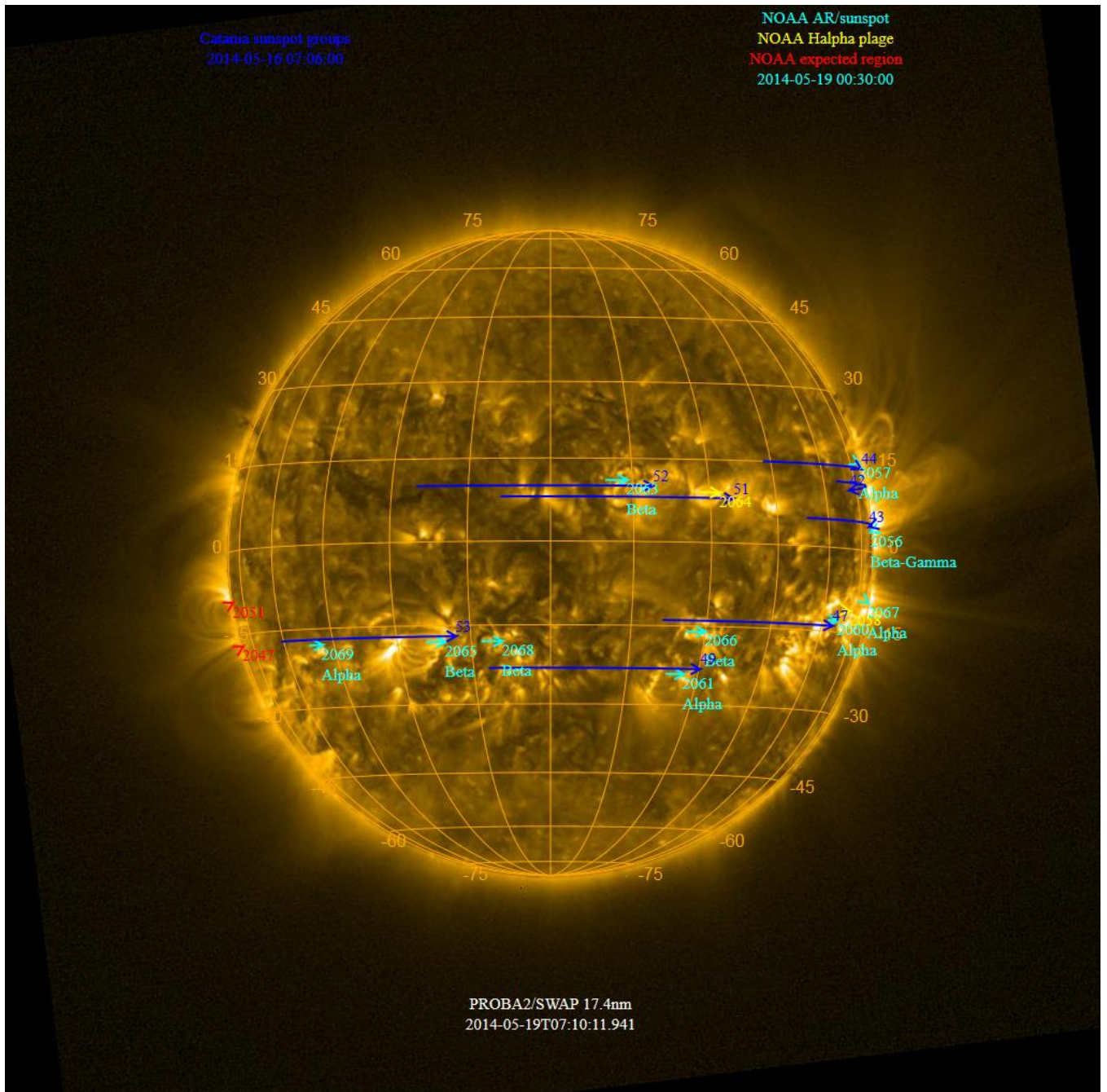
This week, the level of solar activity<sup>1</sup> was generally **low**, except for Saturday, **when a M1.3 flare occurred**.

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

	Monday 19 May	Tuesday 20 May	Wednesday 21 May	Thursday 22 May	Friday 23 May	Saturday 24 May	Sunday 25 May
Activity	low	low	low	low	low	moderate	low
Flares	-	-	-	-	-	<b>M1.3@18:26</b>	-

<sup>1</sup> See appendix. All timings are given in UT.

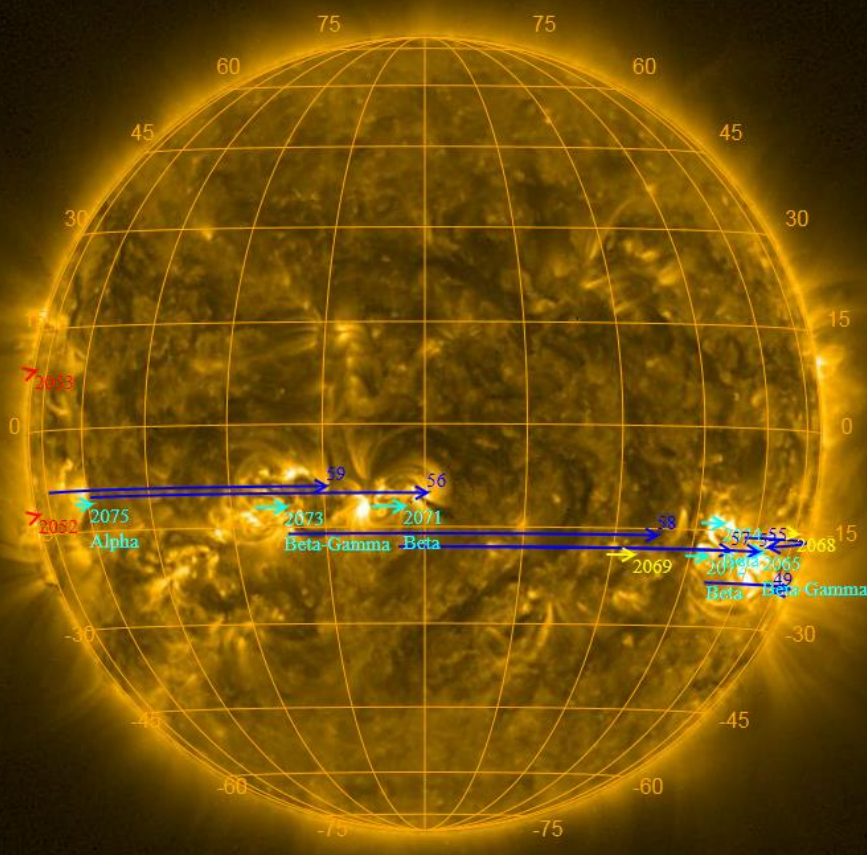
The SWAP images of May 19 and May 25 are shown below, with annotated active regions.



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

Catania sunspot groups  
2014-05-21 07:06:00

NOAA AR/sunspot  
NOAA Halpha plage  
NOAA expected region  
2014-05-25 00:30:00



PROBA2/SWAP 17.4nm  
2014-05-25T08:40:27.721



## Solar Activity

Solar flare activity was low this week, except on Saturday, when it was moderate.

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](#) (SWAP week 217).

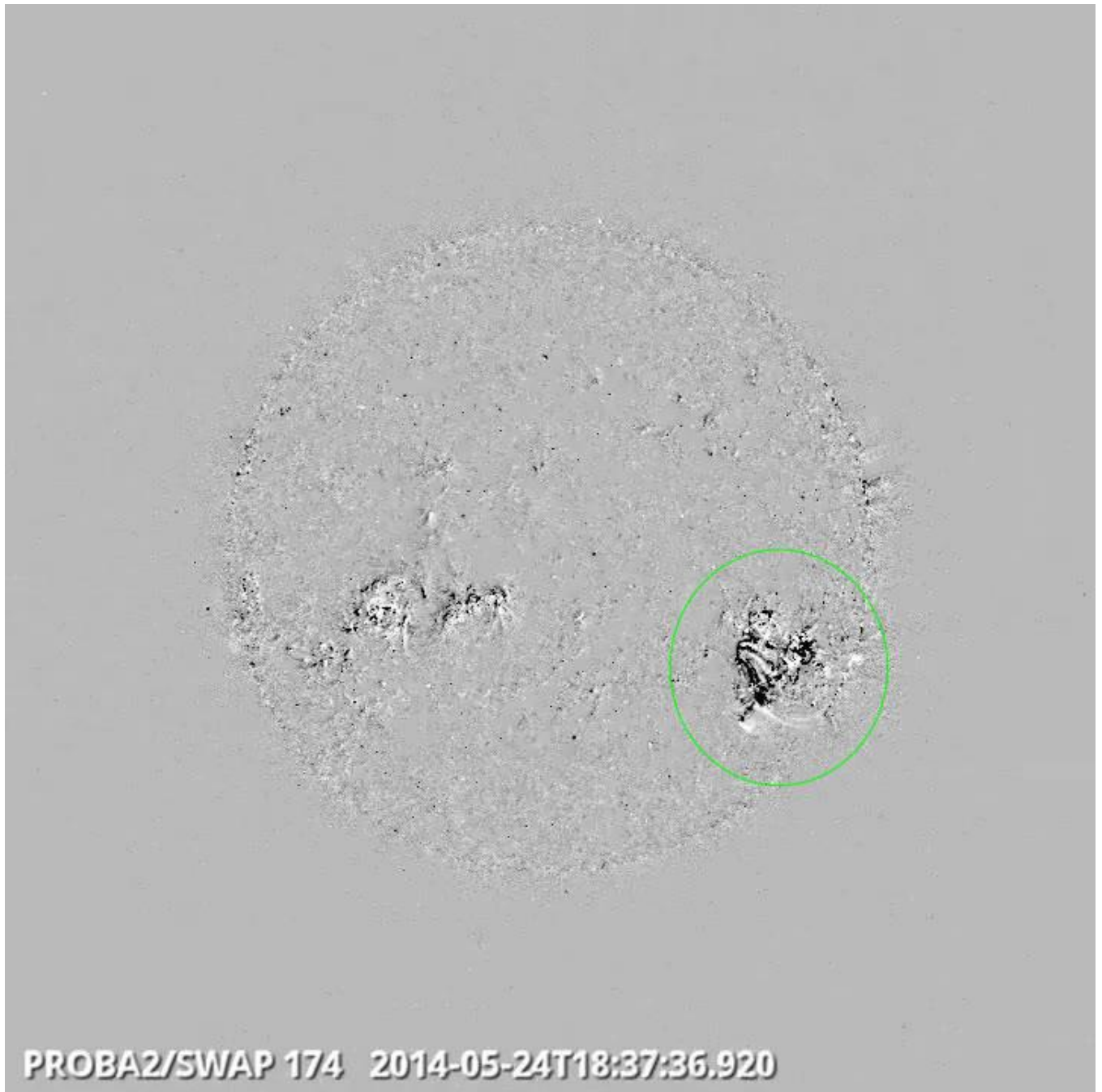
Details about some of this week's events can be found further below.

### Wednesday May 21



**Eruption on-disk, Center, between North & South @ 19:37 - SWAP difference image**

Saturday May 24

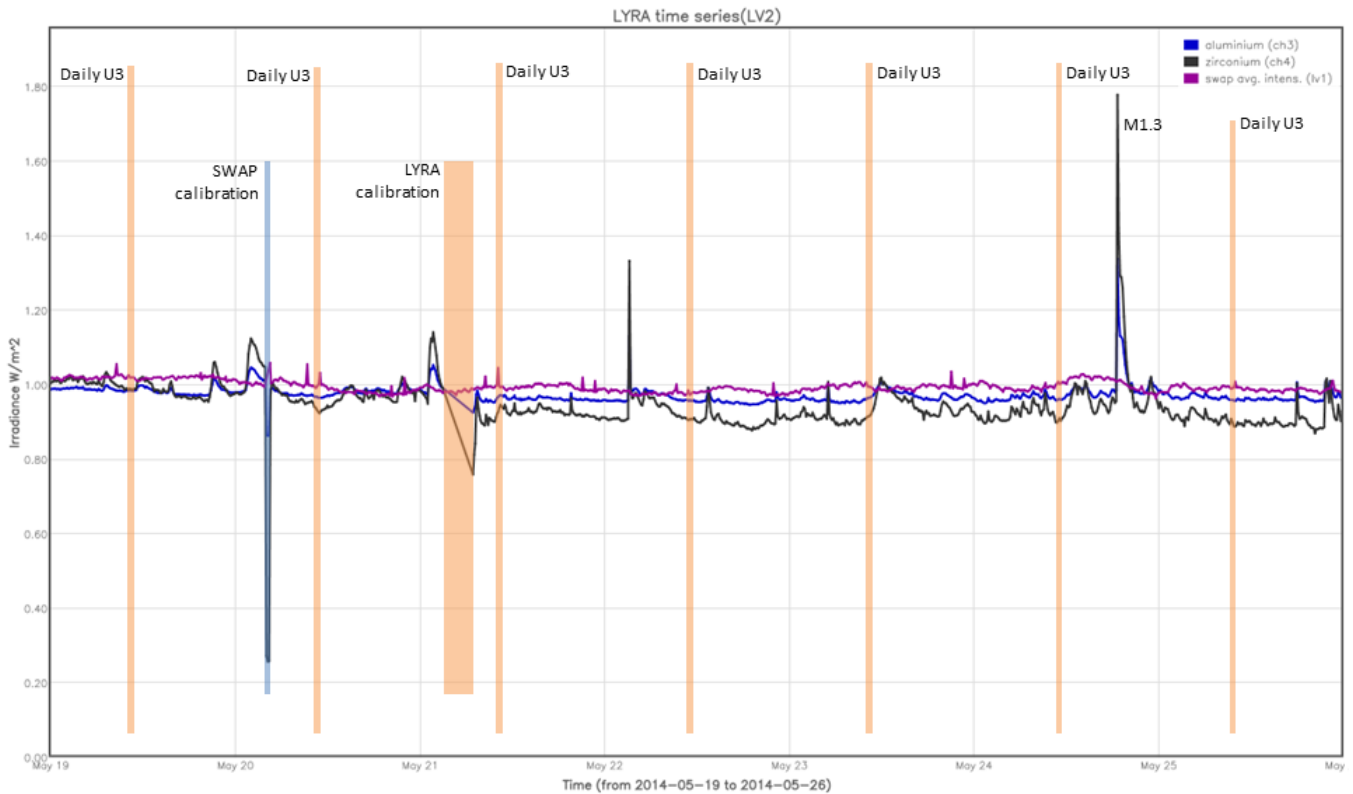


**M1.3 flare in South West Quadrant @ 18:37 - SWAP difference image**

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



The (LYRA related) orange shaded periods correspond to, from left to right (see also section 2):

- Daily LYRA unit 3 campaigns (2 consecutive days)
- Calibration campaign on Wednesday morning
- Daily LYRA unit 3 campaigns (5 consecutive days)

The (SWAP related) blue shaded periods correspond to, from left to right (see also section 3)

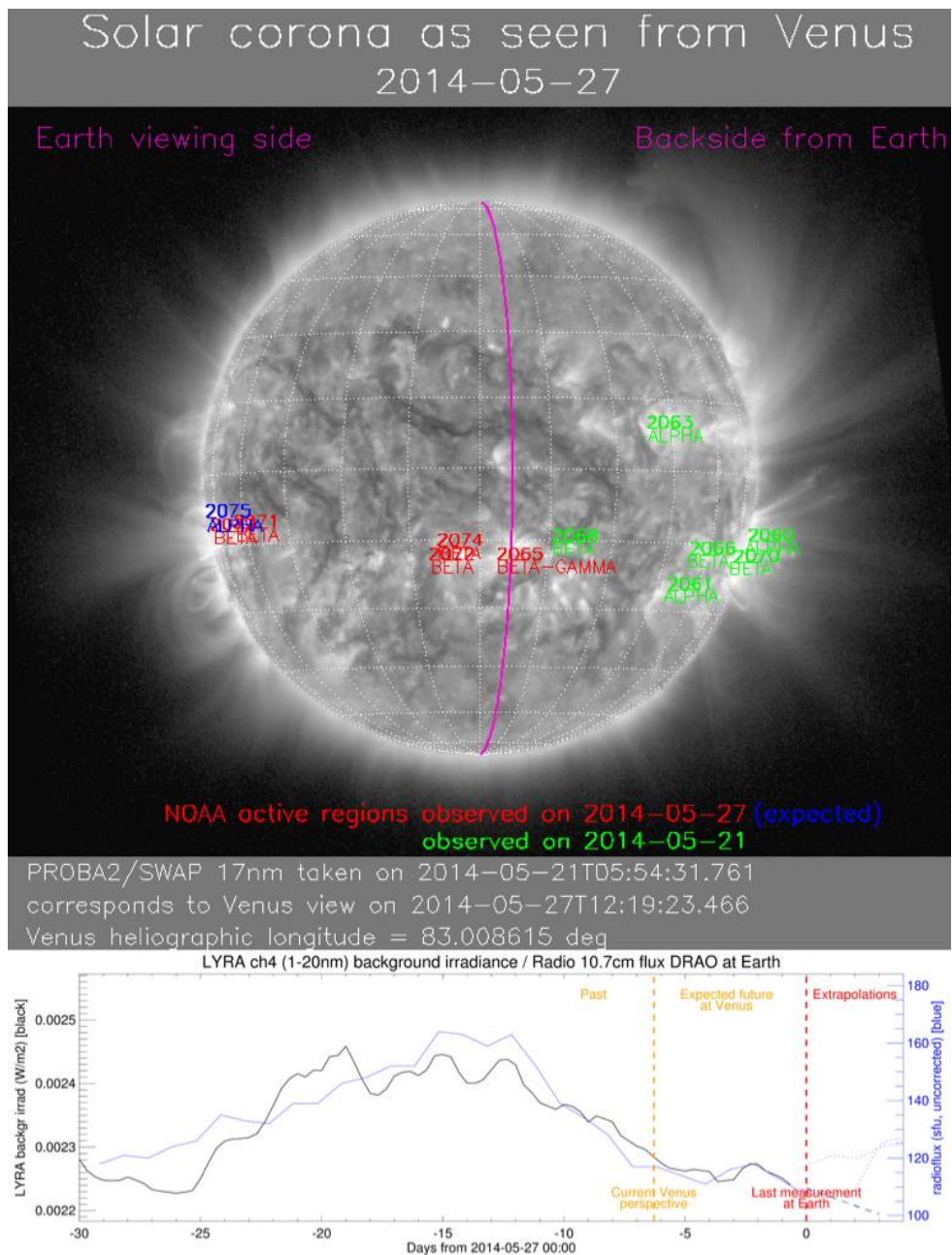
- Calibration campaign on Tuesday morning

**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>).

SWAP & LYRA data have been provided to the VENUS EXPRESS mission, in support of their operations to aerobrake the orbiter into Venus' atmosphere. This is the type of information provided:



### **Guest Investigator Program**

- Vida Zigman joined the P2SC for her research on: 'Modelling flare induced ionization enhancements of the lower ionosphere with LYRA data.'  
Her stay will last from May 05 till May 28.
- Christian Bethge joined P2SC for his follow-up stay, from May 05 until May 23.  
He is 'Combining SWAP and CoMP to study coronal pseudostreamers and their influence on solar wind speeds'.  
This was his final week.

### **Other Visitors**

- None



## 2. LYRA instrument status

### Calibration

LYRA calibration on Wednesday this week.

### IOS & operations

Monday 19 May	Tuesday 20 May	Wednesday 21 May	Thursday 22 May	Friday 23 May	Saturday 24 May	Sunday 25 May
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
LYIOS00396	LYIOS00397	LYIOS00397	LYIOS00397	LYIOS00397	LYIOS00397	LYIOS00397

The following science campaigns were performed by LYRA:

- daily U3 observation campaign (7 consecutive days)

### LYRA detector temperature

During normal operations, the LYRA detector 2 temperature varied between 48.0 °C to 47.2 °C, taking into account the small daily U3 activation temperature peaks.

During calibration, the temperature dropped down to 45.9 °C

### 3. SWAP instrument status

#### Calibration

SWAP calibration on Tuesday this week.

#### MCPM errors

The number of MCPM recoverable errors increased from 18813 to 18973.

The number of MCPM unrecoverable errors continued to increase regularly, from 1294 to 1438.

#### IOS & operations

Monday 19 May	Tuesday 20 May	Wednesday 21 May	Thursday 22 May	Friday 23 May	Saturday 24 May	Sunday 25 May
Nominal acquisition	Nominal acquisition + calibration	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition
IOS00521 586 images	IOS00522 687 images	IOS00522 664 images	IOS00522 587 images	IOS00522 665 images	IOS00522 632 images	IOS00522 649 images

Special SWAP operations this week:

- None

#### SWAP detector temperature

The SWAP Cold Finger Temperature varied between -1.05 °C and -2.24 °C.

#### **4. PROBA2 Science Center Status**

The main operator is Erik Pylyser (supported by 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 14203 and 14266) was nominal.

### **Data coverage HK**

All HK data files (LYRA\_AD) have been received.

### **Data coverage SWAP**

All SWAP Science data files (BINSWAP) have been received.

Total number of images between 2014 May 19 OUT and 2014 May 26 OUT: 4470

Highest cadence in this period: 30 seconds

Average cadence in this period: 135.30 seconds

Number of image gaps larger than 300 seconds: 0

### **Data coverage LYRA**

All LYRA Science data files (BINLYRA) have been received.



## 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)