P2SC-ROB-WR-094-20120107 Weekly report #094	**P2SC Weekly report**	
Period covered: Date: Written by: Released by:	Mon Jan 09 to Mon Jan 16, 2012 16 Jan 2012 Erik Pylyser David Berghmans	Royal Observatory of Belgium PROBA2 Science Center
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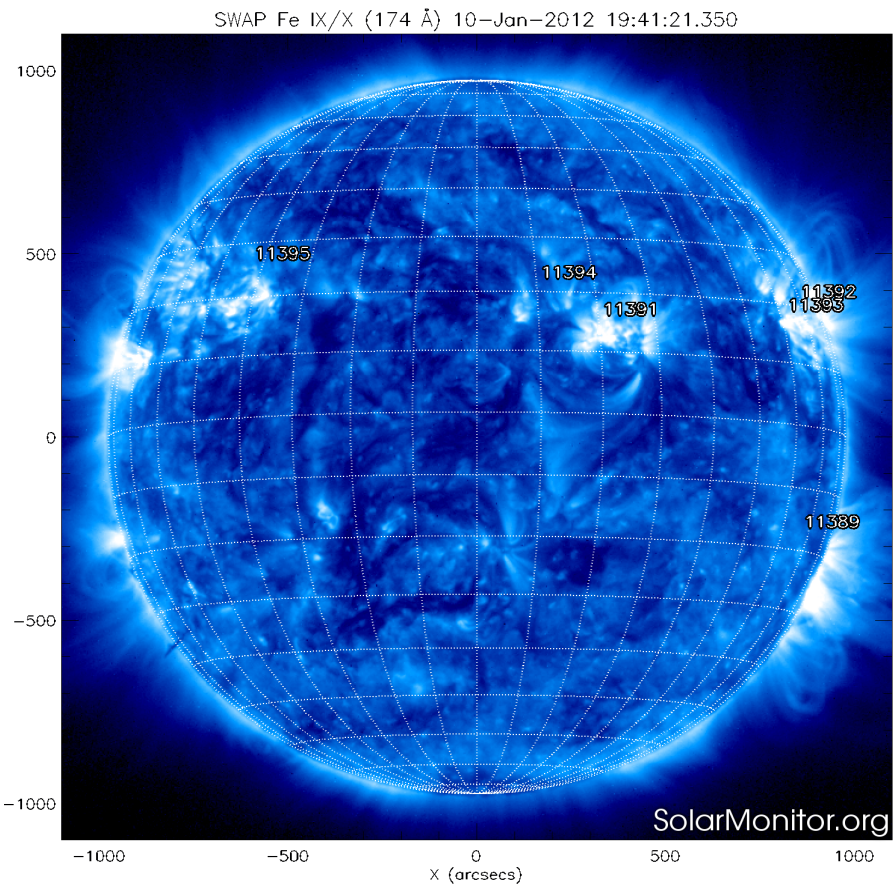
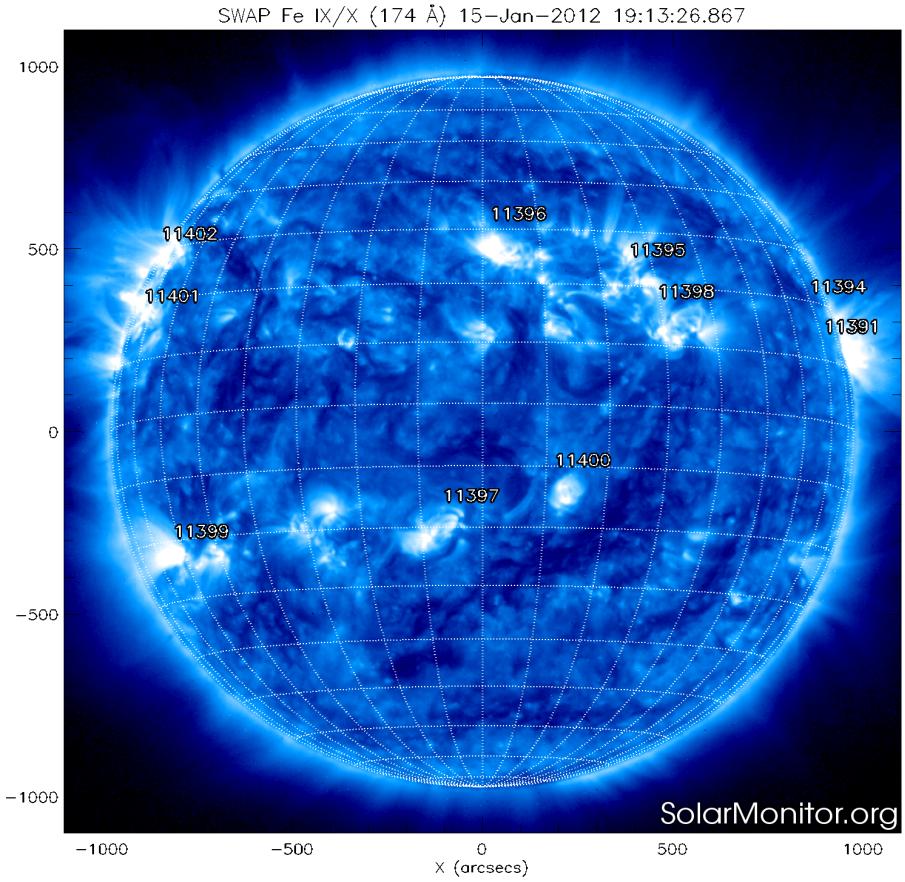
1. Science

Solar & Space weather events

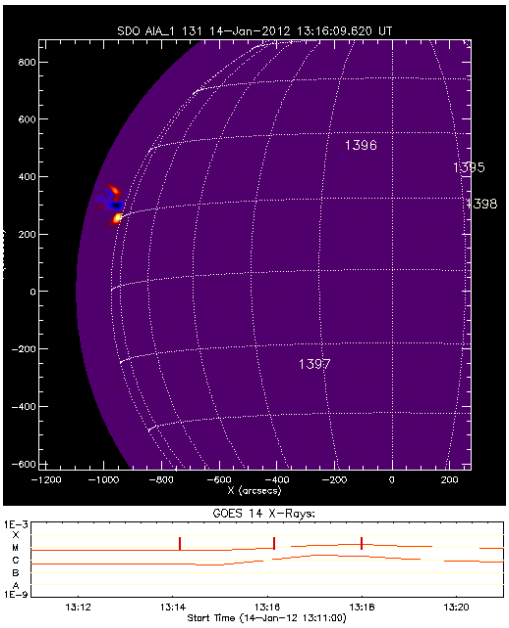
Overview
The SWAP images of Jan 9 and Jan 16 are shown below, with annotated active regions:


SWAP Fe IX/X (174 Å) 10-Jan-2012 19:41:21.350
11395
11394
11391
11392
11393
11389
SolarMonitor.org
1000
500
0
−500
−1000
−1000
−500
0
500
1000
X (arcsecs)


SWAP Fe IX/X (174 Å) 15-Jan-2012 19:13:26.867
11396
11402
11395
11401
11398
11394
11391
11400
11397
11399
SolarMonitor.org
1000
500
0
−500
−1000
−1000
−500
0
500
1000
X (arcsecs)

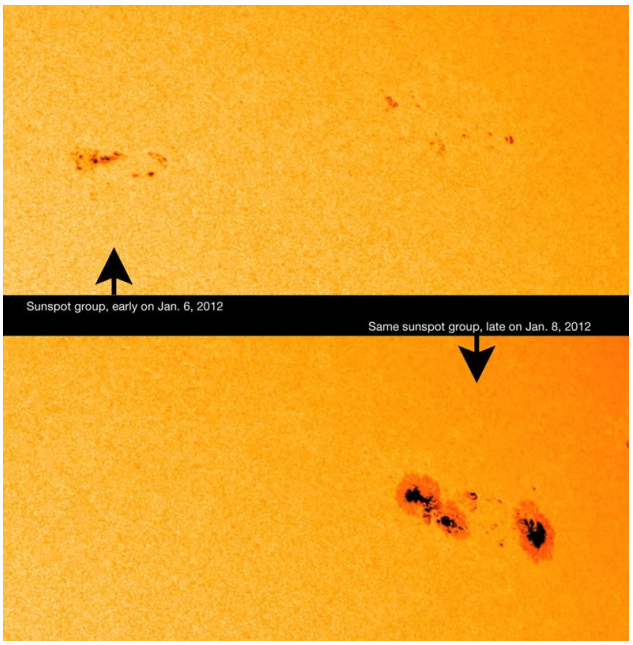
Overall solar activity was ‘MEDIUM’ (i.e. essentially between 5-10 C-flares per day) from Monday till Thursday. Two days of ‘LOW’ activity followed, until Sunday, when AR11401 crossed the East limb. This AR is very active with several C-flare occurrences and an M1.4 flare.

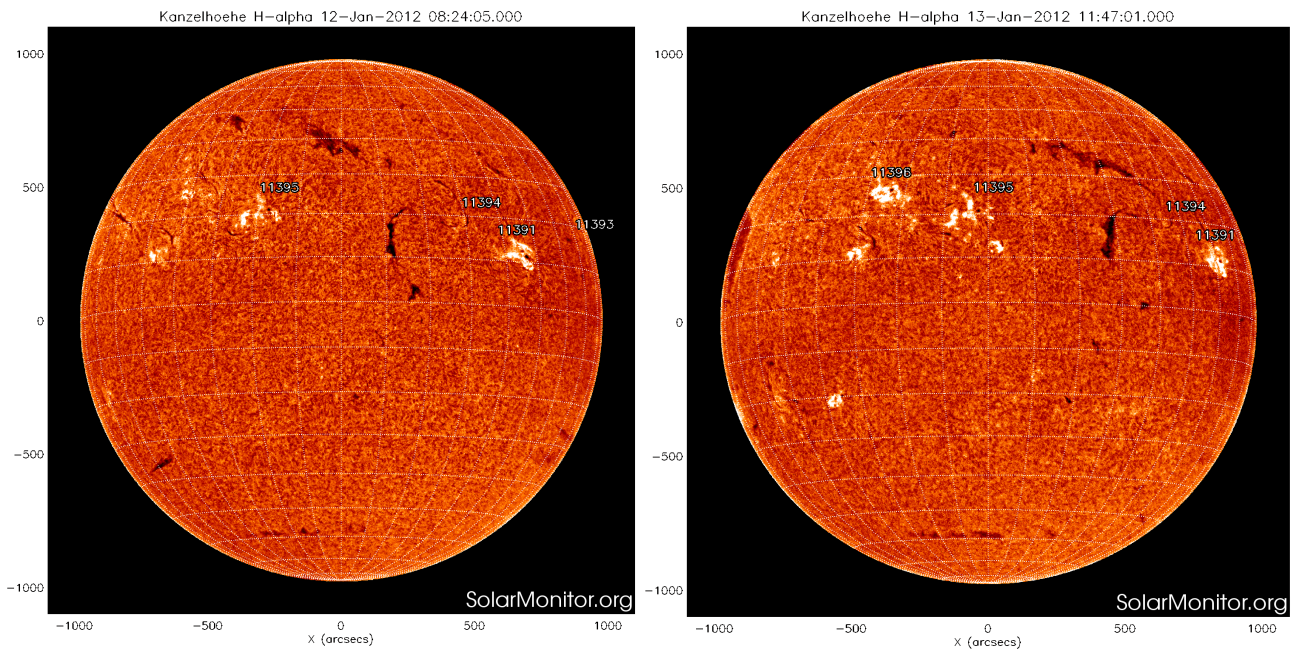
The M1.4 (GOES) flare occurred in AR 11401 on Saturday 14 (13:14:00), on the North-East limb (SDO-AIA).



The onset and maximum of this flare was observed by LYRA. The decay, however, was interrupted by two occultations.

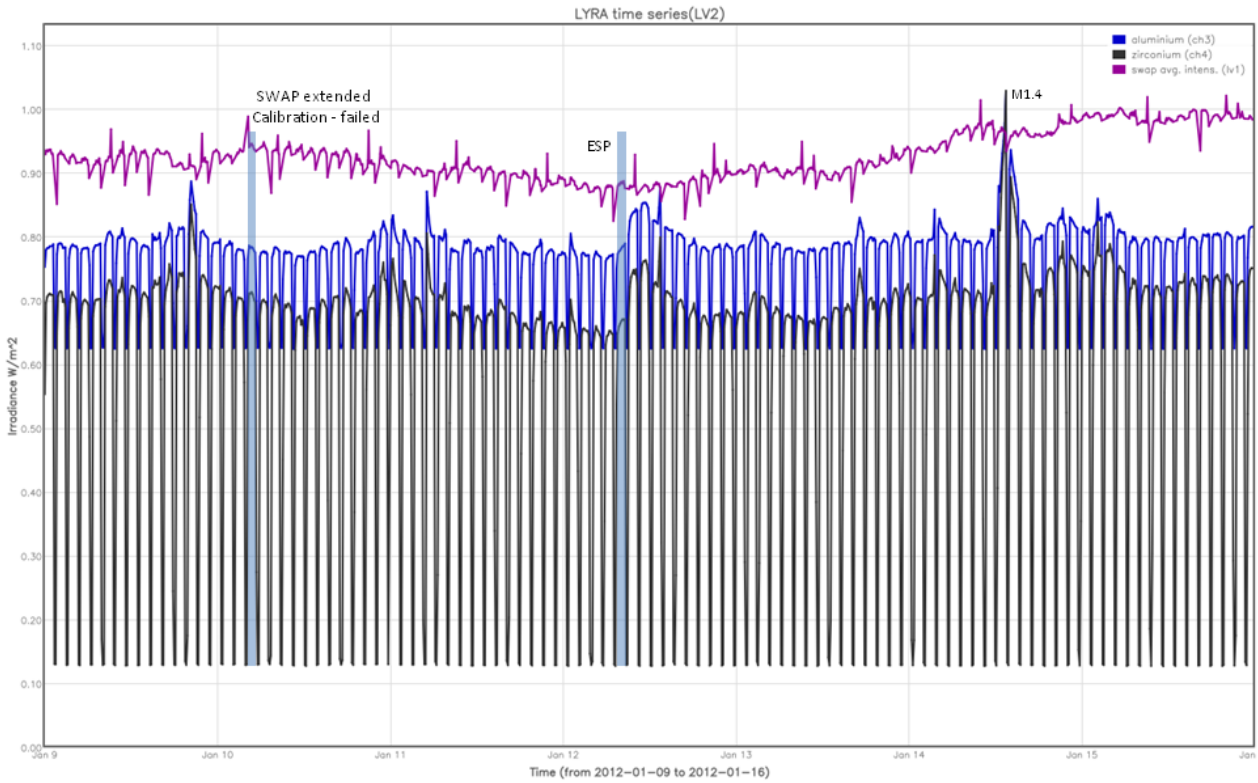
Earlier in the week, the growth, in barely 1 day, of the sunspot group associated with AR 11396 was remarkable:





Sunspot group 11396 barely visible left of 11395, on Jan 12, grew to be a big sunspot group on Jan 13.

Below is provided an overview of the weekly LYRA & SWAP data:



The blue shaded periods correspond, from left to right, to a SWAP calibration on Tue, and a SWAP jump, related to an ESP campaign on Thu.

Scientific campaigns

The following LYRA and SWAP specific scientific campaigns are on-going:
- daily LYRA occultation ingress & egress (planned around 10:00 every day), with channel 3.
- weekly (but not this week) SWAP occultation ingress & egress imaging (planned on Tue, in parallel to the 10:00 LYRA occulation)

No other specific science campaigns have been executed.

Outreach, papers, presentations, etc.

None (TBC)

2. LYRA instrument status

Calibration

No LYRA Calibration this week.

IOS & operations

Monday 09 Jan	Tuesday 10 Jan	Wednesday 11 Jan	Thursday 12 Jan	Friday 13 Jan	Saturday 14 Jan	Sunday 15 Jan
Nominal acquisition LYIOS00211	Nominal acquisition LYIOS00211	Nominal acquisition LYIOS00211	Nominal acquisition LYIOS00211	Nominal acquisition LYIOS00212	Nominal acquisition LYIOS00212	Nominal acquisition LYIOS00212

The daily occultation campaign continued this week. It will continue beyond the (visual and UV) occultation season, until further notice.

LYRA detector temperature The LYRA detector 2 temperature (nominal unit) fluctuated between 38.9 and 41.9 degrees during nominal operations.
To be explored /

3. SWAP instrument status

Calibration The planned extended calibration on Tue 10th was not successful (see below for details), due to an operator error. This failure has no particular consequences.
MCPM errors The number of MCPM recoverable errors increased from 1495 to 1502. The number of MCPM unrecoverable errors is still 0.

IOS & operations

Monday 09 Jan	Tuesday 10 Jan	Wednesday 11 Jan	Thursday 12 Jan	Friday 13 Jan	Saturday 14 Jan	Sunday 15 Jan
Nominal acquisition 80s cadence + occult. jumps IOS00360 663 images	Nominal acquisition + Calibration + occult campaign + occult. jumps IOS00360 651 images	Nominal acquisition + + occult. jumps IOS00360 683 images	Nominal acquisition + ESP + occult. jumps IOS00360 660 images	Nominal acquisition + + occult. jumps IOS00360 660 images	Nominal acquisition + occult. jumps IOS00361 622 images	Nominal acquisition + occult. jumps IOS00361 663 images

Occultation jumps are commanded and performed during each orbit.
On Tuesdays, SWAP participates in the LYRA daily occultation campaign, by 'not jumping' over the same occultation as the chosen LYRA occultation on Tue. This week, this campaign was not included.

Also, from next week on, the calibration sequence for SWAP returns to 'normal', i.e. the original sequence of commands is reinstated AND the calibration sequence will occur every two weeks. The extended calibration campaign (gathering additional darks) was introduced to address and compensate for the new thermal environment for SWAP, resulting from a the introduction of the 'LAR delays' in Sept 2011. During this period, sufficient dark images have been gathered to justify the return to 'normal' calibrations.

A one hour gap of data was identified on Thursday. This is due to the combination of an occultation and the ESP campaign, being 'too' close to eachother. In the following weeks, the ESP period will be chosen, if possible, further apart from the occultation periods (before & after) to allow for at least one picture being taken, and thus avoid a one-hour-long gap.

SWAP detector temperature
The SWAP Cold Finger Temperature fluctuated between -4.6 and -2.4 degrees Celsius, under nominal operations.

To be explored
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4. PROBA2 Science Center Status

The main operator is Koen Stegen; Erik Pylyser provides support, when needed.

On several occasions, the LYRA_AD files were processed later than the other files delivered at the same within a pass. The cause of the 'late' processing of the LYRA_AD data is the DCVC taking too long. Solutions are being investigated.

5. Data reception & discussions with MOC

Passes

The delivery of the following passes for this week (from 6738 till 6798) was not nominal:
- none.

Data coverage HK
The HK data were complete over this period.

Data coverage SWAP

The SWAP data were complete over this period.

For the following passes, BINSWAP processing failed, due to packet CRC corruption:
- 6756 (Wed 11/01/2012), 6770 (Thu 12/01/2012).

Statistics for the week:

Total number of images between 2012 Jan 09 0UT and 2012 Jan 16 0UT: 4653
Highest cadence in this period: 60 seconds
Average cadence in this period: 129.97 seconds
Number of image gaps larger than 300 seconds: 101
Largest data gap: 58.93 minutes

Data coverage LYRA
The LYRA data were complete.

6. APPENDIX Frequently used acronyms

ADP	Ancillary Data Processor
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

DR	Destructive Readout
DSLP	Dual Segmented Langmuir Probe
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
ICD	Interface Control Document
IIU	Instrument Interface Unit
IOS	Instrument Operations Sheet
LED	Light Emitting Diode
LEO	Low Earth Orbit
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
PGA	Programmable Gain Amplifier
PI	Principal Investigator
P2SC	PROBA2 Science Center
PPT	Pointing, Positioning and Time (software module of P2SC)
ROB	Royal Observatory of Belgium
SAA	South Atlantic Anomaly
SCOS	Spacecraft Operation System
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
TBW	To Be Written
TC	Telecommand
TPMU	Thermal Plasma Measurement Unit
UTC	Coordinated Universal Time
UV	Ultraviolet