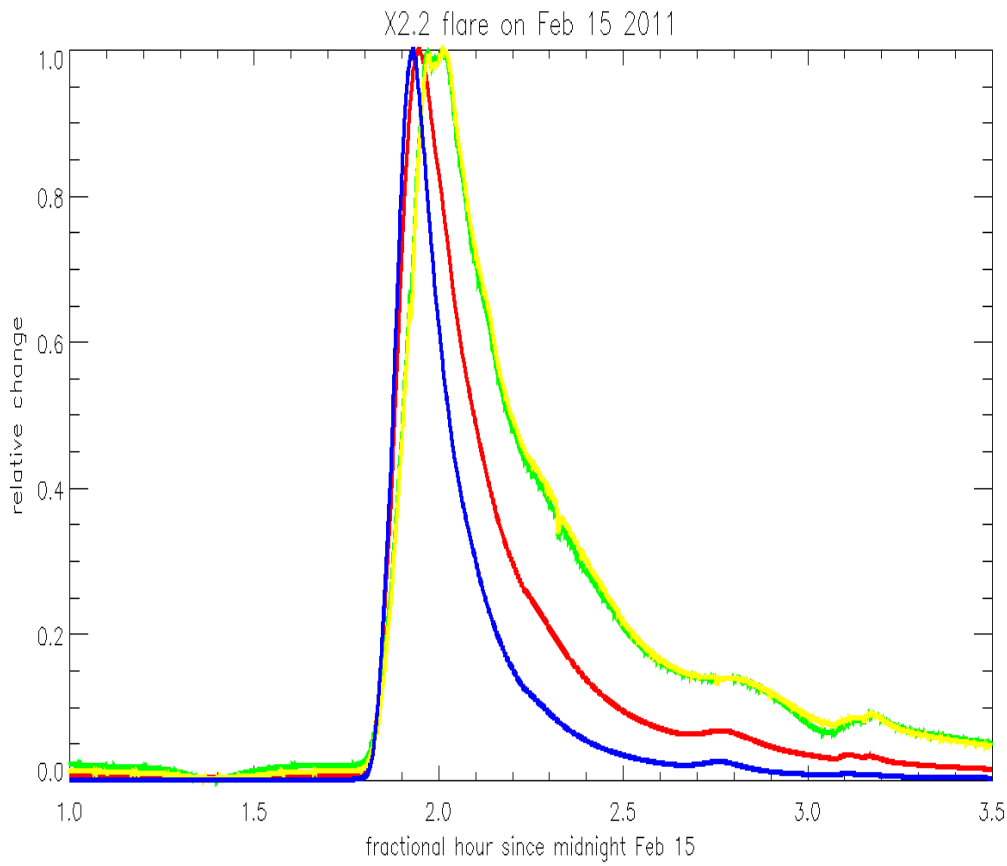
P2SC-ROB-WR-048-20110214 Weekly report #048	**P2SC Weekly report**	
Period covered: Date: Written by: Released by:	Mon Feb 14 to Sun Feb 20 2011 Thu Feb 10 2011 David Berghmans David Berghmans	Royal Observatory of Belgium PROBA2 Science Center
To:	LYRA PI, marie.dominique@sidc.be SWAP PI, david@sidc.be	http://proba2.sidc.be ++ 32 (0) 2 373 0 559
cc:	ROB DIR, ronald@oma.be ESA Redu, Etienne.Tilmans@esa.int ESA D/SRE, Joe.Zender@esa.int ESA D/TEC, Karsten.Strauch@esa.int	

1. Science

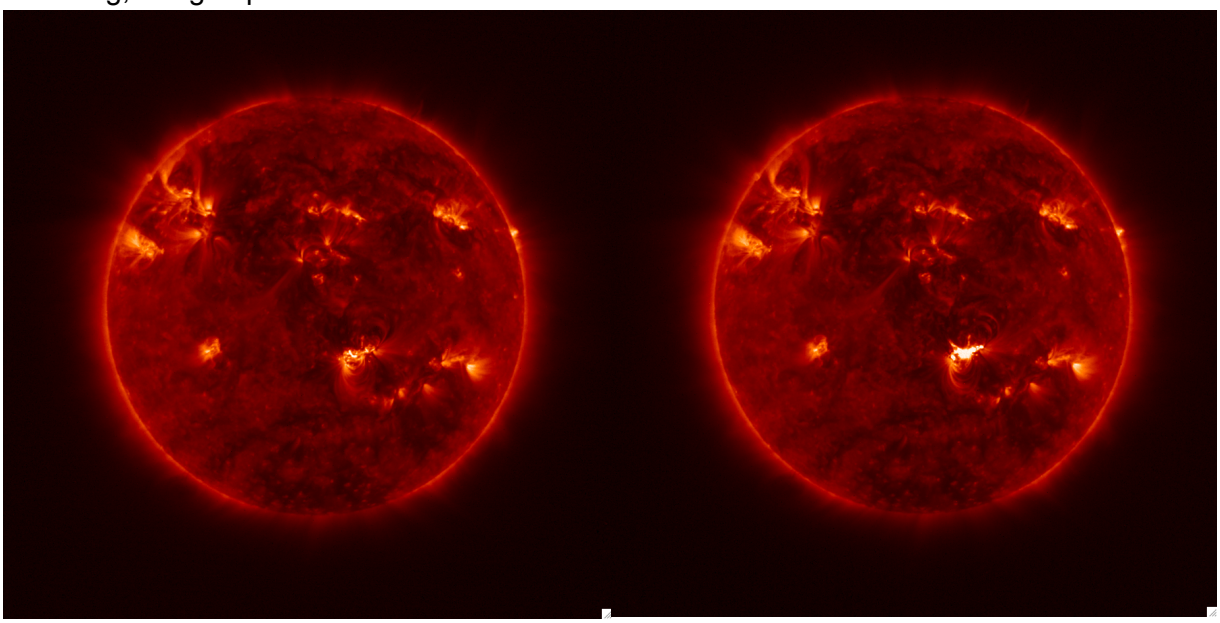
Solar & Space weather events

Solar activity was high during the period and it was dominated by NOAA AR 1158. It produced an X2.2 flare peaking at 01:56 UT on February 15. This has been the strongest flare in more than four years.



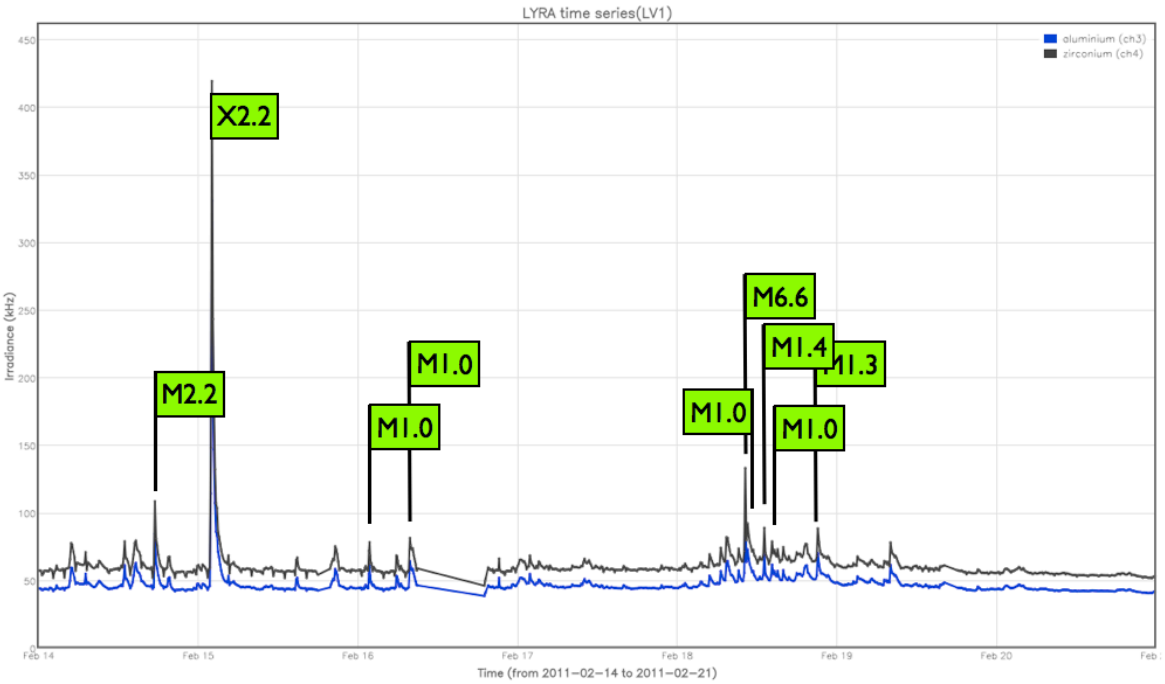
(Red= GOES 0.1-0.8nm, Blue=GOES 0.05-0.4nm, LYRA Zir = green, LYRA Alu= yellow)

Below left, SWAP pre-flare image, right SWAP peak-flare image. Note that there is no sign of blooming, nor grid pattern.

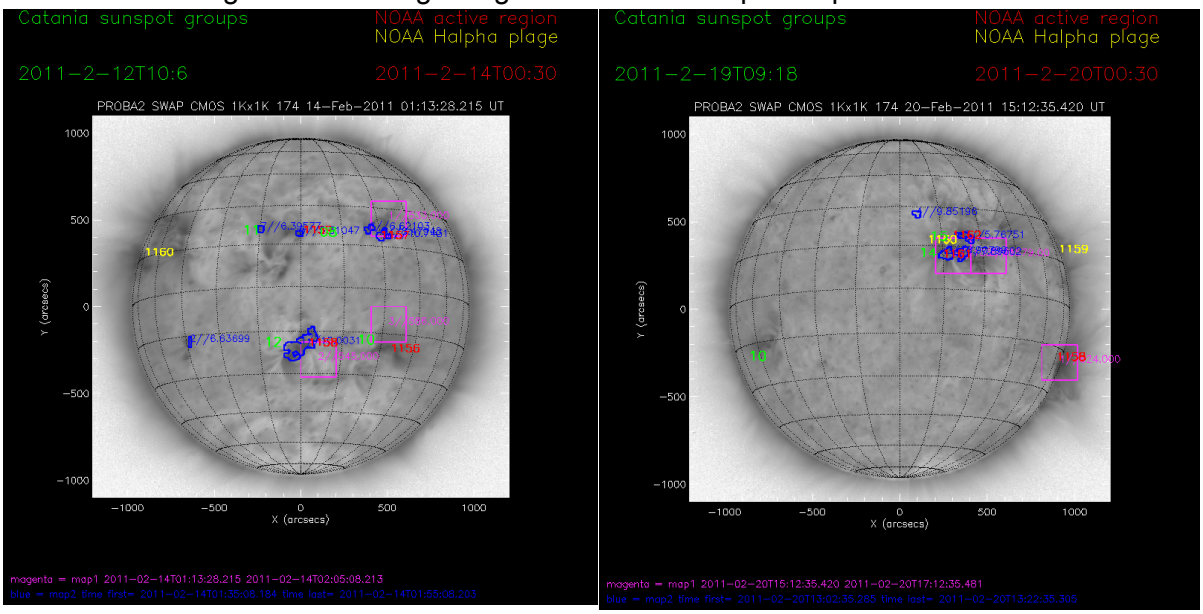


AR 1158 also produced the following M-class flares:
Feb 14: M2.2 at 17:26 UT
Feb 16: M1.0 at 01:39 UT, M1.6 at 14:25 UT,

Feb 18: M6.6 at 10:11 UT, M1.4 at 13:03
NOAA AR 1161 produced and additional M1.0 flare at 07:44 UT on February 16.
NOAA AR 1162 was active on February 18 with an M1.0 at flare 10:26, an M1.0 flare at 14:08 UT and an M1.3 at 21:04 UT. The overview of LYRA data over the week is given below:



SWAP Active Regions at the beginning and end of the reported period:



Outreach, papers, presentations, etc.

1. Media Coverage.

Following the X2.2 flare, solar activity got plenty of press attention. SWAP images where shown on RTL and on VTM:
http://www.rtlinfo.be/videos/13h/276400
http://vtm.be/nieuws/binnenland/59114-zonnewolk-verstoort-gps

2. SOTERIA Capacity Building Workshop

The EU FP7 project SOTERIA organized a "Capacity Building Workshop" at ROB on Feb 15 and Feb 16:
http://soteria-space.eu/wiki/index.php/Capacity_Building_Workshop
SWAP and LYRA were covered by presentations by respectively Dan Seaton and Ingolf Dammasch.

3. SWT meeting.

The SWAP and LYRA Science Working Team meeting took place on Feb 17 and Feb 18 at ROB. About 50 people participated, including a representation of DSLP (Stephan Stverak) DSLP and guest presentations from PICARD. All SWAP and LYRA topics (data analysis, calibration, planning, etc) were covered. Working groups on specific research subjects have been formed and we will aim at a joint publication in a Topical Issue of Solar Physics.

To be explored
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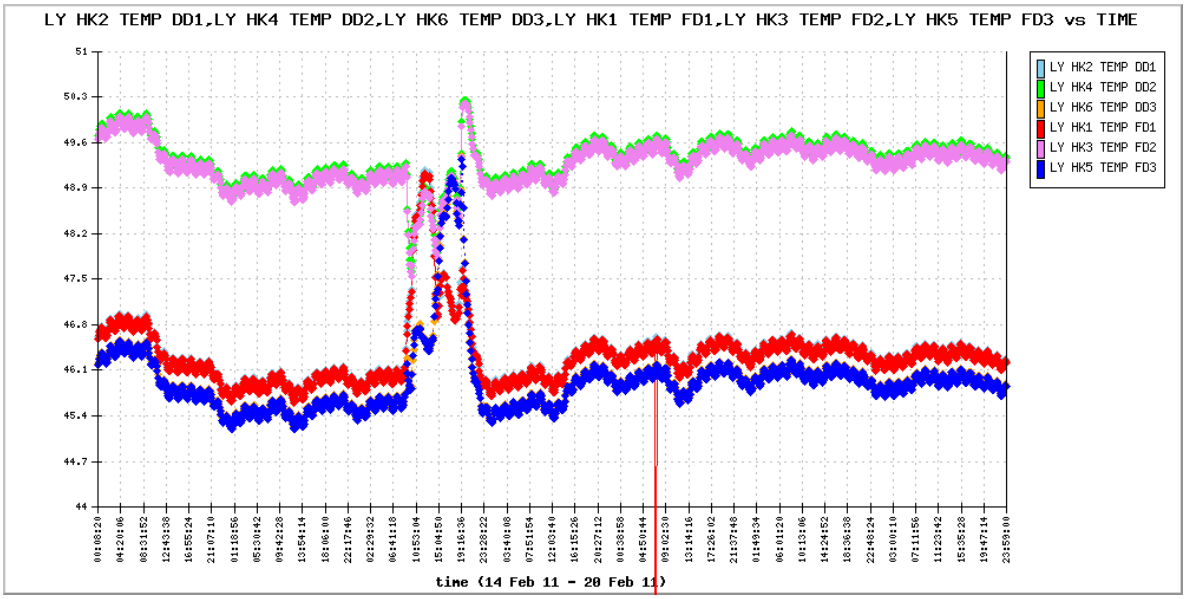
2. LYRA instrument status

Temperature evolution

LYRA temperatures are essentially flat this period, except for Feb 16 when the calibration campaign was run. Slightly (>~0.5C) lower temperature values can be seen in the first half of the period which corresponds to a reduced PLASMA CURR CAL power consumption.



Calibration

A LYRA calibration + back-up campaign was executed on Wednesday Feb 16.

IOS & operations

Monday 14 Feb	Tuesday 15 Feb	Wednesday 16 Feb	Thursday 17 Feb	Friday 18 Feb	Saturday 19 Feb	Sunday 20 Feb
Nominal acquisition (LYRA00147)	Nominal acquisition (LYRA00147)	Nominal acquisition + Calibration campaign (LYRA00148)	Nominal acquisition (LYRA00148)	Nominal acquisition (LYRA00148)	Nominal acquisition (LYRA00148)	Nominal acquisition (LYRA00148)

To be explored

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3. SWAP instrument status

MCPM errors

the MCPM recoverable errors increased from 644 to 782 during this week. This is an increase of 138, almost once per hour (=168).

The number of MCPM unrecoverable errors is still 0.

IOS & operations

Monday Feb 14	Tuesday Feb 15	Wednesday Feb 16	Thursday Feb 17	Friday Feb 18	Saturday Feb 19	Sunday Feb 20

Nominal + eclipse jumping Cadence:100 #images: 679 IOS00248	Nominal + eclipse jumping Cadence:100 #images: 558 IOS00250	Nominal + eclipse jumping Cadence:100 #images:748 IOS00250	Nominal + eclipse jumping Cadence:100 #images:658 IOS00250	Nominal + eclipse jumping Cadence:100 #images: 601 IOS00250	Nominal + eclipse jumping Cadence:100 #images: 593 IOS00250	Nominal Cadence:100 #images:762 IOS00250

Eclipse jumping was stopped on Feb 19 noon. The last day of the eclipse season was actually Feb 21. The SWAP eclipse season is defined as days with the Sun going below 350 km tangential height, which corresponds to a dimming of the Sun of more than 5%. The nominal cadence in the eclipse season was 100s, we will in the coming week have to increase this value as there are no more eclipse jumps.

IOS 00250 scheduling the calibration sequence on Tuesday Feb 15 did not get onboard. The calibration sequence is therefore postponed till next week.

SWAP detector and IIU temperature
The SWAP Cold Finger Temperature was fluctuating around 6C.

4. PROBA2 Science Center Status

Carlos Cabanas was operator on Monday Feb 14 till Wednesday Feb 15, David Berghmans was operator during the rest of the week.

There were no tools updated during the period.

5. Data reception & discussions with MOC

Passes

- During Redu pass 3789 (2011-02-14@17:15:33z) the TM was lost around 17:16:30z just during the upload of the IOS (LYRA#148 and SWAP#249). The latter one could not be uploaded in the next pass because the first TC was by then in the past. As a consequence, the bi-weekly calibration was postponed by a week.
- For the following passes, there was at least one BINSWAP image for which a packet CRC did not validate:
  - Feb 14: pass 3781, 3778, 3771 3754
  - Feb 16: pass 3800
  - Feb 17: pass 3820:
- For the following passes, there was at least one BINSWAP image with a truncated packet:
  - Feb 15: pass 3794
  - Feb 17: pass 3820
  - Feb 18: pass 3826

Data coverage HK complete
Data coverage SWAP Statistics for complete week: *Total number of images between 2011 Feb 14 0UT and 2011 Feb 21 0UT: 4599* *Highest cadence in this period: 100 seconds* *Average cadence in this period: 131.50 seconds* *Number of image gaps larger than 300 seconds: 103* *Largest data gap: 17.47 minutes*
Data coverage LYRA LYRA science data FITS file on Feb 16 has a data gap corresponding due to the calibration sequence. Our LYRA Telemetry Reformatter (LYTMR) reports a surprising large number of corrupted packages. Due a to-be-fixed-problem (see LYTMR error 4306) this causes the LYTMR to abort the processing of the pass file completely. As a consequence we have data gaps in the output science files corresponding to a time between two passes: This happened on: Feb 15 18:00-19:40 (pass 3800), Feb 19 16:00-18:00 (pass 3837), Feb 21 (pass 3867) and Feb 24 (pass 3879).

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
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