


P2SC-ROB-WR-421 - 20180416 Weekly report #421	P2SC Weekly report	
Period covered: Date: Written by: Approved by:	Mon Apr 16 to Sun Apr 22, 2018 18 Apr 2018 Laurence Wauters Matthew West	Royal Observatory of Belgium - PROBA2 Science Center
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1. Science

Solar & Space weather events

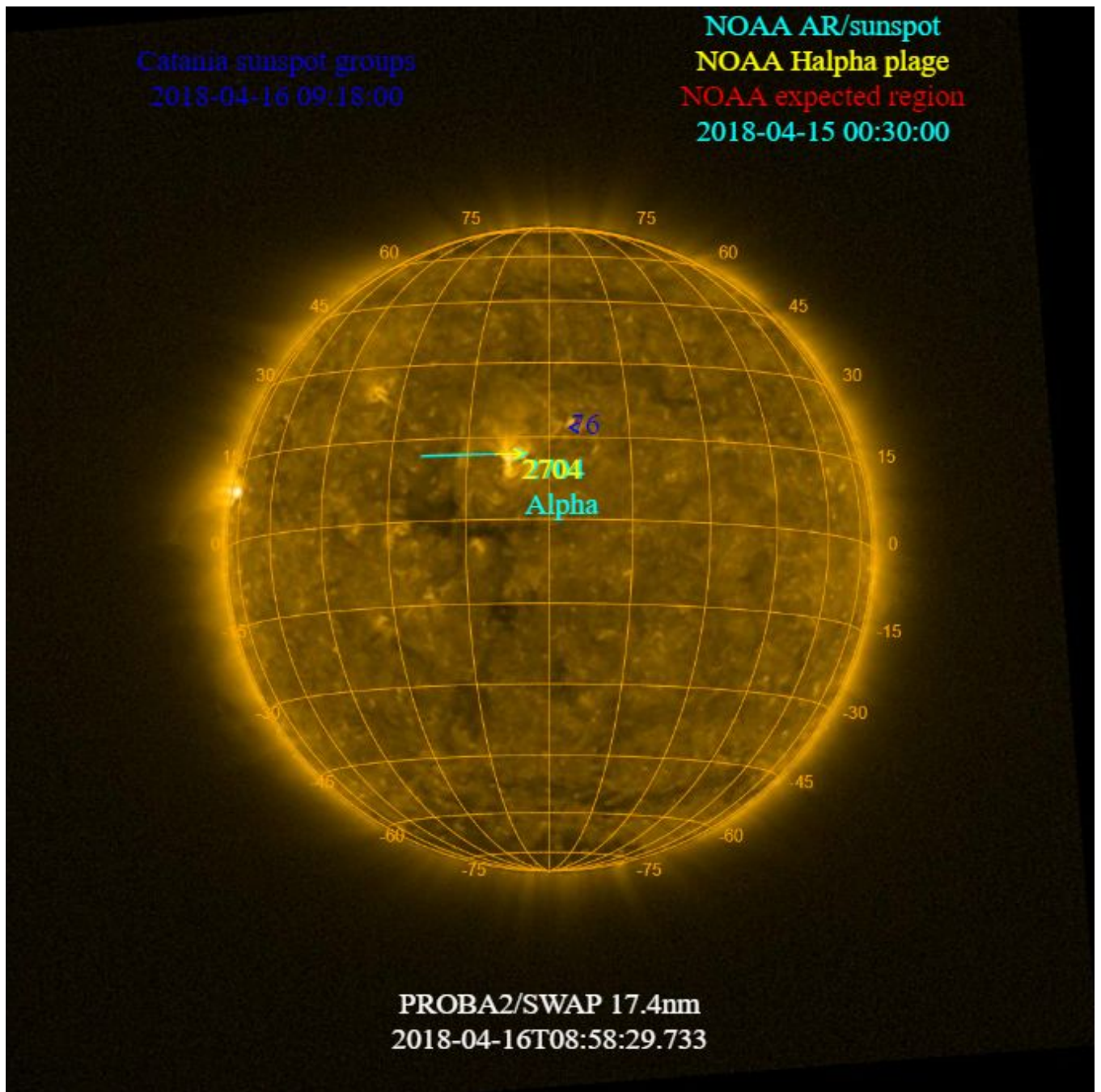
The level of solar activity¹ was **very low** this week.

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

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

¹ See appendix. All timings are given in UT.

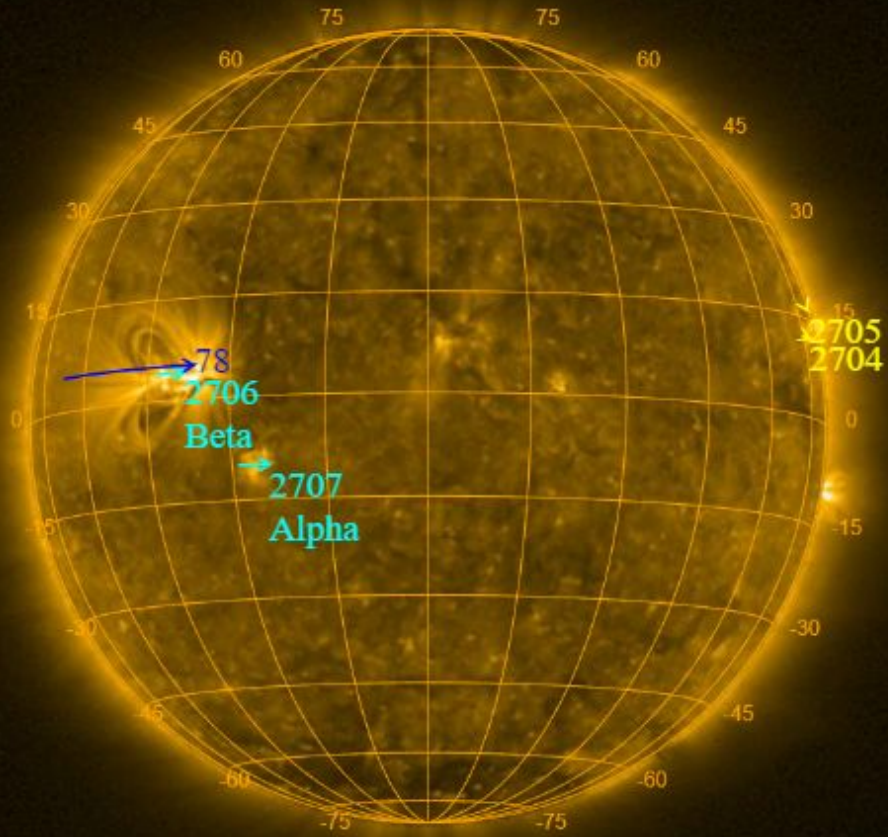
The SWAP images of Apr 16 and Apr 22 are shown below, with annotated active regions.



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

Catania sunspot groups
2018-04-20 06:36:00

NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2018-04-22 00:30:00



PROBA2/SWAP 17.4nm
2018-04-22T09:00:37.042

Solar Activity

Solar flare activity was very low during 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>

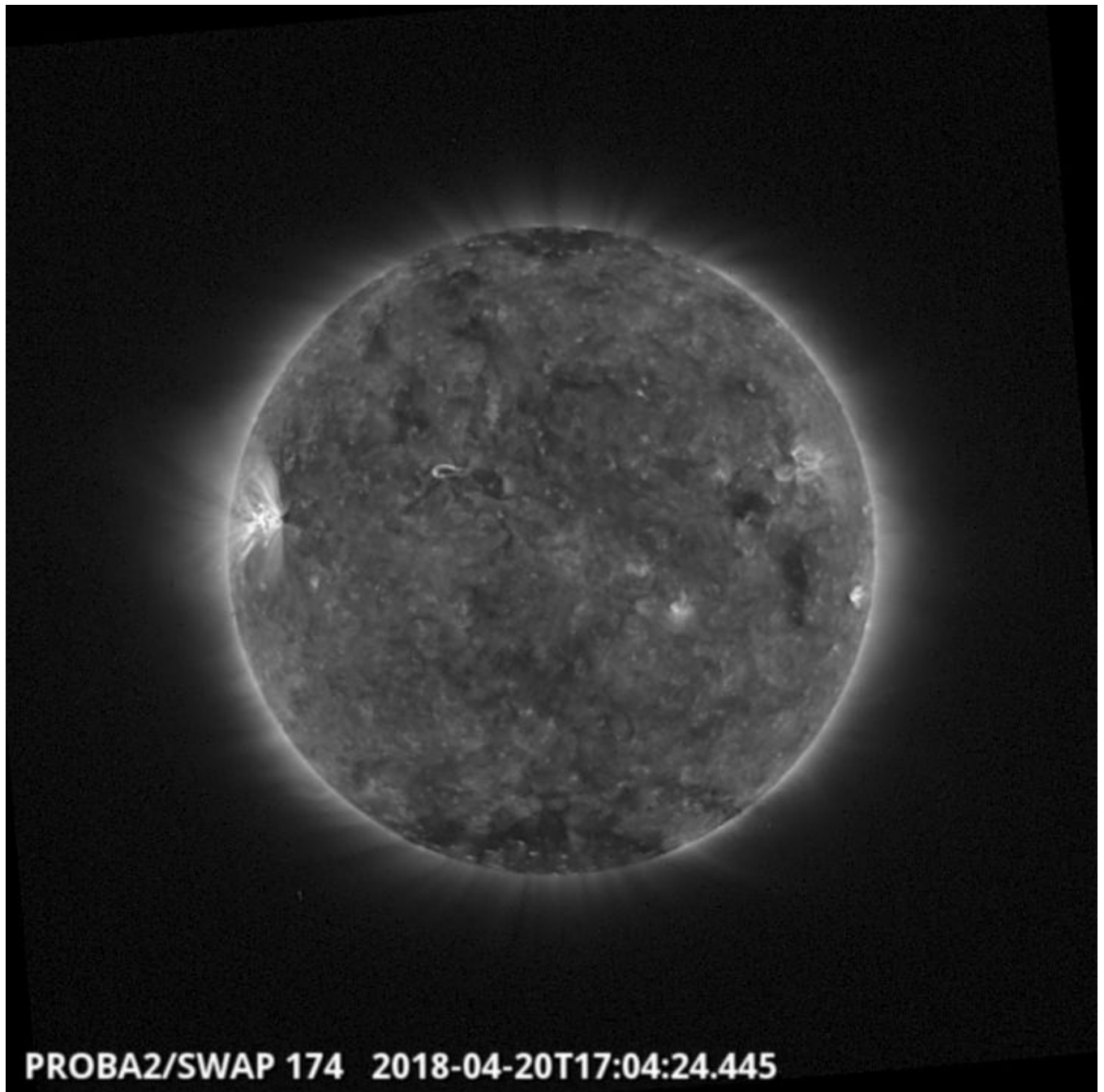
This page also lists the recorded flaring events.

A weekly overview movie can be found [here](#) (SWAP week 421).

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

If any of the linked movies are unavailable they can be found in the P2SC movie repository [here](#)

Friday Apr 20



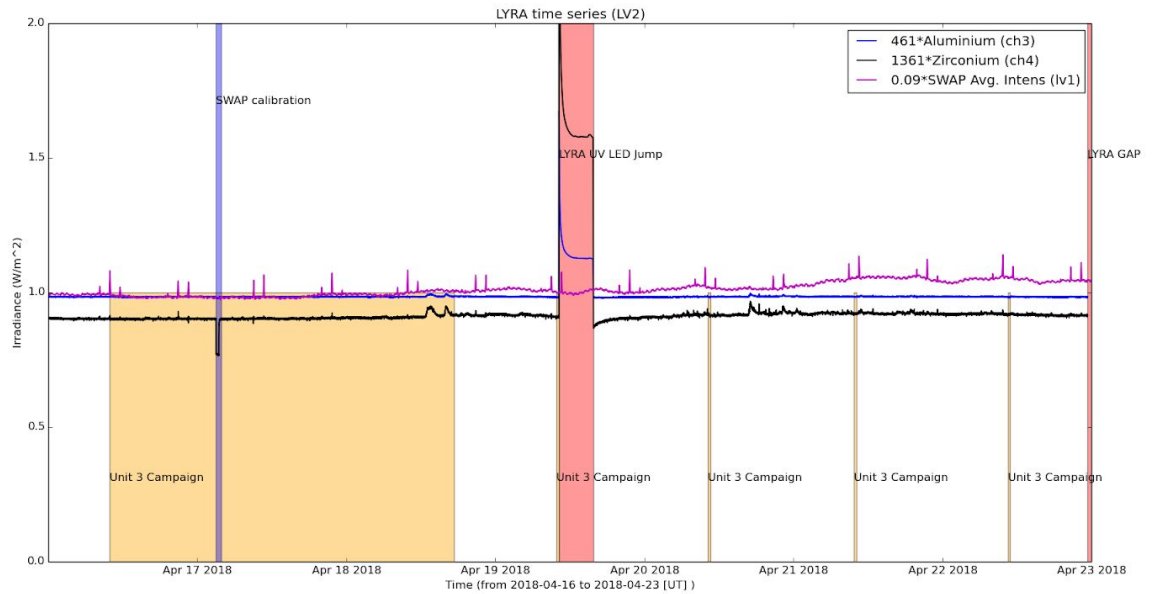
The largest flare of the week was a B5.3 associated with NOAA AR 2706. The flare is visible in the North-East part of the solar disk in the SWAP image above at 17:04 UT. The AR produced several B-class flares throughout the whole week.

Find a movie of the event [here](#) (SWAP 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 (SWAP Average Intensity; integrated solar intensity per SWAP image pixel)



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

- SWAP calibration, 2018-Apr-17

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

- Continuous U3 campaign from 2018-Apr-16 to 2018-Apr-18.
- Daily U3 observation campaign, 2018-Apr-19
- Daily U3 observation campaign, 2018-Apr-20
- Daily U3 observation campaign, 2018-Apr-21
- Daily U3 observation campaign, 2018-Apr-22

The red shaded periods related to other issues corresponds to:

- LYRA UV LED Jump to 1 for unknown reason at the end of the daily unit 3 campaign, 2018-Apr-19
- LYRA data gap due to corrupted packet for pass 27259, 2018-Apr-22

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>).

Guest Investigator Program

- PhD student Ranadeep Sarkar from Udaipur Solar Observatory is working for a month at P2SC on the project "Evolution of coronal cavities leading to CMEs".
- Larisza Krista has returned to the P2SC, for a visit between 2018-Apr-11 and 2018-Apr-20, to continue her work on the project "The structural and footpoint evolution of CMEs."

2. LYRA instrument status

Calibration

No calibration campaign during this week.

IOS & operations

Monday 16 Apr	Tuesday 17 Apr	Wednesday 18 Apr	Thursday 19 Apr	Friday 20 Apr	Saturday 21 Apr	Sunday 22 Apr
Nominal acquisition + U3	Nominal acquisition + U3	Nominal acquisition + U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3
LYIOS00689	LYIOS00689	LYIOS00689, LYOS00690	LYIOS00690, LYIOS00692	LYIOS00692	LYIOS00692	LYIOS00692

The following science campaigns were performed by LYRA:

- Continuous U3 campaign from 2018-Apr-16 to 2018-Apr-18
- daily U3 observation campaigns

LYRA detector temperature

LYRA detector 2 temperature globally varied between 48.97 and 51.69 °C.

3. SWAP instrument status

Calibration

Calibration campaign on Tuesday this week.

MCPM errors

The number of MCPM recoverable errors increased from 3882 to 4170.

The number of MCPM unrecoverable errors remained at 0.

IOS & operations

Monday 16 Apr	Tuesday 17 Apr	Wednesday 18 Apr	Thursday 19 Apr	Friday 20 Apr	Saturday 21 Apr	Sunday 22 Apr
Nominal acquisition	Nominal acquisition + calibration	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition
IOS00768 551 images	IOS00768 735 images	IOS00768 689 images	IOS00768 739 images	IOS00768 687 images	IOS00768 689 images	IOS00768 607 images

Special operations for SWAP, this week:

- Bi-weekly calibration 17-Apr-2018

SWAP detector temperature

The SWAP Cold Finger Temperature globally varied between -0.97 and 0.31 °C.

4. PROBA2 Science Center Status

The main operator is Laurence Wauters.

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 27193 to 27258) was nominal, except for:

- pass 27194 but data has been received in pass 27196.

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 2018 Apr 16 00:00 UT and 2018 Apr 23 00:00 UT: 4821

Highest cadence in this period: 30 seconds

Average cadence in this period: 125.45 seconds

Number of image gaps larger than 300 seconds: 122

Largest data gap: 9.17 minutes

Data coverage LYRA

All LYRA Science data files (BINLYRA) have been received, except:

- pass 27194 but data has been received in pass 27196.
- pass 27259 corrupted. No data LYRA data processed between 2018-04-22 23:21:52 and 2018-04-23 02:37:16

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
DAC	Data Acquisition Controller
DBR	Deployment, backup & recovery
DDA	Decommutated data archive
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
SoFAST	Solar Feature Automated Search Tool
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)