Month: November 2023

- **NEWS FROM THE SOLAR SECTION**

In the first 3 weeks of November the sunspot number dropped drastically below 100 with the lowest observed number on 18 November with a number of 25. It was suggested that the Solar maximum is coming sooner as expected. But as from the 22th the numbers increased again in the 100s. Sunspot groups increased from 2-4 in the first 3 weeks to 9-10 in the last week of November.

From this month the Solar bulletin will cover the geo-magnetic activities as they take place on a daily basis.

• SUNSPOT OBSERVATIONS

Day	Time	Groups	Spots	W no.	North Groups	South groups	North spots	South spots
1	1310	3	18	48	2	1	7	11
2	1055	6	29	89	3	3	17	12
3				0				
4				0				
5	1245	6	19	79	3	3	6	13
6	1255	4	12	52	2	2	2	10
7	1355	6	24	84	2	4	7	17
8	13h10	5	30	80	3	2	21	9
9	1330	5	27	77	2	3	14	13
10	1355	5	28	78	2	3	14	14
11				0				
12	1150	4	19	59	1	3	7	12
13	1155	4	16	56	1	3	2	14
14	1430	3	14	44	1	2	1	13
15	1345	3	7	37	3	0	7	0
16	1445	2	10	30	0	2	0	10
17	1435	2	6	26	0	2	0	6
18	1215	2	5	25	0	2	0	5
19	1235	2	11	31	0	2	0	11
20				0				
21				0				
22	1335	9	41	131	5	4	24	17
23				0				
24				0				
25	1325	9	33	123	5	4	11	22
26	1345	9	34	124	4	5	19	15
27				0				
28	1350	7	23	2	2	5	9	14
29	1410	9	21	111	4	5	7	14
30	1420	10	24	124	4	6	6	18
				0				
	Observations	Groups	Spots	W no.	North Groups	South groups	North spots	South spots
	21	115	451	1510	49	66	181	270

	Monthly Means	
MDF	71,9	1 Observer
MDF g	5,5	1 Observer
MDF Ng	2,3	1 Observer
MDF Sg	3,1	1 Observer

Observers:

Jacques van Delft   ASSA Bloemfontein South Africa

When more than 1 observer is submitting sunspots, the average per day is calculated and noted.

- **SOLAR FLARE ACTIVETY OCTOBER 2023**

Solar flares are classified according to their x-ray brightness in the wavelength range 1 to 8 Ångstrom. There are 3 categories: C class – minor, M class – medium and X class – big. Each category has 9 subdivisions.

2023	November	C class	M class	X class
	1	5	2	
	2	7	2	
	3	3		
	4	3		
	5	6	2	
	6	11		
	7	6		
	8	8		
	9	2		
	10	2		
	11	14	1	
	12	3		
	13	11		
	14	23	1	
	15	5		
	16	2		
	17	3		
	18	3	2	
	19	10		
	20	14	1	
	21	12		
	22	3		
	23	10	2	
	24	8	1	
	25	3		
	26	5		
	27	6		
	28	3	2	
	29	10		
	30	7		
	Totals	208	16	0

Solar flare data November 2013
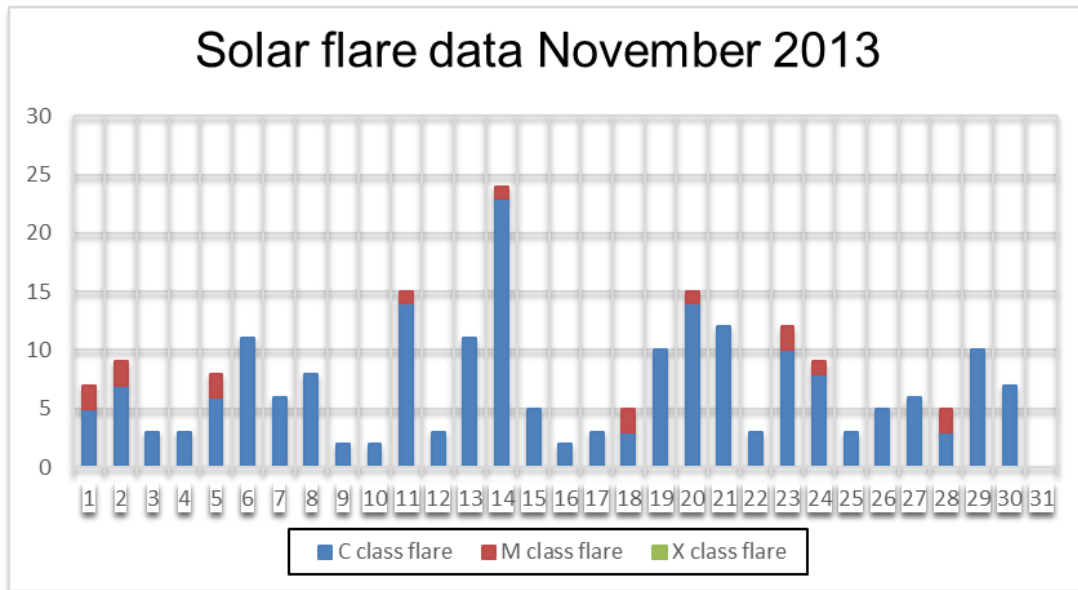
01 Nov 23: At 06h07 UT an M1,1 class flare was observed. At 11h37 UT a M1,4 flare took place, possibly from the same region. Regions of occurrence is unknown.

02 Nov 23: At 12h18 UT, Sunspot 3474 produced a M1.6 class flare. At 19h08 UT a M1.0 class flare occurred from an unknown region.

05 Nov 23: At 11h34 UT and 14h24 UT sunspot group 3480 produce a M1.8 and M1.6 class flare.

11 Nov 23: At 17.01 UT a M 1.2 class observed from group 3477.

14 Nov 23: At 22h58 UT a M1.0 class flare was observed from group 3485.

18 Nov 23: At 05h37 UT a M1,2 class flare and at 16h34 UT a M1,1 class flare was observed both from group 3490.

20 Nov 23: At 08h45 Uta M1.2 class flare was observed from group 3492.

23 Nov 23: At 02h59 UT a M1,4 class flare was observed from a unknown region. At 14h25 UT a M1,0 class flare was observed from group 3490.

24 Nov 23: At 09h17 UT a M1,1 class flare was observed from group 3499.

28 Nov 23: At 19h07 and 19h35 A M3,4 and M9.8 class flare was observed from group 3500.

- **Geo-Magnetic data**

Scientists monitor geomagnetic activity using various instruments, including magnetometers and satellites, to better understand the processes involved and predict potential impacts on technological systems such as power grids, communication networks, and navigation systems as well as changes in our climate. Severe geomagnetic storms have the potential to disrupt these systems, making the study of geomagnetic activity crucial for both scientific understanding and practical applications.

Increased geo-magnetic activities are caused by Coronal Mass Ejections (CME's) triggered by solar activities such as solar flares, filament eruptions and Coronal openings.

The K-index scale has a range from 0 to 9 and is directly related to the maximum amount of fluctuation (relative to a quiet day) in the geomagnetic field over a three-hour interval.

		0hrs to 03hrs	03hrs to 06hrs	06hrs to 09hrs	09hrs to 12hrs	12hrs to 15hrs	15hrs to 18hrs	18hrs to 21hrs	21hrs to 24hrs
1		2,33	2,67	2,33	2,67	2,33	2,00	1,33	1,67
2		2,67	2,67	2,00	1,67	1,33	1,33	1,33	1,33
3		1,00	1,00	1,67	1,33	1,00	0,33	0,67	0,67
4		1,00	1,00	2,00	1,00	1,67	3,00	4,67	4,33
5		3,00	2,33	1,33	6,00	6,00	7,00	6,33	4,67
6		4,33	5,67	4,67	4,33	2,67	4,67	5,33	4,67
7		4,67	4,33	2,33	2,33	2,67	3,33	3,00	2,67
8		2,67	4,00	3,00	3,33	1,33	2,33	4,00	3,33
9		2,67	2,33	3,33	2,67	2,00	2,00	2,67	3,00
10		2,33	3,67	2,67	2,00	2,33	1,67	1,00	2,00
11		2,00	1,33	1,67	1,00	1,00	1,00	1,00	0,67
12		0,67	1,33	4,00	2,67	2,33	1,67	1,33	3,00
13		5,00	3,67	1,67	1,67	3,00	3,00	2,00	1,33
14		2,33	1,00	0,33	1,00	1,33	3,00	2,33	0,67
15		2,33	1,67	2,33	2,00	3,33	3,33	3,33	2,67
16		1,67	1,00	2,67	2,00	2,33	2,33	1,33	2,33
17		0,67	0,33	0,33	0,67	0,67	1,67	1,33	0,33
18		0,33	1,00	0,67	1,00	0,67	0,33	1,00	1,33
19		0,67	0,33	1,67	1,67	1,67	0,67	0,67	1,33
20		1,00	1,00	2,00	2,00	1,67	1,33	1,33	1,00
21		1,33	2,33	4,33	3,33	3,67	3,67	3,00	3,67
22		5,00	5,00	4,33	3,33	4,00	4,00	2,67	2,67
23		2,67	2,33	2,67	1,33	1,67	0,67	0,67	0,67

24		1,67	1,67	1,33	1,33	2,00	1,67	2,33	2,67
25		3,00	3,00	4,67	4,67	5,00	4,67	6,00	4,00
26		4,00	2,33	3,33	2,00	2,00	0,67	1,33	1,67
27		1,33	1,67	2,33	1,33	2,00	2,33	1,33	2,00
28		2,00	2,00	2,00	2,00	1,67	2,00	2,00	1,67
29		1,00	2,00	2,00	1,33	1,67	1,00	2,00	0,67
30		1,67	2,00	1,33	1,33	1,67	1,00	1,33	0,33

GEO-MAGNETIC STORM INDEX

G1	G2	G3	G4	G5

AVG KP index / day November 2023
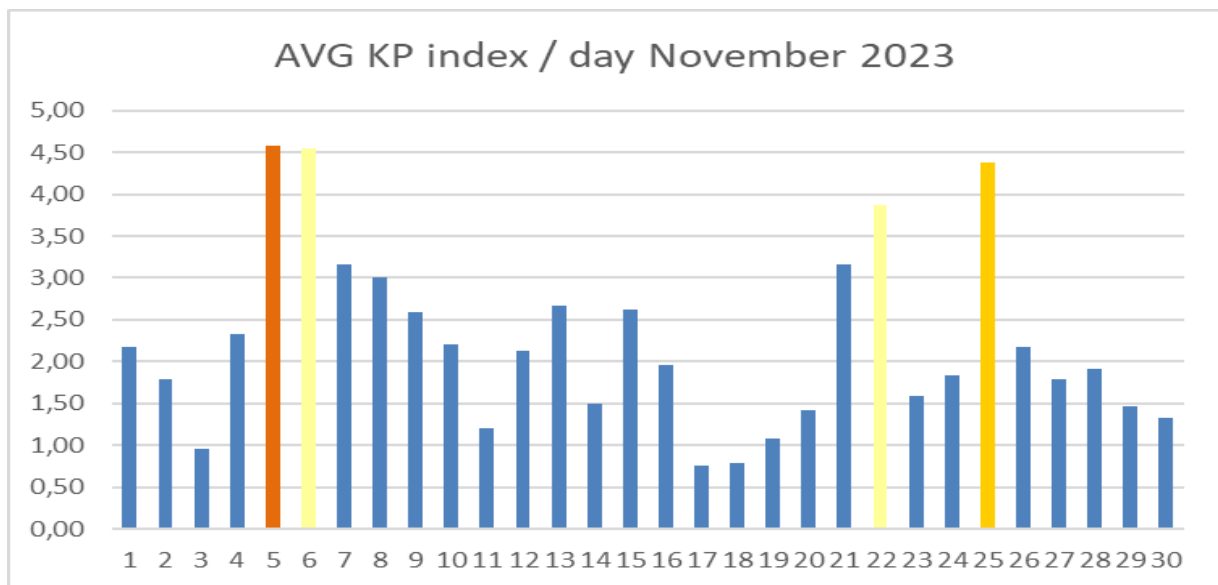
November 5:
G3 storm index sparked long time strong Aurora activities visible as far South as Texas in the USA and Italy in Europe.

November 22:
G1 storm index short time medium Aurora activities visible in the high latitudes the USA and Europe.

November 25:
G2 storm index sparked short time strong Aurora activities visible in the low latitudes of the USA and Europe.

- **H Alpha Observations**

One observer shared his H-Alpha data for November 2023. Andrew Devey from BAA & MSAS living in Spain using a PST double stack H Alpha telescope.

November 2023	Counts	Observations	MDF
Prominance	148	28	5,3
Plage Areas	97	28	3,5
Filaments	171	28	6,1
Flares	0	28	0,0

- **Solar images**

WHITE LIGHT

Jacques van Delft, ASSA Bloemfontein
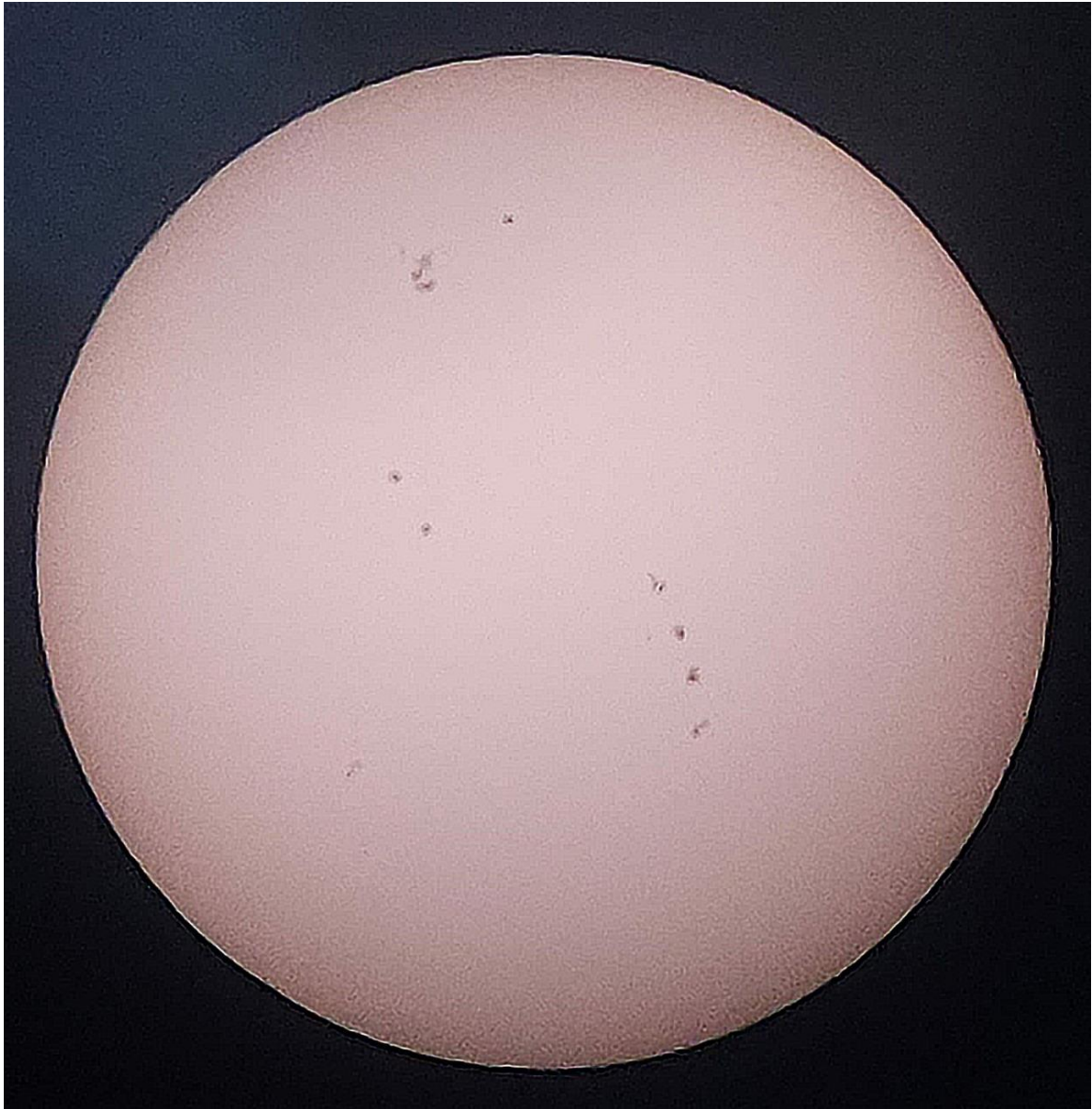
Colin Steyn, ASSA 27 Nov 23. Sterland observatory Bloemfontein

Jacques van Delft
29 Nov. 2023
Celestron Astra F1 130 mm
Bloemfontein, South Africa
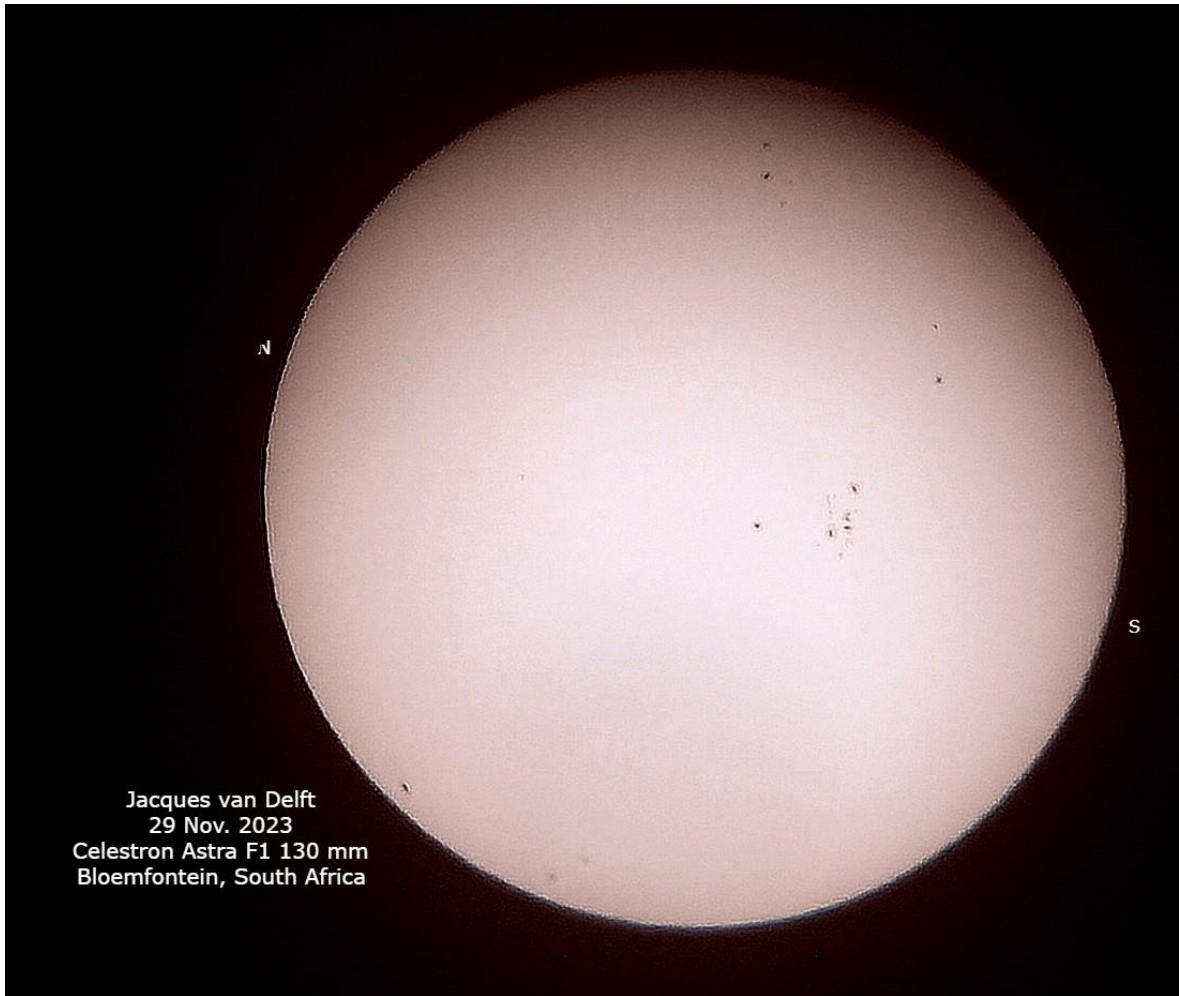
Jacques van Delft, ASSA Bloemfontein
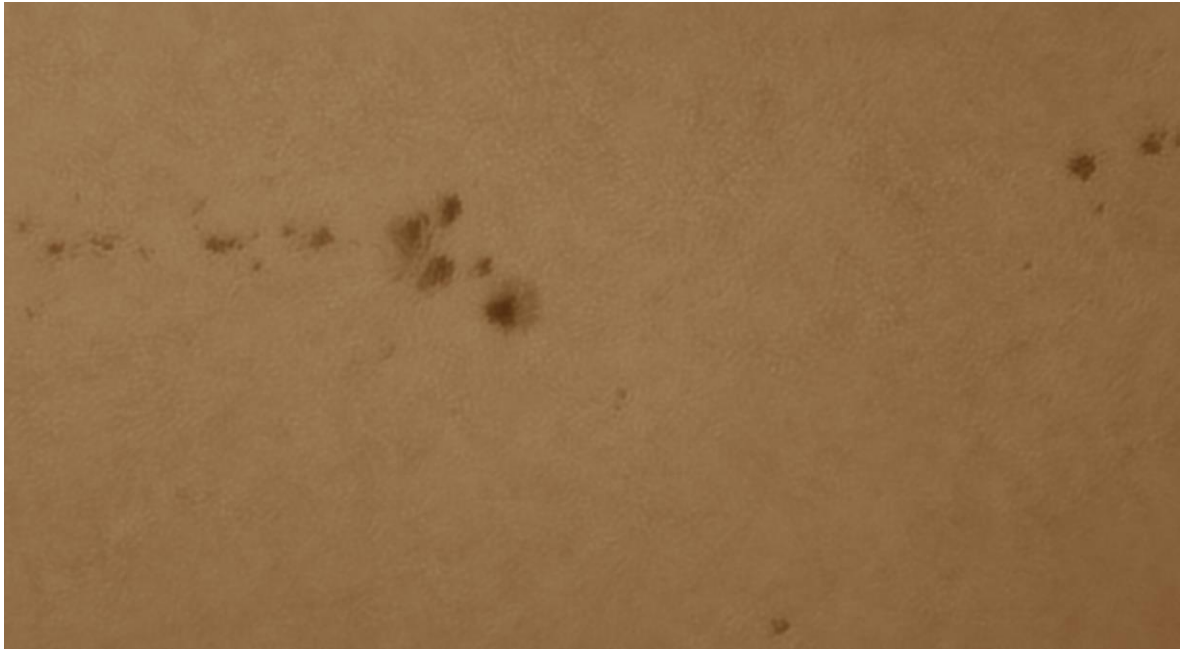
Andrew Devey, BAA/MSAS Spain. AR3498 & AR 3499
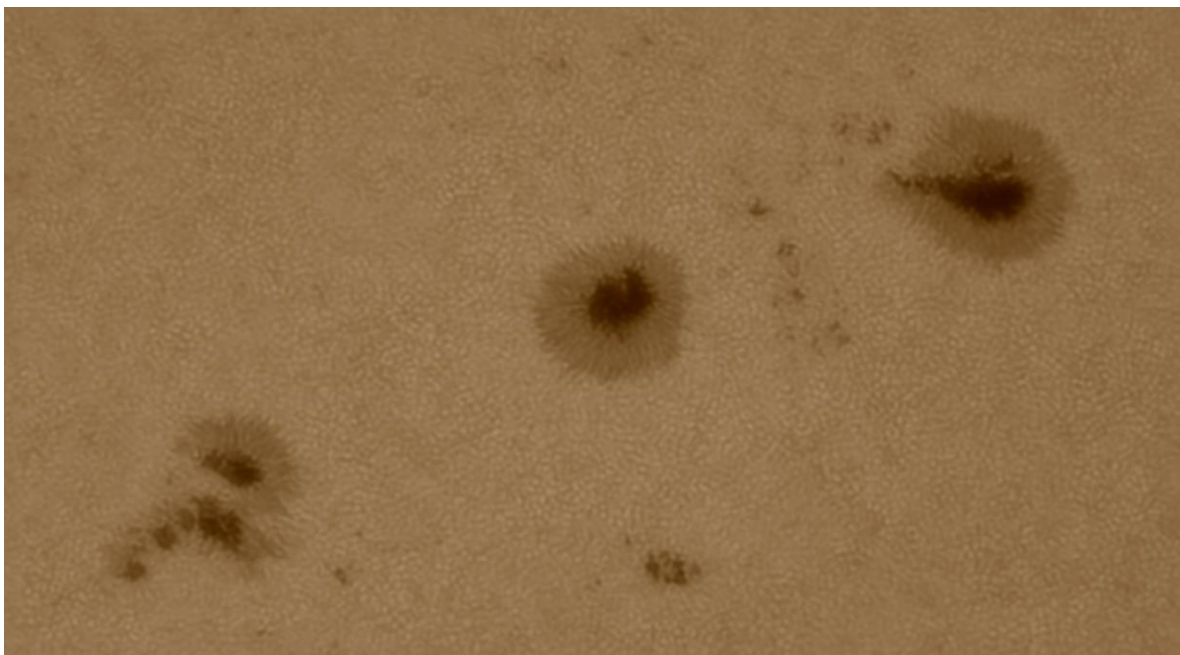
Andrew Devey, BAA/MSAS Spain. AR3502, AR3492,AR3491 &3490
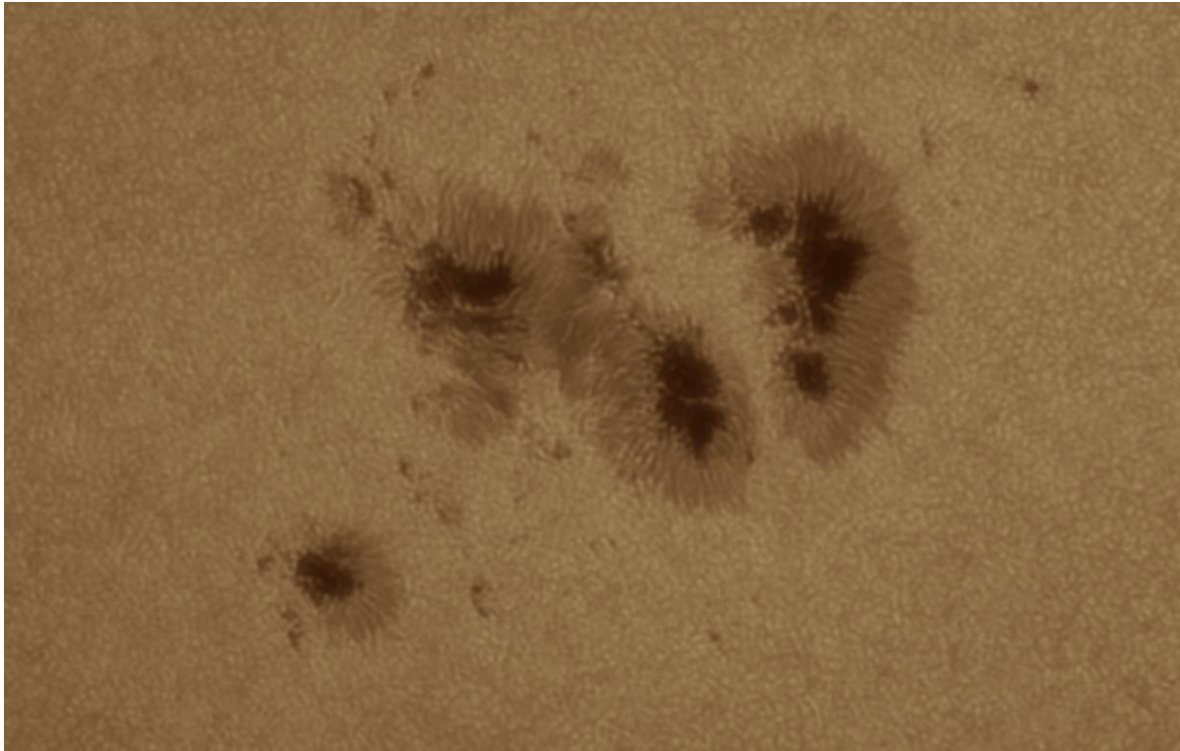
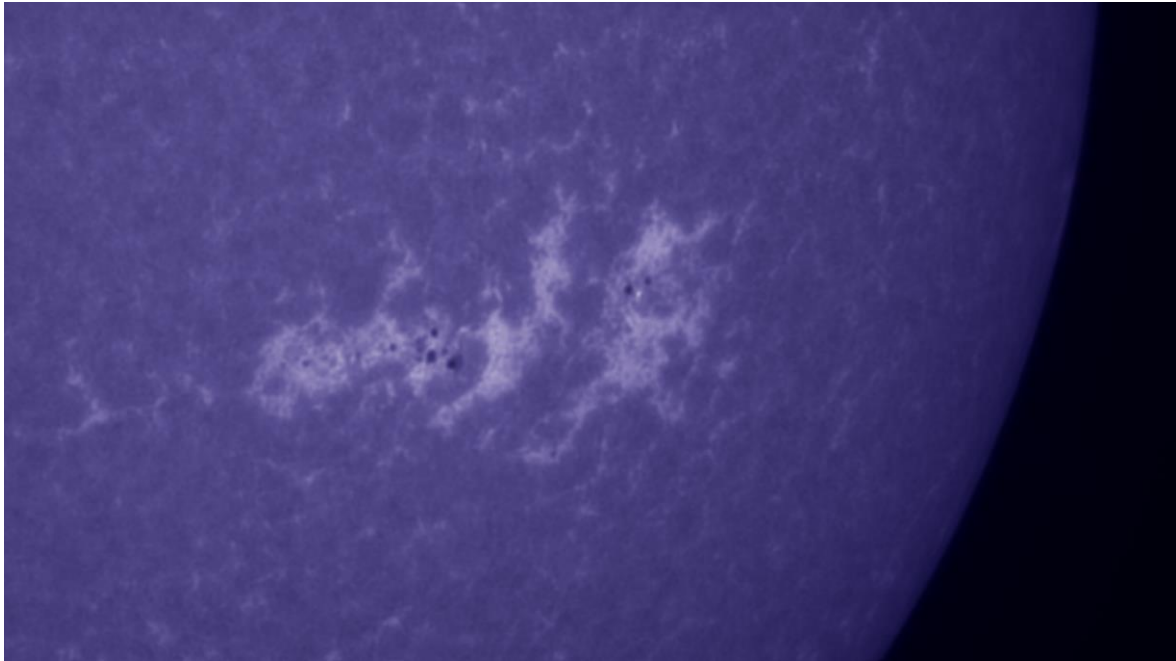Andrew Devey, BAA/MSAS Spain. AR3500

H-Alpha
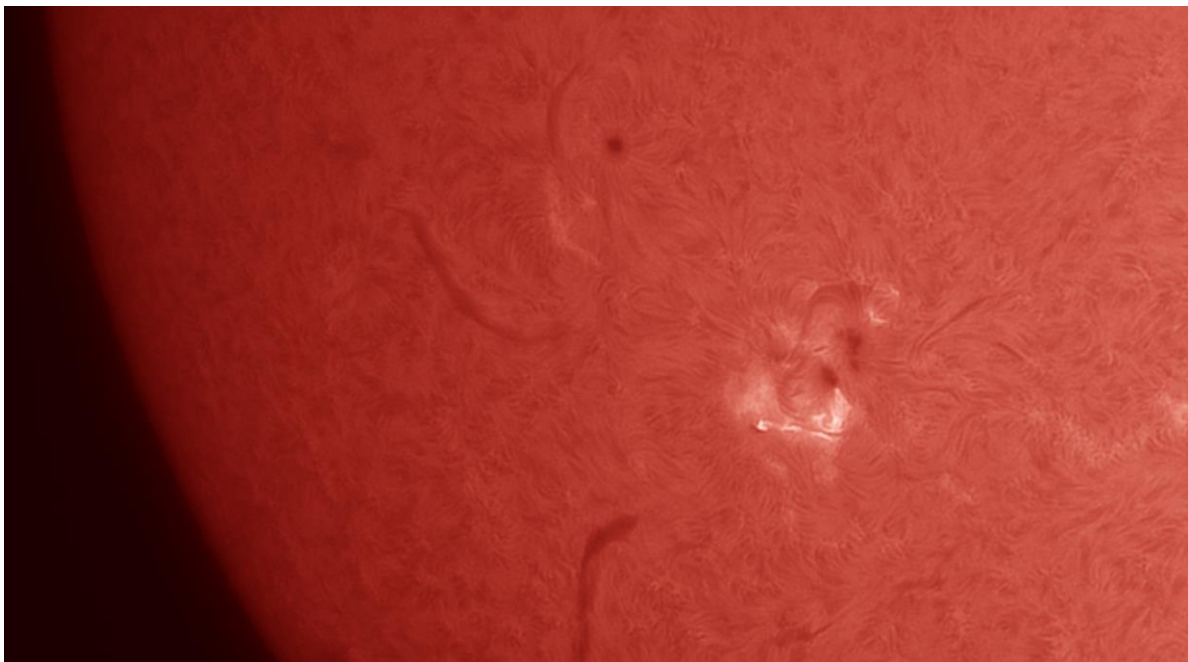
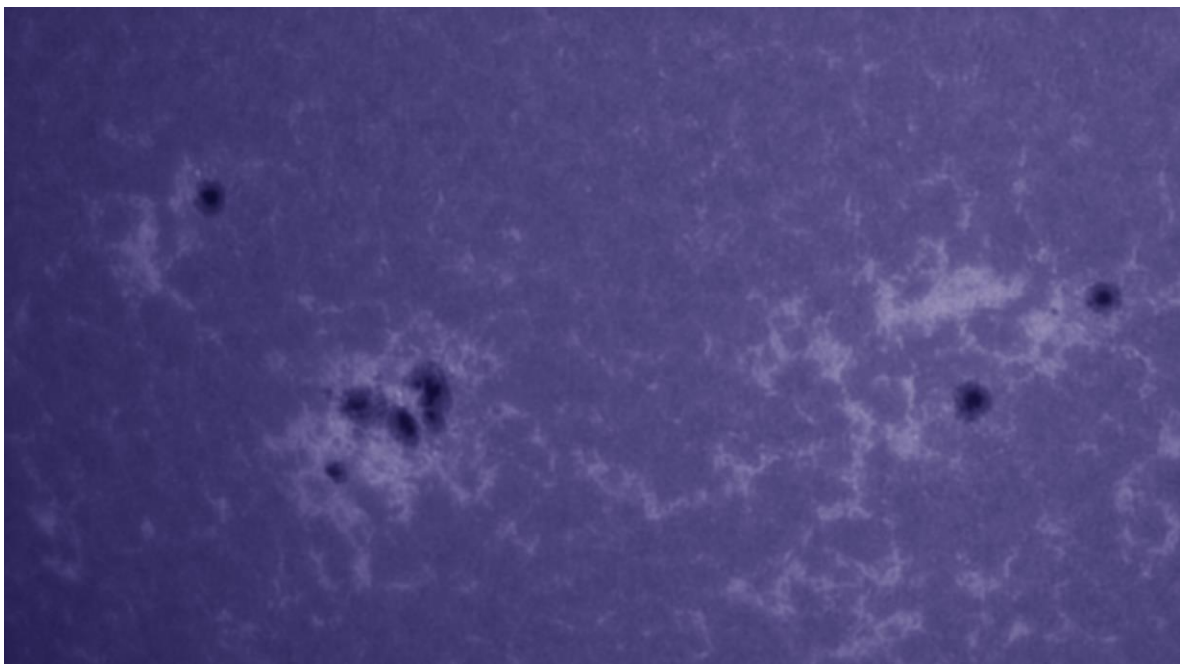Andrew Devey, BAA/MSAS Spain. AR3500 C3 flare
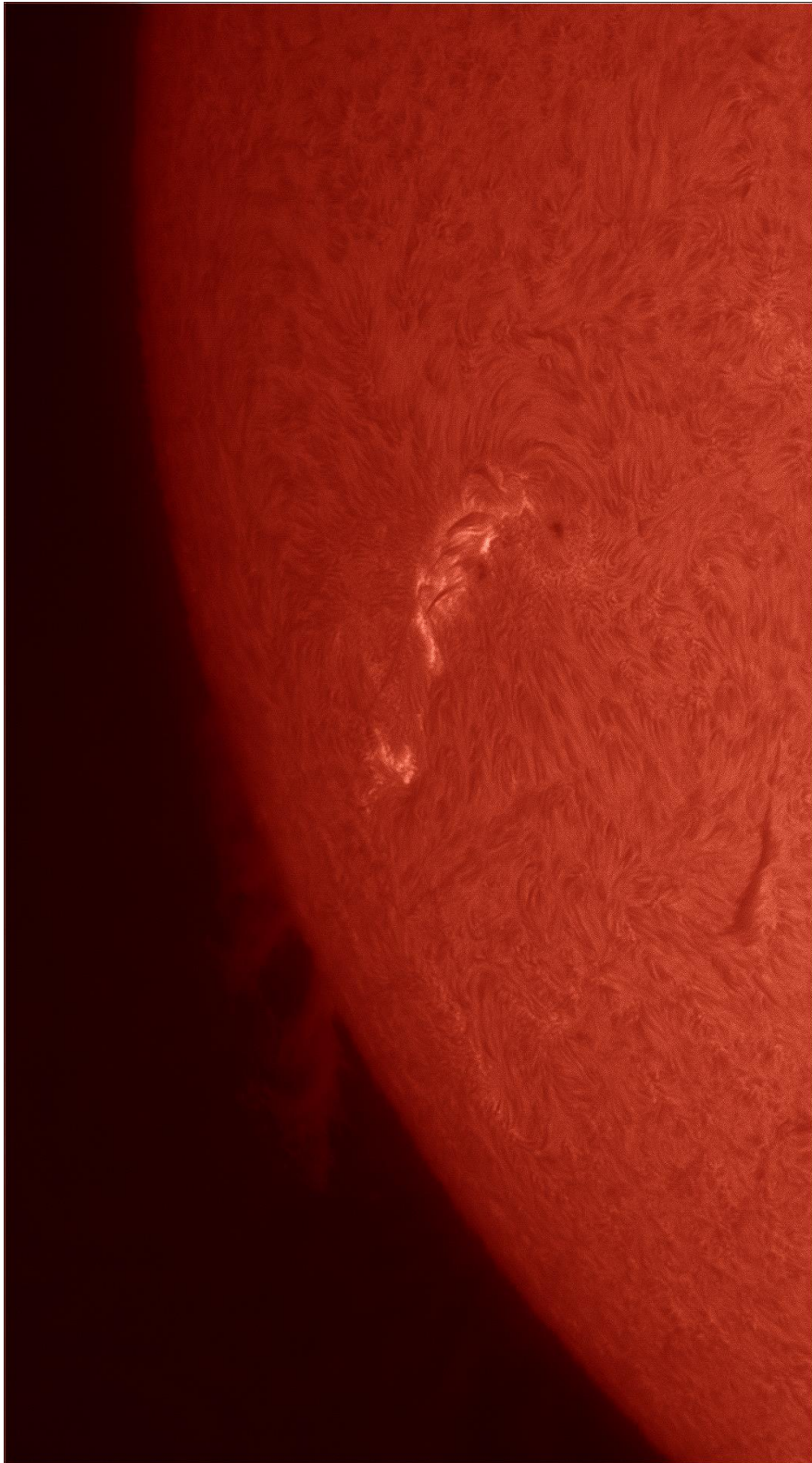
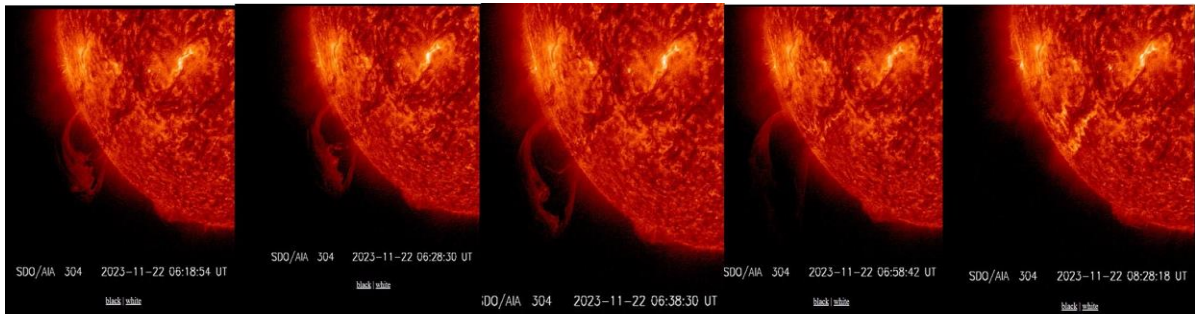Andrew Devey, BAA/MSAS Spain. Orientated C7 flare

Ca-K

Andrew Devey, BAA/MSAS Spain. AR3498 & AR 3499

Andrew Devey, BAA/MSAS Spain. AR3501,3500,3494 & ar3493
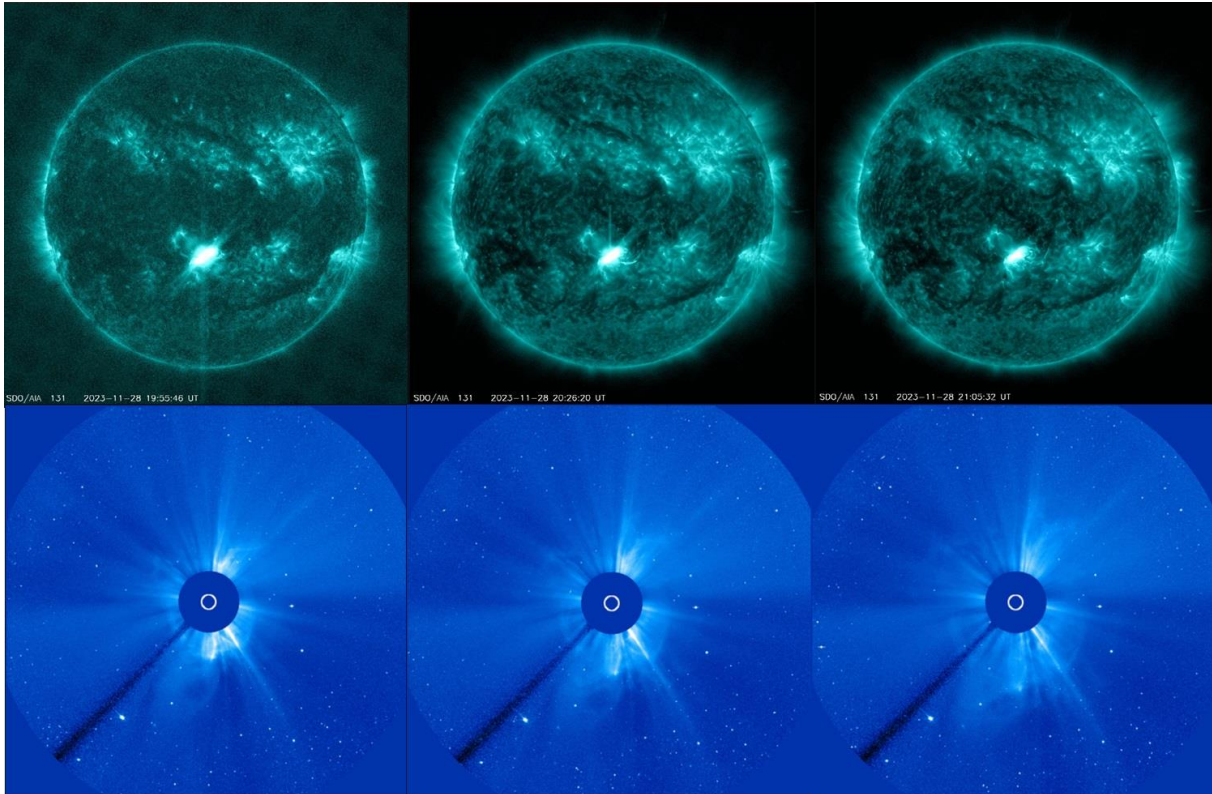
EVENTS IN NOVEMBER

A series images of a filament eruption leaving a canyon of fire on the 22th of November

A series images on 3 Coronal Mass Ejections that took place on the 23th of November.

This image shows the M9.8 solar flare that took place on the 28th of November causing Auroras visible as far south as Texas in the USA and Italy in Europe. (Images with courtesy of Spaceweather.com)

I would like to thank the contributors for their valuable inputs and wish all of you a Merry Christmas and a happy new year.

Clear Skies

Jacques van Delft

Solar Section ASSA