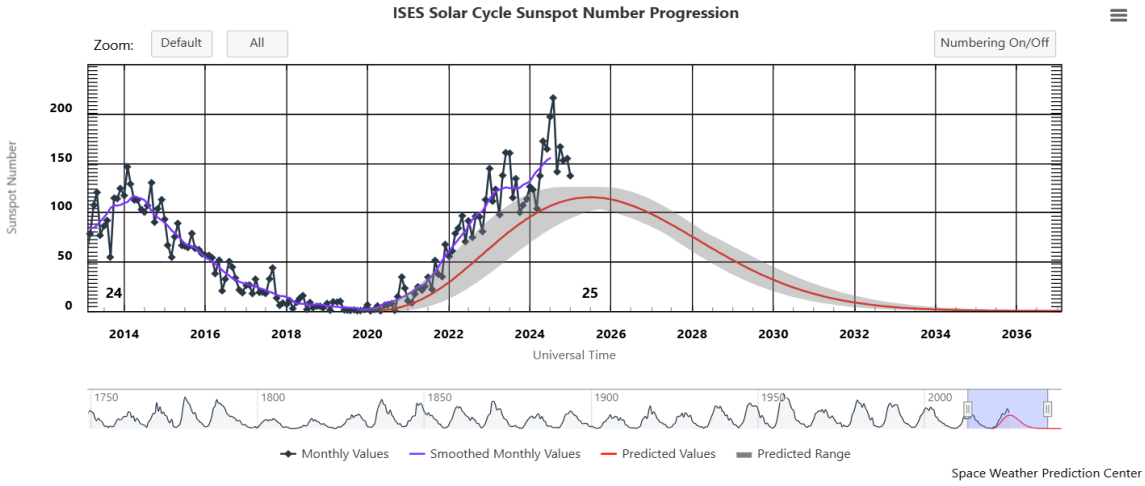
Month: January 2025

- **NEWS FROM THE SOLAR SECTION**

January 2025 solar news

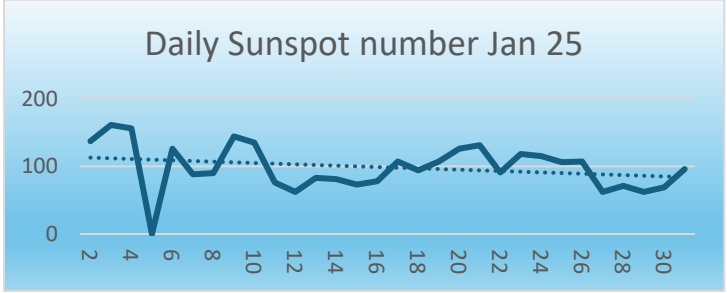
The sunspot number for January saw a decrease from 154.5 to 137, marking a decrease of 37.5. While the decrease in January sunspot numbers may suggest that Solar Cycle 25 is approaching its peak, we will need to monitor solar activity over the next few months to confirm this trend. Scientists and ASSA will be watching for any signs of a secondary peak**,** as has occurred in previous cycles. If the decline continues, it would indicate that the Sun is beginning its gradual transition toward solar minimum, expected in early 2030s.



SUNSPOT OBSERVATIONS JANUARY 2025

2025	January	Time	J van Delft Seeing	J van Delft Groups	J van Delft Spots	J van Delft W no.	J van Delft North Groups	J van Delft South groups	J van Delft North spots	J van Delft South spots
Wed	1	1205	G	10	42	142	2	8	13	29
Thu	2	1240	G	9	47	137	2	7	11	36
Fri	3	1245	G	12	41	161	3	9	8	33
Sat	4	1005	G	11	46	156	3	8	10	36
Sun	5					0				
Mon	6	1210	G	9	36	126	2	7	13	23
Tue	7	1300	G	7	18	88	2	5	10	8
Wed	8	1005	G	7	20	90	3	4	11	9
Thu	9	1110	G	11	34	144	6	5	23	11
Fri	10	1145	G	10	35	135	5	5	26	9
Sat	11	1100	G	6	16	76	4	2	13	3
Sun	12	1050	G	5	12	62	4	1	11	1
Mon	13	1315	G	7	13	83	5	2	10	3
Tue	14	1055	G	7	11	81	4	3	8	3
Wed	15	1425	G	6	13	73	5	1	11	2
Thu	16	1400	G	6	18	78	5	1	11	7
Fri	17	1155	G	8	27	107	6	2	16	11
Sat	18	1145	G	7	24	94	5	2	13	11
Sun	19	1220	G	8	27	107	4	4	15	12
Mon	20	1415	G	10	26	126	5	5	12	14
Tue	21	1310	G	10	31	131	6	4	19	12
Wed	22	1215	G	7	21	91	4	3	6	15
Thu	23	1405	G	8	38	118	4	4	15	23
Fri	24	1320	G	7	45	115	3	4	18	27
Sat	25	1010	G	8	26	106	4	4	10	16
Sun	26	1025	G	8	27	107	4	4	9	18
Mon	27	1150	G	5	12	62	3	2	3	9
Tue	28	1145	G	6	11	71	3	3	4	7
Wed	29	1430	F	5	12	62	3	2	8	4
Thu	30	1055	G	5	19	69	3	2	13	6
Fri	31	1250	G	7	26	96	4	3	19	7

Observations	Groups	Spots	W no.	North Groups	South groups	North spots	South spots
30	232	774	3094	116	116	369	405



Monthly Means

MDF	103,1	1 Observer
MDF g	7,7	1 Observer
MDF Ng	3,9	1 Observer
MDF Sg	3,9	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.

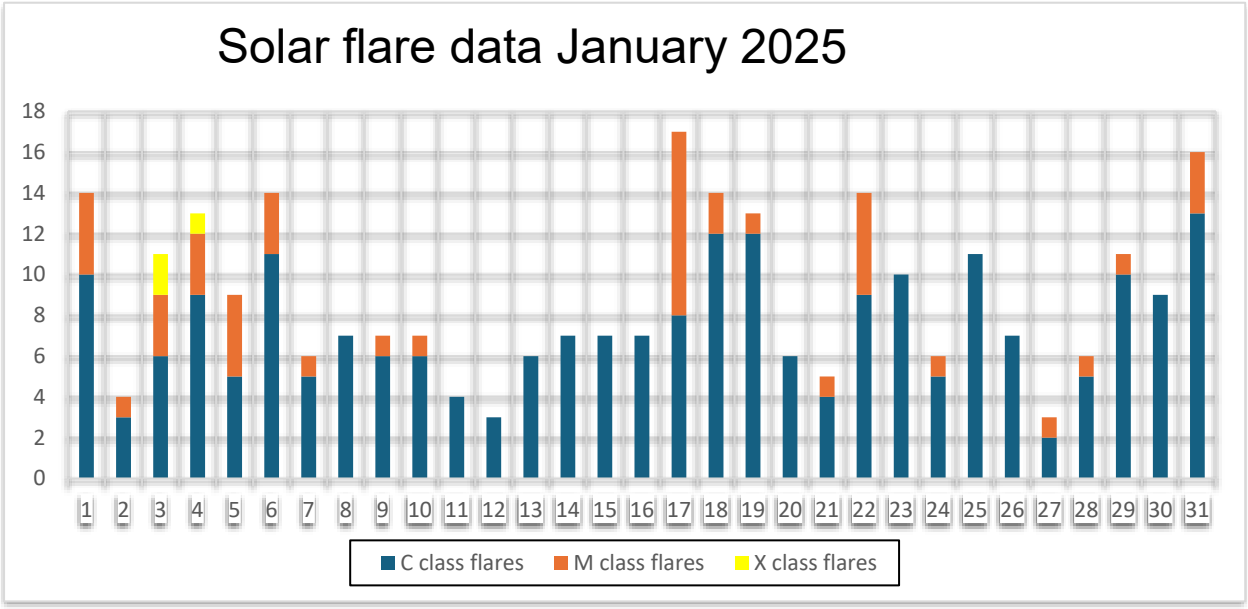
SOLAR FLARE ACTIVETY DECEMBER 2024

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

A total of 275 solar flares were observed: 225 C-class flares and 46 M-class flares and 3 X class flares.

Solar flare data: LABORATORY OF X-RAY ASTRONOMY OF THE SUN
https://xras.ru/en/sun_flares.html

2024	January	C class	M class	X class	NOA No	
Wed	1	10	4	0	3936	M1,1 M1,0 M1,2 M1,1
Thu	2	3	1	0	3939	M1,1
Fri	3	6	3	2	3947	X1,2 X1,1 M2,3 M1,9 M5,8
Sat	4	9	3	1	3947	X1,8 M1,5 M7,6 M2,1
Sun	5	5	4	0	3947	M4,1 M2,1 M4,1 M2,4
Mon	6	11	3	0	3947	M3,1 M1,4 M4,8
Tue	7	5	1	0	3939	M1,1
Wed	8	7	0	0		
Thu	9	6	1	0	3947	M1,1
Fri	10	6	1	0	3947	M0,9
Sat	11	4	0	0		
Sun	12	3	0	0		
Mon	13	6	0	0		
Tue	14	7	0	0		
Wed	15	7	0	0		
Thu	16	7	0	0		
Fri	17	8	9	0	3961/3964	M1,1/ M1,3 M2,0 M1,5 M7,4 M1,2 M1,8 M1,1 M1,0
Sat	18	12	2	0	3964	M1,7 M1,1
Sun	19	12	1	0	3964	M2,4
Mon	20	6	0	0		
Tue	21	4	1	0	3967	M3,6
Wed	22	9	5	0	3962	M1,3
Thu	23	10	0	0		
Fri	24	5	1	0	3961	M2,7
Sat	25	11	0	0		
Sun	26	7	0	0		
Mon	27	2	1	0	F/E	M2,6
Tue	28	5	1	0	3977	M1,7
Wed	29	10	1	0	3977	M1,0
Thu	30	9	0	0		
Fri	31	13	3	0	3976/3977/3978	M1,0/ M1,8/ M6,7
	Totals	225	46	3		



- **Geomagnetic data**

K INDEX

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.

2025	January	0hrs to 03hrs	03hrs to 06hr	06hrs to 09hr	09hrs to 12hr	12hrs to 15hr	15hrs to 18hr	18hrs to 21hr	21hrs to 24hr	A Index
Wed	1	4,00	5,33	5,00	6,33	6,67	8,00	6,67	4,33	86
Thu	2	3,67	2,67	3,33	4,67	4,00	4,00	3,33	3,00	22
Fri	3	3,33	3,00	2,67	4,67	0,67	1,00	1,33	1,67	9
Sat	4	2,67	4,67	5,00	4,33	3,33	4,67	5,00	3,67	32
Sun	5	3,67	2,67	3,00	3,67	3,33	4,00	4,00	3,00	20
Mon	6	3,33	4,00	3,00	2,67	2,67	3,00	2,33	2,33	15
Tue	7	2,33	2,67	2,67	2,67	2,33	3,33	2,67	2,33	12
Wed	8	3,67	2,33	1,67	67,00	1,67	2,33	1,33	1,00	8
Thu	9	2,00	1,00	2,00	2,67	3,67	3,00	2,33	1,67	10
Fri	10	1,33	3,33	1,67	3,00	3,00	1,67	2,67	3,67	12
Sat	11	2,67	0,67	1,00	1,67	1,67	3,00	2,00	0,67	7
Sun	12	1,33	2,00	2,00	1,67	2,00	1,33	1,67	2,33	7
Mon	13	4,00	2,33	1,67	2,33	2,00	2,33	2,67	2,00	11
Tue	14	2,67	2,33	2,67	2,00	2,00	2,67	3,33	3,00	12
Wed	15	3,67	3,67	3,33	2,67	3,00	3,33	3,33	3,00	16
Thu	16	3,00	3,33	2,00	2,33	3,00	3,00	3,33	3,00	14
Fri	17	3,33	3,67	3,67	3,00	3,33	3,33	4,00	4,00	21
Sat	18	2,67	2,00	2,67	2,00	2,67	2,33	2,33	2,33	10
Sun	19	1,33	2,33	3,67	3,00	3,33	2,67	3,00	3,67	15
Mon	20	4,00	3,33	3,00	3,00	4,33	3,33	3,00	3,33	20
Tue	21	2,33	3,33	2,00	1,67	1,33	2,67	3,00	2,67	11
Wed	22	3,33	2,33	3,00	2,33	2,00	1,33	1,00	3,00	10
Thu	23	3,00	1,33	0,67	1,33	1,67	3,33	3,33	2,33	10
Fri	24	1,00	1,67	2,67	1,33	2,00	1,33	1,67	2,33	7
Sat	25	0,67	0,33	1,00	0,67	0,67	1,33	0,67	0,67	3
Sun	26	0,67	1,00	0,33	0,67	0,67	0,67	0,67	0,67	3
Mon	27	0,33	0,33	1,67	2,33	2,00	3,00	2,00	2,67	8
Tue	28	2,33	1,67	0,67	2,33	3,00	3,00	3,67	3,00	12
Wed	29	2,67	1,00	1,00	2,33	2,33	1,67	1,33	1,67	7
Thu	30	1,33	1,00	0,67	1,00	1,00	1,33	2,00	2,67	6
Fri	31	1,67	1,00	1,33	1,67	2,33	2,00	2,33	3,00	8

Geomagnetic Storm Index

G1	G2	G3	G4	G5

Credit: NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

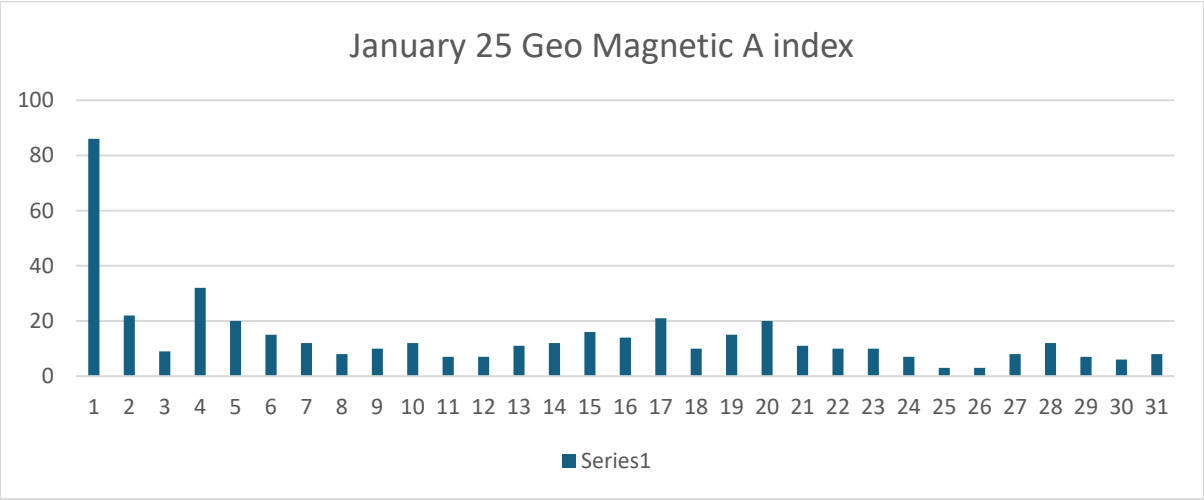
A INDEX

The solar A Index is a numerical scale that represents the geomagnetic activity in the Earth's ionosphere caused by solar flares and other solar phenomena. It measures the overall geomagnetic disturbance level on a scale from 0 to 400. The index is derived from the observed planetary A index, which quantifies the magnetic activity over a 24-hour period.

Here's a breakdown of the solar A Index scale:

- 0 to 7: Quiet geomagnetic conditions.
- 08 to 15: Unsettled geomagnetic conditions.
- 16 to 29: Active geomagnetic conditions.
- 30 to 49: Minor storm levels.
- 50 to 99: Major storm levels.
- 100 and above: Severe storm levels.

A higher A Index generally indicates more disturbed geomagnetic conditions. This index is valuable for radio operators, especially those involved in high-frequency (HF) radio communication, as it helps predict the likelihood of signal disruptions due to solar activity. The solar A Index is typically updated regularly and is an important tool for space weather monitoring and forecasting.



The high geomagnetic activity on January 1st have caused auroras at high latitudes, minor satellite disruptions, and potential fluctuations in Earth's magnetic field. The gradual decline in activity suggests that the solar wind and CME influences weakened throughout the month.

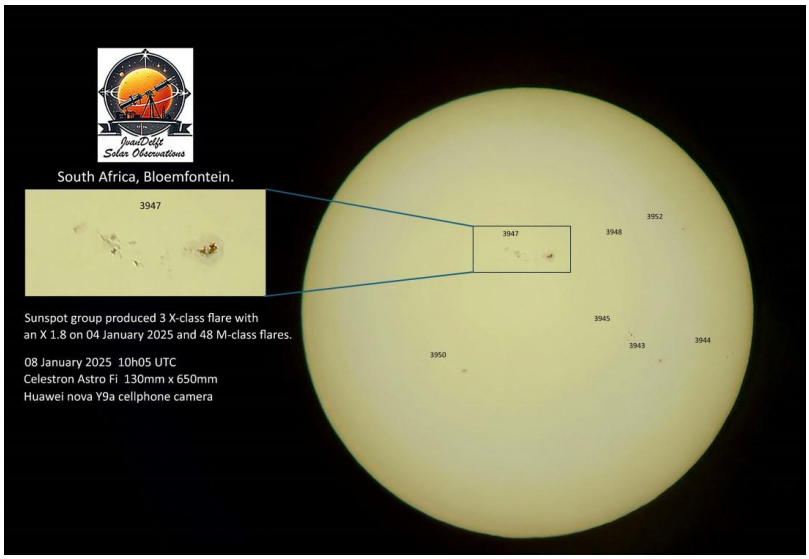
H Alpha Observations

One observer shared his H-Alpha data for December 2024. Andrew Devey from BAA & MSAS living in Spain. Our regularly observer Mick Nicholls from BAA & MSAS living in the UK will be out of action for some time due to the position of the Sun in winter. This makes observations not possible.

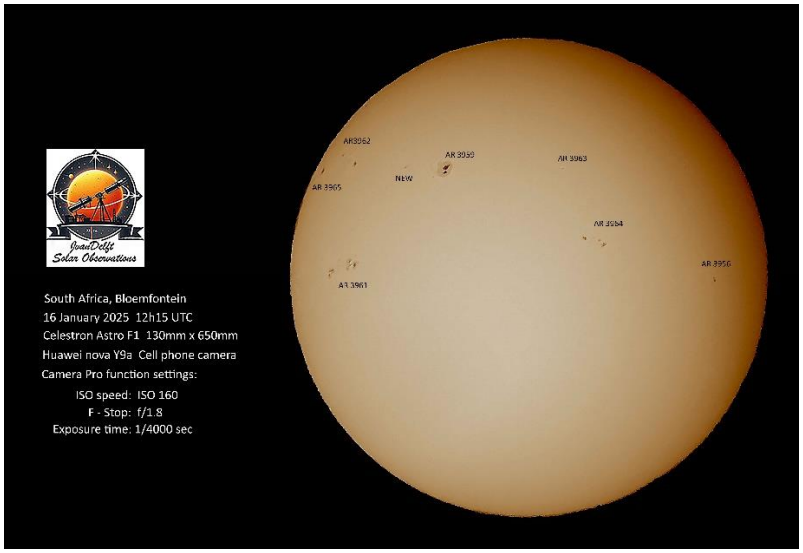
January 2024	Counts	Observations	MDF
Prominance	129	25	5,2
Plage Areas	122	25	4,9
Filaments	204	25	8,2
Flares	4	25	0,2

- **Solar images**

WHITE LIGHT



Jacques van Delft ASSA South Africa



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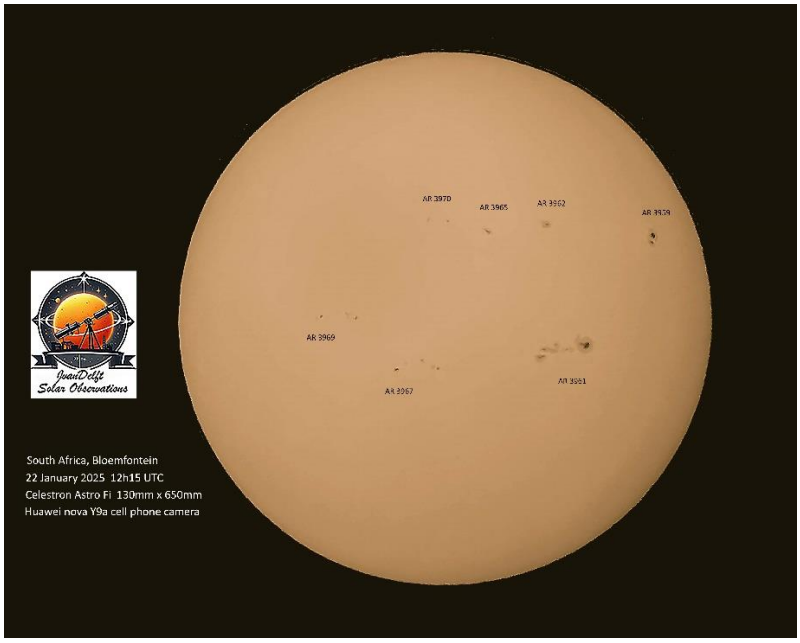

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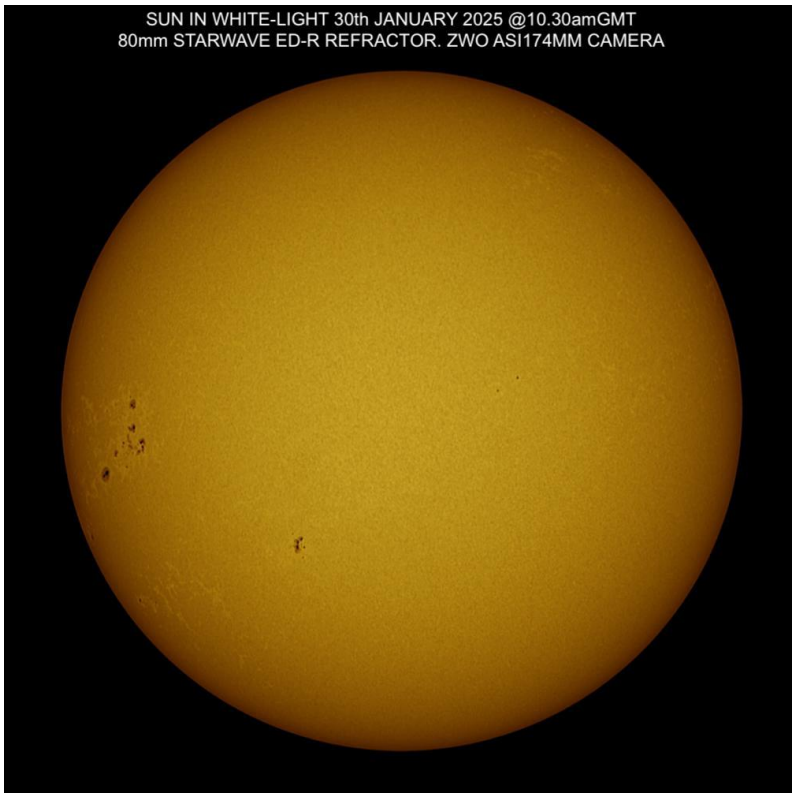
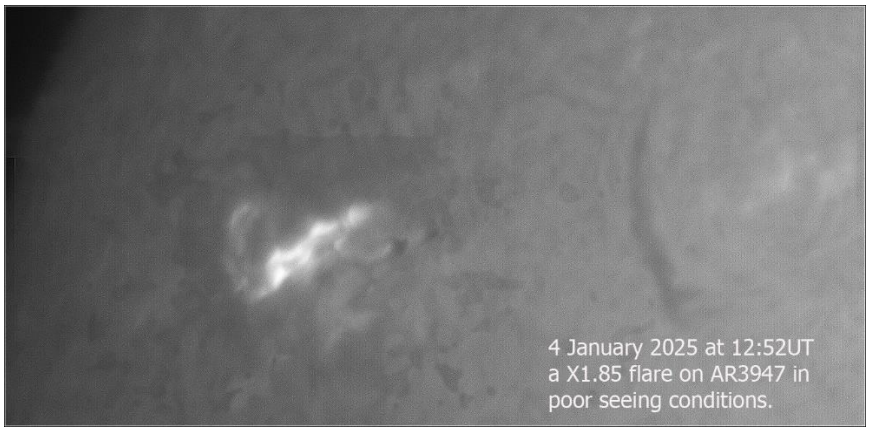


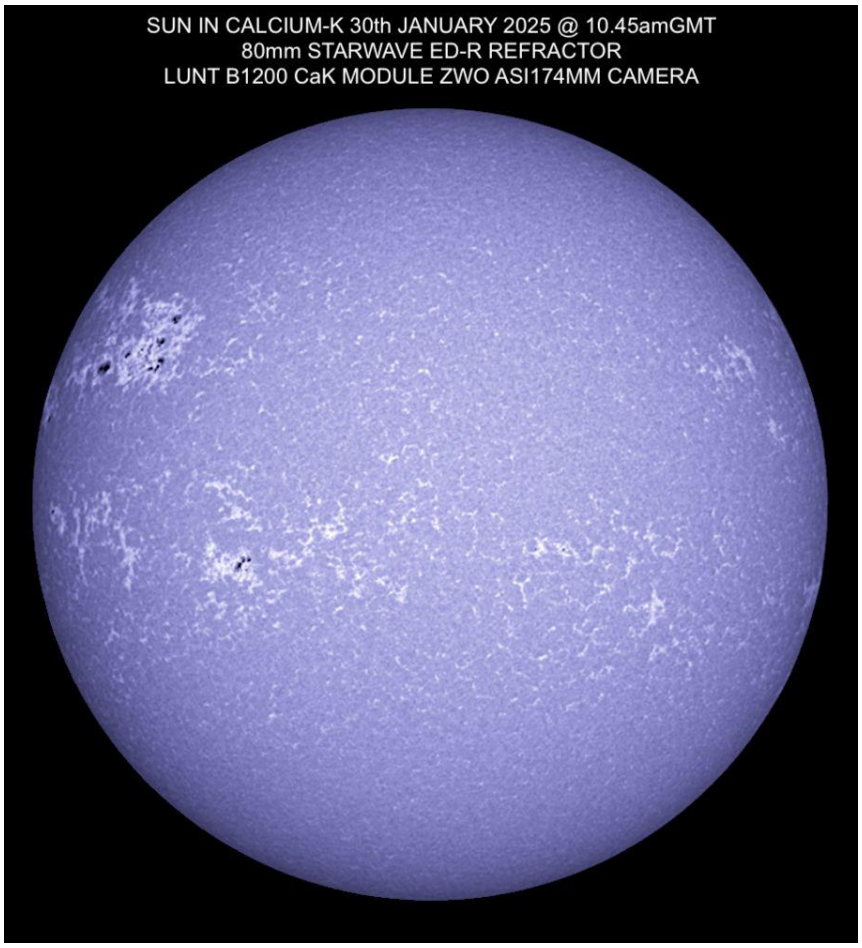
Mick Nicholls, BAA/MSAS, United Kingdom.

H-Alpha



Andrew Devey, BAA/MSAS Spain.

C-Kal



Mick Nicholls, BAA/MSAS, United Kingdom.

Clear skies and regards
Jacques van Delft

ASSA Solar Section