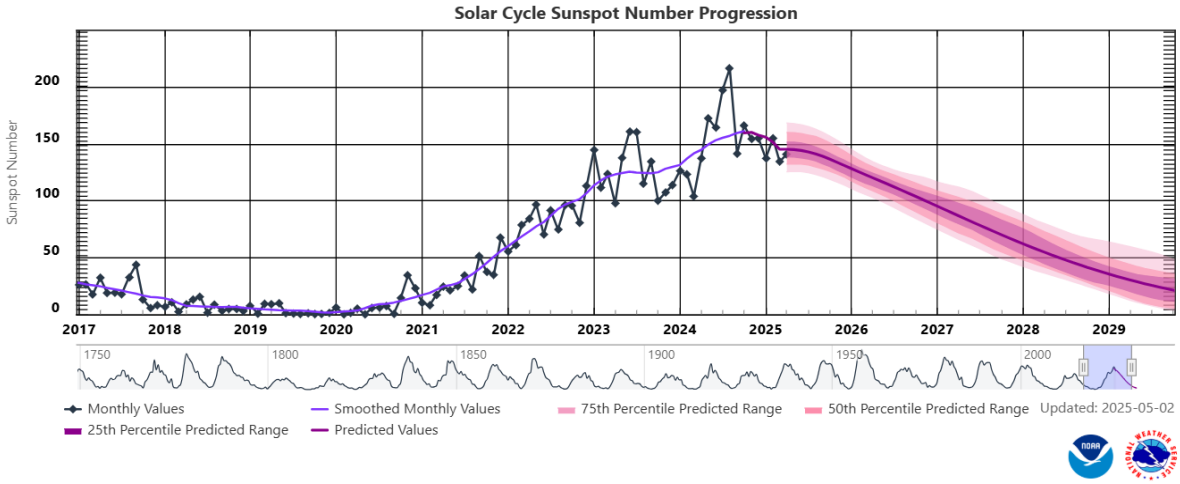
Month: April 25

- **NEWS FROM THE SOLAR SECTION**

April 2025 Solar News

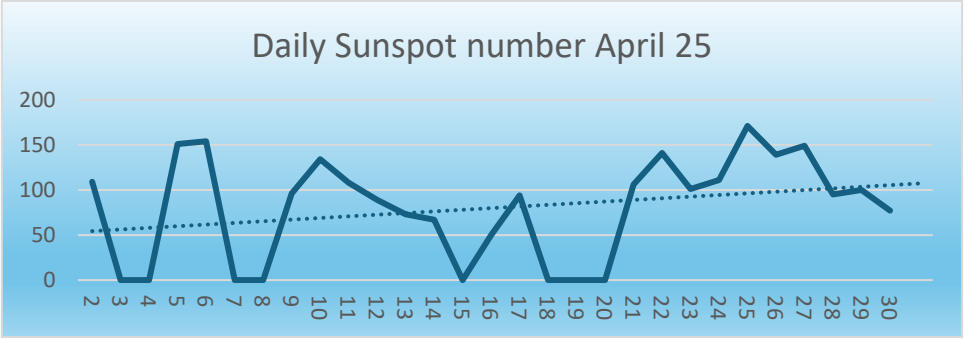
As of March and April 2025, Solar Cycle 25 appears to be at or near its maximum, with sunspot activity beginning to plateau. The observed values are higher than originally predicted, indicating a more active and geoeffective cycle than Solar Cycle 24. This heightened activity supports increased occurrences of solar flares and coronal mass ejections, which may explain recent geomagnetic disturbances like the one on May 1, 2025. If the trend continues, we can expect strong solar influences on space weather throughout 2025 before a gradual decline begins into 2026.



SUNSPOT OBSERVATIONS April 2025

2025	April	Jacques v Delft Time	Seeing	Jacques v Delft Groups	Jacques v Delft Spots	Jacques v Delft W no.	Jacques v Delft North Groups	Jacques v Delft South groups	Jacques v Delft North spots	Jacques v Delft South spots
Tue	1	1205	G	6	38	98	3	3	14	24
Wed	2	1330	G	7	39	109	3	4	16	23
Thu	3					0				
Fri	4					0				
Sat	5	915	G	10	51	151	4	6	13	38
Sun	6	1005	G	9	64	154	3	6	11	53
Mon	7					0				
Tue	8					0				
Wed	9	1015	G	7	26	96	4	3	10	16
Thu	10	1315	G	8	54	134	5	3	34	20
Fri	11	1100	G	8	28	108	5	3	23	5
Sat	12	1000	G	6	29	89	4	2	25	4
Sun	13	1035	G	5	23	73	4	1	22	1
Mon	14	1035	G	5	17	67	4	1	16	1
Tue	15					0				
Wed	16	1055	G	3	20	50	2	1	19	1
Thu	17	1135	G	7	24	94	3	4	10	14
Fri	18					0				
Sat	19					0				
Sun	20					0				
Mon	21	930	G	8	26	106	5	3	19	7
Tue	22	1500	G	10	41	141	5	5	26	15
Wed	23	915	G	7	31	101	2	5	16	15
Thu	24	1515	G	8	31	111	4	4	17	14
Fri	25	1015	G	13	41	171	4	9	20	21
Sat	26	915	G	11	29	139	3	8	10	19
Sun	27	1230	G	11	39	149	3	8	18	21
Mon	28	1105	G	8	15	95	2	6	3	12
Tue	29	1015	G	8	20	100	3	5	7	13
Wed	30	1105	G	6	17	77	3	3	7	10

Observations	Groups	Spots	W no.	North Groups	South groups	North spots	South spots
22	171	703	2413	78	93	356	347



Monthly Means

MDF	109,7	1 Observer
MDF g	7,8	1 Observer
MDF Ng	3,5	1 Observer
MDF Sg	4,2	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.

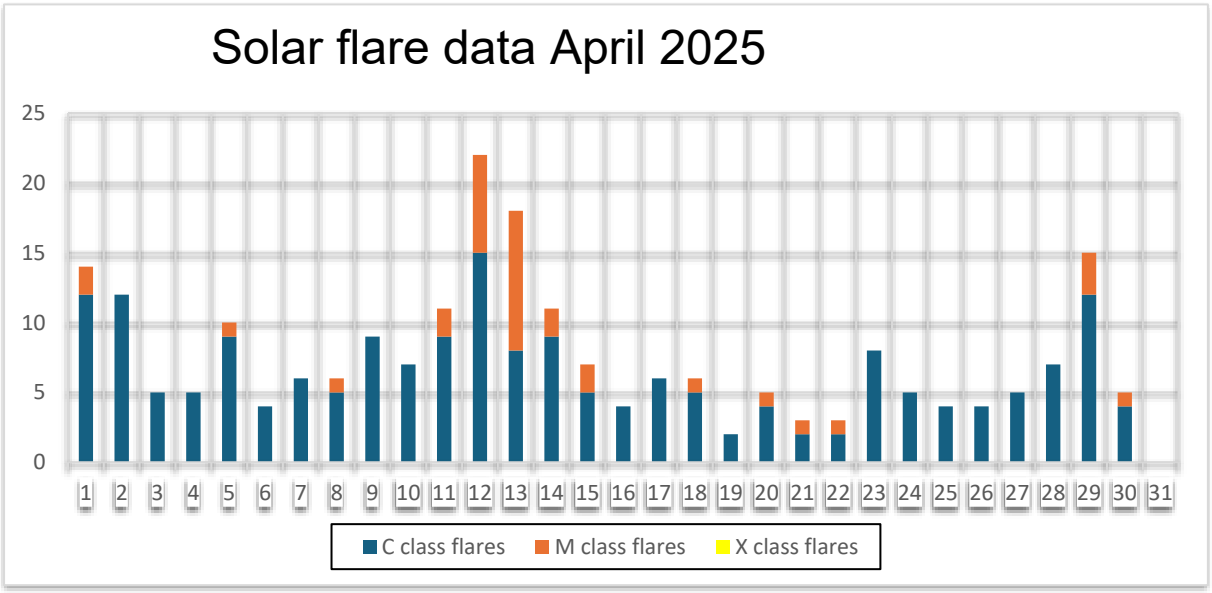
SOLAR FLARE ACTIVETY MARCH 2024

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 229 solar flares were observed: 194 C-class flares and 35 M-class flares and 0 X class flare.

Solar flare data: LABORATORY OF X-RAY ASTRONOMY OF THE SUN

2025	April	C class	M class	X class	Sol Actindex	NOA No	
Tue	1	12	2	0	7,3	4046/4048	M5,6/ M2,5
Wed	2	12	0	0	6,6		
Thu	3	5	0	0	4,8		
Fri	4	5	0	0	4,4		
Sat	5	9	1	0	5,5	4048	M1,0
Sun	6	4	0	0	4,8		
Mon	7	6	0	0	4,5		
Tue	8	5	1	0	5,2	4048	M1,5
Wed	9	9	0	0	5,4		
Thu	10	7	0	0	5		
Fri	11	9	2	0	6,2	4055	M1,0 M1,0
Sat	12	15	7	0	7,8	4055	M1,1 M1,2 M2,0 M2,7 M2,3 M1,3
Sun	13	8	10	0	8,1	4055	M1,0 M1,1 M1,1 M2,3 M1,0 M1,4 M1,2 M1,2 M3,2 M1,6
Mon	14	9	2	0	7,4		
Tue	15	5	2	0	6,3	??	M1,5 M1,3
Wed	16	4	0	0	5		
Thu	17	6	0	0	4,1		
Fri	18	5	1	0	4,1	??	M4,4
Sat	19	2	0	0	5,4		
Sun	20	4	1	0	4,4	??	M1,0
Mon	21	2	1	0	5	4062	M1,9
Tue	22	2	1	0	5,1	4063	M1,3
Wed	23	8	0	0	4,2		
Thu	24	5	0	0	4,1		
Fri	25	4	0	0	3,3		
Sat	26	4	0	0	3		
Sun	27	5	0	0	2,8		
Mon	28	7	0	0	3,7		
Tue	29	12	3	0	6,1	4078/4079	M1,3 M1,6/ M1,7
Wed	30	4	1	0	5,9	4079	M2,0
	Totals	194	35	0			



- **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	April	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
Tue	1	1,00	1,33	1,33	1,00	1,67	1,00	2	2,00	5
Wed	2	4,33	3,67	4,00	4,00	3,33	2,00	3,33	3,67	22
Thu	3	3,67	3,00	4,00	3,67	4	3,33	4,67	4,67	26
Fri	4	4,00	4,00	4,00	4,00	5,33	4,00	4,33	4,67	33
Sat	5	5,67	5,33	4,33	4,33	3,67	3,67	5,33	4,33	40
Sun	6	5,00	3,33	2,33	3,33	3,33	3,33	3,00	3,33	17
Mon	7	3,00	3,00	2,00	1,67	2,33	2,33	4,00	3,33	13
Tue	8	3,33	4,00	3,67	2,33	4,67	4,00	4,00	3,67	24
Wed	9	4,67	3,33	3,67	4,33	3,67	3,00	3,00	3,00	22
Thu	10	4,00	3,33	3,67	2,33	1,67	2,00	2,67	4,33	17
Fri	11	4,33	3,33	2,33	2,33	3,33	2,00	3,33	4,33	18
Sat	12	3,33	2,67	3,00	3,33	2,67	3,67	3,67	4,67	20
Sun	13	4,00	3,67	2,67	2,33	3,00	2,33	3,33	2,33	15
Mon	14	3,33	4,33	3,33	2,00	2,33	3,00	3,00	4,00	18
Tue	15	3,33	2,33	1,67	1,67	2,00	5,00	6,00	6,33	34
Wed	16	5,33	3,33	3,33	4,67	7,33	6,33	7,67	5,33	77
Thu	17	2,67	4,00	2,00	1,67	3,00	2,33	0,67	2,33	11
Fri	18	3,33	4,00	3,00	2,00	2,33	2,33	2,33	2,67	13
Sat	19	4,00	3,00	4,00	2,67	3,33	3,33	2,33	4,33	20
Sun	20	5,00	2,67	2,67	1,67	1,67	1,00	3,00	2,33	14
Mon	21	4,33	4,33	4,33	4,67	5,33	4,00	5,00	2,67	35
Tue	22	3,67	3,00	3,00	1,67	2,33	2,33	2,67	2,67	13
Wed	23	1,67	2,67	1,67	3,00	2,00	1,33	0,67	1,33	7
Thu	24	2,67	2,33	3,67	3,00	3,67	2,00	2,33	1,33	13
Fri	25	1,00	1,00	1,00	1,67	1,67	1,00	1,67	2,00	5
Sat	26	2,00	2,00	1,33	2,33	2,33	1,67	1,67	2,00	7
Sun	27	1,33	2,33	1,33	1,33	1,67	2,33	2,00	1,33	5
Mon	28	2,67	0,67	0,67	1,33	1,00	0,67	0,67	0,67	5
Tue	29	0,33	1,67	2,33	2,00	1,67	1,33	2,00	1,68	6
Wed	30	3,67	2,67	2,67	3,33	1,67	1,33	1,67	3,00	12

Geomagnetic Storm Index

G1	G2	G3	G4	G5

Credit: NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

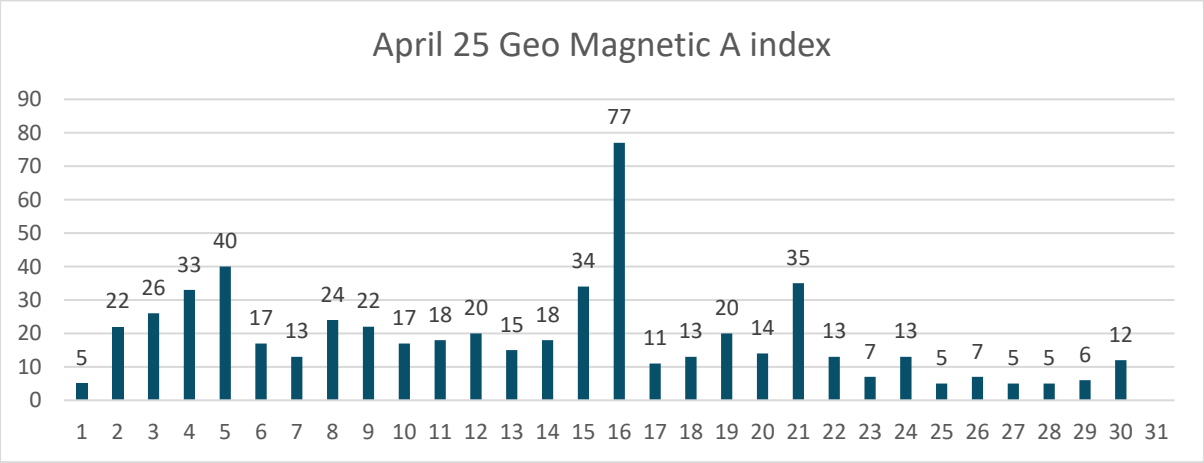
A INDEX

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.



April 2025 displayed highly dynamic geomagnetic activity, marked by both elevated and subdued A index values. The most significant feature is the major geomagnetic storm observed on April 16, with an A index peaking at 77 – a strong indicator of a disturbed geomagnetic field, likely associated with heightened solar activity such as a CME (Coronal Mass Ejection) impact. Prior to this spike, moderate geomagnetic fluctuations occurred, particularly on April 4 (33) and April 5 (40), suggesting the onset of intermittent solar wind streams or smaller CMEs. After the peak on the 16th, the geomagnetic field gradually stabilized, with values declining steadily to relatively quiet levels (mostly under 15) for the remainder of the month. Notable exceptions include April 19 (20) and April 21 (35), indicating brief intervals of renewed disturbance. The last week of April was marked by calm conditions, with values dropping to as low as 5, which reflects quiet geomagnetic behaviour conducive to more stable space weather and minimal auroral activity.

H Alpha Observations

Two observers shared their H-Alpha data for March 2025. Andrew Devey from BAA & MSAS living in Spain and Mick Nicholls from BAA & MSAS living in the UK.

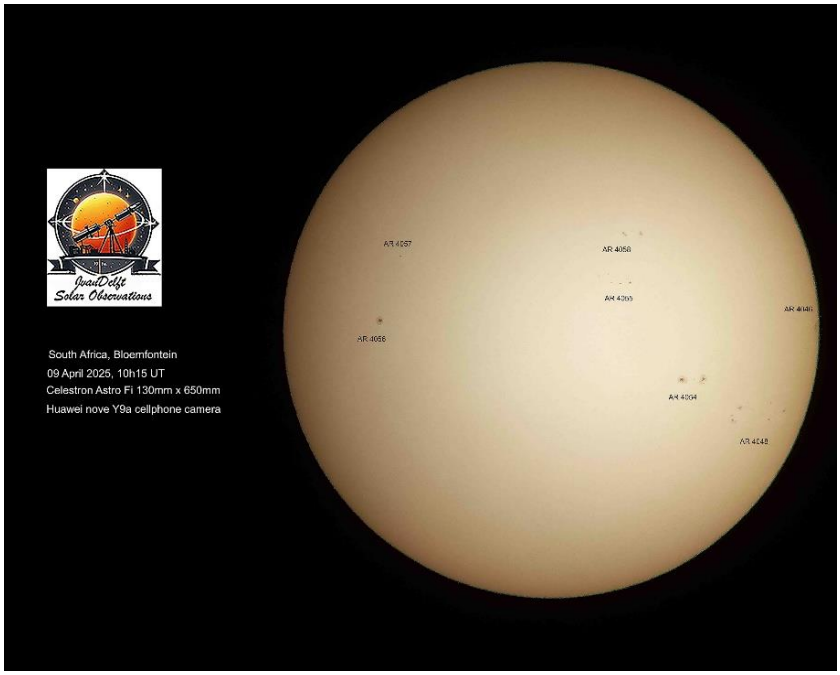
Apr-25	Andrew Devey Prominence Active	Mick Nicholls Prominence Active	Andrew Devey Prominence Quit	Mick Nicholls Prominence Quit	Andrew Devey Prominence Total	Mick Nicholls Prominence Total	Andrew Devey Plage Areas	Mick Nicholls Plage Areas	Andrew Devey Filaments	Mick Nicholls Filaments	Andrew Devey Flares	Mick Nicholls Flares
1		0		4		4		5		6		0
2	3	0	2	5	5	5	6	5	6	7	1	0
3	4	0	1	4	5	4	6	4	6	6	0	0
4	3	0	2	5	5	5	7	3	7	7	0	0
5	2	0	4	3	6	3	6	4	6	6	0	0
6	3	0	3	7	6	7	6	2	6	8	0	0
7		0		4		4		3		7		0
8	2		3		5		5		8		0	
9	3		1		4		4		6		0	
10		0		4		4		4		5		0
11												
12		0		3		3		3		7		1
13												
14	0		4		4		2		5		0	
15	0	0	4	4	4	4	3	2	6	5	0	0
16	3		1		4		3		6		0	
17	2	0	4	4	6	4	3	3	6	3	0	0
18	0		2		2		4		5		0	
19												
20	2	0	6	7	8	7	4	3	5	6	0	0
21	2		5		7		3		6		0	
22	3		2		5		5		6		0	
23												
24	2		3		5		6		7		0	
25	3		0		3		5		6		0	
26	3		0		3		5		6		0	
27	4	0	1	5	5	5	4	2	7	6	0	0
28												
29	2	0	2	3	4	3	4	2	6	8	0	0
30	2		2		4		4		6		0	
Total Nr	48	0	52	62	100	62	95	45	128	87	1	1

March 2025	Counts	Observations	MDF
Prominance	162	35	4,6
Plage Areas	140	35	4,0
Filaments	215	35	6,1
Flares	2	35	0,1

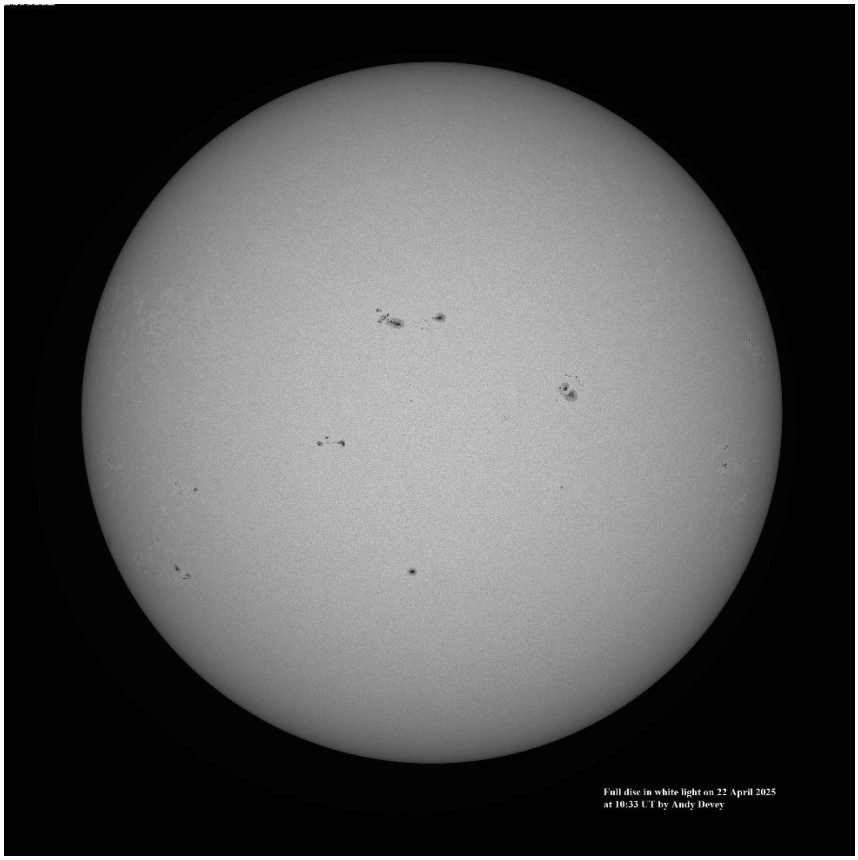
- **Solar images**

WHITE LIGHT

Jacques van Delft ASSA South Africa

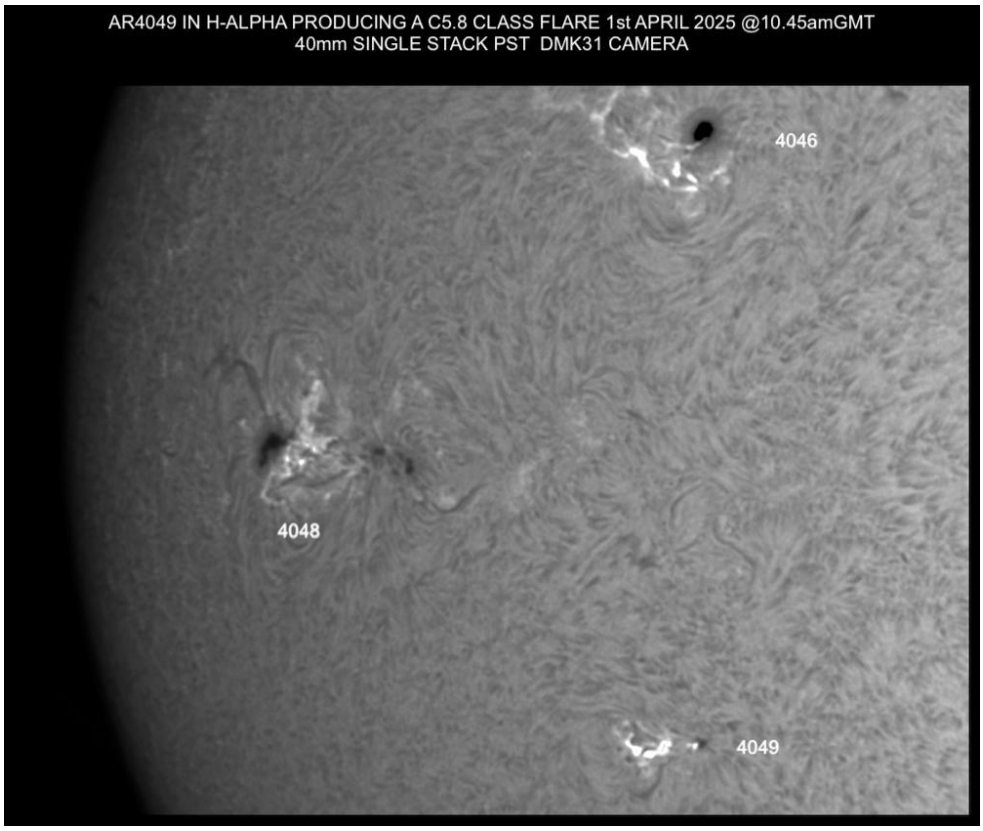


Jacques van Delft ASSA South Africa

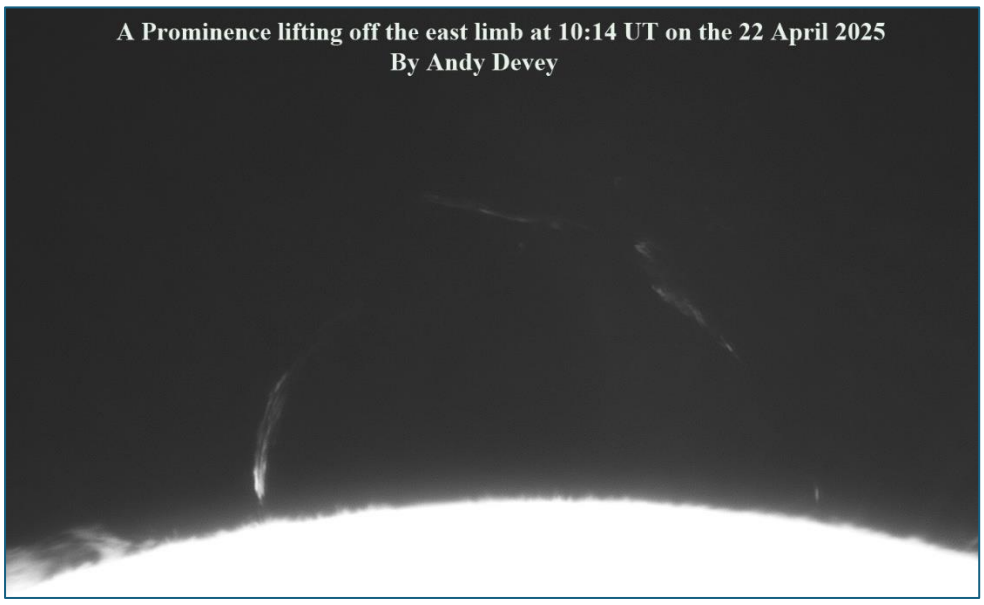


Andrew Devey, BAA/MSAS Spain.

H-Alpha

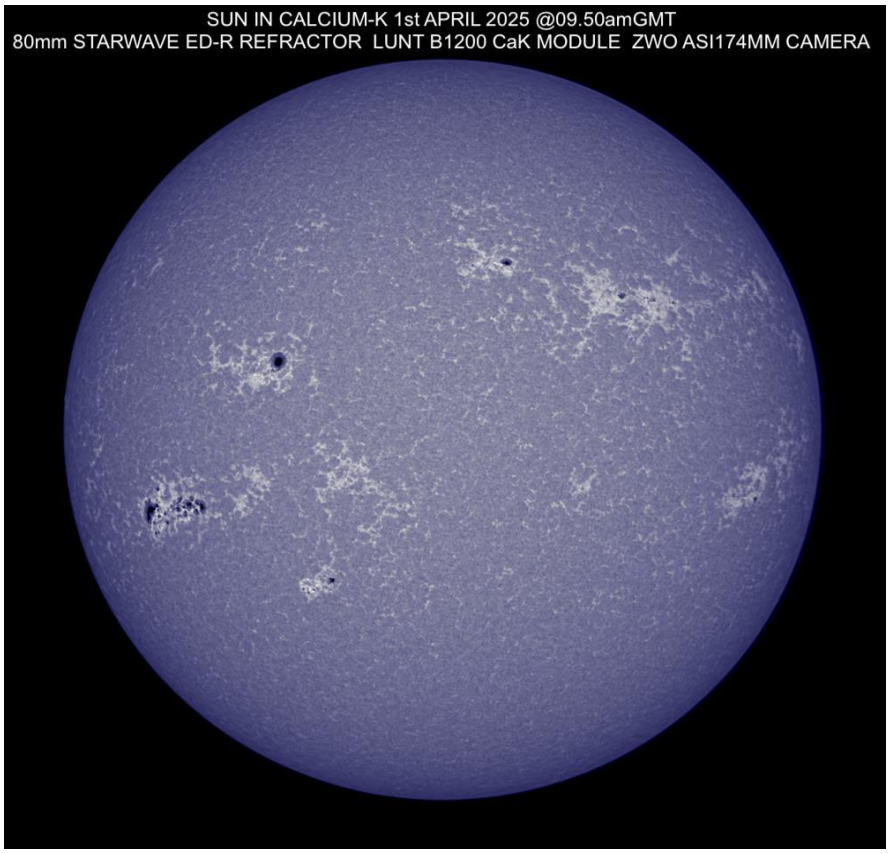


Mick Nicholls, BAA/MSAS, United Kingdom.



Andrew Devey, BAA/MSAS Spain.

C-KaI



Mick Nicholls, BAA/MSAS, United Kingdom.

Thanks to the contributors of data and images,

Clear skies and regards
Jacques van Delft

ASSA Solar Section