



British Astronomical Association

PO Box 702, Tonbridge, TN9 9TX

Email: office@britastro.org Website: britastro.org Telephone: 0207 734 4145



BAA Solar Section Newsletter

Sunspot data 2023 November

Day	g	R
1	5	95
2	5	95
3	6	85
4	5	81
5	6	81
6	4	54
7	4	65
8	5	99
9	5	75
10	5	77
11	4	60
12	4	73
13	4	58
14	3	52
15	2	27
16	1	28
17	2	23
18	2	25
19	4	54
20	5	76
21	7	130
22	8	158
23	9	136
24	9	132
25	10	137
26	8	155
27	7	132
28	8	103
29	9	115
30	8	105

Lyn Smith, 1 Montboy Steading, Careston, Brechin, Angus DD9 6RX, Scotland, UK.
Telephone : 01356 630218 or mob: 07725 347711
Email: solar@britastro.org

Images for the web should be sent to Peter Meadows: peter@petermeadows.com and copied to me. All digital images must be in "JPEG" format with the same orientation as naked eye orientation. Include initials, date and time in the file name. Keep each image file to less than 1Mb.

On-line Reporting:

<https://britastro.org/solarwl>

<https://britastro.org/solarha>

Observers:

J Arnold, Leeds	A Johnston, Denbighshire
C Bailey	R Johnson, Surrey
R Battaiola, Milan, Italy	K Kilburn, Staffordshire
M Boschat, Canada	M Kinder, Cheshire
C F Bowron, South Yorks	L Macdonald, Berkshire
A Bowyer, Epsom Downs	R Mackenzie, Kent
S Brown, Leicestershire	J Martin
E Bryant, North Devon	P Meadows, Essex
M Buck, Bristol	A Mengus, France
L Cambon, France	H Meyerdierks, Germany
I Chouinavas, Greece	B Mitchell, Norwich
G Clarke, Australia	K Orrman-Rossiter, Australia
E Colombo, Italy	Polish Solar Obs Soc
J Cook, Wolverhampton	R Samworth, Leicestershire
P Curtin, USA	J D Shanklin, Cambridge
S Dawes	J Shears, Cheshire
R Dryden, Oxon	D Smith, Essex
F Dubois, Belgium	L Smith, Angus
T Emmett, Cambs	M Stephanou, Greece
M Giuntoli, Italy	A Stone, Bristol
D Glover, Essex	T Tanti, Malta
S Green, Lancs	D Teske, Mississippi, USA
K Hall, Warrington	C Bo Thielke, Denmark
B Halls, W Sussex	N Tonkin, Cornwall
K Hay, Canada	S Ove Thimm, Denmark
A W Heath, Nottingham	P Urbanski, Poland
R Heard, Suffolk	G Vargas, Bolivia
R Hill, Arizona, USA	F Ventura, Malta
J Janssens, Belgium	D Vidican, Romania
M Jenkins, Cambridge	S Viney, Cheshire
S Jenner, Kent	

Monthly Means

MDFg:	5.88	(44 observers)
MDFNg	2.52	(36 observers)
MDFSg	3.52	(36 observers)
Mean R:	88.91	(42 observers)

The Sun in White Light – November

There was a slight increase in activity during November with the southern hemisphere being the stronger of the two. The quality number also improved with the more substantial sunspot groups appearing in the latter half of the month. The Relative sunspot number (R) although up on the previous month, was still the third lowest recorded by the Section for 2023.

There were no spotless days recorded and 37 sunspot groups received a Boulder designation. **AR3474 S18°/327°** survived from the previous month, now in the SW quadrant with both leader and follower displaying asymmetric penumbral sunspots, type Dki. The follower sunspot went into decline on the 2nd and by the 4th was barely visible, the group reducing to type Cso as it approached the limb. The group was last reported on the 5th close to the limb, type Hsx.

AR3477 S13°/234° rounded the SE limb on the 1st. At first glance the group appeared to be a single H-class sunspot but closer examination revealed satellite sunspots and pores situated to its north-east, just outside the penumbra. There was also a cluster of faint pores following the main sunspot, which had an elongated east-west umbra split into two components by a light bridge. On the 5th, the group was reported as type Hkx with an area of 510 millionths, comprising of an irregularly shaped penumbral main sunspot with two umbrae and a few nearby pores. The group had lost its pores by the 6th and the umbra was curved and elongated east-west, still sporting a divided umbra. The group had crossed into the SW quadrant by the 7th and was the most dominant group on the disc. The eastern end of the penumbra now showed a kink and a southward motion of the divided umbra within the sunspot. A trail of faint pores also accompanied the group once again. When next reported on the 10th it had reduced to a small type Dso group and the following day it had reduced in size to 330 millionths with a leading penumbral sunspot and much smaller follower. The group was seen with the protected naked eye on the 5th and 6th.

AR3480 S08°/207° appeared around the SE limb on the 3rd as a line of small penumbral sunspots. By the 5th the group was type Dac with an area of 210 millionths. The group was in decline by the 7th particularly amongst the following sunspots. The fade continued as the group crossed into the SW quadrant on the 9th and by the 10th was type Axx, fading on the disc thereafter.

AR3483 N10°/217° formed on the disc in the northern hemisphere on the 6th was type Dsi on the 8th containing 13 small penumbral sunspots and pores. The group remained basically unchanged until the 11th when it formed a larger almost symmetrical penumbral leader. The group had an area of 490 millionths and was type Dac. The follower sunspots started to fade as the group approached the NW limb on the 13th.

AR3486 S09°/160° formed mid-disc on the 12th type Dao. The following day the group was just into the SW quadrant, now type Dsi with an area of 140 millionths. By the 15th the follower had become more asymmetrical and the group was slightly larger at 290 millionths. The follower was in decline by the 17th when the group was seen approaching the limb amidst faculae and it was reduced to type Hsx the following day as it reached the limb.

AR3489 S16°/016° was reported close to the SE limb on the 17th type Dso. On the 20th the group was type Dac with an area of 260 millionths comprising of several small penumbral sunspots and pores between the leader and follower. The follower sunspots went into decline on the 22nd which heralded the decline of the main group over the next few days. By the 29th the group had decayed to type Bxo as it approached the limb.

AR3490 N18°/344°; AR3491 N11°/353°; AR3492 N18°/343° & AR3495 N27°/348° a collection of sunspots was seen close to the NE limb on the 20th which comprised of several numbered active areas although it was difficult to distinguish between them visually. Using the BAA 10-degree rule on the 23rd the complex was seen as AR3495 as the leading group type Cso with a single Hsx sunspot to its south (AR3491). The remaining sunspots were classified as a single Fai type group (AR3492) containing four penumbral sunspots and many smaller sunspots, particularly lying to the northern edge of the main spots. The situation was similar on the 25th with a string of four sunspots measuring 18° in longitude and straddling the central meridian, type Fac with an area of 530 millionths. AR3491 to the

south of the main group had now reduced to type Axx and was not seen on the 28th. The leading group on the 25th (AR3490) was also in decline and faded to type Axx on the 28th. The main group (AR3492) was also reducing on the 25th and was recorded as type Dso with an area of 140 millionths on the 29th. The remainder of what was a quite impressive area of activity approached the NW limb on the 30th in a very much reduced form.

AR3493 S12°/338° & AR3494 S15°/330° these two Hsx the sunspots appeared around the SE limb on the 20th and travelled together at slightly different latitudes across the disc. AR3493 occasionally sported a pore in attendance and seemed reduced by the 28th when both sunspots were in the mid SW quadrant. AR3493 continued to reduce as the pair approached the SW limb on the 30th.

AR3500 S17°/333° was seen close to the SE limb on the 23rd comprising of two large asymmetric sunspots but foreshortening near the limb made the classification uncertain but probably Dko. By the 25th the group was further onto the disc and was type Dkc, containing 7 sunspots with a large highly asymmetric follower. The group was still type Dkc on the 28th consisting of a large asymmetric penumbral sunspot with a less impressive leader and two smaller accompanying sunspots as well as pores and sunspots with partial umbra. The following day the group was more spread out in longitude; sunspots being more distinctive rather than a single mass and the group was re-assessed as type Dac with an area of 460 millionths. The group was about mid-way across the SW quadrant on the 30th.

AR3505 S17°/233° & 3508 S14°/224° rounded the SE limb on the 28th, both Hsx type sunspots with the AR3505 the smaller of the two. Both groups were unchanged by the end of the month.

AR3507 N08°/219° rotated over the NE limb on the 29th as another Hsx sunspot but larger than its two companions in the southern hemisphere. The group was unchanged on the 30th. 23 observers reported a Quality number of **18.32** for November.

The Sun in H-alpha Prominences

17 observers reported a prominence MDF of **8.43** for November.

An arc prominence was reported at high southern latitude on the 3rd.

On the 5th a hedgerow prominence was on the eastern limb and a pyramid shaped prominence on the northern limb which was still present the following day. Also on the 6th, a low-lying prominence was seen on the NW limb, with a gap between the prominence and the limb.

Four prominence hearths adorned the W limb on the 10th and a fila-prom was noted on the NE limb with another small prominence mass to its immediate north. This latter prominence grew into a flat-topped tree type prominence on the 11th. A low but quite extensive hedgerow prominence was on the SW limb and a chimney and smoke type prominence was also reported on the W limb.

On the 18th a "forest" of prominences graced the SE limb which remained the case on the 19th. A fine fila-prom was also seen on the NE limb.

A column prominence rising to about 90,000 km was reported on the SW limb on the 20th. Two substantial plasma clouds were seen separated from the SE limb on the 23rd and on the 25th a platform arch was seen on the NW limb and a further platform arch was on the SE limb.

Two impressive prominences were recorded on the 28th. A large pyramid type prominence was on the NW limb assessed as being about 70,000 km in height. An even larger prominence mass was seen on the SE limb, extending northwards with a detached element. This latter feature was still in evidence on the 29th but the large pyramid had gone.

The month closed with a slim pyramid prominence on the SE limb at a height of 80,000 km and on the NW limb, a hedgerow type prominence extended around the limb for about 120,000 km but was quite low in height, about 20,000 km.

Bi-Polar Magnetic Regions, Filaments & Plage

16 observers reported a filament MDF of **11.67** and 13 observers reported a plage MDF of

5.19 for November.

Filaments were once again impressive throughout the month, On the 1st a long filament extended from the CM into the NW quadrant and was still present on the 2nd but more broken in the centre.

A very long filament extended from the NE limb into the NE quadrant on the 4th and a large horse-shoe shaped filament was in the NW quadrant. These filaments were in evidence for several days with the NW filaments reaching the NW limb on the 8th and the NE filament, although fainter, survived its passage across the disc reaching the NW limb mid-month. Three long filaments, all aligned north/south were in the SE quadrant on the 11th measuring around 240,000 km, 150,000 km and 140,000 km in length. A long-curved east/west filament was also seen extending from the NE limb into the NE quadrant. This latter filament was joined by another stronger filament on the 13th which was more evident on the 14th. This follower filament was quite broad and dark with a scalloped lower edge and was evident until it reached the NW limb on the 23rd.

A conspicuous bi-polar magnetic region was visible in the SE quadrant on the 21st in association with a sunspot group.

An impressive fila-prom was on the NE limb on the 23rd with the main element being the filament section which extended down towards the new sunspot complex containing AR3492.

On the 25th three filaments were trailing the AR3492 sunspot complex near to the NE limb, a long filament was in the NW quadrant not far from the limb and a short but dark filament was seen to the south of AR3500 in the SE quadrant.

Filaments were numerous on the 28th and scattered around the disc but more numerous in the northern hemisphere. A broad patch of filament was seen near to the large pyramid prominence on the NW limb.

Plage was seen with most sunspot groups throughout the month and areas of bright plage were reported on the 30th nearing the W limb. Also, a large dark filament was nearing the NW limb.

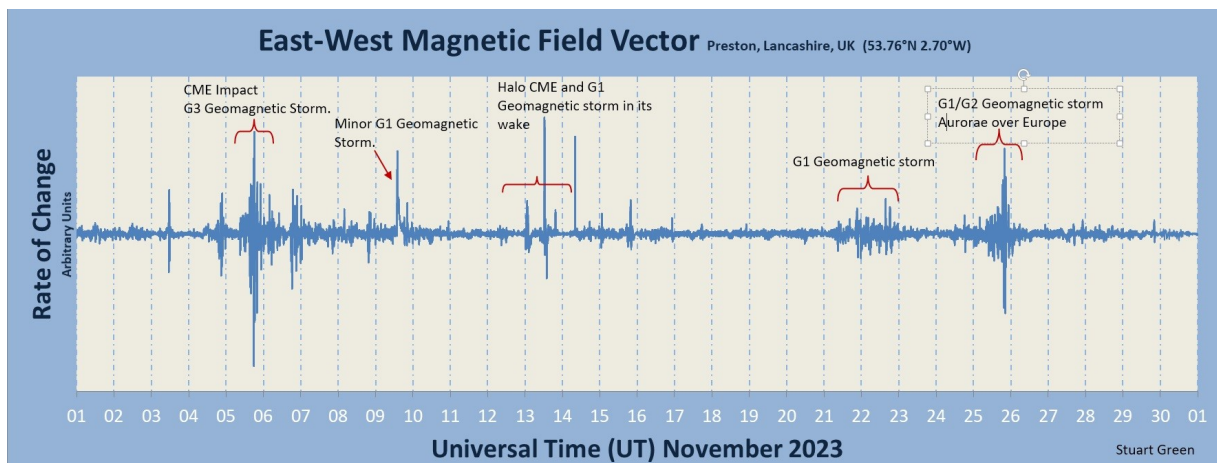
CaK

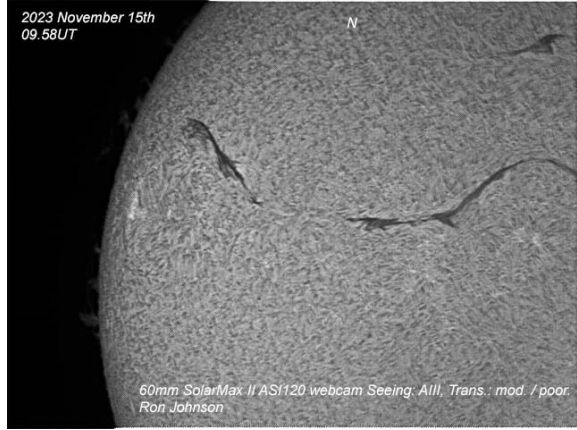
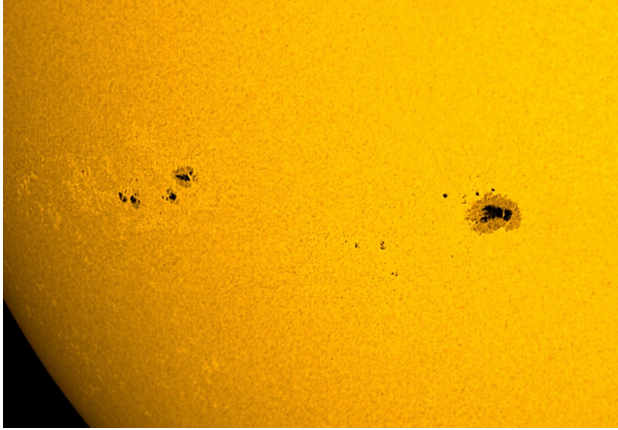
The sunspot group at S20°/305° developed a very strong and large area of CaK emission on the 28th, 29th and 30th. The sunspot group at N20°/350° also had a significant area of emission. Many small CaK plage areas were scattered around the disc, slightly more in number in the northern hemisphere.

CaK MDF **5.00** Brian Mitchell (11 days).

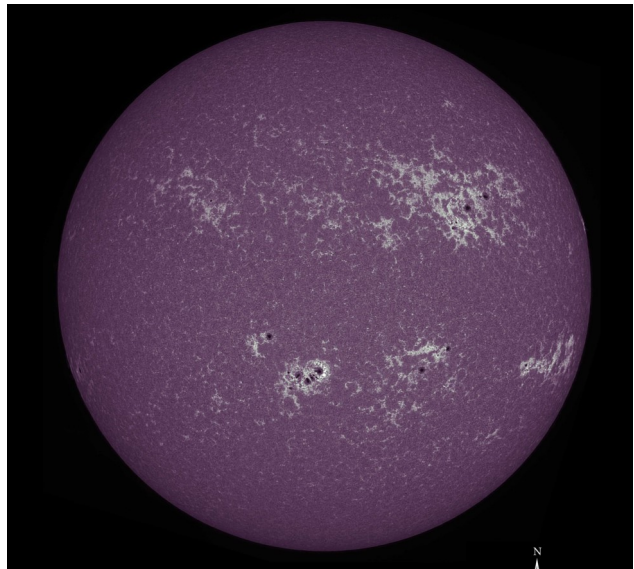
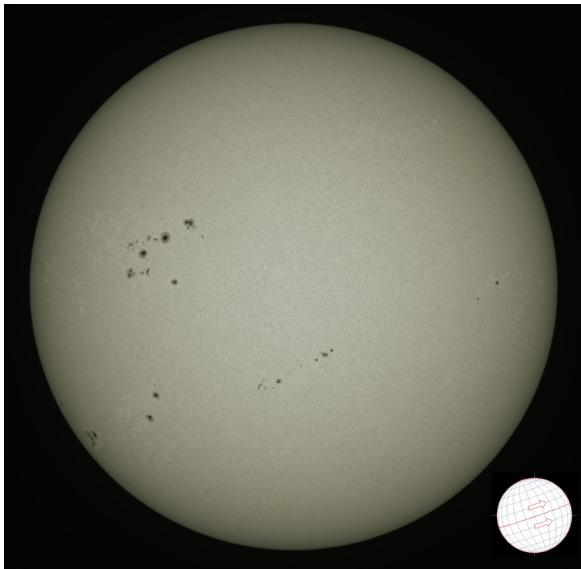
Flares

Few flares were reported during November. Arthur Bowyer reported minor flares on the 7th and 17th; Kevin Orrman-Rossiter reported flares on the 3rd, 5th, 6th and 12th; Andrew Johnston recorded an M1.8 flare on the 5th at 11.55 UT in association with AR3480. Jan Janssens reported no polar faculae sighted during the month.

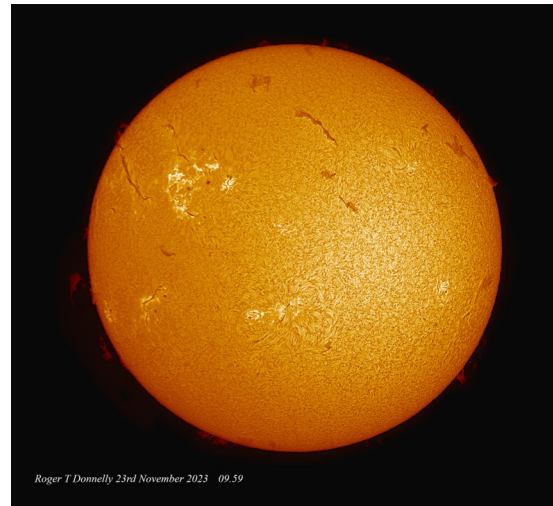
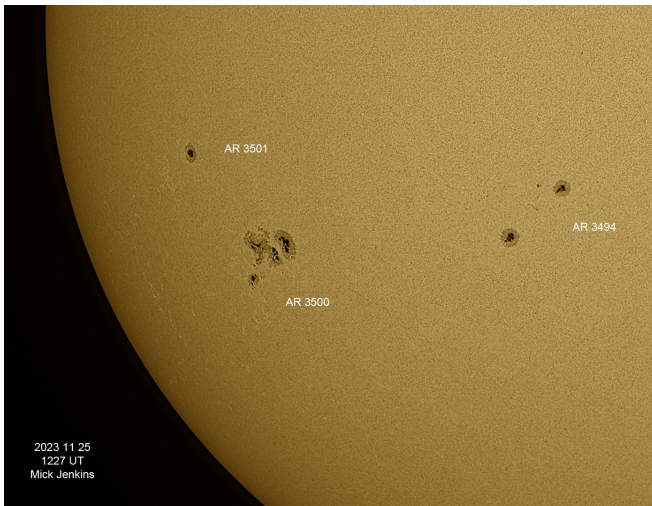




Above Left: AR3477 and AR3480 in white light imaged by Brian Halls, 20231105
Above Right: An impressive filament captured by Ron Johnson 20231115 at 0958 UT.
Below Left: Full disc image by Dave Smith showing the AR3492 complex in the NE quadrant and AR's 3493, 3494, 3500 and 3501 in the SE quadrant on 20231123 at 1105 UT
Below Right: CaK image by Stuart Green showing calcium plage and sunspot groups on 20231128 at 12.28 UT with the AR3492 complex now in the NW quadrant.



Below Left: White light image of the SE quadrant 20231125 at 1227 UT by Mick Jenkins showing AR's 3501, 3500, 3493 & 3495.
Below Right: H-alpha full disc image by Roger Donnelly 20231123 at 0959 UT.





Section News



A VERY MERRY CHRISTMAS SEASON

I received very favourable feedback from members who attended our last Section meeting via Zoom in November. The overwhelming opinion of participants was for more regular meetings to discuss imaging and observing techniques and to share expertise. Currently we are able to provide Zoom meetings courtesy of Martyn Kinder but this facility may not extend beyond the next 12 months. We shall cross that bridge when we come to it. Meanwhile, Martyn has agreed to use his Zoom account for our meetings on a bi-monthly basis. The next meeting will be from 7.30 pm (GMT/UT) Friday 16th February 2024. The joining details are below:

Lyn Smith is inviting you to a scheduled Zoom meeting.

Topic: Solar Section Meeting

Time: Feb 16, 2024 19:30 Greenwich Mean Time

Join Zoom Meeting

<https://us02web.zoom.us/j/84815173092?pwd=bzk2R2VVeDdEK1RqNUtkeDNWVfVZdz09>

Meeting ID: 848 1517 3092

Passcode: 997831

One tap mobile

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+442034815240,,84815173092#,,,,*997831# United Kingdom

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- +44 208 080 6591 United Kingdom
- +44 208 080 6592 United Kingdom
- +44 330 088 5830 United Kingdom

MAGNETOMETER REPORT

2023 NOVEMBER

DATE	DURATION (UT)		ACTIVITY
4	18:00	23:30	Disturbed
5	09:00	14:45	Disturbed
5	14:45	20:00	Active
5/6	20:00	10:00	Disturbed
6/7	16:30	06:00	Disturbed
7	19:00	20:30	Disturbed
8	18:00	00:00	Disturbed
9/10	18:00	04:30	Disturbed
10	21:30	23:45	Disturbed
13	00:15	04:00	Disturbed
15	00:30	02:30	Disturbed
15	19:45	23:00	Disturbed
16	22:00	23:30	Disturbed
21/23	06:15	00:30	Disturbed
24/25	17:00	18:00	Disturbed
25	18:00	21:00	Active
25/26	21:00	03:00	Disturbed

**Solid-state magnetometer,
Uncalibrated.
John Cook**