



British Astronomical Association

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Founded in 1890

BAA Solar Section Newsletter

Sunspot data 2024 August

Day	g	R
1	10	184
2	10	173
3	10	183
4	8	168
5	8	161
6	8	185
7	9	200
8	9	192
9	9	190
10	10	207
11	10	182
12	9	159
13	9	154
14	7	125
15	6	104
16	9	149
17	9	151
18	8	142
19	9	166
20	10	155
21	9	138
22	9	159
23	9	150
24	9	162
25	9	155
26	10	160
27	9	134
28	8	129
29	8	109
30	8	119
31	8	139

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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:

M J Armstrong, Kendal	S L Karl, Aberdeen
J Arnold, Leeds	K Kilburn, Staffordshire
C Bailey, Suffolk	M Kinder, Cheshire
R Battaïola, Milan, Italy	P Lawrence, Leicestershire
M Boschat, Canada	C Longthorn, Rugby
C F Bowron, South Yorks	L Macdonald, Berkshire
A Bowyer, Epsom Downs	R Mackenzie, Kent
P Brierley, Cheshire	P Meadows, Essex
S Brown, Leicestershire	A Mengus, France
E Bryant, North Devon	H Meyerdieks, Germany
M Buck, Bristol	B Mitchell, Norwich
L Cambon, France	C C Moraes, Brazil
G Cauchi, South Australia	L Morrone, Italy
I Chouinavas, Greece	M Nicholls, Sheffield
G Clarke, Australia	P Norman, Worcester
E Colombo, Italy	C Potter, Orkney
J Cook, Wolverhampton	M Ratcliffe, Utah, USA
A Coombs, Vic, Aust	R Samworth, Leicestershire
P Curtin, USA	J D Shanklin, Cambridge
S Dawes, London	J Shears, Cheshire
A Devey, Spain	D Smith, Essex
R Dryden, Oxon	L Smith, Angus
F Dubois, Belgium	N Spencer, York
T Emmett, Cambs	G Steigmann
M Giuntoli, Italy	T Tanti, Malta
D Glover, Essex	P Taylor, Coventry
S Green, Lancs	D Teske, Mississippi, USA
K Hall, Warrington	C B Thielke, Denmark
B Halls, W Sussex	P Tosi, France
K Hay, Canada	Towarzystwo Milosnikow
A W Heath, Nottingham	Towarzystwo Obs Slonca
R Heard, Suffolk	B Tynan, Renfrewshire
R Hill, Arizona, USA	S Ove Thimm, Denmark
J Janssens, Belgium	P Urbanski, Poland
M Jenkins, Cambridge	G Vargas, Bolivia
S Jenner, Kent	F Ventura, Malta
A Johnston, Denbighshire	D Vidican, Romania
R Johnson, Surrey	S Viney, Cheshire

Monthly Means

MDFg:	9.62	(46 observers)
MDFNg	4.18	(38 observers)
MDFSg	5.60	(38 observers)
Mean R:	169.11	(45 observers)

The Sun in White Light – August

Activity levels during August remained extremely high, showing a slight increase on last month to become the highest recorded by the Section during the current Cycle. Although there was a minor decrease in southern hemisphere activity, there was an upsurge in northern activity to more than compensate. Both the Relative Sunspot number (R) and Quality number (Q) were slightly higher than that recorded in July.

A total of 48 sunspot groups received Boulder numbers and there were multiple sunspot groups on every day of the month. Many were large and complex and are reported below.

3772 S23°/249° was in the SE quadrant on the 1st type Eac with an area of 690 millionths. It was a bi-polar group consisting of a main penumbral sunspot leader with several smaller follower sunspots. The following day the followers had increased in size to give a total area of 940 millionths but on the 3rd these had reduced. The leader was quite elongated with a small central sunspot and a larger asymmetrical follower. By the 6th there were no intermediate sunspots and the area had reduced to 480 millionths. By the 9th the group had reduced to a single Hsx type sunspot and was approaching the limb.

AR3774 S06°/226° was seen over the SE limb on the 1st as a collection of close penumbral sunspots. A few more sunspots appeared within the group over the next few days especially in the following and southern parts of the group. On the 2nd the group was type Eac with an area of 760 millionths but the following day the leader had extended in size making the group type Ekc. As sunspots to the south of the group increased, they were given a separate designation of AR3779 on the 4th which had dissolved again by the 8th. The main group continued to change shape particularly in its following end and was type Eac on the 6th with its area peaking the following day at 850 millionths. The number of sunspots began to reduce as the group approached the SW limb but the leading penumbral sunspot stayed intact. The group was type Dai on the 9th and Dso on the 11th when it was last seen.

AR3777 S07°/210° was first reported on the 2nd as a Hsx sunspot to the east of AR3774. The group developed to type Cso the following day and continued to grow over the coming days. On the 5th the group sported an almost symmetrical leader with smaller sunspots following, one with a penumbra. On the 6th the group was type Dai and the following day the leader developed bridges across its umbra, one of which appeared looped. Once past the central meridian on the 8th, the group was type Ekc with an area of 680 millionths. The group started to decay as it approached the limb however the decaying follower had something of a revival on the 11th when it evolved into a regular type sunspot with a bright area of Photosphere within the penumbra of its western edge. The group reached the SW limb on the 13th type Dsc, and surrounded by a network of faculae. The group displayed three distinctive and foreshortened penumbral sunspots.

AR3780 S08°/171° rounded the SE limb on the 4th displaying a large asymmetrical penumbral sunspot and several smaller sunspots. More sunspots rotated around the limb on the 5th with the group already an impressive type Fkc. The main sunspot was large and irregular with a light bridge dissecting its umbra in a north/south line. Two large connected sunspots followed this sunspot with many smaller sunspots making up the group. The surrounding area was covered in a network of faculae. The following day with the group further onto the disk, its area was an impressive 1900 millionths. The large irregular sunspot sported a clear light bridge that divided its umbra and two large penumbral sunspots followed with many smaller sunspots running throughout the group particularly to its western end. Over the next few days, the main sunspot changed shape slightly and made an impressive sight dominating the solar disk. By the 9th the overall longitude extent of the group was 25° and its area 1910 millionths. Small clusters of sunspots led the group with the main sunspot in a central position. Light bridges were detected within the umbra one of which was a very bright arch. The group was just past the CM on the 11th. It was noted that the number of leading and following sunspots had reduced in number with the group having an area of 1680 millionths. Over the next few days, the main sunspot underwent significant shape change and split into two parts on the 14th. The area had by this time reduced to 1250 millionths, however it was still classified as type Fkc. Only the two halves of the main sunspot were seen approaching the limb on the 15th and a single Hax sunspot was close to the limb on the 16th. The group was seen with the protected naked eye (PNE) between 6th and 13th inclusive.

AR3784 N17°/116° was first seen close to the NE limb on the 8th as a single Hsx sunspot. It was clearly irregular in shape by the following day as it rotated onto the disk. By the 11th it had developed into an Hkx sunspot with an area of 760 millionths. The sunspot grew in extent so that by the 13th it had an area of 1090 millionths and was of type Dkc through the brief appearance of a small leading penumbral sunspot. The group was of a similar size the next day when near to the CM and the main sunspot was more irregular in shape. By the 15th the main sunspot had split into three parts with its area reduced to 770 millionths. The group was last reported as a single Hkx sunspot

close to the limb on the 20th and rotated on the 21st. This group was seen PNE from the 12th to the 16th inclusive.

AR3790 S10°/026° was first seen close to the SE limb on the 15th as a triangular collection of three small sunspots within a network of faculae. The group had triangular formation on the 17th consisting of a leading penumbral sunspot with a faint light bridge. The group underwent development over the next few days and was type Dac by the 20th consisting of several elongated penumbral sunspots, the largest being the leader. The group continued to grow becoming type Dkc on the 21st. It gained its maximum area on the 23rd at 1010 millionths and was seen PNE on the 20th, 21st, 23rd and 25th. The group reduced thereafter and rotated on the 27th.

AR3792 S15°/011° this group followed AR3790 onto the disk on the 16th as a single Hsx sunspot, again surrounded by a network of faculae. The group was larger, type Hhx by the 18th when it was fully onto the disk and had an area of 590 millionths. The group was reported seen PNE on the 23rd and 25th. It changed little during its transition but did develop a few pores to accompany it as it journey from the SE quadrant into the SW. The group reached the SW limb on the 28th unchanged.

AR3796 S02°/352° was first seen on the 18th as three foreshortened sunspots close to the SE limb. By the 20th the group had a triangular formation due to two small penumbral sunspots at the rear of the group with penumbra and smaller sunspots extending westward. The group was type Dac but grew substantially overnight to develop a penumbral leader with the group now type Dkc. The group reached its peak area on the 23rd at 640 millionths and was reported visible PNE on the 21st, 23rd and also from the 25th to 27th inclusive. The group changed shape during its transition into the SW quadrant but maintained a penumbral leader and follower formation. There was substantial growth to the south of the follower sunspot on the 26th but this started to fade the following day as did the entire group. By the 28th the group had reduced substantially and nothing was visible the following day as it reached the limb.

AR3799 S09°/319° rounded the SE limb on the 21st type Cso. By the 23rd the group had developed a large penumbral leader with less significant sunspots following, type Dki. The main sunspot had a distinctive bright arcing light bridge crossing its southern portion of umbra in an east/west direction. The large sunspot maintained its size and shape through to the 25th and a fine threadlike arched light bridge was seen forming at an east/west orientation across its umbra. The following sunspots had decayed and were now a mix of small sunspots or spots with partial penumbra. Once into the SW quadrant on the 27th, the followers began to fade, dissolving completely by the 29th. The main sunspot continued towards the SW limb accompanied by minor sunspots close to its penumbral perimeter and was close to the limb at the close of the month.

AR3806 S10°/217° rotated over the SE limb on the 28th as a Dao type group with the main two sunspots aligned north/south. The following day the group had an asymmetrical penumbra and was accompanied by a region of bright faculae. The group expanded significantly on the 31st with the main leading sunspot re-orientating more to an east/west configuration. The group was highly asymmetric with smaller following penumbral sunspots and pores.

23 observers reported a Quality number of **32.29** for August.

The Sun in H-alpha

Prominences

17 observers reported a prominence MDF of **8.28** for August.

Given the degree of white light activity, there were surprisingly few prominences of note during the month.

A fine arch prominence was reported on the 3rd on the SW limb and also a detached prominence on the SE limb.

Two impressive prominences were reported on the 7th, an irregular type on the NW limb and a hedgerow on the SW limb. A double arch prominence was also reported on the W limb near to the CM rising to about 50,000 km with a width of 60,000 km. The following day this had developed into a triple arch with a width of about 70,000 km.

A large hedgerow type prominence was on the NW limb on the 9th and two large broken arched prominences were reported on the SE limb on the 11th.

On the 16th a platform type prominence was seen at the NE limb and a bright flame type prominence was visible on the W limb.

A large bush type structure was on the SE limb on the 18th and on the 21st a very large complex structure was on the SE limb. This structure persisted through the following day changing shape but by the 23rd was only a long thin streamer.

A cloud of plasma was seen hovering over the NW limb at a height of 80,000 km on the 20th and on the 26th another cloud of plasma was hovering over the SW limb at a height of about 120,000 km.

A triangular shaped prominence was seen above the SE limb also on this day. A fine tall prominence was on the N limb on the 29th rising to about 110,000 km and again on the 30th although it appeared more fragmented. The month closed with a leaning arch prominence on the SW limb and another but shorter version on the SE limb.

Filaments & Plage

16 observers reported a filament MDF of **9.89** and 13 observers reported a plage MDF of **7.80** for August.

A long north/south aligned curved filament was near the CM on the 1st and persisted the following day but was not seen on the 3rd. Also on the 1st, a long east/west filament was in the NW quadrant to the north of AR3770, rotating over the limb on the 4th and 5th giving rise to a hedgerow prominence. An insignificant filament extending from the NE limb extended in length the following day and continued to do so through the 3rd and 4th. It became extremely long, aligned east/west and broke away from the limb on the 5th. Over the coming days the filament made progress into the NW quadrant becoming broken in the central region. The leading element rotated over the NW limb on the 10th/11th/12th being followed by the trailing element on the 15th/16th.

A large eruptive filament was reported on the 4th in the NE quadrant at 10.30 UT which continued to expand by 10.39 UT. The feature changed rapidly at 1048 UT.

Bright plage was noted between the leader and follower of AR3774 on the 11th with three small filaments lying slightly to the north and orientated along the group's axis. Another bright area of plage orientated north/south was following AR3784 closely in the NE quadrant with a thin filament between the sunspot and the plage. The plage in close proximity to AR3784 persisted giving rise to flare activity. On the 13th the plage was wrapped around the eastern/south-eastern and south-western extremities of the group which persisted until the group rotated over the limb on the 20th.

Bright plage was noted with AR3796 on the 23rd between the leader and follower sunspots and a filament stretched outwards from the following cluster of spots.

Bright plage extended along the length of AR3800 on the 25th accompanied by filaments and on the 29th a long east/west aligned filament was observed in the NW quadrant, extending approximately 350,000 km in length.

On the 31st an arc-shaped filament preceded AR3806 in the SE quadrant and another was seen close to the northern edge of AR3807 in the SW quadrant.

CaK

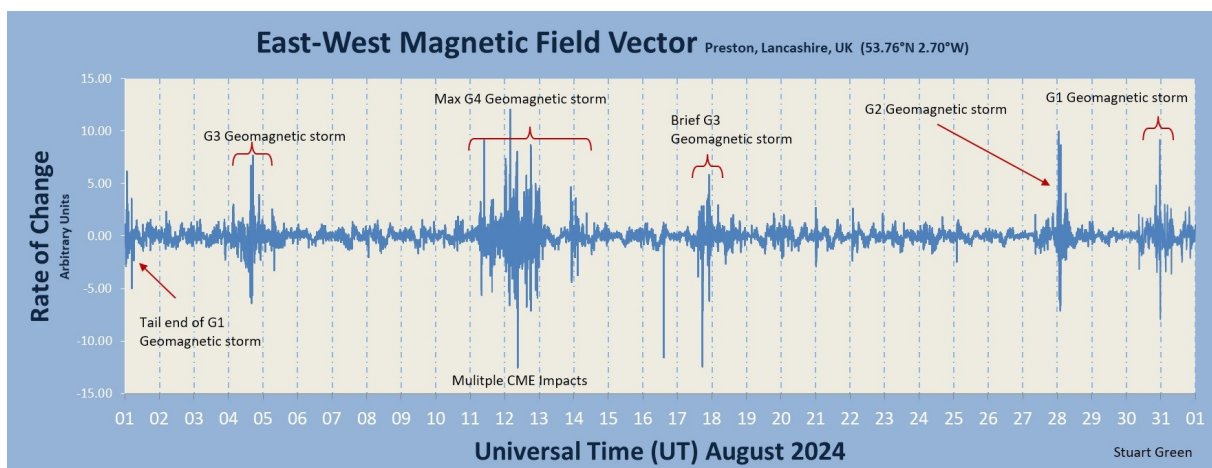
A high CaK count was made during August corresponding to the amount of sunspot activity. Many prominences and flare events were observed in Calcium K-line during the month. CaK emission not associated with a sunspot group, was seen from the 12th to the 16th over a large area centred at approximately N25°/080°. CaK emission surround sunspot groups AR3774/3777 and AR3780 in the southern hemisphere from the 5th to the 12th.

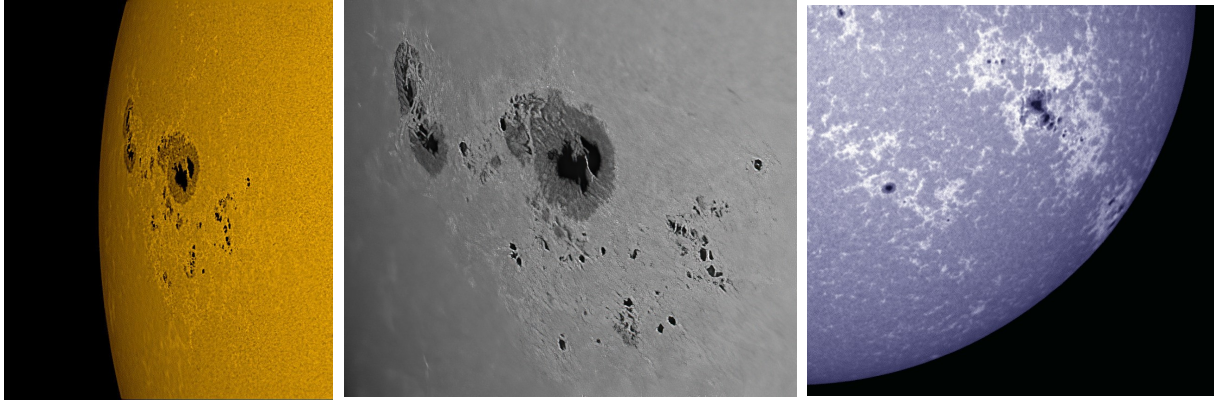
CaK MDF **9.75**

Reports by Brian Mitchell and Ella Bryant.

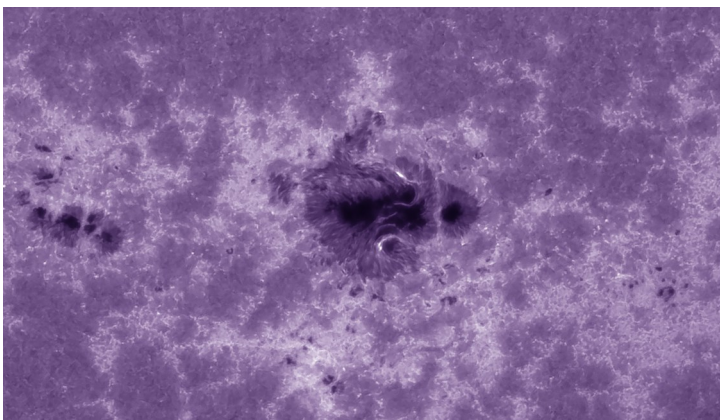
Flares

Many flares were reported during the month. M class flares were reported by Arthur Coombs, Andy Devey, Andrew Johnston, Brian Halls and Mick Nicholls. The strongest flare being an M5 flare associated with AR3796 on the 21st at 2212 UT. AR3768, AR3784, AR3796, AR3800, AR3806 and AR3808 also emitted M class flares.





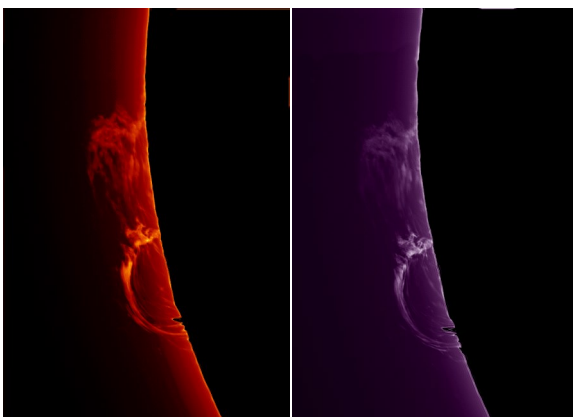
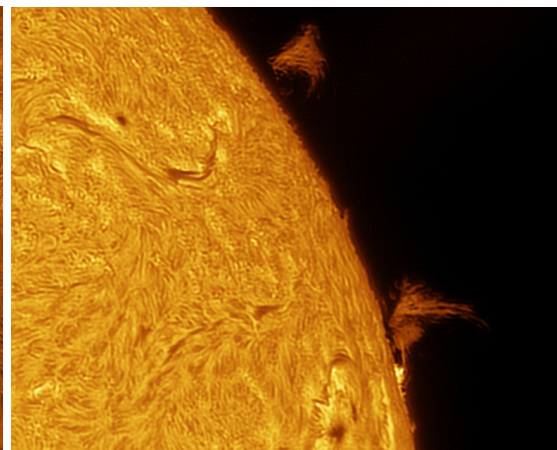
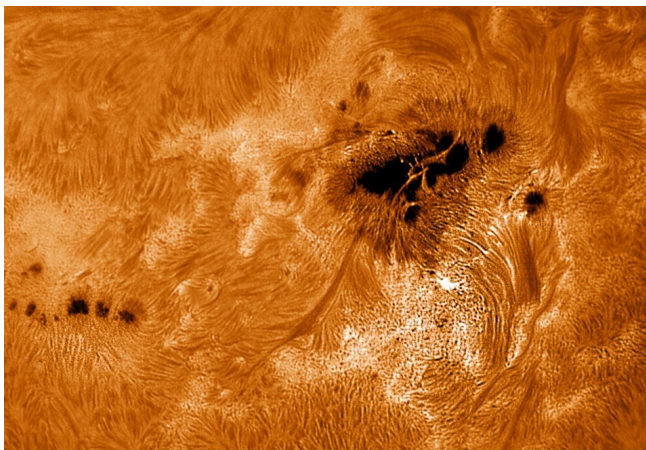
Above Left: AR3780 imaged by Brian Halls 20240805 in white light at 1536 UT
Centre: AR3780 fully on the disk on 20240806 imaged by John Arnold at 0952 UT, white light.
Right: CaK image of AR3780 approaching the western limb on 20240813 imaged by Mick Nicholls at 0901 UT



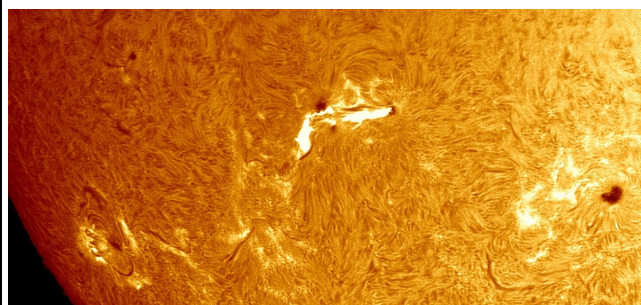
Left: AR3780 imaged in CaK showing flaring regions, imaged by Nic Spencer 20240810 at 1407 UT

Below Left: AR3780 imaged in H-alpha by Gottfried Steigmann using 3x Barlow lens 20240811 0947 UT

Below: AR3780 region and Prominences as it approaches the W limb, imaged 20240815 at 0911 UT



Left: Prominences imaged in H-alpha and CaK, Ella Bryant 20240814 at 1259 and 1306 UT respectively
Below: M5 flare associated with AR3796 imaged by Arthur Coombs 20240821 at 2220 UT



Section News

A reminder about the next Section meeting to be held on the Zoom platform on Friday 4th October 2024 at 1930 hrs GMT/UT. Full details are in the last newsletter. To join Meeting ID844 4674810 and Passcode 619986

All are welcome whether you wish to actively participate or not. You can attend without your camera or microphone switched on if you wish.

Thank you to those that have sent in items for publication. Articles will be published as soon as space permits.

A record 625 images were submitted to the Section during August. The quality of images is simply superb and many more can be viewed on the Section web pages. A huge thank you to all our imagers for their time, dedication and expertise.

MAGNETOMETER REPORT 2024 AUGUST

DATE	DURATION (UT)		ACTIVITY
31/1	14:00	08:00	Disturbed
1	04:30		(SFE)
4	03:00	14:30	Disturbed
4	14:30	17:00	Active
4	17:00	23:00	Disturbed
5	05:15	10:00	Disturbed
6/7	21:30	1:45	Disturbed
11	06:00	3:45	Disturbed
11/12	23:45	09:00	Active
12/13	09:00	04:00	Disturbed
13/14	21:30	04:00	Disturbed
17			Data los
27/28	20:30	09:00	Disturbed
30/31	19:45	08:30	Disturbed

Right:

AR3784 imaged in 3 wavelengths by Stuart Green between 0717 and 0856 UT 20240814. Top CaK 393.4 nm; centre White light 430 nm and bottom H-alpha 656.38 nm

Below:

AR3780 imaged by Luigi Morrone at 0850 UT 20240811 using C14 Edge HD 355 mm.

