



British Astronomical Association



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BAA Solar Section Newsletter

Sunspot data 2023 August

Day	g	R
1	9	138
2	8	120
3	8	111
4	8	97
5	7	93
6	7	92
7	8	106
8	8	98
9	6	79
10	6	81
11	5	78
12	4	62
13	5	77
14	6	85
15	7	103
16	8	118
17	7	103
18	7	99
19	7	100
20	6	78
21	7	82
22	7	85
23	6	77
24	5	67
25	6	70
26	6	74
27	5	67
28	4	55
29	5	65
30	6	82
31	5	68

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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:

- | | |
|---------------------------|----------------------------|
| D Arditti, London | R Johnson, Surrey |
| M J Armstrong, Kendal | S L Karl, Aberdeen |
| J Arnold, Leeds | K Kilburn, Staffordshire |
| C Bailey | M Kinder, Cheshire |
| R Battaiola, Milan, Italy | L Macdonald, Berkshire |
| M Boschat, Canada | R Mackenzie, Kent |
| C F Bowron, South Yorks | P Meadows, Essex |
| A Bowyer, Epsom Downs | A Mengus, France |
| S Brown, Leicestershire | H Meyerdirks, Germany |
| E Bryant, North Devon | B Mitchell, Norwich |
| M Buck, Bristol | L Morrone, Italy |
| L Cambon, France | M Nicholls, Sheffield |
| G Clarke, Australia | P Norman, Worcester |
| E Colombo, Italy | G Palmer, Wales |
| J Cook, Wolverhampton | Polish Solar Obs Soc |
| P Curtin, USA | C Potter, Orkney |
| S Dawes, London | R Samworth, Leicestershire |
| A Devey, Spain | J D Shanklin, Cambridge |
| R Dryden, Oxon | J Shears, Cheshire |
| F Dubois, Belgium | D Smith, Essex |
| T Emmett, Cambs | L Smith, Angus |
| T Figiel, Poland | N Spencer, York |
| M Giuntoli, Italy | G Steigmann |
| D Glover, Essex | T Tanti, Malta |
| S Green, Lancs | P Taylor, Coventry |
| K Hall, Warrington | D Teske, Mississippi, USA |
| B Halls, W Sussex | N Tonkin, Cornwall |
| K Hay, Canada | P Tosi, France |
| A W Heath, Nottingham | S Ove Thimm, Denmark |
| R Heard, Suffolk | P Urbanski, Poland |
| R Hill, Arizona, USA | G Vargas, Bolivia |
| J Janssens, Belgium | F Ventura, Malta |
| M Jenkins, Cambridge | D Vidican, Romania |
| S Jenner, Kent | S Viney, Cheshire |
| A Johnston, Denbighshire | |

Monthly Means

MDFg:	6.69	(45 observers)
MDFNg	4.14	(36 observers)
MDFSg	2.69	(36 observers)
Mean R:	94.41	(43 observers)

The Sun in White Light – August

Although there was a slight increase in northern hemisphere activity compared to the previous month, the quality of sunspot groups was reduced with a corresponding reduction in the Relative Sunspot number (R) and the Quality number (Q). The solar disc featured numerous sunspot groups on every day of the month with 35 groups receiving a Boulder number. The largest/most complex groups are reported below.

AR3380 S07°/124° survived from the previous month, now well across the SW quadrant, type Dkc. The group was complex in appearance containing three main sunspots, the largest being in the centre of the group. On the 1st the group had an area of 880 millionths having increased substantially over 48 hours or so. On the 2nd as the group approached the limb, the leading and centre sunspots merged with many umbrae within the newly merged area. By the 4th, only a small penumbral sunspot was still visible close to the SW limb.

AR3386 N15°/092° also survived on the disc from the previous month, now just passed the Central Meridian and into the NW quadrant. The group was type Eac with an area of 360 millionths, the main sunspot being the leader. Two small penumbral sunspots followed the main sunspot along with a few pores. The leading penumbral sunspot sported a light bridge running north/south across the umbra towards the western edge. By the 4th the main sunspot had become much more asymmetric in shape and only one small penumbral follower was seen. The group was now type Dao with an area of 450 millionths. It was last reported close to the limb on the 6th as a single Hkx sunspot.

AR3392 N09°/037° had appeared on the disk at the end of July just over the NE limb. The group had developed quite rapidly on the 1st to type Dao with the leader being the largest component. The group continued to develop over the next few days with the leader enlarging and the group being briefly type Eso on the 3rd before reducing again to type D with the reduction of the trailing pores. The group crossed the CM on the 4th and was in decline by the 7th when it was type Cso. A bright spot of Photosphere was reported within the southern portion of the penumbra of the main sunspot. The group further reduced to type Hsx on the 9th as it approached the NW limb.

AR3394 S20°/344° was reported close to the SE limb on the 4th as an Hsx type sunspot with an area of 420 millionths. By the 7th it had an asymmetric main sunspot with several surrounding pores. The sunspot was in the SW quadrant on the 11th as a single Hsx sunspot and was similarly reported on the 12th having reduced slightly in area to 360 millionths. The group was unchanged on the 13th and was last seen on the 14th approaching the SW limb.

AR3395 N17°/332° rounded the NE limb on the 3rd as a single Hsx sunspot but smaller sunspots followed on the 4th to make the group a small Dso type. The followers decayed over the coming days to make the group C class but then underwent an outburst of activity particularly preceding the main sunspot, resulting in a Dac type group by the 11th. The group was Dsc on the 12th with an area of 330 millionths and mid-way across the NW quadrant. The group comprised of a collection of small penumbral sunspots with no overall structure. On the 13th it had consolidated into three small sunspots, one leading and the other two following aligned north/south. The following day the 3 penumbral sunspots formed a triangular shaped group with a pore accompanying but by the 15th only an Axx sunspot remained approaching the NW limb.

AR3403 N28°/242° developed on the disk in the NE quadrant on the 13th as a collection of faint pores, type Bxo. By the following day the group had developed to type Dao with an area of 280 millionths. As the group subsequently approached the CM, the leader and followers were asymmetric in shape with several umbra within each. The area of the group developed to 410 millionths on the 16th before the following section of the group started to decay. The group was type Cso on the 21st and a single Hsx sunspot when seen on the 23rd and 24th. The group rounded the NW limb on the 26th.

AR3405 N12°/181° rotated around the NE limb on the 14th as a small Hsx sunspot. The following day it was joined by a small penumbral follower. On the 16th, the entire Fsc type group had completely rotated onto the disk with an area of 410 millionths, comprising of just three small penumbral sunspots. On subsequent days, the middle sunspot decayed to leave the leader and a follower some 17° apart with no sunspots in-between. (SWPC redesignated

the follower as AR3411.) AR3405 continued as a single asymmetric penumbral sunspot whilst AR3411 remained as a small symmetric penumbral sunspot. These two sunspots continued across the disk basically unchanged rotating around the NW limb on the 26th and 28th respectively.

AR3407 S18°/224° formed on the disk in the SE quadrant on the 15th as a Bxo group with 3 small sunspots. The group underwent rapid development to type Dso the following day. There were signs that the leader was in decay on the 20th and it broke up on the 21st with the group declining to type Cso. The follower also started to dissolve and only a single Axx sunspot was left close to the SW limb on the 24th.

AR3412 N31°/134° rotated around the NE limb at high northern latitude. The group was a small Hsx sunspot and was unremarkable other than its high latitude position. The group travelled across the disk unchanged until the 29th when it declined to type Axx. It was last seen on the 30th close to the NW limb.

AR3413 N12°/100° rounded the NE limb on the 21st as another Hsx type sunspot. By the 23rd it had become asymmetric with a few accompanying pores to its north-east. The following day, the umbra of the main sunspot formed an arc shape aligned north/south. Some of the accompanying sunspots had developed into small penumbral sunspots to make the group type Dkc with an area of 570 millionths. Over subsequent days, the umbra of the main sunspot became more east/west in alignment with the group being quite asymmetric. On the 28th it was just west of the CM with several accompanying pores to the west and north of the main penumbral sunspot. By the 30th the main sunspot had reduced in size but was still surrounded by smaller spots. The group was progressing towards the SW limb on the 31st with a reduced leader sunspot and a small penumbral follower, close to its eastern end. This group was seen with the protected naked eye on the 25th – 28th inclusive.

AR3415 S09°/081° appeared on the SE limb on the 22nd and was fully on the disk the following day as a Cko type group. The main penumbral sunspot was asymmetric with two umbrae and third small sunspot formed to its north. On the 24th it had an area of 440 millionths being type Hkx having consolidated into a single penumbral area. By the 28th the main sunspot was quite elongated east/west and the pore had reappeared close to its northern penumbral edge. The group continued across the SW quadrant basically unchanged with the odd pore appearing and fading from time to time. This group was reported visible to the protected naked eye on the 27th and 28th.

25 observers reported a Quality number of **19.09** for August.

The Sun in H-alpha Prominences

15 observers reported a prominence MDF of **7.58** for August.

A thin arch prominence was reported on the SW limb on the 6th with accompanying prominences on either side.

An eruptive prominence was seen on the SW limb on the 9th rising to a height of about 100,000 km. The following day, a cloud of plasma was observed off the same limb at a height of about 180,000 km.

A prominence hearth containing two substantial separate elements was on the NE limb on the 13th but was not seen the following day. A cloud of plasma was seen on the SW limb on the 14th close to AR3394 approaching the limb.

Another eruptive prominence was reported on the 17th at the Sun's North Pole, achieving a height of about 120,000 km.

An arch prominence achieving a height of 40,000 km and a width of 80,000 km was on the W limb on the 19th.

A bright active prominence was reported on the 23rd on the NW limb in the form of two short spikes. Also, on the 23rd, a small prominence was seen on the SE limb at high southern latitude. This small prominence persisted through to the 31st growing in size and also with a small filament extension which in its turn grew across the polar region.

A complex prominence was seen on the 27th detached from the NW limb.

Three faint but tall separate pillar prominences were spread out along the NE limb on the

30th with a broken arch prominence on the SE limb preceding the approaching AR3417. All these prominences were not present on the 31st but the SE limb did sport three separate substantial prominence hearths.

Bi-Polar Magnetic Regions, Filaments & Plage

14 observers reported a filament MDF of **10.21** and 11 observers reported a plage MDF of **5.69** for August.

A long filament was seen extending from AR3391 on the 1st, measuring about 200,000 km in length. Another was seen near to the SW limb extending for about 170,000 km. This latter filament was also seen on the 3rd but had grown to around 250,000 km in length.

A broad filament aligned north/south was trailing AR3394 on the 13th and was seen again near the limb on the 14th but more to the north of AR3394. Several east/west aligned filaments were recorded in the centre of the disk on the 13th with one persisting on the 14th and 15th in the area south of AR3397 and AR3403. Two broad filaments parallel to each other were seen to the north of AR3405 close to the NE limb on the 15th.

A dark filament was north of AR3405 on the 23rd in the NW quadrant and a triangular shaped filament was seen south of AR3404 in the SW quadrant.

The filament extension from a small prominence on the SE limb became very noticeable from the 28th as it extended from the SE limb at high latitude to join the SW limb as a filament Polar Crown on the 30th and 31st.

Also, on the 30th and 31st, filaments were seen in association with AR3413, AR3415, AR3416 and AR3417. Extensive magnetic regions were reported across the NE section of the solar disk on the 30th as far west as AR3415 where a bright spot of plage was present. Bright plage also surrounded AR3415 and to a lesser extent AR3417 near the eastern limb.

CaK

Almost all CaK emissions were small areas but towards the end of the month, a few very large areas of CaK “speckles” appeared particularly between the 28th and 31st.

CaK MDF **8.79** B Mitchell (24 days).

Polar Faculae

Jan Janssens reported a polar faculae MDF of North **1.33** and South **0.67** (3 days).

Flares

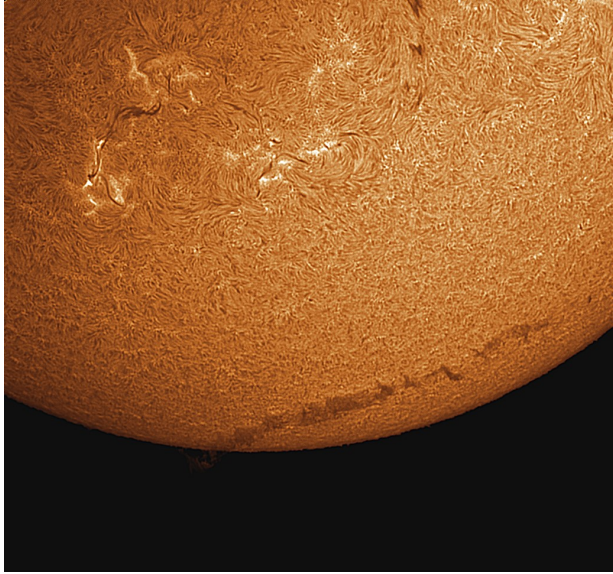
Although minor flares were reported, there were far fewer than in recent months. Andrew Johnston reported an M1 flare at 1605 UT on the 7th associated with AR3387 and a C2 flare at 10.10 UT on the 26th associated with AR3413.

MAGNETOMETER REPORT

2023 AUGUST

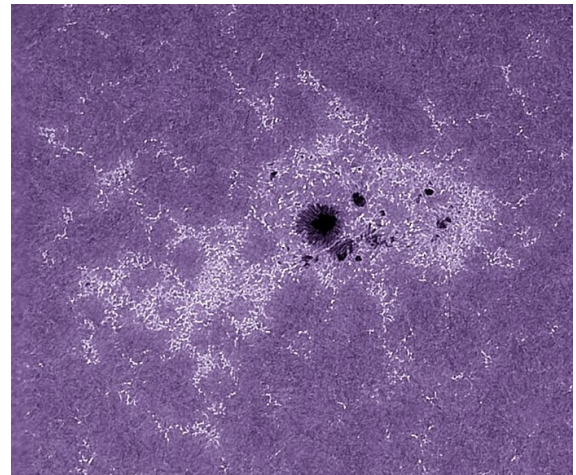
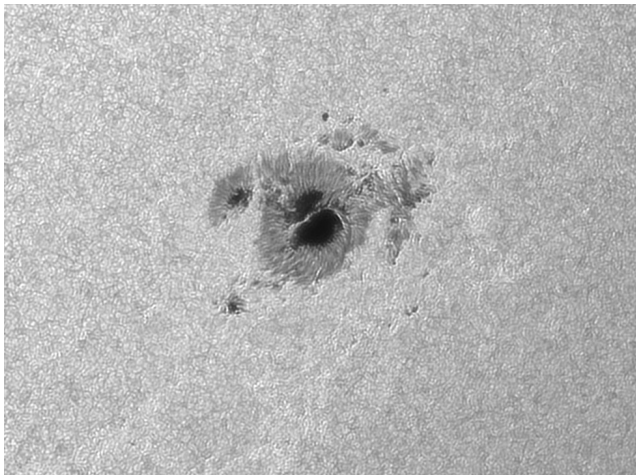
DATE	DURATION (UT)		ACTIVITY
4/5	18:15	10:00	Disturbed
7	02:00	04:00	Disturbed
7/8	20:00	03:00	Disturbed
18	04:45	08:30	Disturbed
24	02:15	03:45	Disturbed
24	20:00	23:00	Disturbed
27	11:30	04:00	Disturbed
28	19:30	23:45	Disturbed

Solid-state magnetometer, Uncalibrated.
John Cook



Above Left: A view of the SE limb and polar region showing an incomplete polar crown filament with AR3388 above, image by Sheri Lynn Karl 20230801 at 1543 UT

Above Right: AR3380 nearing the SW limb with AR3386 in the NW quadrant 20230803 imaged by Brian Halls at 0956 UT

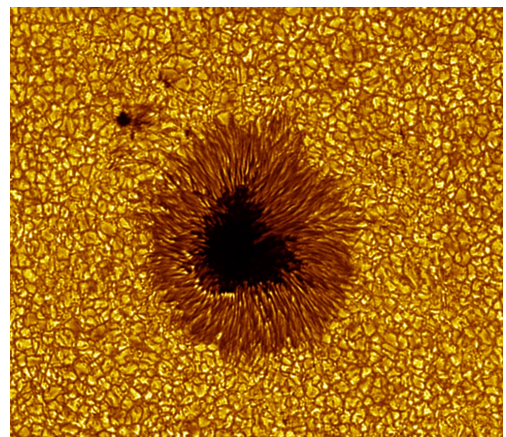
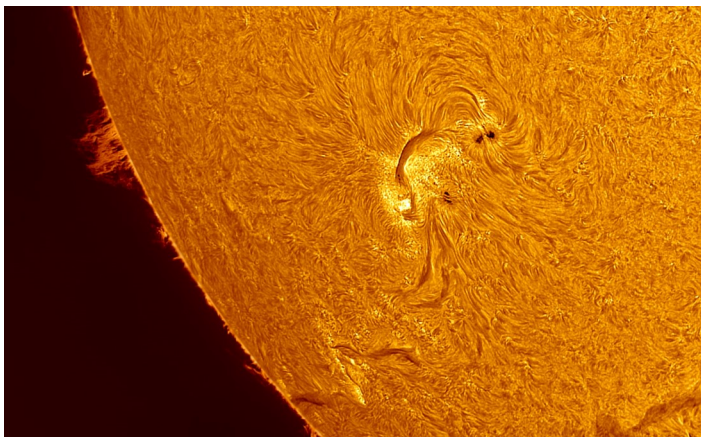


Above Left: AR3413 imaged by Stuart Green 20230830 at 0853 UT in white light

Above Right: AR3395 imaged in CaK by Carl Bowron 20230810 at 0947 UT

Below Left: Gary Palmer imaged AR3417 and surrounding activity in H-alpha 20230831

Below Right: A superb close up image of AR3405 20230822 at 0837 UT by Luigi Morrone



Section News

After the success of the February Section Meeting via the Zoom platform, we have arranged another for Friday 24th November 2023 at 19.30 UT. Please make a note of the date and the link below and join us for a solar related chat. You don't need to take part, if you prefer just to listen in to the chat, that is fine. There is no formal agenda with attendees free to raise any solar related topic that they wish. If however, you would like some particular information on a specific topic of solar observing or imaging, I would be pleased to receive notice of that in advance in order to prepare a short presentation.

Topic: Solar Workshop Number 2

Time: Nov 24, 2023 19:30 UTC

Join Zoom Meeting

<https://us02web.zoom.us/j/87431683717?pwd=QU9FaTBVVXFFVkyzdVZOa0VEV1BuUT09>

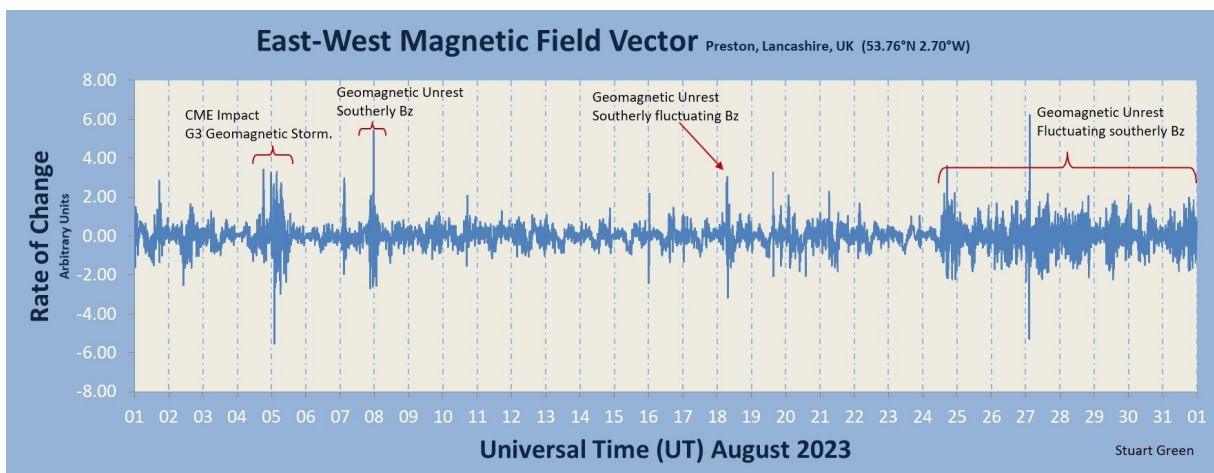
Meeting ID: 874 3168 3717

Passcode: 672038

One tap mobile

+441314601196,,87431683717#,,,,*672038# United Kingdom

+442034815237,,87431683717#,,,,*672038# United Kingdom



Above: Geometric activity chart for August, courtesy of Stuart Green

Below: Sequence by Simon Dawes showing the development of AR3395 from 6th to 10th August

