



British Astronomical Association



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BAA Solar Section Newsletter

Sunspot data 2023 October

Day	g	R
1	8	130
2	7	108
3	6	111
4	7	110
5	6	110
6	7	113
7	6	102
8	7	110
9	7	111
10	7	99
11	8	119
12	7	107
13	5	84
14	6	81
15	5	77
16	4	63
17	4	51
18	3	41
19	3	43
20	4	56
21	4	49
22	3	44
23	2	21
24	2	28
25	2	26
26	3	39
27	3	37
28	3	41
29	3	52
30	3	48
31	4	80

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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 |
| R Battaiola, Milan, Italy | D Keep, Lincoln |
| M Boschat, Canada | K Kilburn, Staffordshire |
| C F Bowron, South Yorks | M Kinder, Cheshire |
| A Bowyer, Epsom Downs | L Macdonald, Berkshire |
| S Brown, Leicestershire | R Mackenzie, Kent |
| E Bryant, North Devon | M Mattos, Spain |
| M Buck, Bristol | P Meadows, Essex |
| L Cambon, France | A Mengus, France |
| G Cauchi, South Australia | H Meyerdierks, Germany |
| I Chouinavas, Greece | B Mitchell, Norwich |
| G Clarke, Australia | M Nicholls, Sheffield |
| E Colombo, Italy | Polish Solar Obs Soc |
| J Cook, Wolverhampton | C Potter, Orkney |
| P Curtin, USA | R Samworth, Leicestershire |
| S Dawes, London | J D Shanklin, Cambridge |
| A Devey, Spain | D Smith, Essex |
| R Dryden, Oxon | L Smith, Angus |
| F Dubois, Belgium | N Spencer, York |
| T Emmett, Cambs | M Stephanou, Greece |
| T Figiel, Poland | A Stone, Bristol |
| 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 | 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 |
| S Jenner, Kent | D Vidican, Romania |
| A Johnston, Denbighshire | S Viney, Cheshire |
| R Johnson, Surrey | |

Monthly Means

MDFg:	5.17	(46 observers)
MDFNg	3.08	(37 observers)
MDFSg	2.16	(37 observers)
Mean R:	79.71	(44 observers)

The Sun in White Light – October

Activity declined in October particularly during the second half of the month. The decline took place in both hemispheres but more so in the north. The Relative Sunspot number (R) also declined significantly being the lowest for 6 months and correspondingly there was a drop in the Q number. There were no spotless days recorded and at least two sunspot groups were observable even in the quieter second half of the month. Thirty-one sunspot groups were designated with Boulder numbers; the main groups are reported below.

AR3448 N15°/354° survived on the disc from the previous month, a strong Hsx sunspot with an area of 170 millionths, just over the CM into the NW quadrant on the 1st. The sunspot progressed towards the western limb reducing in size and was last reported near the limb on the 7th with bright faculae associated with it on the 6th and 7th.

AR3450 S19°/329° also survived from the previous month. The group was type Eac on the 1st with the largest sunspot being the leader but it was preceded by a small sunspot close to its western edge. Following was a cluster of smaller penumbral sunspots and pores. The group extended on the 2nd but by the 3rd it was in decline. By the 5th the leading penumbral sunspot had broken down and many of the following sunspots had disappeared or reduced. The group reduced further the following day and by the 7th was type Axx fading on the disc as it approached the SW limb.

AR3451 N18°/301° & AR3452 N11°/304° both groups also survived from the previous month, both travelling in close unison in the NE quadrant on the 1st. AR3452 was the larger of the two groups being type Dso with AR3451 being a Bxo type group. By the 3rd AR3452 had developed into a Eac type group with an area of 310 millionths comprising a string of small penumbral sunspots and pores. The larger preceding sunspot sported two umbrae with a photo-light bridge of a slightly brighter appearance than the surrounding Photosphere. Accompanying AR3451 had also matured into a Dso group comprising of two small penumbral sunspots, the group having an estimated area of 130 millionths. By the 5th, with both groups near the central meridian, AR3452 had developed a few more penumbral sunspots and within AR3451, a few more pores had appeared. By the following day, both groups had evolved to type Eai but thereafter AR3452 went into decline whilst AR3451 strengthened. This process continued over subsequent days and by the 9th AR3451 was a Dac group with an area of 350 millionths whilst AR3452 had declined to type Bxo. Both groups were reported near the NW limb on the 10th.

AR3456 S30°/331° reported on the 5th as an Axx sunspot and was short lived but noted for its high southern latitude.

AR3460 S08°/232° formed in the mid SE quadrant on the 8th as a Csi group with an area of 40 millionths which developed into a Dsc type group the following day comprising of a few small penumbral sunspots and pores. The group was led by a penumbral sunspot and a follower with a number of umbrae sharing the same penumbral enclosure. On the 10th a slightly larger follower gave the group a total area of 280 millionths. The following day, the group was type Dsi being led by a small penumbral sunspot with two small penumbral sunspots in close unison bringing up the rear. By the 14th the group had lost almost all its intermediate sunspots to leave a Dso type group with an area of 160 millionths. As the group approached the SW limb on the 15th and 16th it was reported as a single Hsx sunspot.

AR3464 N05°/167° was initially reported on the 10th near the NE limb as an Axx type sunspot. The group developed to type Cso the following day and was type Cao by the 14th due to the leading penumbral sunspot becoming quite asymmetric. Although the group became type Dsc with an area of 170 millionths on the 15th it then decayed again on the 16th to type Csi and then Cso on the 17th. The group lost all its follower spots by the 19th to become type Hsx and reached the NW limb on the 21st.

AR3465 N12°/147° rounded the NE limb on the 11th as a single asymmetric penumbral sunspot type Hax. The group was unchanged by the 14th and had an area of 290 millionths with a distinct light bridge separating the umbra. The following day, a few pores developed and by the 17th a small penumbral sunspot had formed to the north-west of the main sunspot the group being type Dac with an area of 340 millionths. Thereafter the group went into

decline as it crossed the NW quadrant and was type Hrx by the 20th. The group then dissolved on the disc.

AR3468 S09°/079° rounded the SE limb on the 16th type Hsx. The group remained unchanged as it travelled across the disc and only started reducing on the 25th as it crossed the SW quadrant. On the 27th it was type Axx before dissolving on the disc as it approached the limb.

AR3471 S22°/050° developed on the disc in the SW quadrant on the 25th as a Cao type group. However, the group proved to be short-lived and reduced to type Bxo on the 28th before dissolving on the disc.

AR3474 S15°/327° was first reported in the SE quadrant on the 27th as a single Axx sunspot. The group was type Bxo the following day and then underwent rapid growth to type Dai on the 29th. The group was much enhanced by the 30th and on the 31st was type Dki with an area of 480 millionths. The group was bi-polar with penumbral sunspots leading and following with the follower being asymmetric and both penumbral sunspots displayed light-bridges.

25 observers reported a Quality number of **14.93** for October.

The Sun in H-alpha Prominences

16 observers reported a prominence MDF of **8.02** for October.

A small loop prominence graced the NE limb on the 1st.

An eruptive prominence was reported on the SE limb on the 3rd and three structured prominences also graced the NE limb.

On the 5th, in the vicinity of the solar North Pole, a plasma cloud was seen at a height of around 100,000 km.

An arch prominence stretched around the NE limb on the 7th for about 100,000 km with a height of 40,000 km.

A complex prominence hearth was seen on the SW limb on the 14th which was also seen the following day but with reduced width. The reduction continued on the 16th and the prominence was not seen on the 17th.

An inclined pillar prominence was on the NW limb on the 17th extending for about 50,000 km.

An active loop prominence was reported on the SE limb on the 21st rising to about 60,000 km and being more extensive on the following day at a height of about 70,000 km.

At high latitude on the NE limb on the 25th, a pillar prominence was noted rising to about 60,000 km and a fine pyramid prominence was on the SE limb.

A large pyramid type prominence was on the SE limb on the 28th which persisted the following day.

Bi-Polar Magnetic Regions, Filaments & Plage

15 observers reported a filament MDF of **10.77** and 14 observers reported a plage MDF of **4.99** for October.

A dark filament was seen extending from the NW limb on the 1st to the north of AR3447.

Also, a long-broken filament was seen further east arcing through the SW quadrant. A smaller north/south aligned filament travelled between AR3452 and AR3453 in the NE quadrant.

Two long filaments were observed in the NE quadrant on the 9th measuring around 300,000 km and 250,000 km respectively. Both were obviously until the 12th but started fading and breaking up after that date. The most northerly of the two was most likely responsible for the inclined pillar prominence on the NW limb on the 17th.

On the 16th an east/west aligned filament was mid disc in the northern hemisphere to the north of AR3465 and a north/south aligned filament was mid-way across the SE quadrant. Both features remained obvious until the 20th crossing the solar disc.

A large delicate filament was seen threading across the NE quadrant on the 20th and on the

22nd, the bi-polar regions associated with AR3468 and AR3470 were quite conspicuous. On the 21st, a long north/south aligned filament was close to the NE limb. The filament was quite dark as it travelled across the quadrant until the 26th when it started fading and breaking apart near the CM. However, the feature was still present in a reduced form nearing the NW limb at the end of the month

An interesting looking BMR was seen rotating onto the disc on the 25th with discretely differing polarities.

Plage was seen with most sunspot groups throughout the month.

CaK

Few CaK plage were obvious during October other than those accompanying sunspot groups. A bright CaK area persisted on the 8th and 9th situated around the sunspot group at N06°/210°.

CaK MDF **5.20** Brian Mitchell (9 days).

Polar Faculae

Jan Janssens reported a polar faculae MDF of 0 for both hemispheres.

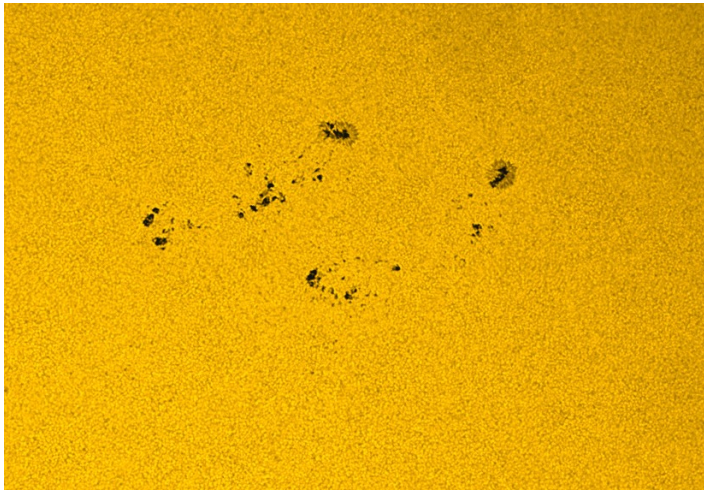
Flares

Few flares were reported this month. Andrew Johnston reported a C3 flare on the 1st associated with the AR3451/3452 complex at 1500 UT and another C2 flare on the 29th at 0945 UT associated with AR3474. Andy Devey caught the peak of an M2.2 flare associated with AR3451 on the 10th at 1221 UT. Brian Halls observed a surge prominence together with a minor flare on the 22nd between 1134 and 1140 UT.

Sudden Ionospheric Disturbances At 23.4kHz 2023 OCTOBER

DAY	START	PEAK	END(UT)	NOTES
1	09:45	09:52	10:262	C5.0
1	11:13	11:15	11:441+	C3.6
1	14:21	14:24	14:381-	C2.9
2	11:53	11:57?	-	C3.0
2	12:42	12:47	14:123	M1.9
3	09:37	09:42	10:071+	C3.5
6	10:59	11:06	11:311+	C3.4
8	12:39	12:44?	-	C3.4
10	10:39	10:42	11:051	C2.7
10	11:55	12:01?	-	C6.0
10	12:12	12:19	13:372+	M2.3
10	13:45	13:48	13:551-	C3.4
11	09:33	09:39	09:561	C7.2 (22.1kHz)
11	14:35	14:44	15:071+	C4.9
16	10:41	10:53	12:153	C7.5
29	11:37	11:43	12:192	C6.6
29	13:07	13:09	13:151-	C7.8

John Cook

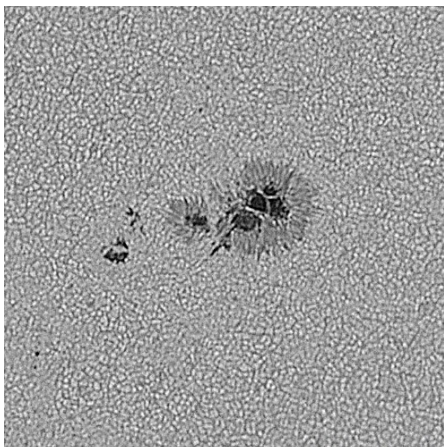
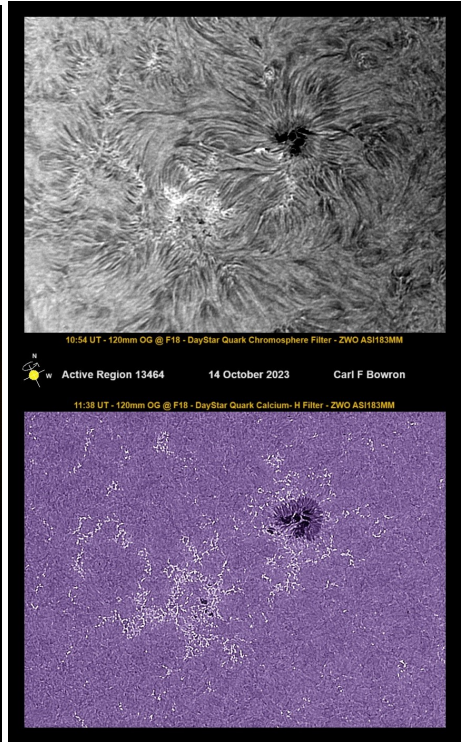
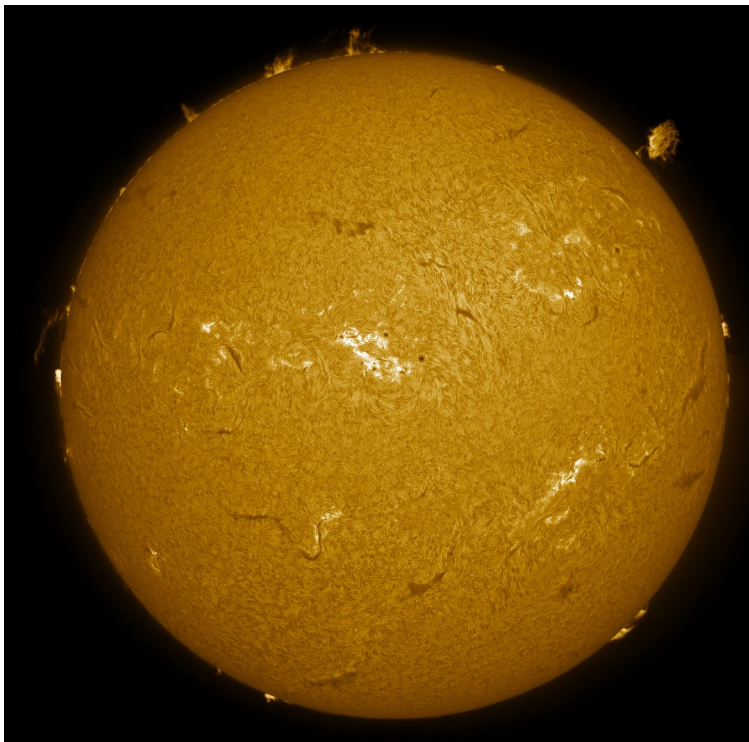


Above Left: AR3451 & AR3452 imaged in white light by Brian Halls 20231007 at 0933 UT

Above Right: A fine prominence hearth imaged by Andy Devey at 0819 UT 20231005

Below Left: Full disc H-alpha image by Dave Smith showing prominence at 0935 UT 20231005

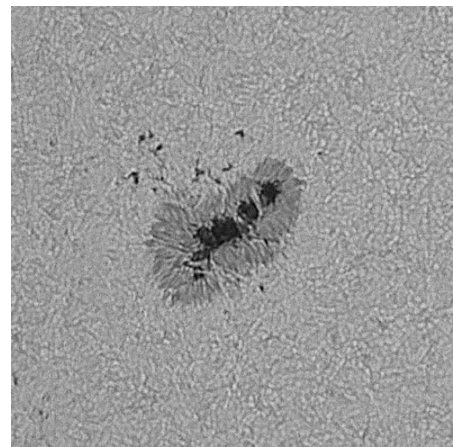
Below Right: Two images by Carl Bowron showing AR3464 in H-alpha and Calcium K- line between 1054 and 1138 UT 20231014



Left: AR3464 imaged in white light at 0854 UT

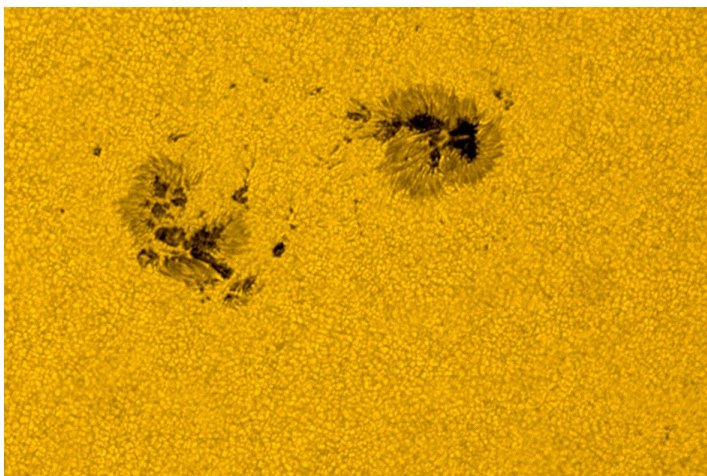
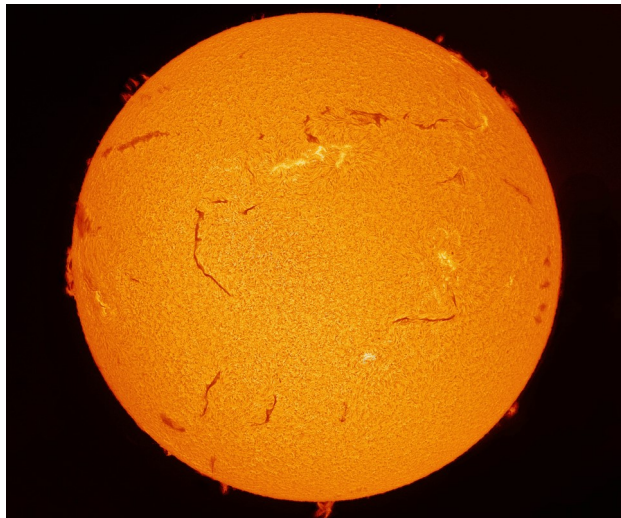
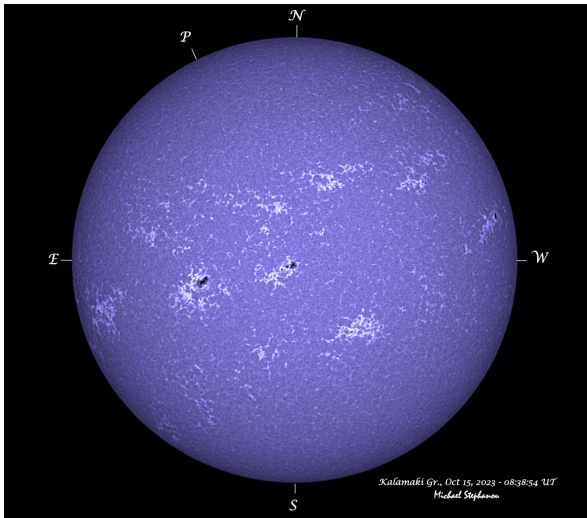
Right: AR3465 Imaged at 0900 UT

Both images in white light by Carl Bowron 20231015



Section News

I hope to meet you at our next Section Zoom meeting on Friday 24th November 2023 starting at 7.30 pm. Details of how to join have been circulated separately and can also be found in the 2023 September newsletter. If anyone has a particular question or subject they would like to be covered during the meeting, please drop me an email. With Christmas looming once again, can all observers please enter their data on the Section database prior to the 14th of December to enable me to complete and circulate the next newsletter before the Christmas holiday.



Above Left: Full disc in Calcium K-line by Michael Stefanou
Imaged 0838 UT 20231015

Above: Full disc in H-alpha imaged 20231024 at 1030 UT by Ella Bryant

Left: AR3474 imaged by Brian Halls at 1109 UT 20231031

