British Astronomical Association

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Founded in 1890

BAA Solar Section Newsletter

Sunspot data 2024 February

Day	g	R
1	5	83
2	6	90
3	7	99
4	7	111
5	7	115
6	7	123
7	6	105
8	6	136
9	5	120
10	6	116
11	6	116
12	6	120
13	5	113
14	5	115
15	7	116
16	7	96
17	5	78
18	5	73
19	4	55
20	2	34
21	2	36
22	2	44
23	4	75
24	5	78
25	5	75
26	6	103
27	5	93
28	5	108
29	5	104

Monthly Means

MDFg:	6.10	(45 observers)
MDFNg	3.24	(36 observers)
MDFSg	2.99	(36 observers)
Mean R:	96.57	(44 observers)

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

The Sun in White Light – February

There was a slight decline in activity during February mainly due to a reduction in southern hemisphere sunspot groups. Activity returned to the level seen in 2023 December. There was a corresponding drop in the Quality number, however multiple sunspot groups were still present on every day of the month. Thirty-two sunspot groups were allocated Boulder numbers during the month, the largest or most active are reported on below.

AR3567 N19°/132° survived on the disc from the previous month. Over the NE limb, this group was classified as type Dac on the 1st with an area of 350 millionths. The group comprised of a close collection of small penumbral and other minor sunspots led by an isolated lead sunspot and followed by two sunspots contained in a complex penumbral area. The following day the group had decayed and had a more east/west strung-out appearance. This was still the case on the 3rd when the group was classified as Bxo. The group continued to fade as it crossed into the NW quadrant on the 4th and then dissolved on the disc.

AR3575 S35°/176° formed in the SW quadrant just passed the central meridian on the 2nd type Bxo. By the 3rd the group had undergone rapid development to type Dac with an area of 420 millionths, being quite unusual for such a high latitude sunspot group. The group comprised of an irregular main penumbral sunspot, a couple of small penumbral sunspots to its north and a few pores in between. When next reported on the 5th, the main sunspot had changed shape slightly and its area had increased slightly to 520 millionths. The group was seen on the 6th approaching the limb type Dao and on the 7th was very near the limb having the appearance of a single penumbral sunspot.

AR3576 S15°/057° rounded the SE limb on the 4th. The group was classified as type Dkc on the 5th with the main penumbral sunspot exhibiting a southward extension. This extension became detached from the main sunspot the following day with the main sunspot throwing out a northern extension from its eastern edge. The extension looped westward over the northern penumbral area of the main sunspot which was large containing four umbrae. The group was now type Ekc. On the 7th the northern extension also detached from the main sunspot and broke into two separate penumbral areas. The group crossed the CM on the 10th still with a main large asymmetrical penumbral sunspot accompanied by various smaller outbursts of activity mainly to the north and east of the main sunspot. The group was type Fkc and was at its peak of growth on this day. On the 11th the group had an area of 590 millionths and the following day appeared more compact in longitude and was assessed as type Eki with a similar area to the previous day but with fewer pores. The accompanying sunspots had reduced substantially by the 13th and by the 15th was nearing the SW limb consisting of far fewer sunspots. It was last reported as a Dao type group on the 16th close to the limb.

AR3582 N06°/034° developed on the disc well across the NE quadrant on the 10th type Cao. The group was stronger the following day but developed substantially by the 12th to type Dso. The group was by now just into the NW quadrant and comprised of two parallel lines of small penumbral sunspots and pores. The group maintained this composition until the 15th when it started to fade and was a C class group by the 16th. The group crossed the limb the following day.

AR3583 N09°/006° also developed on the disc in the NE quadrant on the 10th, well to the east of AR3582. This group also developed rapidly overnight and was type Dso on the 11th and 12th. The group consisted of a definite leader and follower with an area of sunspots and small penumbra in-between. The group was described as having the casual appearance of a scorpion, the northerly curve of the following component looking just like a "sting". The central sunspots started to fade as the group crossed into the NW quadrant but more sunspots developed in the subsequent days, mainly centred around the leader of the group. The follower sunspots also started to reduce as the group approached the limb and the group was last reported near the limb on the 19th type Dsc, consisting of four sunspots.

AR3590 N18°/222° was first observed on the 18th as a single large penumbral sunspot rounding the NE limb. The following day further sunspots had rotated around the limb revealing an Ekc group comprising of a large leading penumbral sunspot and two much smaller penumbral sunspots. The group was fully on the disc by the 21st where its extent

could be fully appreciated. The group was type Fki with the leader by far the largest component. On the 23rd, one of the smaller penumbral areas following the main sunspot joined up with it merging into a larger asymmetric penumbral sunspot. The group was now 1420 millionths in area. This new merged area continued to grow and develop over the coming days making the main sunspot huge and highly complex as it crossed into the NW quadrant on the 25th. A further merger took place with a penumbral area near the south-west of the main sunspot making an even larger sunspot on the 26th although this detached again on the 27th. The group reached 1550 millionths in area and was visible to the protected naked eye from the 23rd to 27th inclusive. The group was approaching the NW limb on the 29th, much reduced by still a substantial asymmetric penumbral sunspot.
AR3595 N20°/164° formed on the disc over the NE limb on the 25th, type Bxo. The following day the number of sunspots had expanded from two to four and extended in longitude. On the 27th a small penumbral leader formed designating the group as Cai but overnight the group further developed with a penumbral follower forming making the group Dao. The group reached the CM the following day similarly configured.
23 observers reported a Quality number of **19.76** for February

The Sun in H-alpha

Prominences

17 observers reported a prominence MDF of **7.91** for February
The month started with a fine curtain prominence on the SW limb stretching around the limb for approximately 110,000 km. The feature was still present on the 2nd but reduced.
There were few prominences of note until the 11th when a triangular shaped prominence was reported on the NE limb rising to about 50,000 km in height. The following day, this had erupted into a spectacular event. The prominence was reported at 1125 UT as a very active platform with a height of around 50,000 km and a length of 200,000 km. By 1145 UT the prominence had lifted into a large loop with a smaller prominence to its northern end giving it the appearance of a splashing effect onto the limb. A few minutes later the arcing prominence was estimated to be 350,000 km in extent and rising to about 80,000 km above the limb. By 13.25 UT the prominence had grown very large indeed but had died back by 14.25 UT and was no longer visible.
On the 19th an extended but low curtain prominence was reported on the SW limb.
A slab type prominence was reported above the E limb on the 23rd with a small region of hydrogen between the main slab and the limb.
A broken arch prominence was seen on the SE limb on the 26th and a pillar type prominence was noted on the SW limb. Neither was present the following day but a platform type prominence was seen on the NW limb, fairly lengthy but low on the limb.

Bi-Polar Magnetic Regions, Filaments & Plage

15 observers reported a filament MDF of **7.42** and 13 observers reported a plage MDF of **4.78** for February.
On the 6th a north/south aligned filament preceded AR3576 and the following day, another additional north/south aligned filament followed the group onto the disc in the SE quadrant. By the 12th the preceding filament had shortened and become east/west in alignment but the trailing filament was now stronger and placed between AR3576 and the following AR3581. The filament persisted at this location reaching the SW limb on the 18th.
Another long north/south aligned filament was in proximity to the SE limb on the 14th but lost half its length by the 17th.
A curiously shaped filament preceded AR3586 in the NE quadrant on the 18th consisting of a triangular shaped section of plasma at its southern end with a stream of thin plasma extending northwards.
A broken filament was near the NE limb on the 23rd which then progressed across the disc preceding AR3594. The feature persisted to the end of the month.
A broad filament was near the SE limb on the 27th which developed a thin northern strand on the 28th and 29th.

Plage was reported with the main sunspot groups throughout the month.
No information on BMR's was available for February.

CaK

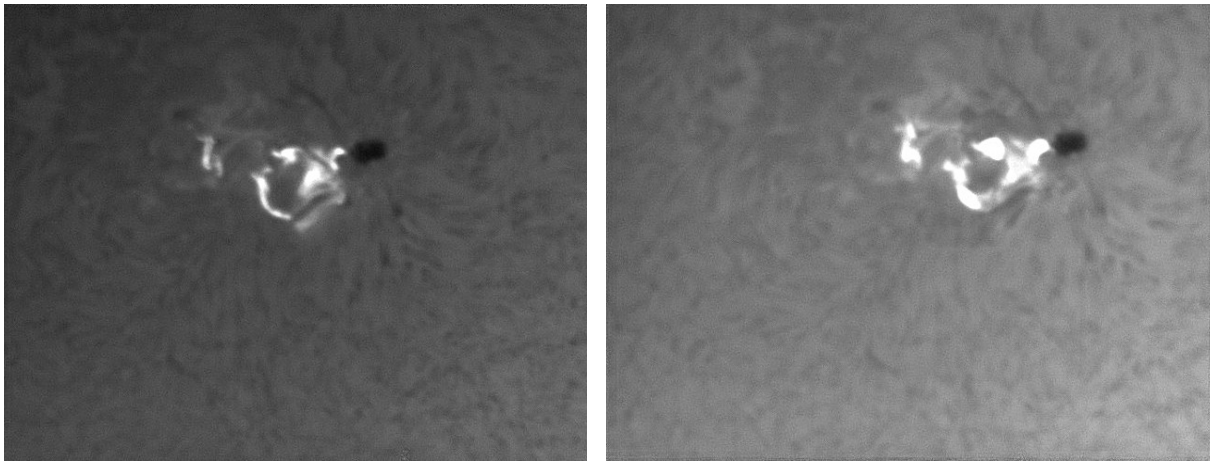
Few features of note were reported. A CaK band at about 20°N was prominent in CaK emissions from the 19th onwards. It was a strong feature located at 20°N from 280° to 320° longitude. On the 19th as AR3590 appeared over the NE limb, it was surrounded by strong CaK emissions that covered the whole sunspot group from the 23rd to the 25th.

Flares

Minor flares were reported by several Section members throughout the month. Arthur Coombs imaged an X6 flare from AR3590 on the 22nd at 2228 UT and 2232 UT; Andy Devey reported an M3 flare also associated with AR3590 at 0851 UT on the 22nd and Mick Nicholls imaged a M3.6 flare within AR3590 at 1114 UT on the 24th. Also, on the 24th Peter Meadows reported two M class flares associated with AR3590. At 1030 UT several bright regions were visible to the east and south of the main umbrae but the brightest was the northernmost, being an M2.2 flare. By 1055 UT these flaring regions had started to fade but before they subsided, another region brightened at 1115 UT being an M2.3 flare. All had faded by 1130 UT.

Polar Faculae

No polar faculae were reported during February.

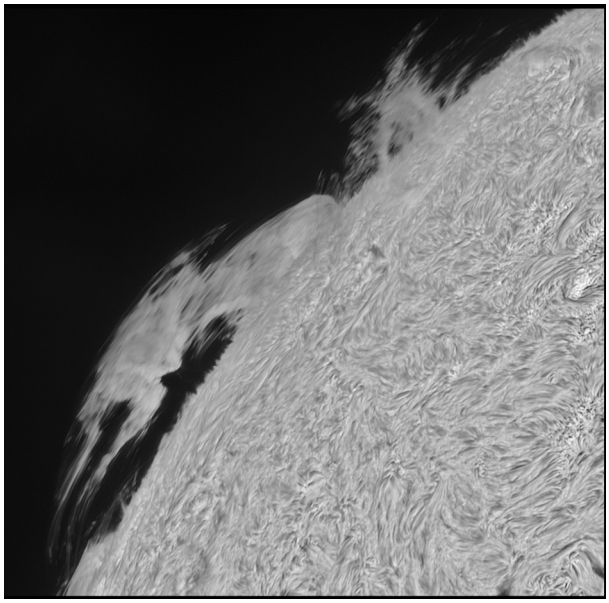


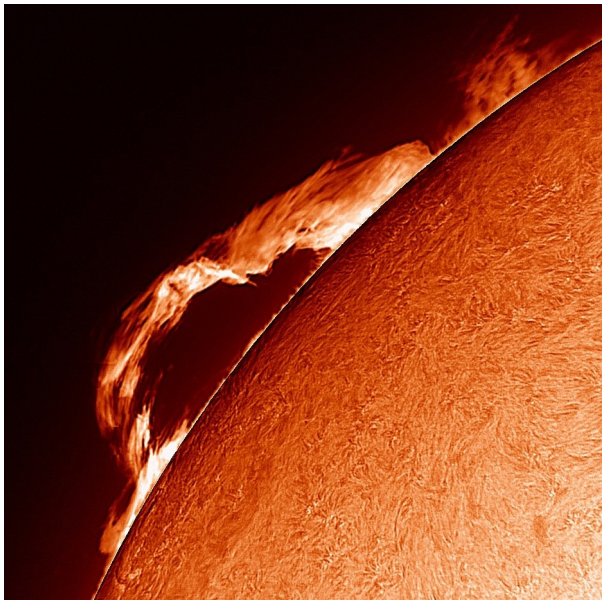
Above: Two images by Arthur Coombs showing the X6 flare associated with AR3590 on the 22nd. Image left timed at 2228UT and image right at 2232 UT.

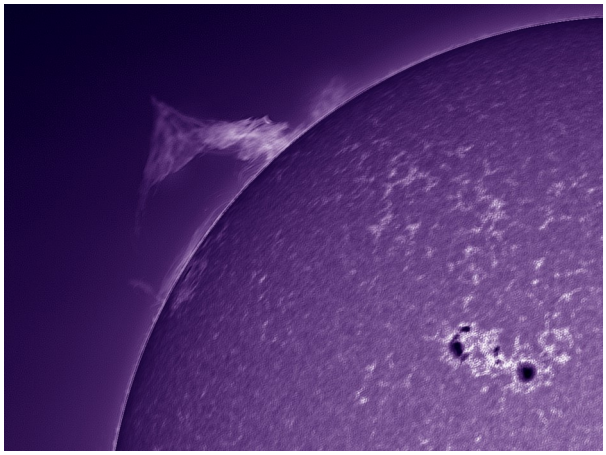
MAGNETOMETER REPORT 2024 FEBRUARY

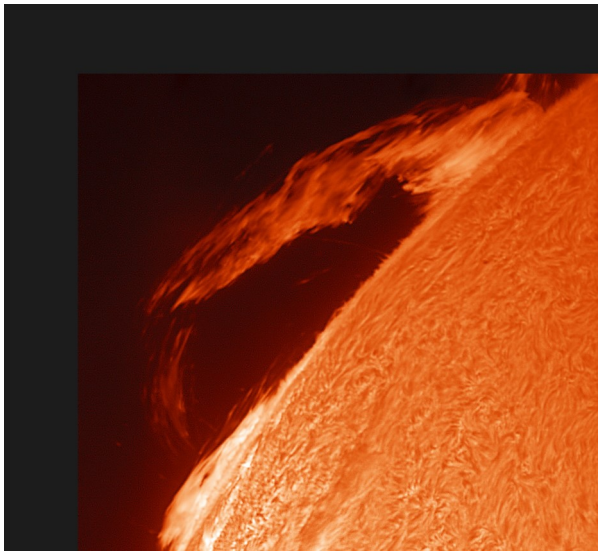
DATE	DURATION (UT)		ACTIVITY
4	21:00	22:30	Disturbed
11	02:00	11:00	Disturbed
13/14	23:00	01:30	Disturbed
16	11:15	15:30	Disturbed
17/18	22:30	03:00	Disturbed
26/27	23:00	05:00	Disturbed
29	08:00	12:00	Disturbed

Solid-state magnetometer, Uncalibrated.
John Cook

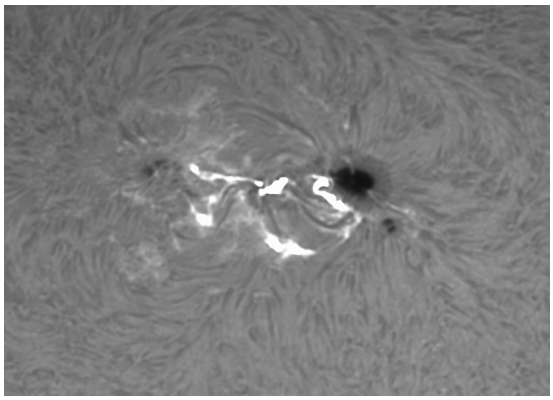


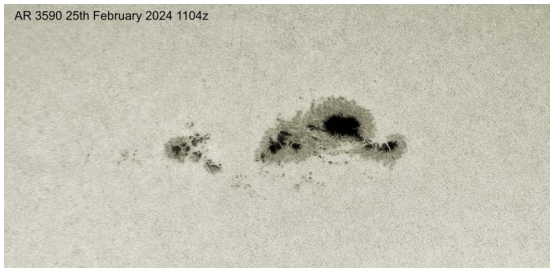




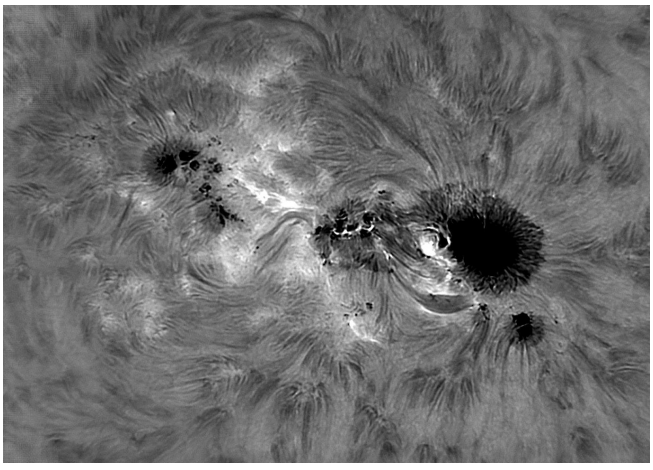


Images of eruptive prominence 20240212
From Top Left and then clockwise: Stuart Green 1109 UT; Carl Bowron 1150 UT; Pete Lawrence 1232 UT and Ella Bryant 1327 UT





Top Left: M3.6 flare within AR3590 imaged by Mick Nicholls 20240224 at 1114 UT
Below Left: White light image of AR3590 by Chris Bailey 20240225
Below: H-alpha image of AR3590 by Carl Bowron imaged 20240225 at 1028 UT



Section News

Our next Solar Section meeting will be at 7.30 pm (18.30 UT) on Friday 26 April 2024. I am delighted to inform you that Stuart Green and Dave Smith will be presenting a work-shop on solar image processing.. No doubt, many other aspects of solar observing will be discussed as well, so please come along and join in the chat. If you just wish to attend with your camera off and listen in, that is also fine.

Lyn Smith is inviting you to a scheduled Zoom meeting.

Topic: SOLAR SECTION WORKSHOP
Time: Apr 26, 2024 19:30 London (Conference will open at 19:15)

Join Zoom Meeting
https://us02web.zoom.us/j/82405341934?pwd=eXpxOXkwVjFJOGVVZC96NTZjaWp5UT09

Meeting ID: 824 0534 1934
Passcode: 565040

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- +44 330 088 5830 United Kingdom
- +44 131 460 1196 United Kingdom

Meeting ID: 824 0534 1934

Below Left: Flare in association with AR3571 imaged by Ella Bryant at 1501 UT 20240201
Below Right: Full disc image in CaK by Michael Stephanou showing AR3590 dominating the disc. Imaged on 20240224 at 1032 UT