



The British Astronomical Association

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BAA Solar Section Newsletter

Sunspot data 2025 January

Day	g	R
1	10	162
2	9	142
3	10	158
4	10	152
5	11	155
6	9	129
7	7	107
8	7	104
9	9	126
10	7	102
11	5	79
12	7	92
13	7	81
14	5	61
15	5	75
16	7	115
17	8	128
18	7	122
19	7	141
20	8	146
21	9	149
22	7	128
23	7	136
24	7	117
25	6	98
26	6	76
27	3	40
28	5	67
29	4	64
30	6	85
31	6	112

Monthly Means

MDFg:	6.98	(42 observers)
MDFNg	3.47	(35 observers)
MDFSg	3.62	(35 observers)
Mean R:	108.15	(42 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:

R S Armas, Cuba	S Jenner, Kent
C Bailey, Suffolk	A Johnston, Denbighshire
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
C Briden, York	R Mackenzie, Kent
S Brown, Leicestershire	M Mattos, Spain
E Bryant, North Devon	P Meadows, Essex
M Buck, Bristol	A Mengus, France
L Cambon, France	H Meyerdierks, Germany
G Clarke, Australia	B Mitchell, Norwich
E Colombo, Italy	C C Moraes, Brazil
J Cook, Wolverhampton	M Nicholls, Sheffield
A Coombs, Vic, Aust	R Samworth, Leicestershire
P Curtin, USA	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	T Tanti, Malta
M Giuntoli, Italy	D Teske, Mississippi, USA
D Glover, Essex	C B Thielke, Denmark
S Green, Lancs	N Tonkin, Cornwall
K Hall, Warrington	Towarzystwo Milosnikow
B Halls, W Sussex	Towarzystwo Obs Slonca
K Hay, Canada	S Ove Thimm, Denmark
R Heard, Suffolk	P Urbanski, Poland
J Janssens, Belgium	G Vargas, Bolivia
M Jenkins, Cambridge	D Vidican, Romania

The Sun in White Light – January

The Relative sunspot number fell slightly in January back to levels last seen in 2024 April. This was mainly due to a decrease in southern hemisphere activity. An increase in northern hemisphere activity compensated for this decrease whilst the overall quality of sunspots during the month remained quite substantial. Forty-five sunspot groups were assigned Boulder numbers during January, the most significant of which are reported below:

AR3944 S14°/045° was mid-way across the SE quadrant on the 1st being newly formed there, type Dai. The largest penumbral sunspot was the follower with a quite small leader and pores between the two main components. By the 3rd, the follower was starting to decay. The decay continued as the group crossed the SW quadrant, fading altogether as it approached the SW limb on the 10th.

AR3945 S09°/004° & AR3951 S14°/359° rounded the NE limb on the 1st and was described as a type Eac group with an area of 550 millionths on the 2nd. The group consisted of three penumbral sunspots in various stages of formation. By the following day, the group was slightly larger but of the same classification. A small penumbral sunspot to the south-east of the main group was subsequently allocated a separate AR number (AR3951). The follower sunspots of the main group started to fade and by the 6th had dissolved with the group now reduced to type Cai. The group continued to fade as it crossed into the SW quadrant being type Bxo on the 10th and dissolving on the disk thereafter.

AR3947 N12°/342° appeared over the NE limb on the 2nd type Dao. The group was described on the 3rd as a small but complex region of sunspots amid bright faculae. Over the coming days, the group underwent substantial development becoming type Eac on the 5th. The group developed a large penumbral leader and multiple followers, being just into the NW quadrant by the 9th. The group was described as bi-polar with an area of 500 millionths, the dominant sunspot being the leader. The group lost many of its pores by the 10th and the process of decay continued as it progressed towards the limb being last reported on the 13th.

AR3956 N10°/281° formed on the disk on the 9th mid-way across the NE quadrant. The group rapidly developed overnight into a Dao type group. Both the leader and follower increased in size and looked quite promising for further development on the 12th but by the 14th it had clearly peaked and reduced to type Cao. The group continued to fade as it approached the limb and was only marked by faculae on the NW limb on the 18th.

AR3959 N17°/206° was noted close to the NE limb on the 12th, type Hsx. The group was type Hax the following day and then type Dko with an area of 710 millionths on the 14th due to two small sunspots trailing close to the eastern edge of the main sunspot's penumbra. The leading penumbral sunspot matured in size and displayed a split umbra aligned north/south. The group was Dko on the 15th and reached the CM on the 18th type Cko. The group progressed across the NW quadrant with only minor changes to the small accompanying sunspots and was close to the NW limb on the 24th.

AR3961 S07°/180° was first reported on the 14th close to the SE limb as two small penumbral sunspots following one another, type Dso. The following day, the group was more complex type Dac. When next reported on the 18th, the group was mid-way across the SE quadrant and had developed substantially into a Ekc type sunspot. The group consisted of complex asymmetrical penumbral sunspots throughout its length with multiple light bridges on display. When seen on the 21st, the group was into the SW quadrant, type Fkc. The leader was a large asymmetric sunspot with several umbrae. The leader was now more distinct from the remainder of the group which was still substantial and complex. As the group crossed the quadrant, the followers reduced substantially so by the 25th as the group approached the limb, it had reduced to type Dko with an area of 1030 millionths. The group still sported a large leading penumbral sunspot with smaller sunspots and pores trailing. A distinct network of faculae surrounded the group. The group rotated around the limb on the 26th.

AR3962 N17°/171° & AR3965 N15°/159° & AAR3970 N16°/153° & AR3971 N12°/174° were closely associated regions as they traversed the disk. AR3962 was first reported over the NE limb on the 15th as a bi-polar group consisting of two small penumbral sunspots. By the 18th the follower had reduced but the group had been joined by another small penumbral sunspot to its south-east (AR3965) type Hsx. The follower of AR3962 continued to reduce but on the 20th, small sunspots had appeared in the Photosphere between AR3962 and AR3965. The following day, these new sunspots were named AR3971 as two small sunspots had also formed to the east of AR3965 and had been allocated the designation AR3970. On the 22nd AR3971 faded on the disk but by the 24th had re-emerged again quite strongly whilst AR3970 had dissolved. The groups had an estimated area of 530 millionths and were associated with networks of faculae. The groups rounded the limb on the 26/27th. **AR3976 N13°/001° & AR3977 N18°/002° & AR3978 N11°/012°** another three sunspot groups travelling in close association. The first of these rounded the NE limb on the 28th with the southernmost group being allocated the designation AR3976 and the northern group AR3977. By the following day, AR3978 followed AR3976 onto the disk, a Hax type sunspot. By the 30th it was difficult to distinguish the separate sunspot groups within the area but AR3976 was the more complex and substantial at type Eac. The region was even more complex and developed by the 31st. 21 observers reported a Quality number of **22.72** for January.

The Sun in H-alpha Prominences

14 observers reported a prominence MDF of **7.04** for January. Few prominences of note were observed during the month. A moderately tall pyramid prominences was seen on the SE limb on the 2nd rising to about 35,000 km. On the 9th a small arch prominence was reported on the NW limb and on the 13th a bright but small prominence was seen on the NW limb near to AR3947. Two moderately tall spike prominences were also reported on the NE and NW limb. A steep arch prominence with a distinct plasma arm was seen on the SW limb on the 14th with a smaller pyramid prominence further south. The following day, the southernmost pyramid was still present but the steep arch prominence had gone. However, a piece of detached plasma was seen above the limb at the same location. Another blob of detached plasma was seen on the 18th this time above the NE limb, where a small arch prominence had existed the day before. A low but extensive hedgerow prominence was on the SE limb on the 21st (which was more pronounced the following day) and a small Eiffel tower type prominence was on the SW limb. On the 24th a column type prominence with a height of about 50,000 km was on the NW limb. Another detached prominence was seen on the 25th above the NW limb.

Filaments & Plage

13 observers reported a filament MDF of **9.30** and 11 observers reported a plage MDF of **5.62** for January. At the base of the pyramid prominence reported on the 2nd, a long filament extended from the SE limb for about 220,000 km across the solar disk. The filament strengthened and extended the following day with a distinct north/south alignment to the western end. The filament extended further in length forming a massive curved feature as it transited across the solar disk. The filament started to cross the SW limb on the 10th and took several days to do so but no significant prominences resulted. A north/south aligned loop filament was near to the SE limb on the 6th. The feature became stronger and more obvious when it reached the CM on the 11th. It was observed crossing

the SW quadrant and arrived at the limb on the 17th again without producing any significant prominences.

A small dark spot was observed on the 9th in the NE quadrant with small filaments emanating from it. The feature was not associated with a white light sunspot at this time but resembled a splash feature in H-alpha. Small areas of bright plage were observed within the feature. On the 11th white light sunspot AR3956 had materialised in the same vicinity.

On the 21st a comet shaped filament was seen streaming from the northern edge of AR3951 in the NW quadrant. An east/west aligned filament also underscored AR3965 and AR3970 in the NE quadrant.

The extensive hedgerow prominence reported on the 21st resulted in a strong curved filament coming onto the disk from the SE limb, seen clearly on the 24th and 25th. However, there was no sign of it on the 26th.

Three long dark filaments were seen in the southern hemisphere on the 30th, two of which were in the SE quadrant.

Plage was reported with most sunspot groups and with some filaments during the month.

Flares

Reports of minor flares were received during the month.

Andy Devey reported an X1.2 flare associated with AR3947 at 1154 UT on the 3rd; an X1.8 flare at 1250 UT on the 4th and an M5 flare on the 6th at 1626 UT, all associated with the same group. Brian Halls observed a further flare from this group on the 7th at 1100 UT being C4.1. Ella Bryant imaged an M7 flare from AR3964 at 1337 UT on the 17th and Lyn Smith reported an M3.3 flare from AR3967 on the 21st at 1040 UT (event 7060).

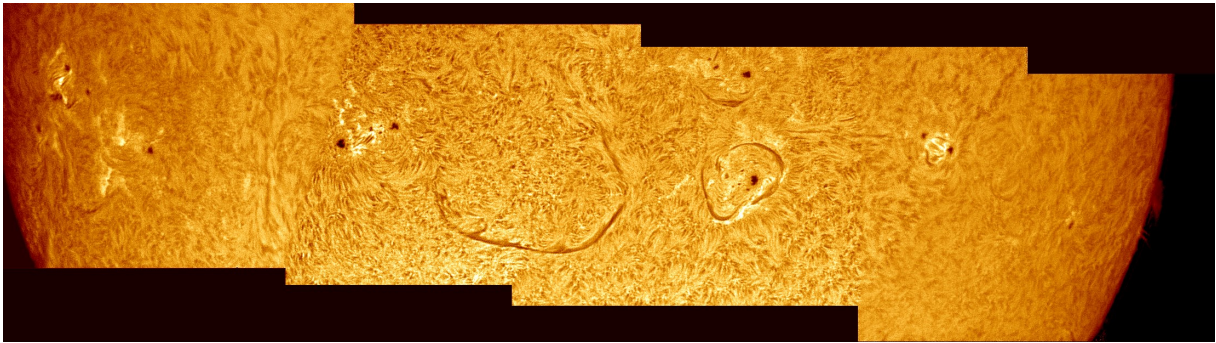
Ella Bryant reported several flares visible in CaK during the month. Flaring was seen from AR3964 at 1344 UT on the 16th which had subsided by 1350 UT. On the 21st flaring was observed from AR3961 at 1334 UT. Some flaring was also noted on the 31st around AR3976 and AR3974 at 1338 UT. Flaring was also seen from AR3978 to the south-west of the main sunspot below the penumbra, at 1345 UT. There was an increase in intensity by 1346 UT and flaring had shifted to south of the main sunspot. A further increase in intensity was seen at 1350 UT which continued and spread resulting in an M6.76 flare at 1402 UT.

MAGNETOMETER REPORT

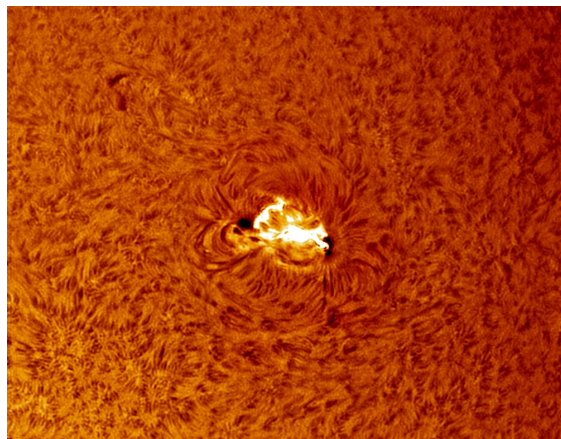
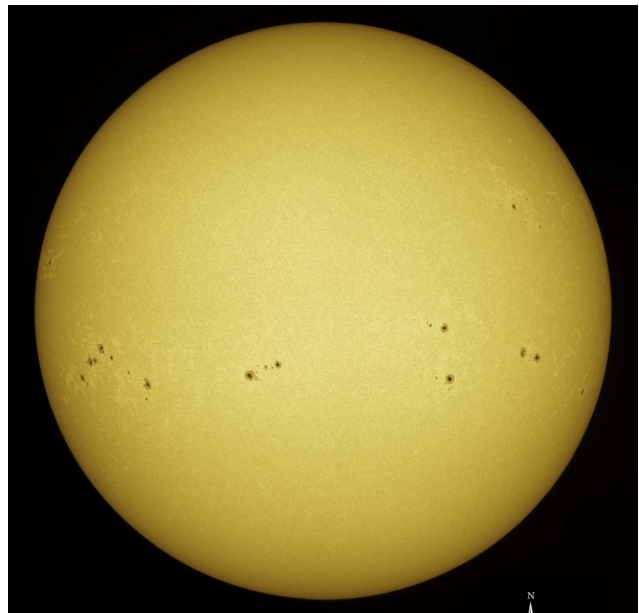
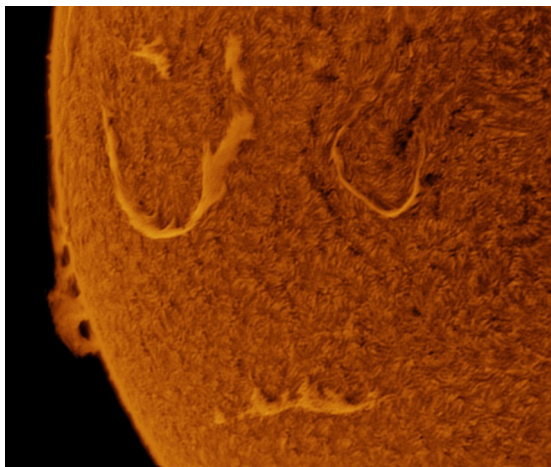
2025 JANUARY

DATE	DURATION (UT)		ACTIVITY
31/1	18:45	13:00	Disturbed
1	13:00	19:00	Active
1/2	19:00	02:00	Disturbed
2	07:00	00:00	Disturbed
3	05:30	08:00	Disturbed
4/5	04:00	03:00	Disturbed
5/6	09:00	22:00	Disturbed
7	08:00	19:00	Disturbed
8	00:00	02:00	Disturbed
8	14:00	19:00	Disturbed
9	00:00	19:00	Disturbed
10/11	19:30	01:00	Disturbed
13	00:00	04:00	Disturbed
14/15	20:00	05:00	Disturbed
16	16:00	22:00	Disturbed
17/18	01:30	00:00	Disturbed
19/20	07:00	18:45	Disturbed
20/21	23:00	07:00	Disturbed
21/22	17:30	11:00	Disturbed
22/23	21:00	01:00	Disturbed
23	17:15	20:00	Disturbed
28	18:00	00:00	Disturbed
29	15:15	20:30	Disturbed

Solid-state magnetometer,
Uncalibrated
John Cook



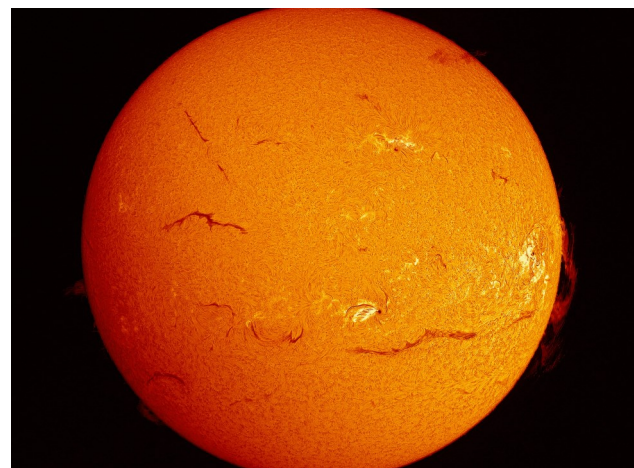
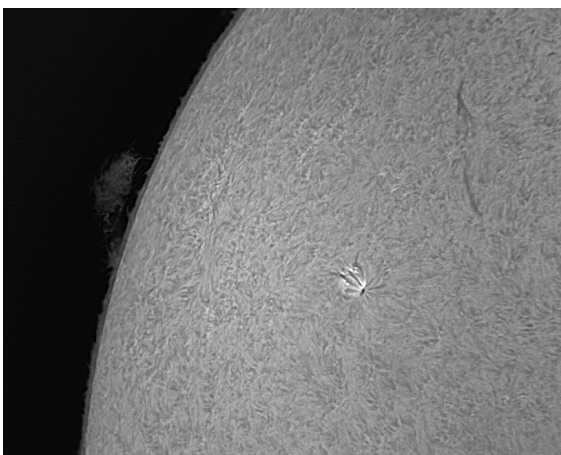
Above: Composition by Arthur Coombs showing sunspot groups in Ha and filaments on the 1st.
Below Right: A similar view in WL by Stuart Green on the 2nd showing sunspot groups (right to left along the central zone) AR3946, 3941, 3939, 3944, 3943 and 3945.
Below Left: Filaments shown inverted on 25th imaged at 1123 UT by Dave Smith.



Left: M7 flare associated with AR3964 imaged by Ella Bryant on the 17th at 1337 UT

Below Left: The splash effect in H-alpha from the emerging AR3956 imaged by Brian Halls at 1117 UT on the 9th

Below: A full disk image by Ella Bryant 1351 UT on the 14th showing a range of long filaments and a fine prominence hearth on the W limb.



Section News

I have circulated the Zoom link for our Section meeting on Friday 21 February 2025 and look forward to seeing you there.

Below is a short article from Arthur Coombs living in Australia. Arthur has had to step back from his garden observatory for health reasons but is still imaging from indoors. He tells us how:

THE ARTHUR COOMBS INDOOR LOUNGE-ROOM OBSERVATORY +145°03' -37°45'

An Introduction

At a very young age, a Christmas present of wood, nails along with good quality tools (spokeshave, tenon saw, hammer) saw numerous wood propellers made with blades at various angles. As time went on, box-kites, crystal sets and all types of mechanical things were attempted. Photography played a major part of my interest. Joining Cubs and proceeding to a Queens Scout and then Rover Scouts presented me with the opportunity to learn many skills.

Secondary school saw me excelling in the mathematical and science areas which lead me to obtaining my first degree with a Physics Major. My secondary teaching profession led me to Hamilton, a country city west of Melbourne. With street lights turned off at night, the southern sky was wonderful. Here, I started making mirrors and building my first Newtonian Telescope and naturally photographing the Moon.

Moving back to Heidelberg in the 1963, my main project was to build a domed observatory in the backyard. Unfortunately, for health reasons and being in my 87th year, ladders are banned, hence, observation of our star from my easterly facing lounge room. As well as being a BAA member. I am an Honorary Member of the Astronomical Society of Victoria, having joined over 60-years ago.

Equipment

EQ6 Mount and SynScan hand control.

Coronado Series II 60-mm Double stack H α filter.

As seen in the photograph, I have used a cardboard modification to find the image. The front screen with a small hole and a second screen with a cross hair drawn on it. An image of the Sun can be seen on it. The projector lens mounted on the diagonal, prevents one seeing the screen of the Coronado view finder.

Baader Hyperon 17-mm focal length positive projection lens. Different width spacers between the



lens and camera changes the magnification.

ImagingSource DMK 21AU04 Camera. 1/4 "CCD Sensor (1980 technology)

The Video image capture uses a program supplied with the camera. In general, 500 frames are captured at speed of around 1/19th s for the surface and as low as 1/4 s for faint prominences.

Processing

Autostakkert & Registax-6

60% of the frames are stacked and processed in Autostakkert to produce the first image which is transferred to Registax-6 to adjust the orientation and adjust the histogram. This image is then transferred to Photoshop- Elements 5 (which came with a camera many moons ago) and trimmed as well as final density and brightness adjustments.