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British Astronomical Association

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BAA Solar Section Newsletter

Sunspot data 2024 September

Day	g	R
1	8	133
2	6	133
3	6	129
4	6	104
5	5	119
6	6	129
7	7	139
8	7	117
9	6	122
10	7	111
11	7	109
12	7	100
13	5	82
14	5	81
15	4	76
16	6	104
17	6	104
18	5	77
19	5	87
20	6	89
21	6	100
22	6	106
23	6	111
24	7	107
25	7	105
26	7	111
27	6	107
28	7	125
29	6	122
30	6	133

Monthly Means

MDFg:	6.82	(43 observers)
MDFNg	1.94	(35 observers)
MDFSg	5.04	(35 observers)
Mean R:	113.66	(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:

C Bailey, Suffolk
R Battaiola, Milan, Italy
M Boschat, Canada
C F Bowron, South Yorks
A Bowyer, Epsom Downs
S Brown, Leicestershire
M Buck, Bristol
G Clarke, Australia
E Colombo, Italy
J Cook, Wolverhampton
A Coombs, Vic, Aust
P Curtin, USA
S Dawes, London
A Devey, Spain
R Dryden, Oxon
F Dubois, Belgium
T Emmett, Cambs
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
D Keep, Lincoln
M Kinder, Cheshire
C Longthorn, Rugby
L Macdonald, Berkshire
R Mackenzie, Kent
M Mattos, Spain
P Meadows, Essex
A Mengus, France
H Meyerdierks, Germany
B Mitchell, Norwich
C C Moraes, Brazil
M Nicholls, Sheffield
P Norman, Worcester
R Samworth, Leicestershire
J D Shanklin, Cambridge
D Smith, Essex
L Smith, Angus
N Spencer, York
M Stephanou, Greece
A Stone, Bristol
T Tanti, Malta
P Taylor, Coventry
D Teske, Mississippi, USA
C B Thielke, Denmark
P Tosi, France
Towarzystwo Milosnikow
Towarzystwo Obs Slonca
B Tynan, Renfrewshire
S Ove Thimm, Denmark
P Urbanski, Poland
G Vargas, Bolivia
D Vidican, Romania
S Viney, Cheshire

The Sun in White Light – September

The recent high activity was not maintained during September with activity falling back to levels seen in 2024 April. This was mainly due to a decrease in northern hemisphere activity with the southern hemisphere remaining active. The Relative Sunspot number (R) and the Quality number (Q) also showed corresponding decreases. Multiple sunspot groups were recorded on every day of the month with the largest/most active groups reported below.

AR3806 S10°/214° & AR3808 S10°/201° survived from the previous month, being another example of two active areas travelling in close proximity with AR3808 to the east of AR3806. On the 1st these two groups could be identified as separate with AR3806 being the larger but as the groups progressed towards the central meridian (CM) the groups became more closely associated with small sunspots forming between them. For BAA counting purposes, this region became one active area and was described as type Fac. The group crossed the CM on the 4th with an elongated penumbral sunspot leading the group and smaller sunspots surrounding it. The group was still extensive on the 6th but reduced to type Eac on the 7th as it approached the western limb. The group was close to the limb on the 8th.

AR3807 S15°/266° also survived from the previous month and was just into the SW quadrant on the 1st type Eac with an area of 460 millionths. The group comprised of two main penumbral sunspots with a few smaller penumbral sunspots located in-between the main sunspots together with a few pores in the following position of the group. On the 3rd the group was larger at 660 millionths before becoming type Esc on the 4th when nearing the western limb. The group rotated over the limb the following day.

AR3811 S08°/175° was seen near the SE limb on the 1st as an Hax sunspot. By the 3rd it became more irregular with an area of 490 millionths and by the following day it had matured into a Dko type group through the appearance of a second penumbral sunspot. The main sunspot was described as have a "lozenge" shaped appearance with the south-eastern and south-western edges of the outer penumbra having a pronounced straight appearance as did the umbra within. When near the CM on the 6th, the group started to split into several penumbral sunspots before continuing to decay as it progressed towards the SW limb. On the 8th it was type Csi with an area of 200 millionths and on the 11th was seen close to the limb as three small penumbral sunspots in a triangular formation.

AR3813 S19°/156° & AR3815 S25°/140° & AR3819 S12°/112° & AR3820 S22°/150° the first group AR3813 appeared over the SE limb on the 2nd followed onto the disk by AR3815. On the 4th AR3813 was described as three distinctive sunspots and smaller spots surrounded by penumbra and bright faculae. AR3815 being the following sunspot group, sported a large preceding sunspot with a small light-bridge at the eastern end of the umbra. By the 6th AR3813 was type Eac with an area of 400 millionths appearing as a collection of small penumbral sunspots and pores while AR3815 was type Eac and 360 millionths in area. With the main two groups just into the SW quadrant on the 9th, a small penumbral sunspot to the north-east of the main penumbral sunspot of AR3813 was given the designation AR3820. Another group of small sunspots formed to the east of AR3815 and was designated AR3819. AR3819 faded on the disk on the 10th and the entire complex of groups was much reduced. The groups continued to fade as they approached the limb with AR3815 rounding the limb as the final sunspot visible, type Hsx, on the 14th.

AR3814 N17°/115° & AR3822 N14°/104° was the largest group of the month and was in the northern hemisphere. AR3814 was first reported on the 6th as irregular Hkx sunspot with an area of 530 millionths. By the 7th the main sunspot was accompanied by two pores which increased in number the following day. On the 10th, AR3822 had formed to the east of AR3814 comprising of a small leading penumbral sunspot and a following collection of pores. By the 12th AR3814 had decayed slightly with the leading area decaying into two small clusters of pores which decayed entirely the following day. Both groups were approaching the limb on the 14th with AR3814 a single H class sunspot and AR3822 being still extensive but much decayed with most of the pores in the following area of the group within a patch that looked like penumbra.

AR3824 S04°/070° formed on the disk in the SE quadrant on the 11th as a developing C

class group. The group was stronger the following day with a penumbral leader and cluster of pores following. The group extended in longitude over the coming days maintaining its basic composition. By the 16th the group was in the NW quadrant forming a line of small penumbral sunspots and pores type Eac. The group was reduced by the 18th as it approached the limb, type Eao, rotating the following day.
AR3825 S15°/015° rounded the SE limb on the 13th as a close collection of penumbral sunspots, hard to define due to fore-shortening near the limb. By the 15th the group was type Eko with an area of 650 millionths. The follower was quite irregular and appeared to split into several small penumbral sunspots by the following day. The group changed shape day-to-day and on the 17th the leader had formed into a north/south bar comprising of three umbrae within a long penumbra. This shape changed into a more east/west formation the following day with the formation breaking up and fading over the coming days. By the 21st the group was type Cso with an area of 110 millionths and continued to decay as it approached the limb.
AR3828 S13°/040° rounded the SE limb on the 16th as a single Hsx sunspot. There was no change on the 17th but a few pores developed to the southern edge of its penumbra on the 18th. These became more numerous in the coming days and the main sunspot changed shape with the umbra splitting into two. The group reached the CM on the 22nd and the umbra was now split into 3 with a string of quite strong minor sunspots over the northern edge of its penumbra. These smaller sunspots had faded by the 24th and the group was in decline type Hax. The group continued to fade and was barely visible as it approached the limb on the 27th.
AR3835 S09°/248° was close to the SE limb on the 23rd, a small Dso type group. The group strengthened the following day appearing as 3 small separated sunspots in a triangular formation. It wasn't until the 28th when the group was into the SW quadrant that it underwent significant development. The group now comprised a cluster of small leading sunspots with a larger following penumbral sunspot with a light-bridge across its umbra. This was its peak of development as it underwent rapid decay thereafter but was still visible at the end of the month.
AR3842 S14°/177° was reported as conglomeration of small sunspots and pores amidst faculae close to the SE limb on the 28th. By the 30th it was strengthening and extending in longitude type Eai, the largest sunspot being a asymmetric penumbral leader.
21 observers reported a Quality number of **21.95** for September.

The Sun in H-alpha

Prominences

17 observers reported a prominence MDF of **8.39** for September.
Prominences were small and insignificant during the first half of the month apart from a fine spray type prominence on the SE limb on the 1st.
On the 13th fine post-flare loops were reported by several observers. The western limb sported a spectacular display of prominences; a collection of jets that were quite active and changed in appearance over the span of a few minutes. On the SW limb, a double hedgerow prominence was seen above the limb and a moderately high triangular shaped prominence was on the southern limb. A large billowing cloud of plasma was also reported on the SE limb ahead of the approaching AR3825 (0830 UT).
Two clouds of plasma were seen above the NW limb on the 15th at about 50,000 km and 70,000 km respectively. Another blob of plasma was hovering over the SE limb at 120,000 km.
A triangular prominence was on the NE limb on the 18th with a long but quite low hedgerow prominence to its south.
On the E limb on the 19th, a curtain prominence rose to about 30,000 km but had a length around the limb of 150,000 km.
An inclined pillar prominence rose to about 50,000 km on the W limb on the 26th with a length of 100,000 km being still evident the following day.

Filaments & Plage

16 observers reported a filament MDF of **10.12** and 15 observers reported a plage MDF of **5.83** for September.

An "S" shaped filament was seen near the W limb on the 3rd extending for about 300,000 km. Another long filament was in the southern hemisphere, aligned north/south and measuring about 450,000 km. Also, an area of plage was reported in the NW quadrant at the approximate location of AR3803 but no white light sunspots were observed.

An east/west aligned filament was seen to the north of AR3813 on the 6th and 7th and an area of plage was seen with new sunspot group AR3815 extending all the way back to the SE limb on the 6th.

Two arc filaments aligned east/west were seen in the NW quadrant on the 11th and two straight filaments, also aligned east/west, were seen south of AR3815 and AR3820 in the SW quadrant.

A fine fila-prom was seen on the E limb on the 15th with a long finger of plasma extending onto the disk. This was the consequence of a prominence seen at the same location on the 13th.

Another fila-prom was seen extending onto the disk from the NE limb on the 17th, again as a consequence of a prominence hearth at that location the previous day. The filament was quite dark on the 18th and had detached from its limb location.

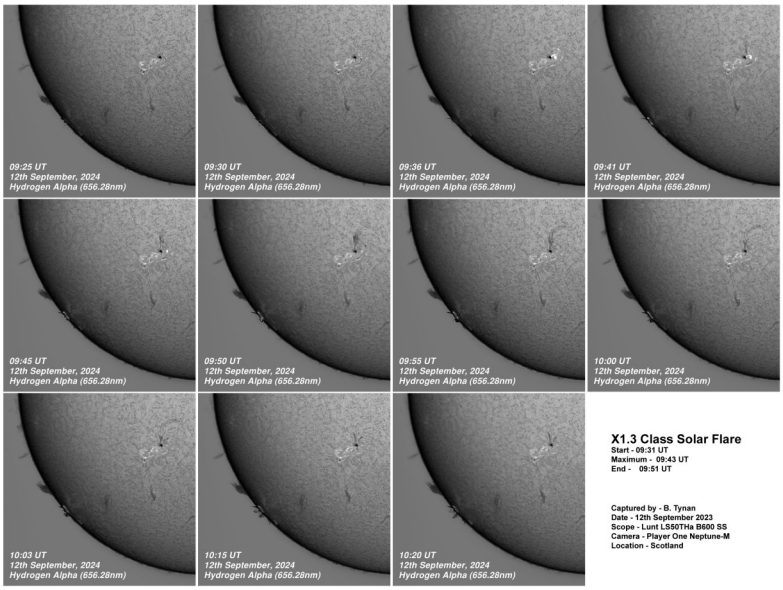
A long arc filament was observed close to the NE limb, extending for a total length of about 400,000 km. The previously mentioned filament was also present to its north-west and had a serrated southern edge. Both filaments were present the following day, both sporting thickened areas. Both filaments declined in strength thereafter but were still visible and significant as they crossed the disk.

CaK

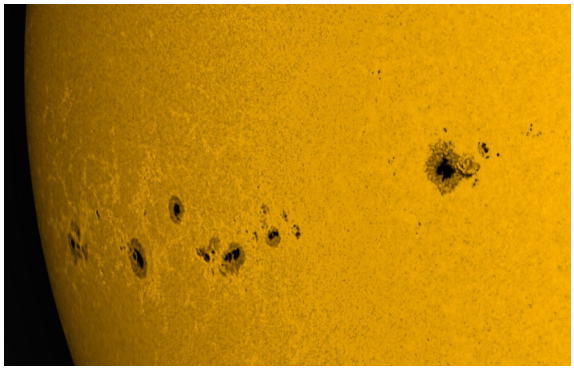
A large area of CaK emission was reported from the 6th to the 8th centred at S10°/220° and measuring about 10° north/south and 30° east/west. Another such area was seen from the 15th to 18th centred about S20°/0°, measuring approximately 15° to 20° both north/south and east/west. A third such area was centred at about N15°/120°, aligned east to west and seen from the 8th to the 16th. On the 8th the area extended just over 30° east to west.

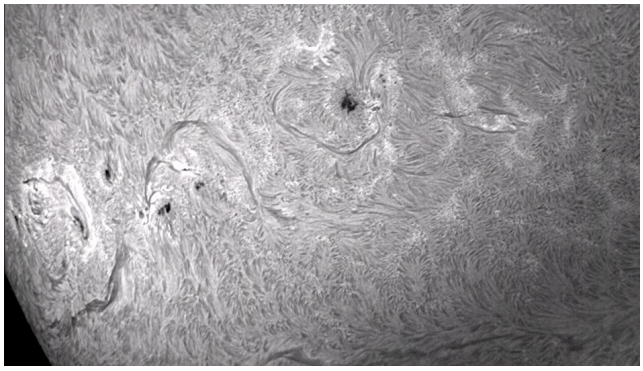
Flares

September was another good month for solar flares with numerous reports from members. Minor flares were recorded by Arthur Bowyer, David Glover, Peter Meadows and Stephen Viney. M class flares were reported by Andy Devey, Brian Halls, Andrew Johnson, Mick Nicholls, Lyn Smith and David Teske. Brendan Tynan observed an X1.3 flare associated with AR3814 on the 12th between 0923 and 1021 UT and Andy Devey reported an X4.5 flare associated with AR3825 on the 14th at 1646 UT.

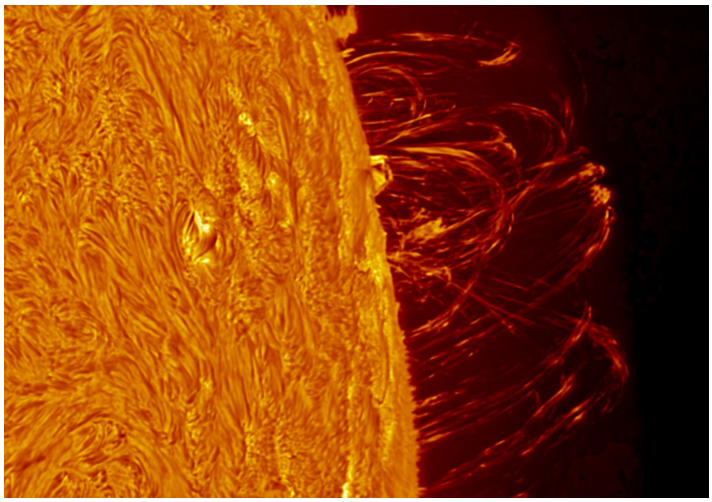


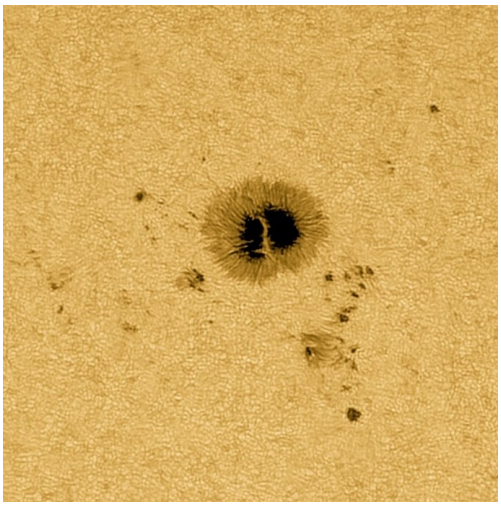
Sequence leading up to and post the X1.3 solar flare associated with AR3825 recorded on the 12th between 0925 and 1020 UT
Images by Brendan Tynan using Lunt L50 Tha B600 SS and Player One Neptune M camera

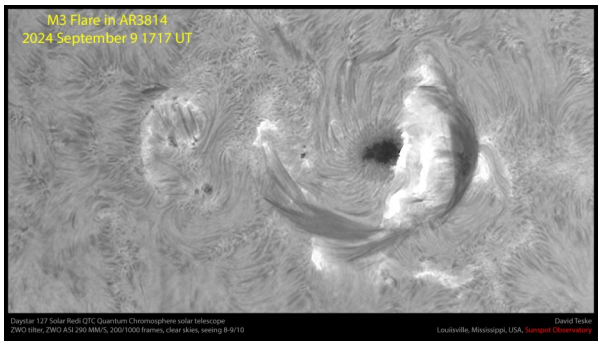




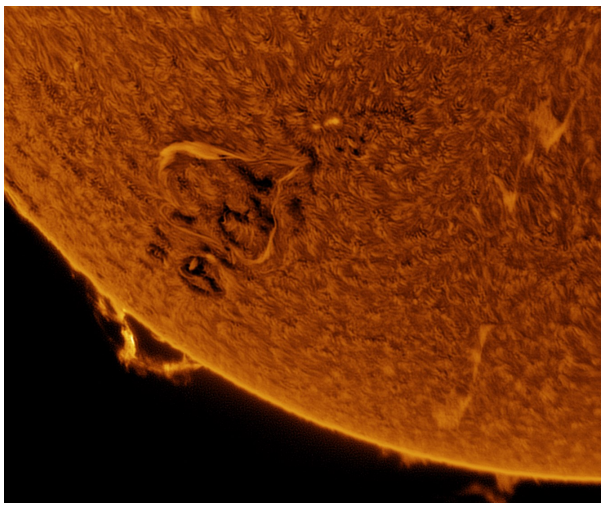
Above Left & Right: Comparison images of AR3811 and AR3813 in white light and H-alpha. Images by Brian Halls 4th September 20214 0954 UT and 1014 UT respectively.
Below Left: Post flare loops imaged by Stuart Green 13th September 2024 at 0946 UT.
Below Right: White light image of AR3811 at 1222 UT 6th September 2024, by Carl Bowron.

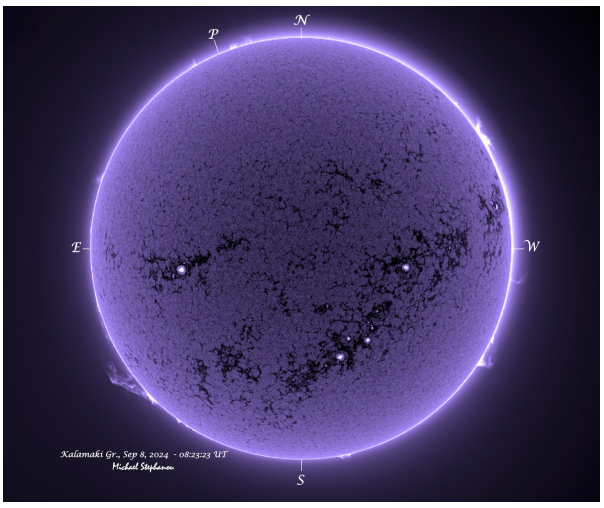






Left: M3 flare imaged by David Teske on 9th September 2024 at 1717 UT AR3814
Below Left: Inverted image in H-alpha of AR3834 & 3835 with attendance filaments and prominence. Imaged by Dave Smith 0923 UT 23rd September 2024.
Below: Full disk image by Michael Stephanou Showing active areas in CaK and substantial prominence 0823 UT 8th September 2024



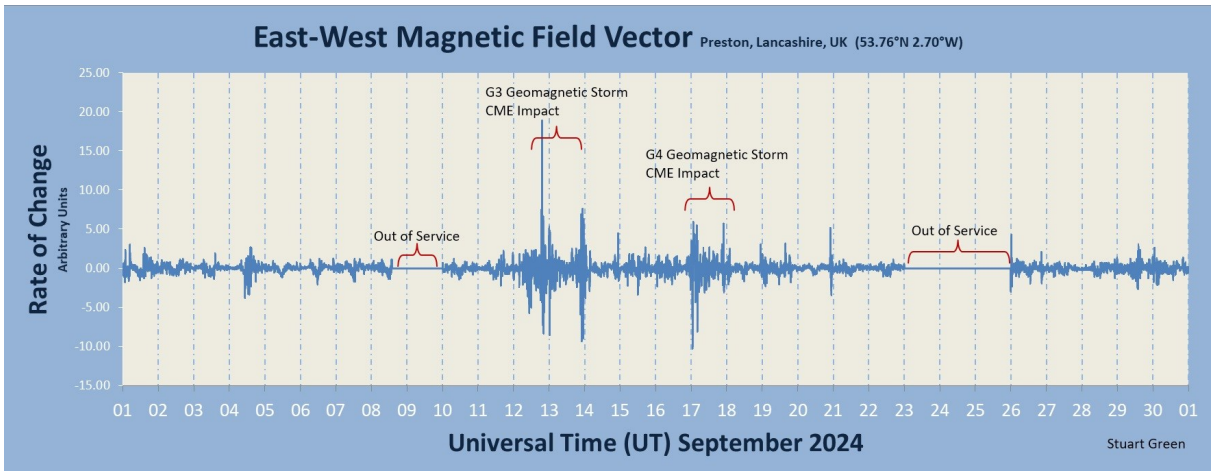


Section News

Our next Section meeting will be on Friday 13th December 2024 full details below. There is no particular topic arranged for this meeting. Anyone with anything they would like to discuss or present to the meeting, please email me. I am always glad to hear from members and if you would like to present a few of your images or show your telescope/equipment and give us any tips or discuss problems, please feel free to do so. This is what the meeting is designed for so let's continue to make it a success and have plenty to talk about. I will send out another reminder with joining link a few days prior to the meeting. A recording of the last meeting is available. Email solar@britastro.org for the link to be sent to you.

Topic: SOL Workshop
Time: Dec 13, 2024 19:30 Greenwich Mean Time
Join Zoom Meeting
https://us02web.zoom.us/j/83297223465?pwd=jvBdzszK2C3hpeCpqcf9ywOoVyTiBb.1

Meeting ID: 832 9722 3465
Passcode: 290095



DATE	DURATION (UT)		ACTIVITY
4	11:00	15:00	Disturbed
12	03:45	19:00	Disturbed
12	19:00	20:45	Active
12/13	20:45	08:00	Disturbed
13/14	15:30	04:30	Disturbed
14	19:00	00:00	Disturbed
15	05:00	13:00	Disturbed
16	00:30	09:00	Disturbed
17	00:00	05:00	Active
17/18	05:00	03:00	Disturbed
18/19	22:45	03:15	Disturbed
20	20:00	23:30	Disturbed
23	12:30	19:00	Disturbed
24/25/26	19:30	06:00	Disturbed
29	08:15	17:00	Disturbed

Solid-state magnetometer, Uncalibrated.

John Cook