

White light MDF, 1999 November

Observer	MDF				R		Q	
	North	South	Total	Days	Total	Days	Total	Days
J. Shanklin	3.5	3.6	7.1	20	105.0	20	-	-
A. Ibrahim	-	-	10.2	25	91.8	25	-	-
D. Storey	6.7	2.0	8.7	3	-	-	-	-
G. Johnstone	-	-	7.9	8	-	-	-	-
P. Meadows	4.4	4.6	9.0	7	153.4	7	30.1	7
K. Medway	4.1	2.9	7.1	16	-	-	-	-
G. North	3.9	2.1	6.0	8	111.2	6	-	-
W. Heyes	6.3	3.3	9.5	4	-	-	27.0	4
E. Strach	3.9	3.7	7.6	17	138.3	17	24.5	17
MEANS	4.1	3.3	8.1	108	113.2	75	26.2	28

MDF = Mean Daily Frequency of active areas, R = sunspot number, Q = mean quality estimate (JBAA 98,6,pp282-286)

White light activity, 1999 November

Strach commented that he has observed a marked increase in white-light activity during November. His MDF of active areas is the highest of this cycle so far. Similarly, his relative sunspot numbers and the quality of sunspots have been the highest of the present cycle. We all hope for further increases in the coming months!

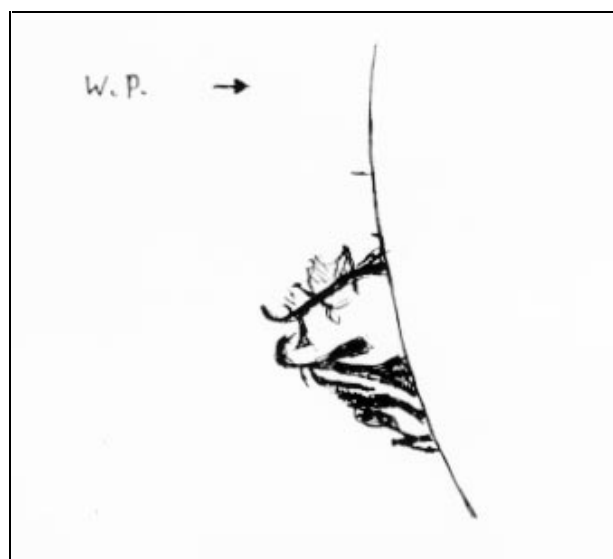
On the 6th Meadows recorded a total of 12 groups. The largest of these was a Dsi group at S19/73 with an area of 130 millionths. One of these groups included, on the E limb, the return of the large October Fkc group at N11/294 which now appeared as two highly foreshortened penumbral spots. Further spots within this group had appeared around the limb on the 7th to make an Ekc group with a mean location of N10/291. By the time of Meadows' next observation on the 13th, the now 20° long group straddled the CM. It consisted of many moderately sized penumbral spots together with numerous other spots. Even so, the total area was only 350 millionths. When seen on the 16th, this group had decayed into three portions. Further decay had occurred by the 18th as only a small Dsi group was seen.

Strach noted a small group of high-latitude spots on the 6th at N38/17, becoming a bipolar group on the 7th; the group was still visible on the 10th when the separation between the leader and follower had increased from 7° to 12.5°. There was also retrogression in longitude from a mean of 17° to 14°, due to differential rotation. Even more surprising was the appearance of yet another high latitude group at N42/296. This group was short-lived. Such high-latitude spots often occur at the onset of the cycle and not near maximum. Strach comments that this may mean that the present cycle is still in its early stages.

Between Meadows' 6th and 7th observations, a Bxo group had developed on the disk at N14/325 which consisted of seven small spots. When this group was seen on the 13th it had developed into a Fkc group with a total area of 610 millionths. The largest spot of the group was the leading asymmetrical penumbral spot; a collection of smaller penumbral spots followed. The

group had passed around the W limb by the observation on the 18th.

In the latter part of the month, spot groups tended to occur mostly in latitudes 10 to 20° N & S; the notable exception was a low latitude group. Strach first saw this on Nov 19 at N3/147. During the following days it extended into a bipolar group; on the 22nd its position was N4/149 and N6/143. He could not see it at his next observation of the 25th.



Prominence on the W limb. 1999 Nov 19. 1110. EHS.

One of the two S hemisphere groups seen on the 13th was of type Ekc at S13/235 and Meadows noted that it comprised a collection of nearby penumbral spots, the largest of which was markedly asymmetrical. The total area of the group was 450 millionths. This group was also seen in October (type Csi when seen on 19th October). By the 16th, all the penumbral spots had merged and substantially increased in size to consist mainly of a single large complex penumbral spot. This contained many umbral spots, the largest being at the leading part of the penumbral spot. At the following part of the group, a spiral penumbral region could be seen. The total area was estimated at 1100 millionths and it was an easy naked eye object. Two days later, on the 18th, the group consisted mainly of two penumbral

spots and a leading spot had separated from the rest of the group. Many umbral spots were still present in the now 1400 millionths area group (the largest seen by meadows so far this solar cycle). One small penumbral spot was seen just to the N of the leading spot (this spot was also seen on the 16th) while a few other spots were seen near the much larger following penumbral spot. When this group was last seen on the 21st, it had halved in size to 680 millionths due to the following spot reducing in size. Now the leading and following penumbral spots appeared approximately equal in size.

Although many extended and complex groups were seen during the month Strach notes that there were no very large spots. One of the largest spots was seen in the centre of the group at S15/169 on the 25th Nov. He estimated its area to be 475 millionths, whilst the leader of the group covered an area of 200 millionths.

H α activity, 1999 November

Prominence activity was again high although Strach reported that his prominence MDF was the lowest of the

year so far. Both Strach and Medway recorded some spectacular events with Medway commenting that an arch prominence seen on the SW limb on the 19th/20th was the most spectacular that he has seen this cycle. This spectacular prominence was drawn by Strach (see figure on the previous page). He had been following its progress as a dark filament on this disk before it arrived at the W limb on the 18th.

Flares, 1999 November

Date	Time	Lat	CMD	Type	Obs.
2	0950	S18	W01	Sf	EHS
9	1255-1308	N11	E15	Sf	EHS
13	1402	S12	E42	Sf	KJM
17	1010	N18	E20	2b	EHS
19	1115-1126	N14	W04	1n	EHS
19	1352	S16	W30	Sf	KJM
20	1030	S15	E18	Sf	EHS
21	1015-1025	S13	W48	Sn	EHS
21	1153	S16	E5	Sf	KJM
27	1130	S14	W68	Sf	EHS
28	1135	S13	W30	Sn	KJM

Prominence MDF, 1999 November

Observer	All Latitudes				0-40°			40-90°		
	North	South	Total	Days	North	South	Total	North	South	Total
K. Medway	3.0	7.4	10.4	7	1.6	3.9	5.4	1.4	3.6	5.0
E. Strach	3.3	5.5	8.8	14	1.2	1.8	3.1	2.1	3.6	5.7