

White light MDF, 1999 October

Observer	MDF				R		Q	
	North	South	Total	Days	Total	Days	Total	Days
D. Storey	4.0	2.7	6.7	3	-	-	-	-
J. Shanklin	4.0	2.7	6.6	23	97.0	23	-	-
P. Meadows	5.8	3.1	8.9	15	141.4	15	25.7	15
G. Johnstone	-	-	6.2	11	-	-	-	-
A. Ibrahim	-	-	8.4	28	77.0	28	-	-
K. Medway	3.5	2.5	6.0	24	-	-	-	-
M. Hendrie	5.5	3.8	9.3	13	138.0	13	-	-
G. North	2.9	1.9	4.8	11	89.8	11	-	-
E. Strach	3.7	2.4	6.1	24	105.0	24	18.0	24
W. Heyes	5.1	1.4	6.5	8	-	-	15.6	8
MEANS	4.2	2.6	7.0	160	103.6	114	20.0	47

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

White light activity, 1999 October

Solar activity in October showed a healthy increase with a number of large groups visible. Strach notes that N hemisphere activity dominated up to the 20th and the S hemisphere dominated thereafter.

Meadows reports that his first observation on the 2nd showed a total of eight groups, but all were small in size and all consisted of one spot (of type Hsx or Axx). The number of groups and number of spots per group increased over the next three days such that on the 5th, 11 groups were seen with R being 157. One of the longest lasting of these groups was initially seen as an Hsx spot near the E limb on the 2nd at N22/47. Between the 3rd and 5th it was of type Cso. According to Meadows the group had an area of 270 millionths on the 4th. All the accompanying spots surrounding the main penumbral spot had appeared by the 6th and the penumbral spot had become asymmetrical. When Meadows next saw it on the 10th, it was still of type Hax. He last saw the group on the 14th near the W limb.

The most active portion of the Sun seen during the month first appeared near the E limb on the 10th. This consisted of an Eac group at N23/318 and a collection of small spots some 10° to the S. By the next day Meadows reports that the S spots appeared to separate into two Bxo groups. In addition, a Dac group had appeared around the limb at N11/294. On the 12th, the E type group had changed to become type Ekc with an area of 460 millionths. The E Bxo group had developed into type Dsi (area 80 millionths). Another group, at N22/301 and of type Csi appeared on the disk close by to make a collection of five groups. By the 13th, the most dynamic group was the easternmost one. Meadows estimated that this was now of type Ekc with an area of 450 millionths. The overall structure of this group was of a main asymmetrical penumbral spot, a smaller following spot with a few smaller penumbral spots between.

On the 14th, the N most group remained of type Ekc but it now had a reduced area of 80 millionths. The Csi group from the 12th was now of type Dai (area 130

millionths). As on the 13th, the most active group was the easternmost as it now had an area of 630 millionths due to the joining together of several penumbra spots into a large following spot that contained several umbra and a light bridge. When this group was seen near the CM on the 16th both the leading and following spots had become strongly asymmetrical and much larger in size; the total area was 960 millionths with the following spot still the larger. The group has also become type Fkc. The Dsi group from the 12th had decayed to become type Bxo again. This group and its adjacent Bxo group had decayed on the disk by the 16th.

On the 17th Meadows reported that the three remaining groups from the active portion of the disk still dominated white light activity. The N most group was now type Eac with a total area of 250 millionths. The group at N22/301 had increased in longitudinal extent to become type Fac but it had an area of only 130 millionths. It was the southernmost group that was still the most spectacular. Its area had increased slightly to 1020 millionths due to an increase in the size of the leading spot. Now both the two main penumbral spots were of similar size, had irregular shapes and contained many umbral spots of a variety of sizes. The group was visible to the naked eye on the 17th according to a number of observers. On the 18th, the longitudinal extent of this group reduced to become type Ekc but the leading spot had increased in size again although the total area was slightly smaller than on the previous day. When Meadows last saw the group on the 19th it was still of type Ekc but it now had a reduced total area of 780 millionths due to the decaying following spot. Heyes commented that the rapidly changing configuration of these groups and their relative closeness made classification and accurate estimation of the AA count rather difficult.

Meadows' observation, on the 31st, showed a total of 10 groups spread across the disk and in both hemispheres. The largest group was of type Eac at S25/145 with an area of 180 millionths.

H α activity, 1999 October

Both Medway and Strach reported that H α activity maintained its high level during October. On the 3rd Medway counted no less than 12 prominences around the limb of many different types including mounds, loops and pillars.

Strach comments that the most dramatic formation seen during the month was an arch seen on the 13th. At 0915 a moderate arch was seen spanning from N61 to N76 on the E limb. By 0927 it had doubled in size and at 0935 it reached its maximum height of 180,000 km with both ends still attached to the limb. At 0940 the S leg became detached and at 0948 the N leg did likewise. It was still visible at 0959 when it was 235,000 km from the limb and its last trace was seen at 1003 some 300,000 km out.

Many filaments were seen during the month. In particular Strach noted an inverted C-shaped filament situated just S of the equator which crossed the CM on the 5th. Medway reports that no less than six filaments were counted on the disk on the 19th.

Flares, 1999 October

Date	Time	Lat	CMD	Type	Obs.
2	1425	S31	W	Sf	KJM ¹
4	0815	N14	E64	Sf	EHS
13	0920	N12	E48	Sf	EHS
16	1100	N23	W24	Sf	EHS
18	0855	N07	W20	Sf	EHS
18	1025	N15	W30	Sf	EHS
19	1325-1334	N22	W39	Sf	KJM
19	1405	N18	W42	Sf	KJM
19	1443	N30	E51	Sn	KJM
19	1329	N20	W40	Sf	EHS
27	1330-1335	N12	E80	1B	EHS ²
28	0905	N11	E65	Sf	EHS ³
28	1135	N12	E64	Sf	EHS
31	1325	N10	E25	Sf	KJM

1. Limb flare
- 2 N-S stripe near E limb from N14 to N8. No spot seen in vicinity.
- 3 N-S stripe as on 27th now associated with spot group.

Prominence MDF, 1999 October

Observer	All Latitudes				0-40°			40-90°		
	North	South	Total	Days	North	South	Total	North	South	Total
K. Medway	5.0	2.4	8.4	8	1.8	2	3.8	3.2	1.4	4.6
E. Strach	5.8	6.3	12.1	19	1.9	2.9	4.8	3.9	3.4	7.3