

## White light MDF, 2000 April

Observer	MDF				R		Q	
	North	South	Total	Days	Total	Days	Total	Days
L. Smith	4.2	3.0	7.2	11	107.1	11	-	-
G. North	4.0	3.5	7.5	8	119.1	8	-	-
M. Hendrie	5.5	5.2	10.7	13	148.8	13	-	-
W.F. Heyes	3.9	3.9	7.7	7	-	-	22.6	7
T. Tanti	5.0	4.6	9.5	25	146.4	24	25.6	25
J. Shanklin	5.1	3.5	8.6	19	116.0	19	-	-
A. Ibrahem	-	-	5.5	25	64.8	25	-	-
R. Dryden	4.0	4.2	8.2	12	128.3	12	-	-
K. Medway	3.4	3.3	6.9	24	-	-	-	-
G. Johnstone	4.0	4.1	8.1	12	-	-	-	-
D. Storey	3.5	4.8	8.3	4	-	-	-	-
P. Meadows	4.8	5.6	10.4	14	156.1	14	30.6	14
E. Strach	4.1	3.8	7.9	19	121.5	17	23.4	19
MEANS	4.4	4.1	8.1	193	120.2	143	25.7	65

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

## White light activity, 2000 April

Solar activity made its presence felt more strongly than usual during April with a spectacular aurora visible over much of the country on the night of April 6/7. The actual level of activity was up slightly on that observed in March. Strach notes that most spot groups occurred between latitudes  $\pm 7^\circ$  to  $\pm 24^\circ$  and only a few spots were as low as  $7^\circ$  or as high as  $34^\circ$ .

Meadows' observation on the 1st showed a total of 16 groups with an almost equal number in the N and S hemispheres. None of these groups were particularly large but they included a Dsc group at N16/267 with an area of 60 millionths and a Dac group at S13/267 with an area of 90 millionths. Both of these areas were seen again towards the end of the month when they had developed into much larger groups.

By the time of Strach's first observation on the 4th the large group at N16/267 was approaching the W limb. Its preceding portion cleared the W limb on the 5th and the following part rotated out of sight on the 6th. As mentioned above this group was next seen on the 21st.

On the 6th Meadows reports that the number of groups seen had reduced to 11 with just three in the N hemisphere. Up to the 10th the S hemisphere continued to dominate activity. During this period, one of the most interesting groups was of type Dac at S14/130. On the 8th this consisted of six small penumbral spots with no obvious E-W alignment together with numerous other spots. The total group area on this date was 160 millionths. The appearance of this group was similar on the 9th and 10th although the number of penumbral spots had reduced slightly.

Meadows' next observations on the 18th and 19th showed a mixture of group types amongst the nine groups seen on each date. These ranged from single Axx spots to an Eao group at S21/32 with an area of 310 millionths.

The return of one of the two groups seen earlier in the month was noted by Strach on the 21st. The S group came around the E limb at S14/265. At the same time a large N group was only partially on the disk at N16/262. It had also survived its passage on the averted hemisphere. Medway recorded no less than 13 active areas on this date. Meadows comments that the large N group comprised primarily of a pair of penumbral spots with the following spot being the larger and irregular and the leading spot being fairly symmetrical. He classified this group as type Eko. By the 23rd it became more obvious that the following penumbral spot was quite irregular and it included a light bridge. Meadows estimated the area of the group on this date as 780 millionths and he re-classified it as type Ekc due to the presence of other penumbral spots. On the following day, the 24th, more small penumbral spots were seen surrounding the following spots and the total area of the group had increased to 930 millionths. Subsequent observations on the 27th and 29th showed a slightly smaller group with fewer spots between the leading spot (which changed little throughout) and the more symmetrical following spot.

The other large group seen on the 21st, at S14/263, was first seen as an irregular leading spot containing a prominent umbra and a collection of following penumbral spots. Meadows comments that the appearance of this leading spot changed from observation to observation in terms of its exact shape and arrangement of umbra within it. In addition the following spots changed shape and number during the group's passage across the disk. The total area of the group was estimated to be 1050 millionths on the 23rd, 1170 millionths on the 24th, 1080 millionths on the 27th before it reduced to 740 millionths on the 29th. Meadows notes that this group was probably the largest seen so far this solar cycle. Medway reports that both large groups were easily seen with the naked eye and he was busy videoing them hourly in order to detect structural changes in the penumbra and umbra.

By the 29th Meadows reported that activity was concentrated in the W portion of the disk with seven groups seen. Only a small Hsx spot was seen in the E hemisphere. Heyes comments that by that time the large N group contained a follower spot with a penumbra about 3° in diameter. He also noted that the leader of the S group was an elongated penumbral spot with a complex umbra extending from S12/W36 to S15/W33. By the 30th this large S spot had divided into two close penumbral spots.

### H $\alpha$ activity, 2000 April

Strach comments that, although his high prominence count has been maintained over the past year, the April figures show great daily variations from 4 to 14!. Medway agrees that prominence activity was high in April with some events visible through thin cloud.

On the 4th Strach noted a low, forked prominence to the W of the N-point at N60 to N62. On the next day it became a high spike and remained in evidence right up to the 9th having taken shape of a high slender pyramid on the 7th.

On the 6th Strach reported an irregular, low arc formation on the E limb from S25 to S38. He observed further complicated arches in the SW on the 18th and comments that their structure was constantly changing. Similar eruptions occurred on the 20th in the NE between 0720 and 1105 spanning latitudes N30 to N43. On the following day a large detached prominence was seen at N44. It reached a height of 240 arcsec (170,000 km) as shown in the figure.

Also on the 21st Medway described a tall prominence seen on the NE limb at N20 adjacent to one of the large groups. Hydrogen material was very broad at the top of the prominence tapering down to the limb. He

### Prominence MDF, 2000 April

Observer	All Latitudes				0-40°			40-90°		
	North	South	Total	Days	North	South	Total	North	South	Total
M. Hendrie	4.0	13.0	17.0	1	3.0	8.0	11.0	1.0	5.0	6.0
E. Strach	4.9	4.8	9.8	17	2.1	3.2	5.3	2.8	1.6	4.4+
K. Medway	3.3	2.8	6.2	16	2.0	2.1	4.1	1.3	0.7	2.1

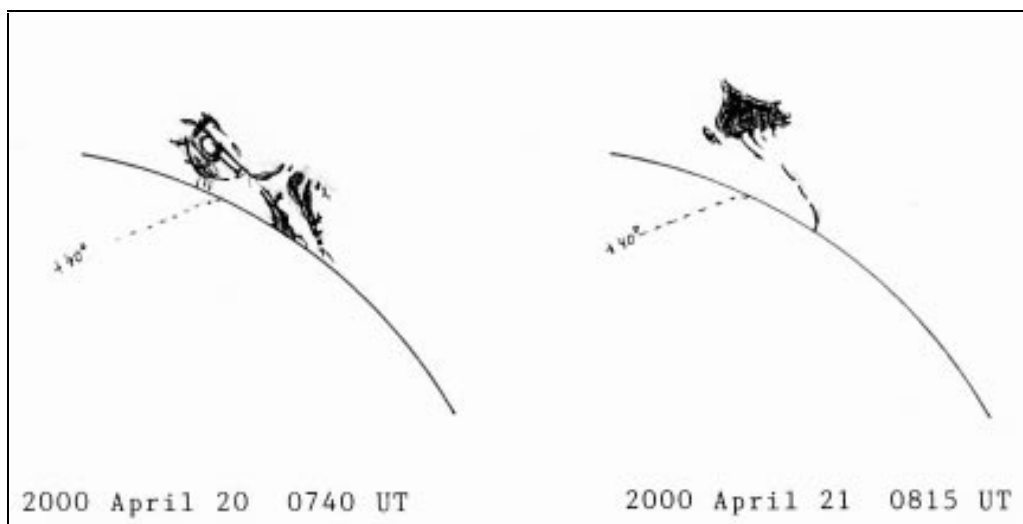
comments that it had disappeared by the time of his observations on the 22nd. Another interesting prominence was seen on the SE limb on the 29th at 1429. Medway describes it as a long, low loop of fine Hydrogen material and comments that he cannot recall having previously seen such a structure.

Both Strach and Medway comment that there were many filaments visible on the disk. Medway reported five on the 2nd rising to 10 on the 9th. Between the 4th to the 9th Strach noted that most filaments were confined to the S hemisphere.

On the 16th Strach observed a long filament running mainly N-S in the NE quadrant from N30, E20 to N10, E10 with its S part veering W. On the next day it was some 5° west of the CM, running mainly parallel with it and only its S part veering westwards. It remained in evidence on the next two days and on the 24th it appeared in form of a number of prominences on the W limb.

### Flares, 2000 April (Sf flares not reported)

Date	Time	Lat	CMD	Type	Obs.
6	1008-1020	N15	W16	2F	EHS
8	0916-0922	S14	E27	SB	KJM
8	1429	S13	E25	SN	KJM
9	1420-1422	N6	E60	SB	KJM
9	1444	S11	E10	SN	KJM
9	1455-1457	S20	E12	SB	KJM
10	1453	S14	W10	SB	KJM
16	1257-1320	S23	E25	SB	KJM
17	1728-1447	N17	W23	1B	KJM
22	1406-1411	N8	E47	1N	KJM
22	1724-1749	S13	E10	1B	KJM
24	0843	N13	E37	SB	KJM
30	0820-0835	S13	W11	2N	EHS
30	0830	N17	E38	1N	EHS



Prominence ejection, 2000 April 21. EHS.