

BAA Radio Astronomy Group.

2013 AUGUST

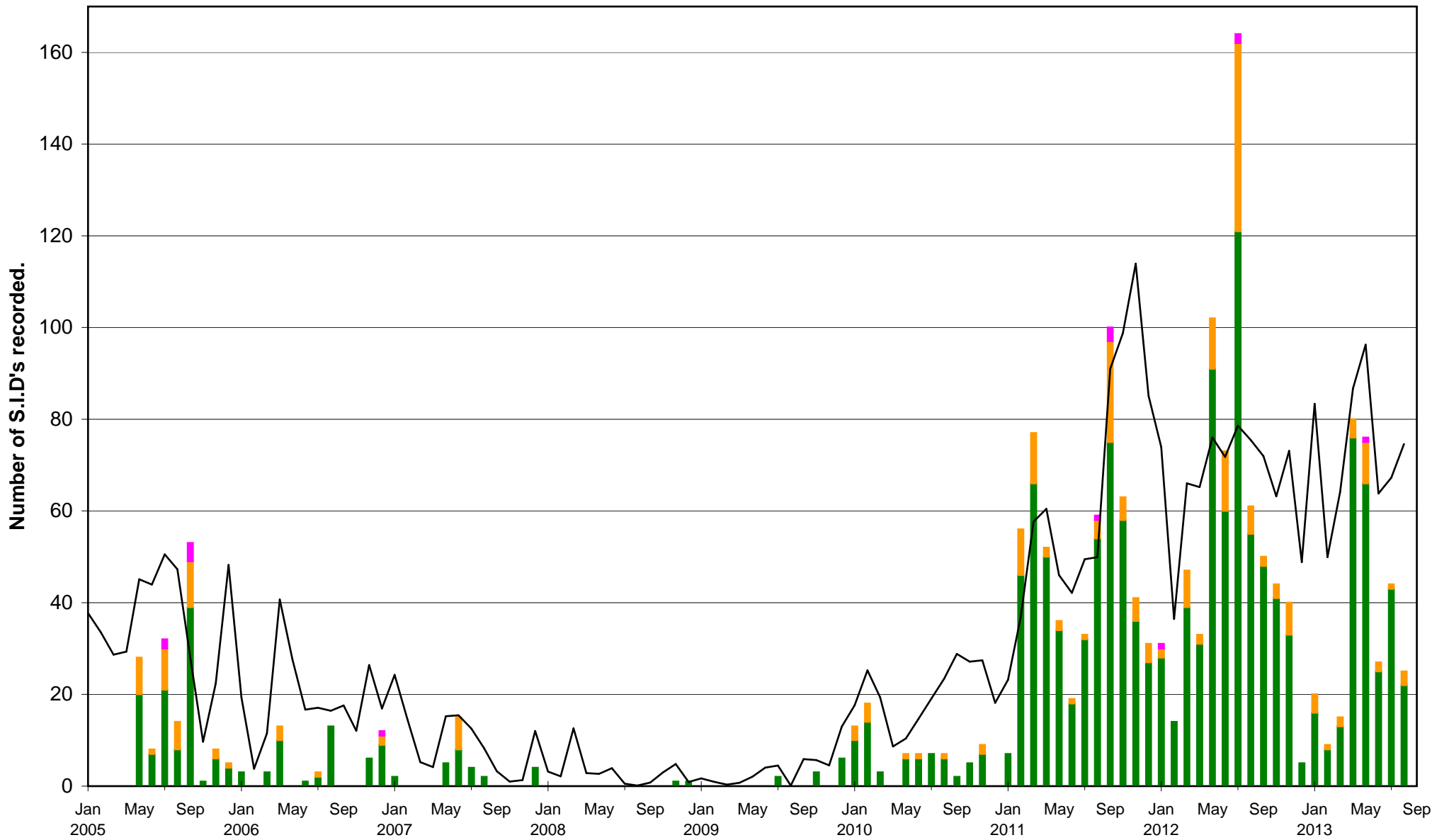
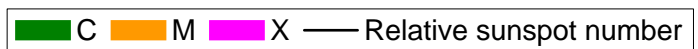
DAY	Xray class	Observers	John Cook (23.4kHz/22.1kHz)	Roberto Battaiola (20.4kHz)	Paul Hyde (22.1kHz)	Bob Middlefell (22.1kHz)	Mark Edwards (18.3/24.0/20.9kHz)
			Tuned radio frequency receiver, 0.58m frame aerial.	Modified AAVSO receiver.	Tuned radio frequency receiver, 0.96m frame aerial.	Tuned radio frequency receiver, 0.5m frame aerial.	Spectrum Lab / PC 2m loop aerial.
			START PEAK END (UT)	START PEAK END (UT)	START PEAK END (UT)	START PEAK END (UT)	START PEAK END (UT)
11	C2.0	5	14:22 14:37 14:47 1		14:20 14:37 15:12 2+		14:22 14:38 15:18 2+
11	C1.2	1					16:42 16:49 17:03 1
11	C2.1	1					19:25 19:38 ? -
11	?	1					19:56 19:59 20:12 1-
12	M1.5	7	10:25 10:41 11:58 3	10:23 10:43 11:35 2+	10:25 10:36 11:13 2+	10:43 10:47 12:43 3	10:25 10:44 12:08 3
13	C2.8	6	11:37 11:47 12:12 2	11:36 11:47 12:01 1	11:38 11:48 12:37 2+		11:40 11:50 12:30 2+
13	C1.5	2			15:46 15:55 16:41 2+		15:51 15:56 16:12 1
13	C1.8	2			16:53 17:02 17:34 2		16:57 17:05 17:31 2
13	C4.6	1					18:48 18:51 19:49 2+
14	C1.5	1					10:28 11:22 12:15 3
14	C3.6	4	16:52 16:59 17:17 1		16:53 16:59 17:48 2+		16:54 16:59 17:48 2+
14	C1.5	1					17:51 17:55 18:14 1
15	C1.0	1					17:11 17:16 17:34 1
15	C2.1	2			17:50 17:57 18:13 1		17:53 17:56 18:26 2
16	C1.3	2	12:40 12:48 13:06 1+				12:47 12:48 13:10 1
16	C2.6	5	13:16 13:19 14:00 2		13:16 13:20 13:32 1-		13:15 13:22 13:49 2
17	C1.8	5	13:33 13:45 14:11 2	13:28 13:48 13:56 1+			13:32 13:47 14:11 2
17	M3.3	4	18:20 18:28 ? -		18:20 18:31 ? -		18:20 18:24 ? -
17	M1.4	2			18:51 19:20 ? -		19:12 19:24 20:28 2+
18	C1.6	3	11:26 11:36 12:00 2				11:28 11:35 11:57 1+
18	?	1					17:02 17:04 17:22 1
19	C2.2	3			09:13 09:21 09:49 2		09:14 09:22 09:58 2
20	C1.6	1			09:59 10:03 10:16 1-		
21	C2.2	2			07:28 07:47 08:27 2+		07:32 07:45 08:19 2+
21	C1.1	3	11:28 11:37 11:50 1		11:27 11:36 11:45 1-		11:29 11:34 13:00 3
22	C2.4	6	13:19 13:26 14:38 2+	13:19 13:27 13:50 1+	13:18 13:28 14:16 2+		13:20 13:27 14:21 2+
31	C2.6	1					17:30 17:36 18:33 2+

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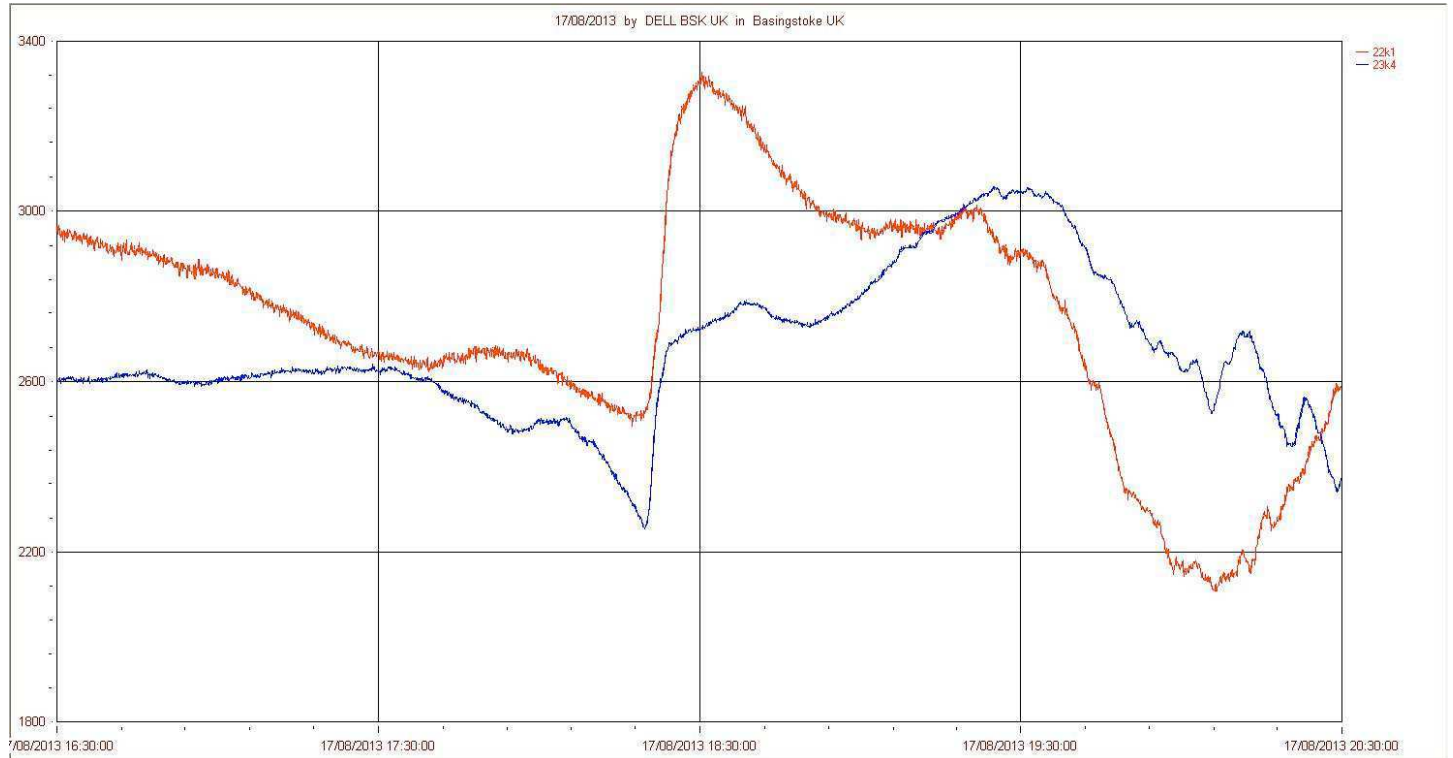
		Colin Clements (23.4kHz/22.1kHz)	Peter King (18.3kHz)	Tarif Rashid Santo (19.8kHz)	John Wardle (19.6/23.4kHz)	Steve Parkinson (Various)
		AAVSO receiver, 0.76m screened loop aerial.	Own designed receiver, 1.4m loop aerial.	Spectrum Lab, 15m Half-wave dipole.	PC soundcard, long wire aerial.	Tuned radio frequency receiver, 0.58m frame aerial.
DAY		START PEAK END (UT)	START PEAK END (UT)	START PEAK END (UT)	START PEAK END (UT)	START PEAK END (UT)
11	C2.0	14:18 14:35 15:41 2+				14:22 14:37 15:09 2+
11	C1.2					
11	C2.1					
11	?					
12	M1.5	10:24 10:44 12:37 3+				10:25 10:43 12:00 3
13	C2.8	11:34 11:49 12:34 2+				11:40 11:48 12:26 2+
13	C1.5					
13	C1.8					
13	C4.6					
14	C1.5					
14	C3.6					16:54 17:00 17:30 2
14	C1.5					
15	C1.0					
15	C2.1					
16	C1.3					
16	C2.6	13:16 13:19 13:53 2				13:16 13:23 13:40 1
17	C1.8	13:28 13:43 14:23 2+				13:33 13:44 14:17 2
17	M3.3					18:20 18:30 ? -
17	M1.4					
18	C1.6					11:27 11:37 12:20 2+
18	?					
19	C2.2					09:13 09:21 09:43 1+
20	C1.6					
21	C2.2					
21	C1.1					
22	C2.4	13:17 13:26 13:48 1+				13:20 13:27 14:00 2
31	C2.6					

VLF flare activity 2005/13.



My own recording is shown on the left, the SID being disturbed by a short drop in signal strength followed by a pair of very short transmitter breaks. On the right, I have offset my data to remove the drop in signal, leaving just the two short breaks. The SID becomes much easier to see.

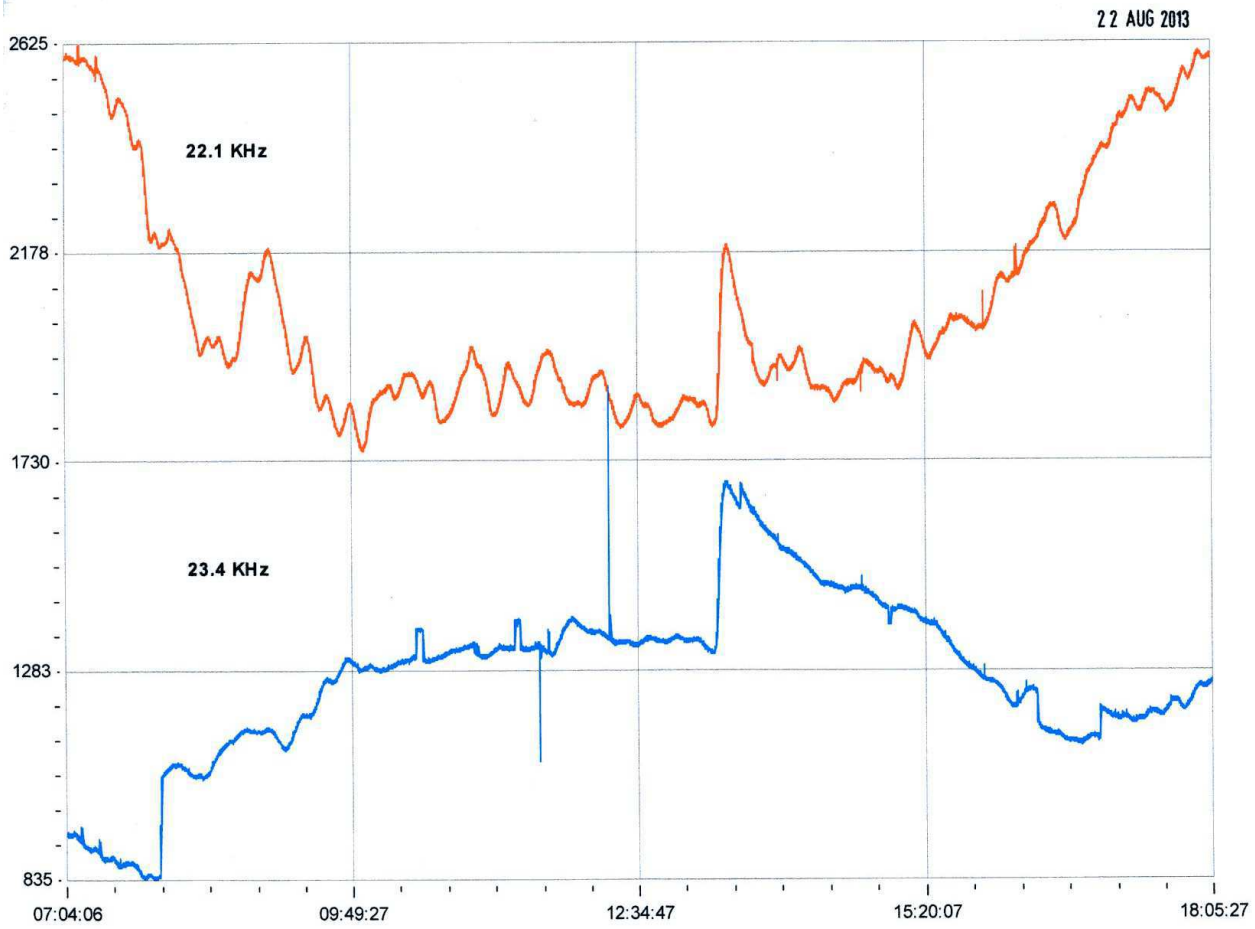
The pair of M-class flares on the 17th were rather late in the evening, becoming confused by the D-region height changes at sunset. Paul Hyde has included his recording:



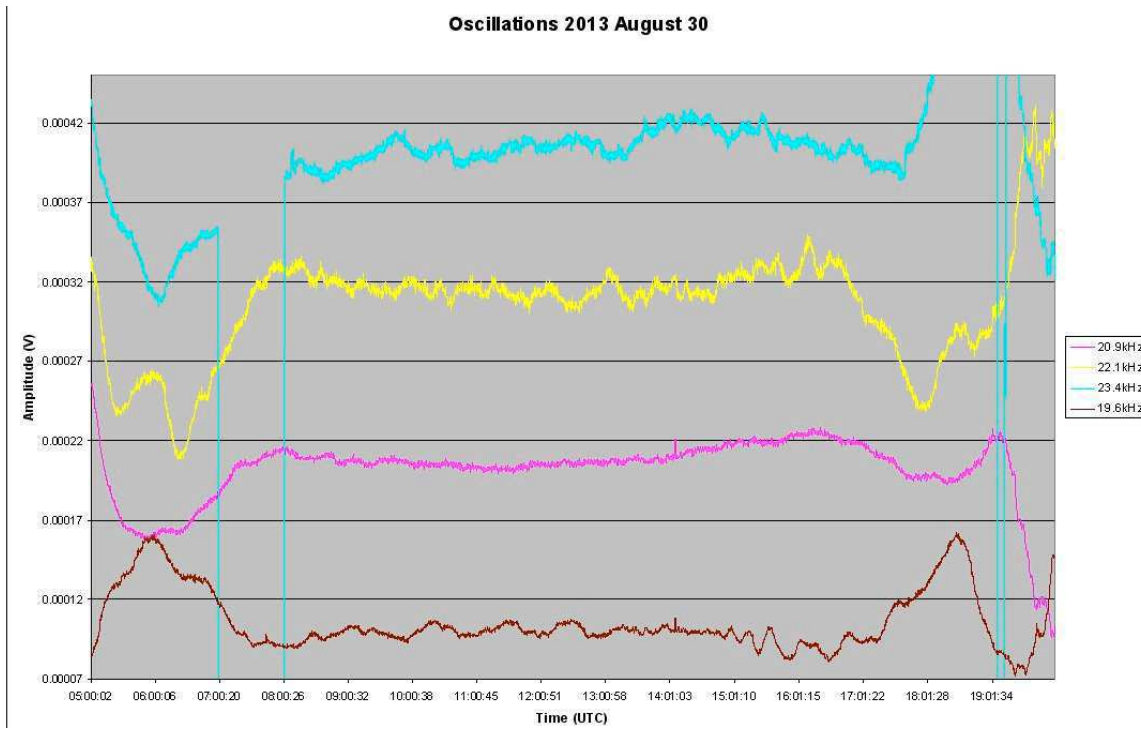
The M3.3 peak is clear enough at 18:31UT. The M1.4 peak is at 19:20UT, both signals then falling rapidly into the sunset. Red is 22.1kHz, blue 23.4kHz.

Strong oscillations were reported by Mark Edwards on the 19th and 30th, and by Colin Clements on the 22nd. I also recorded some mild oscillations on the 19th and 22nd. The amplitude of oscillation recorded by Colin at 22.1kHz is quite large, despite being over a relatively short path. I estimate a path length of just 200km with a mid-point over the Irish Sea a little north of the Isle of Man. The SID from the C2.2 flare peaking at 13:26UT is also quite clear. Colin's chart is at the top of the next page, red being the 22.1kHz signal. The 23.4kHz signal (blue) does not show the effect, although it does have a number of signal level changes that seem to be annoyingly common with this transmitter. Although the bearing is similar, the range at 23.4kHz is much greater with a mid-point over the North Sea.

Mark Edwards included his chart for the 30th, showing several signals. 19.6kHz (brown trace) is quite unsteady all day, breaking into a more regular oscillation from 14:43 until sunset. 22.1kHz (yellow) is also quite unsteady, but does not have the same distinct oscillations in the afternoon. Both transmitters are on similar paths for Mark, at a range of about 300km.



Colin Clements.



Mark Edwards.

MAGNETIC OBSERVATIONS.

Magnetic disturbances recorded during the first half of August were due to coronal hole high speed streams, notably on 4th, 5th and 14th to 16th. The M1.4 flare at 19:24 on the 17th produced a coronal mass ejection that reached earth late on the 20th. The BGS list a sudden storm commencement at 22:27 on the 20th, but unfortunately this does not show clearly in our recordings. A very mild disturbance was recorded early on the 21st, with a more active period from about 22:00 on the 22nd to 02:45 on the 23rd.

A second SSC is listed by the BGS at 19:26 on the 23rd. This is not obvious in our recordings either, there being some ongoing disturbance for a couple of hours around this time. The source of this was a filament eruption seen in satellite images at 08:24 on the 20th.

Coronal hole effects continued over the last few days of August, concluding a rather uneventful month.

Magnetic observations received from Colin Clements, John Cook.

Observations to jacook@jacook.plus.com

ROTATION	KEY:	DISTURBED.	ACTIVE	SFE	B, C, M, X = FLARE MAGNITUDE.	Synodic rotation start (carrington's).
2407	F	18 19 20 21 22 23 24 25 26 27 28 29 30 31			2010 January 1 2 3 C	2092 4 5 6 7 8 9 10 11 12 13 *
2408	F	14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	20 CCMC MCMCC	23		2093 2010 February 1 2 3 4 5 6 7 8 9 CC MCCMMCC
2409	F	10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27	14 15 16 17 C BB	25 26		2094 2010 March 1 2 3 4 5 6 7 8 C
2410	F	9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31		17 18 19		2095 27 28 29 30 31 CC
2411	F	5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31		11 12 13 14 15		2096 23 24 25 26 27 28 29 30 May 1
2412	F	2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28		6 7 8		2097 20 21 22 23 24 25 26 27 28
2413	F	29 30 31 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24		3 4		2098 15 16 17 18 19 20 21 22 23 24 C MCCC
2414	F	25 26 27 28 29 30 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21		29 30		2099 14 15 16 17 18 19 20 21 C CC
2415	F	22 23 24 25 26 27 28 29 30 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18		27 28		2100 10 11 12 13 14 15 16 17 18 C CC C C
2416	F	19 20 21 22 23 24 25 26 27 28 29 30 31 1 2 3 4 5 6 7 8 9 10 11 12 13 14		27 28		2101 6 7 8 9 10 11 12 13 14 C
2417	F	15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 1 2 3 4 5 6 7 8 9 10 11		24 25 26 27		2102 4 5 6 7 8 9 10 11 C C
2418	F	12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 1 2 3 4 5 6 7		22 23 24 25 26		2103 2010 November 1 2 3 4 5 6 7 CC M CM
2419	F	8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 1 2 3 4		10 11 12 13 14 15 16		2104 27 28 29 30 31 1 2 3 4 C CC C
2420	F	5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31		13 14 15		2105 25 26 27 28 29 30 31
2421	F	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27		6 7 8		2106 20 21 22 23 24 25 26 27 C C CCC C
2422	F	28 29 30 31 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23		4 5 6		2107 16 17 18 19 20 21 22 23 C CC MCM CCC MMCC CCC

