

BAA Radio Astronomy Group.

2012 JUNE

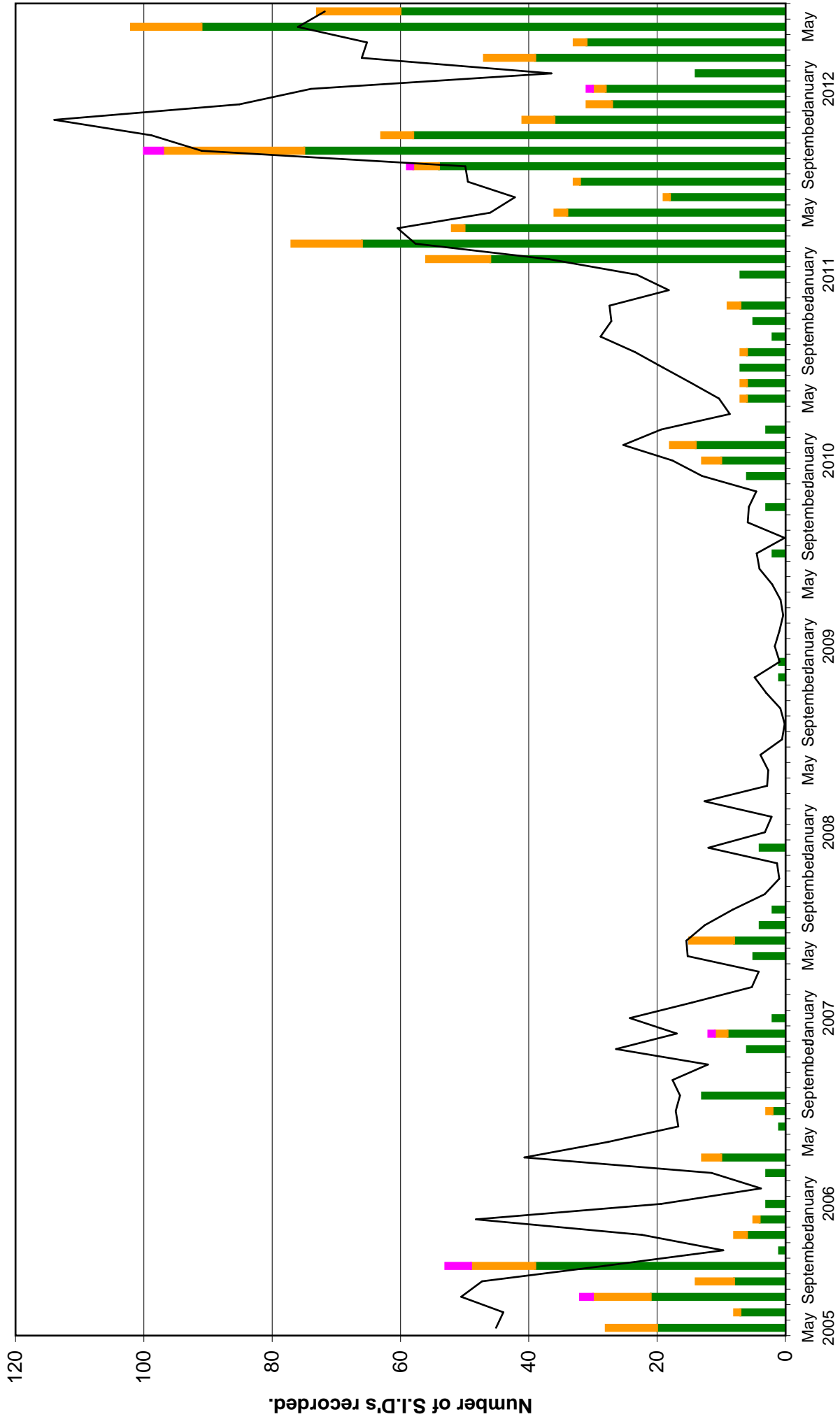
DAY	Xray class	Observers	John Cook (23.4kHz/22.1kHz)	Roberto Battaiola (21.75kHz)	Andrew Lutley (23.4kHz)	Bob Middlefell (22.1kHz)	Mark Edwards (22.1/24.0/20.9kHz)
			Tuned radio frequency receiver, 0.58m frame aerial.	Modified AAVSO receiver.	Tuned radios frequency receiver, 0.5m frame aerial.	Tuned 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)
1	C2.4	1					
3	C1.6	1					
3	M3.3	5					
4	C1.0	1					
4	*	1					
5	C1.1	1					
5	C1.5	1					
6	C1.2	1					
6	C1.0	1					
6	M2.1	3					
7	C2.0	2					
7	C2.7	5					
7	C9.1	7	15:36 15:43 16:30 2+				
7	C1.8	1					
8	C7.7	1					
8	C4.8	4					
8	C1.5	1					
8	M1.9	2					
8	C1.7	1					
8	M1.8	1					
9	C1.5	1					
9	M1.9	9	11:30 11:44 12:50 2+			11:34 11:38 12:58	
9	C1.7	1					
9	M1.8	9	16:49 16:56 17:35 2+				
9	C1.2	1					
10	M1.3	6	06:42 06:48 ? -				
11	C1.1	1					
11	C1.0	1					
11	C1.5	1					
11	C1.5	1					
11	C1.5	1					
12	C1.6	2					
12	C1.1	1					
12	C1.4	1					
12	C1.5	1					
13	C2.7	5	09:17 09:20 09:33 1-				
13	M1.2	8	12:10 13:20 15:50 3+				
13	C7.0	1					
13	C6.2	1					
13	C6.8	1					
14	C2.0	2					
14	C2.5	4	10:49 10:52 11:02 1-				
14	C5.0	7	11:08 11:16 12:01 2+	11:00 11:12 11:32 1+			
14	C2.6	5	12:36 12:40 12:52 1-				
14	M1.9	9	13:37 14:35 16:34 3+	13:25 14:05 15:52 3+			
15	*	1					
15	C3.4	8	13:10 13:24 14:19 2+	13:09 13:22 13:39 1+			
15	C1.1	1					
16	*	1					
16	C1.8	5	14:46 14:50 15:01 1-				13:37 13:41 13:51 1- 14:45 14:54 15:26 2
17	C1.0	1					
17	C3.9	8		17:36 17:40 17:48 1-			17:39 17:43 18:54 2+
19	C1.2	2					13:32 13:37 14:54 2+
19	C1.0	2					
20	C1.5	4	11:02 11:10 11:25 1				11:03 11:09 11:54 2+
20	C3.1	6					16:21 16:31 17:44 2+
26	C1.3	1					12:47 12:59 13:20 2
27	C3.4	3	12:37 12:40 12:53 1-				05:22 05:31 05:51 1+
27	C3.2	3					08:01 08:13 09:03 2+
27	C1.6	2					11:04 11:14 ? -
27	*	1					11:31 11:31 12:10 2
27	C3.4	4					12:37 12:40 13:34 2+
28	C4.2	2	04:43 04:51 05:00 1-				04:53 04:57 05:04 1-
28	M2.4	7	16:11 16:16 17:00 2+	16:09 16:13 16:24 1-			16:10 16:14 17:01 2+
28	C1.7	1					19:36 19:53 20:35 2+
29	C6.7	1					
29	C4.6	2	04:12 04:16 04:27 1-				
29	C6.2	5					06:47 06:52 07:17 1+
29	C2.9	7	08:21 08:24 ? -				08:22 08:24 08:57 2
29	M2.2	9	09:18 09:32 10:24 2+	09:17 09:21 09:57 2			09:18 09:21 10:17 2+
29	C1.0	1					16:22 16:39 17:07 2
30	C4.4	9	08:26 08:30 08:43 1-	08:17 08:31 08:43 1+			08:26 08:32 09:07 2
30	C1.6	4					09:50 09:57 10:06 1-
30	C2.7	8	10:51 11:01 ? -	10:52 10:58 11:14 1			10:52 10:58 11:41 2+
30	M1.0	9	12:49 12:53 13:43 2+	12:50 12:52 13:14 1			12:50 12:53 13:47 2+
30	C1.3	1					16:05 16:20 16:25 1
30	M1.6	7	18:30 18:47 ? -	18:29 18:33 18:39 1-			18:30 18:34 19:58 3

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DAY		Colin Clements (23.4kHz)				Peter Meadows (23.4kHz)			Mike King (20.9kHz)			John Wardle (19.6/23.4kHz)				Peter King (21.05kHz)			
		AAVSO receiver, 0.76m screened loop aerial.				Tuned radio frequency receiver, 0.58m frame aerial.			AAVSO receiver. Tuned loop aerial.			PC soundcard, long wire aerial.				Own designed receiver, 1.4m loop aerial.			
		START	PEAK	END (UT)		START	PEAK	END (UT)	START	PEAK	END (UT)	START	PEAK	END (UT)	START	PEAK	END (UT)		
1	C2.4														17:01	17:10	17:15	1-	
3	C1.6														12:05	12:08	12:10	1-	
3	M3.3								17:53	17:57	18:36			2	17:48	17:55	17:59	1-	
4	C1.0														09:30	09:35	09:40	1-	
4	*														16:45	16:59	17:15	1+	
5	C1.1														07:46	07:55	08:09	1	
5	C1.5														11:54	11:57	12:15	1	
6	C1.2														16:15	16:20	16:25	1-	
6	C1.0														17:55	18:05	18:16	1	
6	M2.1								20:01	20:05	20:18			1-	19:55	20:05	20:15	1	
7	C2.0	11:44	12:15	12:49	2+										12:05	12:15	12:25	1	
7	C2.7	14:21	14:40	15:31	2+										14:20	14:29	14:38	1-	
7	C9.1	15:31	15:49	16:52	2+				15:34	15:42	16:11			2	15:30	15:44	15:55	1	
7	C1.8														19:35	19:43	19:45	1-	
8	C7.7																		
8	C4.8																		
8	C1.5														10:28	10:33	10:38	1-	
8	M1.9														11:20	11:33	11:35	1-	
8	C1.7														15:24	15:28	15:30	1-	
8	M1.8														16:45	16:54	16:58	1-	
9	C1.5														10:28	10:33	10:38	1-	
9	M1.9	11:12	11:36	13:10	3				11:31	11:35	12:15			2	11:20	11:33	11:35	1-	
9	C1.7														15:24	15:28	15:30	1-	
9	M1.8	16:46	16:55	17:36	2+				16:48	16:56	17:40			2+	16:45	16:54	16:58	1-	
9	C1.2														18:30	18:35	18:37	1-	
10	M1.3								06:42	06:46	07:53			2+					
11	C1.1														11:25	11:30	11:35	1-	
11	C1.0														14:45	14:48	14:53	1-	
11	C1.5														15:35	15:43	15:50	1-	
11	C1.5														17:02	17:05	17:09	1-	
11	C1.5														19:00	19:04	19:10	1-	
12	C1.6														09:00	09:10	09:15	1-	
12	C1.1														12:15	12:19	12:20	1-	
12	C1.4														16:00	17:33	17:43	3	
12	C1.5														19:05	19:10	19:13	1-	
13	C2.7	09:15	09:21	09:56	2														
13	M1.2	11:52	13:03	17:09	3+										11:30	13:18	14:30	3+	
13	C7.0														14:40	14:49	15:00	1	
13	C6.2														15:25	15:28	15:30	1-	
13	C6.8																		
14	C2.0														10:45	10:50	10:55	1-	
14	C2.5														11:05	11:13	11:22	1-	
14	C5.0	10:48	11:17	12:27	3										12:33	12:38	12:40	1-	
14	C2.6	12:27	12:41	12:55	1+										12:53	14:35	15:55	3+	
14	M1.9	12:55	14:10	17:05	3+														
15	*	10:43	10:52	11:31	2+										13:08	13:25	13:34	1+	
15	C3.4	13:05	13:26	14:30	2+										15:40	15:50	15:55	1-	
15	C1.1																		
16	*																		
16	C1.8	14:38	14:56	15:43	2+										14:45	14:54	15:00	1-	
17	C1.0														17:25	17:29	17:30	1-	
17	C3.9								17:38	17:44	18:08			1+	17:35	17:40	17:46	1-	
19	C1.2														13:28	13:35	14:10	2	
19	C1.0														14:15	14:19	14:29	1-	
20	C1.5														11:00	11:09	11:25	1	
20	C3.1								16:24	16:33	16:48			1	16:15	16:29	16:38	1	
26	C1.3																		
27	C3.4																		
27	C3.2																		
27	C1.6														11:00	11:10	11:25	1	
27	*																		
27	C3.4	12:35	12:38	13:27	2+														
28	C4.2																		
28	M2.4	16:13	16:15	17:04	2+				16:09	16:16	16:58			2+	16:08	16:12	16:15	1-	
28	C1.7																		
29	C6.7																		
29	C4.6																		
29	C6.2								06:44	06:49	07:00			1-					
29	C2.9								08:21	08:24	08:29			1-	08:20	08:22	08:25	1-	
29	M2.2	09:17	09:18	10:59	3				09:17	09:20	09:35			1-	09:14	09:20	09:24	1-	
29	C1.0																		
30	C4.4	08:25	08:33	09:37	2+				08:26	08:31	08:44			1-	08:20	08:30	08:39	1	
30	C1.6														09:49	09:54	10:00	1-	
30	C2.7	10:50	11:00	12:07	2+				10:53	10:56	11:23			1+					
30	M1.0	12:51	12:52	14:10	2+				12:49	12:52	13:32			2	12:50	12:52	12:55	1-	
30	C1.3																		
30	M1.6	18:29	18:34	19:18	2+				18:28	18:36	18:53			1	18:25	18:32	18:35	1-	

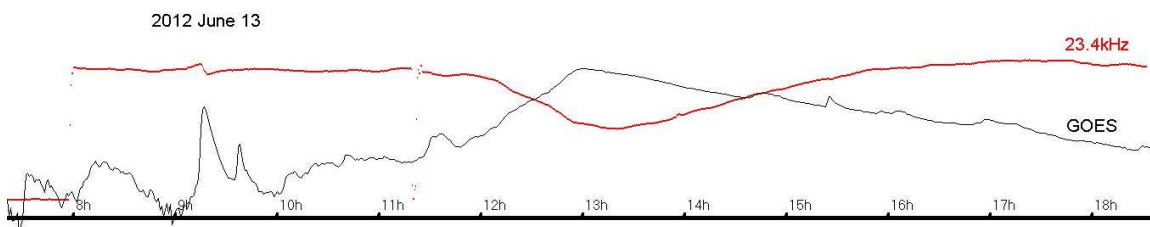
VLF flare activity 2005/12.



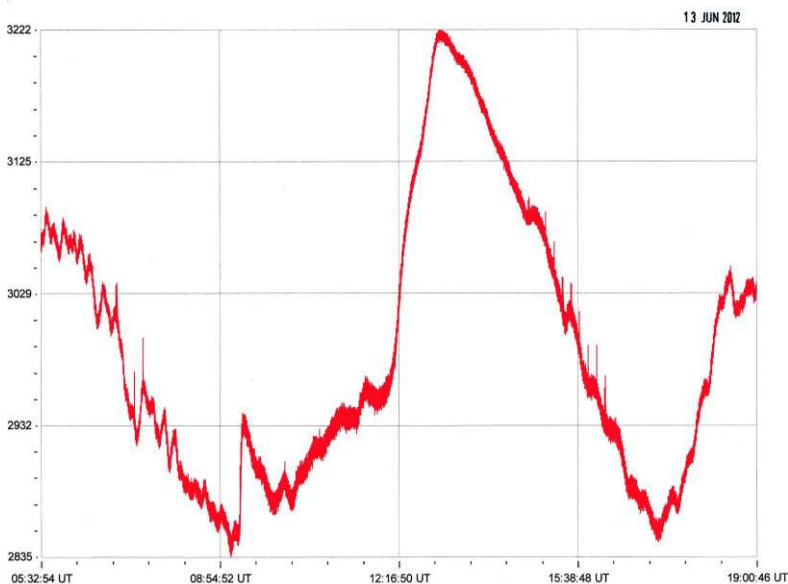
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Although well down on last month, there was still some substantial activity in June. Notably 18% of the recorded SID total were from M-class flares compared with 11% in May. Activity was well spread throughout the month. Two SIDs that caused some comment from observers were from the M1.2 flare on the 13th, and the M1.9 on the 14th. Occurring in the early afternoon, they were both of long duration, looking very unlike a normal SID. The SWPC gave the flare timings as follows:

	Start	Peak	End
M1.2	11:29	13:17	14:31
M1.9	12:52	14:35	14:56

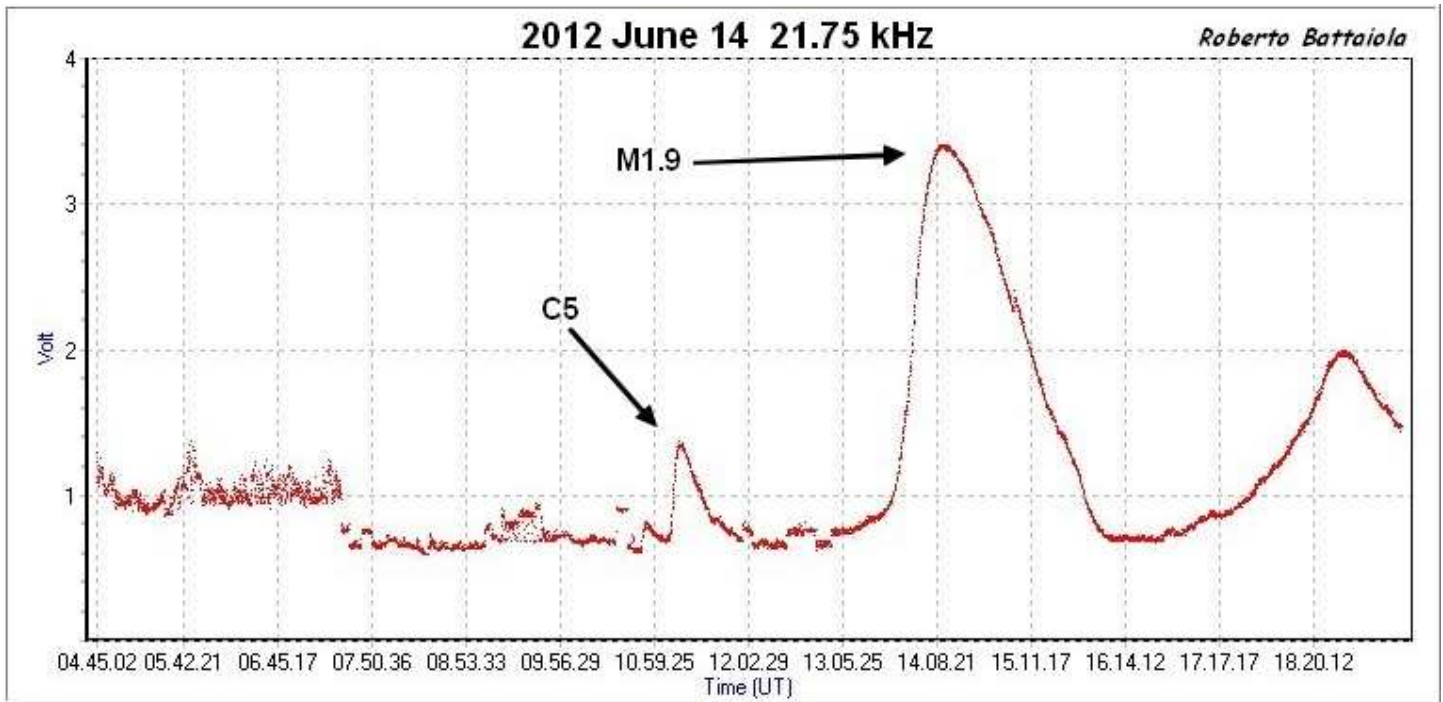


The chart above is my own recording with the GOES-15 X-ray flux added in black. Colin Clements also provided a chart of this event:



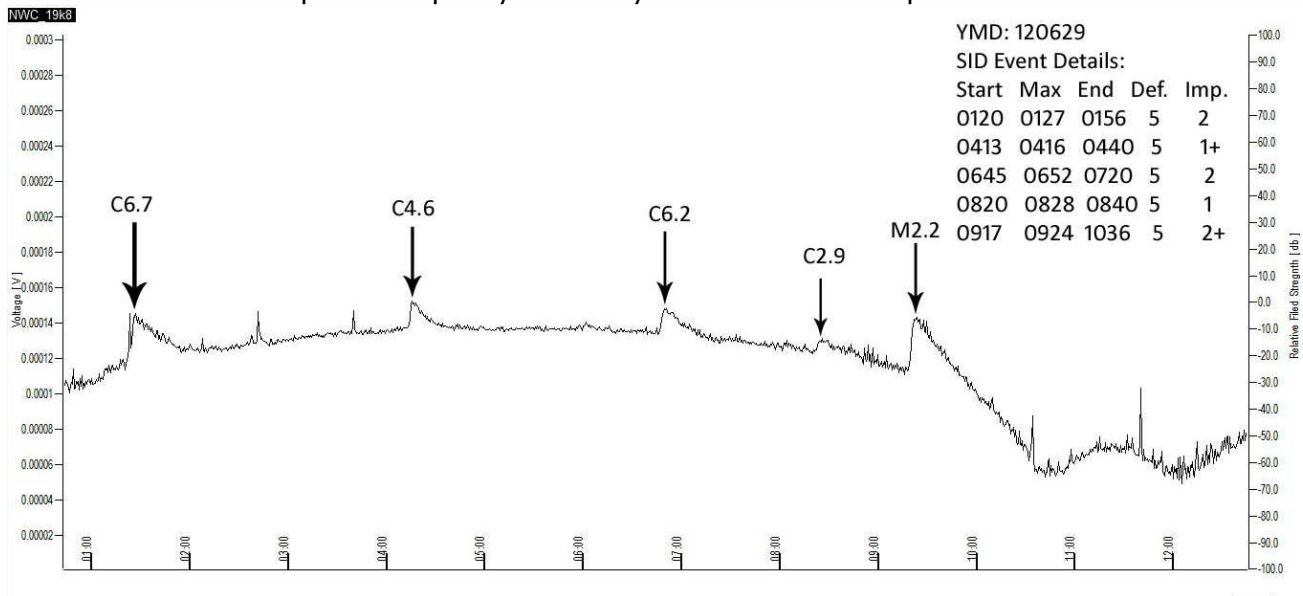
Although the vertical scale is expanded compared to mine, both the earlier C2.7 flare and this long duration M1.2 event are well recorded.

Active region 1504 was responsible for this flare, as well as much of the other activity in June. Covering quite a large area on the sun, it reached its peak magnetic complexity on the 13/14th close to the central meridian. It was also responsible for the M1.9 flare on the 14th, shown well in the chart from Roberto Battaiola on the next page. The earlier C5.0 flare is also shown, along with some interference earlier in the morning.



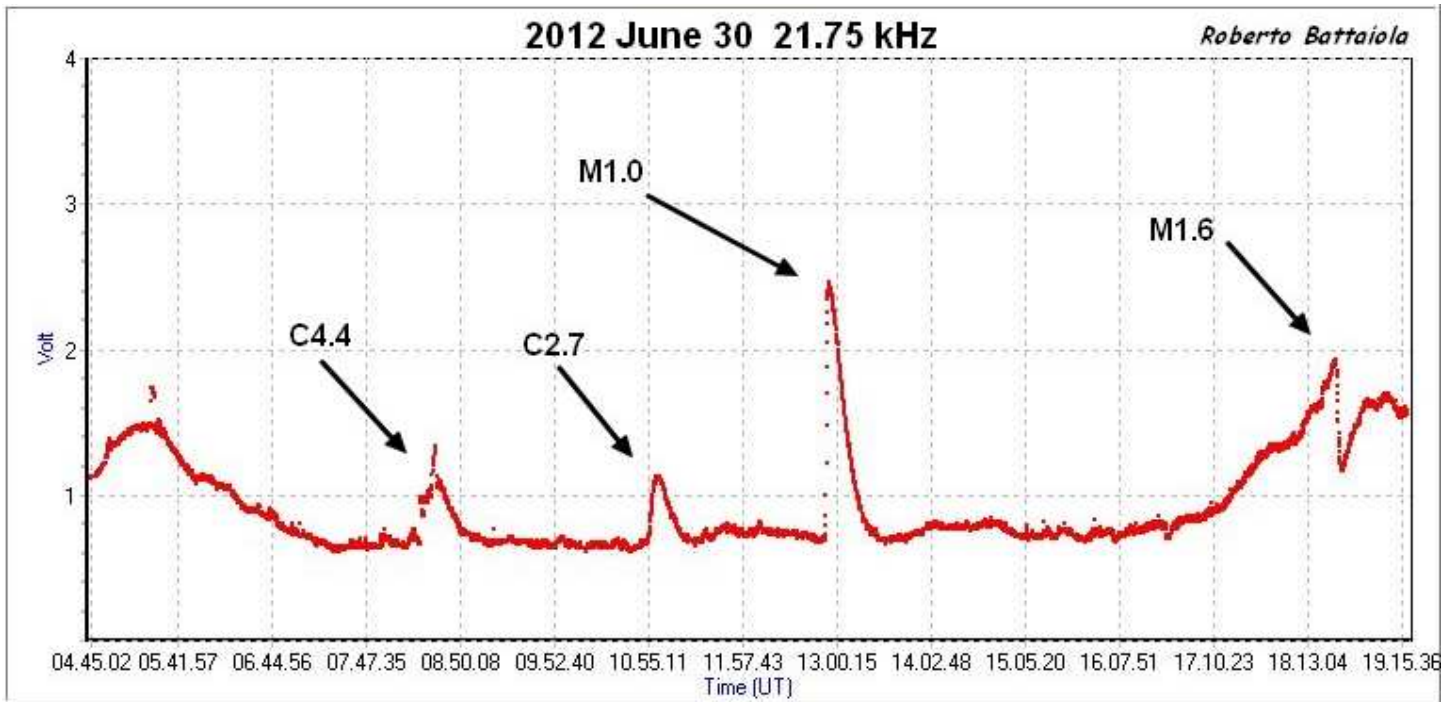
Both of these flares were accompanied by CMEs, resulting in magnetic disturbances on the 16th and 17th.

The 29th and 30th also produced plenty of activity. Tarif Rashid Santo provided his chart for the 29th:



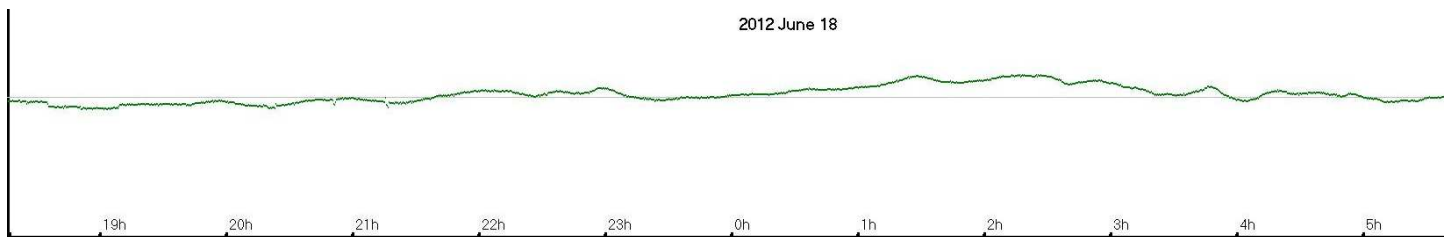
Active region 1513 was responsible for the flares shown. Although smaller than AR1504 it remained quite active. Being close to the longest day in the northern hemisphere, the C4.6 flare peaking at 04:16UT was recorded here as a very small disturbance during the sunrise dip. The C6.2 flare was more widely recorded, but I missed it as it occurred just as DHO on 23.4kHz went off-air. The C6.7 was far too early for European observers.

The 30th produced another six SIDs that were well recorded, including two more from M-class flares. Roberto Battaiola has provided his chart showing four of them:

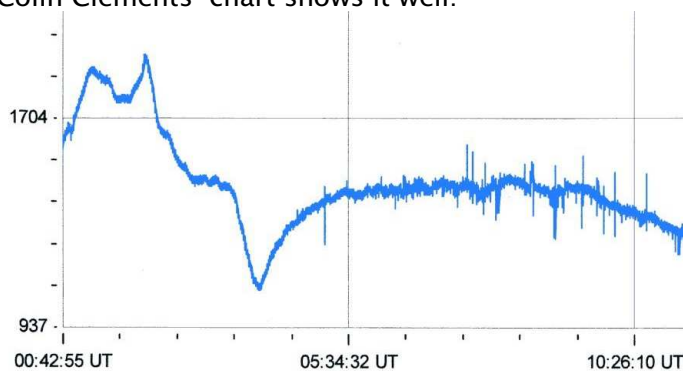


MAGNETIC DATA

Both of the long duration flares mentioned above (13th & 14th) were accompanied by CMEs. The magnetic disturbance from these started on the 16th, with two sudden storm commencements listed in the BGS bulletin. The second of these, at 20:19UT produced a small jump in my magnetometer, but the disturbance really began around 21:20UT. It lasted right through to about 06UT on the 18th here, with about 70nT variations. Colin Clements has recorded a similar disturbance. Gonzalo Vargas (Bolivia) recorded a moderate to active disturbance on the 16th from 17:50 to 22:45UT. As my recording shows, it was not a particularly active CME:



A larger disturbance was recorded from a southward-directed interplanetary magnetic field early on the 12th. Colin Clements' chart shows it well:



Magnetic data provided by Colin Clements, Gonzalo Vargas & John Cook.

