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BAA Radio Astronomy Section.

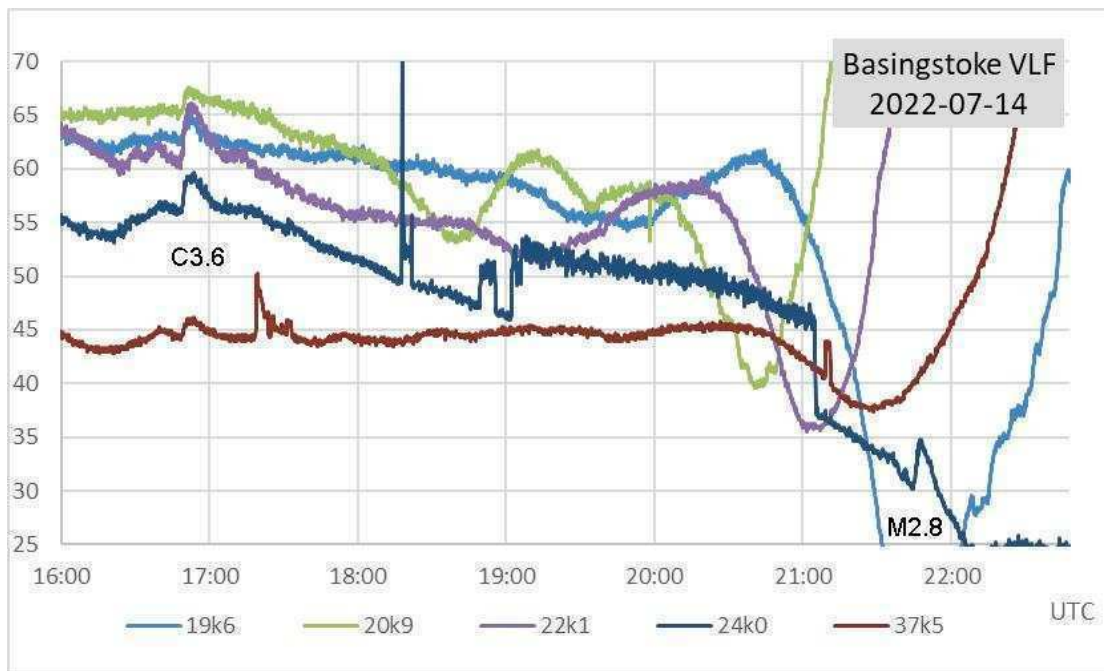
Director Paul Hearn.

RADIO SKY NEWS

2022 JULY.

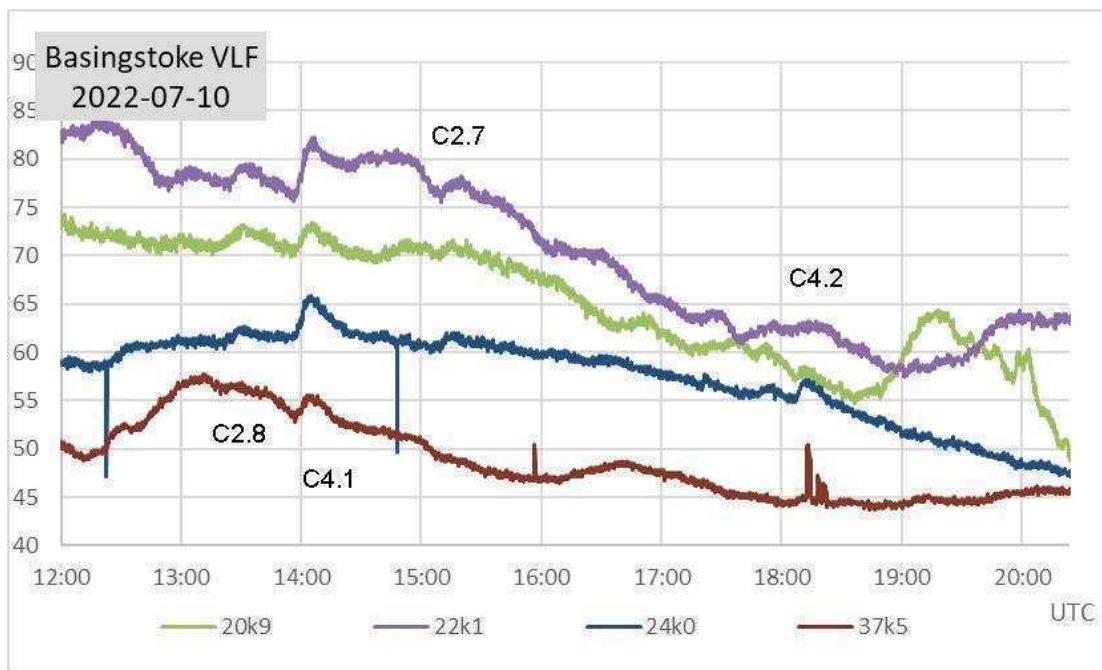
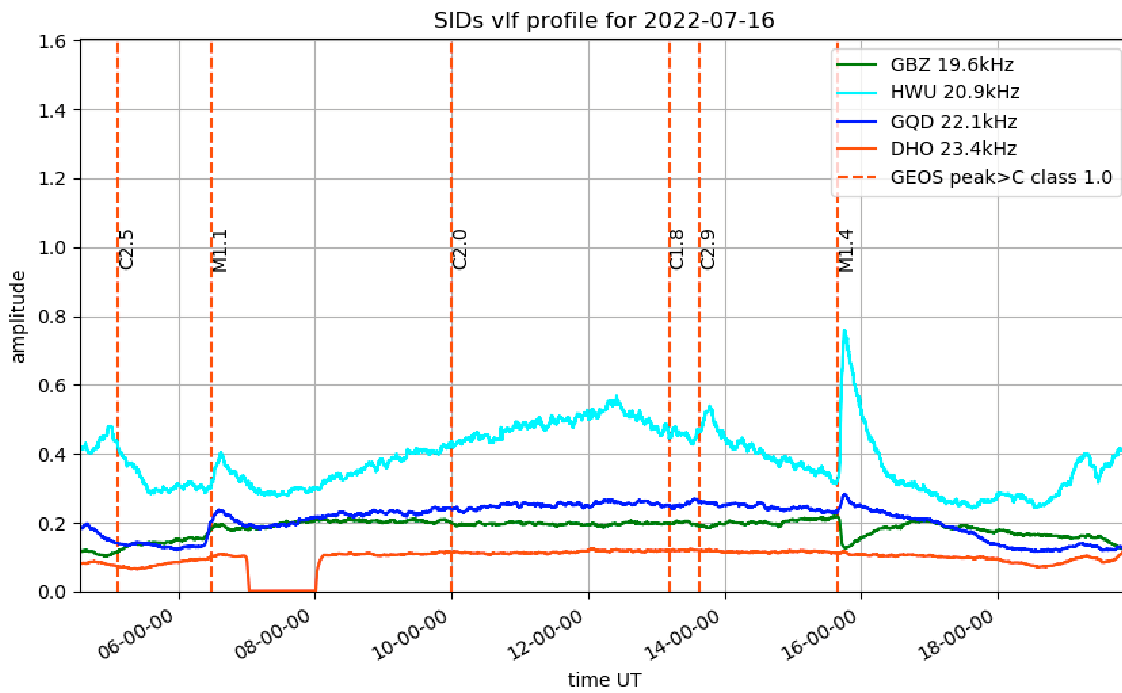
VLF SID OBSERVATIONS.

After the lower activity recorded in June activity increased again in July, although not back to the levels seen in May. There were six M-class flares recorded, the strongest being the M2.8 recorded late on the 14th. This was also the strongest event recorded in the SWPC X-ray data.



This recording by Paul Hyde shows a clear SID on the 24kHz signal, while the others have passed their local sunset times. The earlier C3.6 flare is also visible, preceded by two smaller peaks that seem to have been part of the same flare. The sharp spike at 17:20 on the 37.5kHz signal does not seem to have a magnetic origin, so may be local interference. 24kHz also shows some transmitter effects between 18:00 and 21:00UT.

There were two M-flares on the 16th, along with several smaller C-flares. The M1.4 flare was well timed in the afternoon, while the M1.1 was much earlier in the morning. Both show well in the recording by Mark Prescott on the next page, the M1.1 giving a smaller SID squeezed between sunrise and the 23.4kHz signal break. 23.4kHz does not show much disturbance from any of these flares.

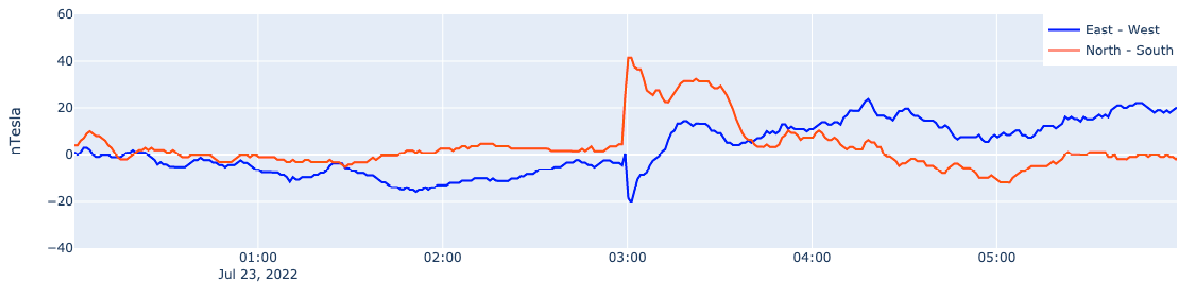


Paul Hyde's recording from the 10th shows some of the smaller flares. The higher background X-ray flux has resulted in rather small SIDs that are not always easy to spot. Under quieter conditions they would be much clearer.

MAGNETIC OBSERVATIONS.

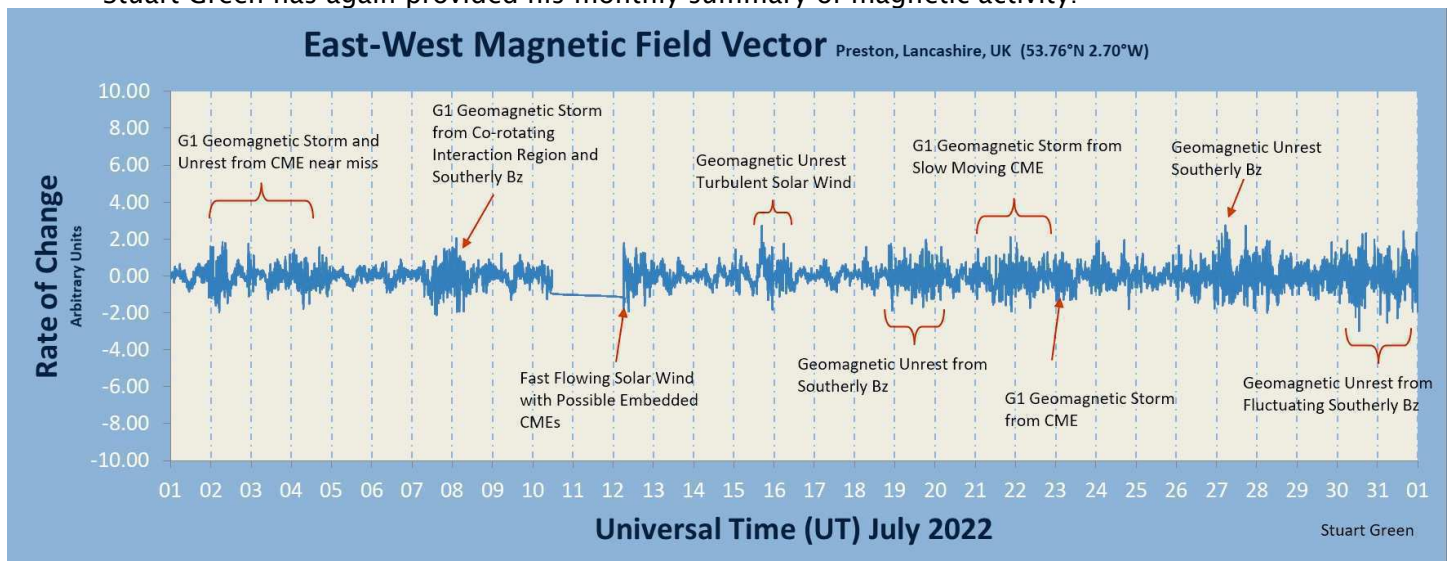
The strong flaring activity produced several weak CMEs, but mostly not directed towards Earth. There was also some high speed wind disturbance from small coronal holes, particularly at the start of the month. The most clearly recorded CME impact arrived at 03:00UT on the 23rd. Satellite data shows the CME on the 21st, although it does not seem to be related to a flare that we have recorded. The CME arrival shows well in the recording by Nick Quinn:

Steyning Magnetometer (50.8 North, 0.3 West)

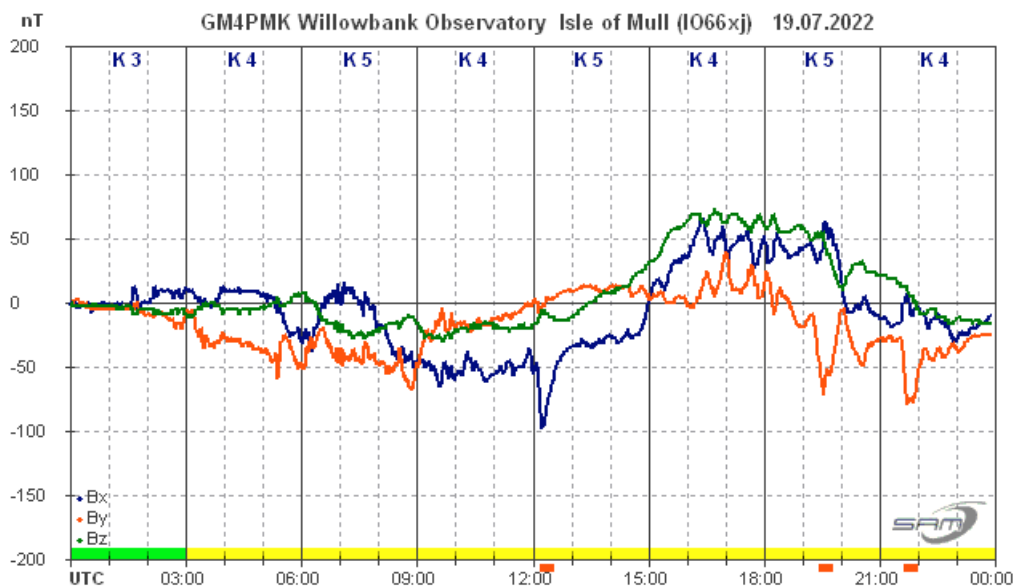


The following magnetic disturbance was very mild, and faded out during the morning.

Stuart Green has again provided his monthly summary of magnetic activity:

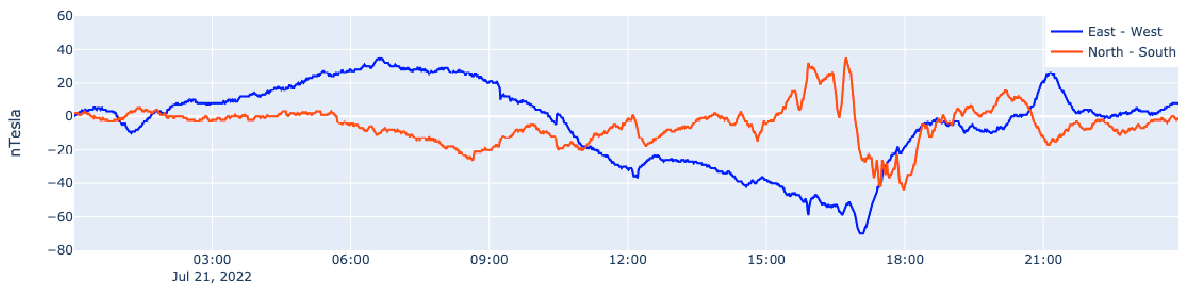


A very mild disturbance at the start of the month was from a CME near-miss, and was followed by a mild coronal hole wind stream. A turbulent solar wind caused some disturbance on the 19th, shown here by Roger Blackwell:



A CME of unknown origin produced a more active period in the afternoon of the 21st, recorded by Nick Quinn:

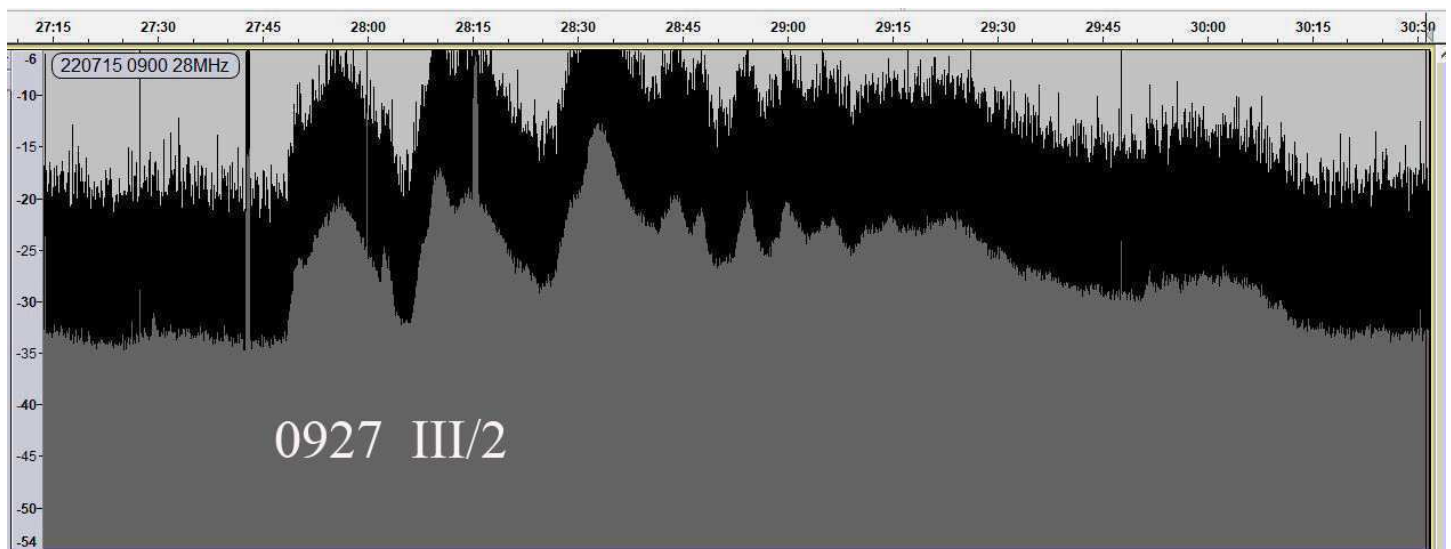
Steining Magnetometer (50.8 North, 0.3 West)



A very mild disturbance continued through the 22nd, merging with the CME impact on the 23rd.

Magnetic observations received from Roger Blackwell, Colin Clements, Stuart Green, Nick Quinn and John Cook.

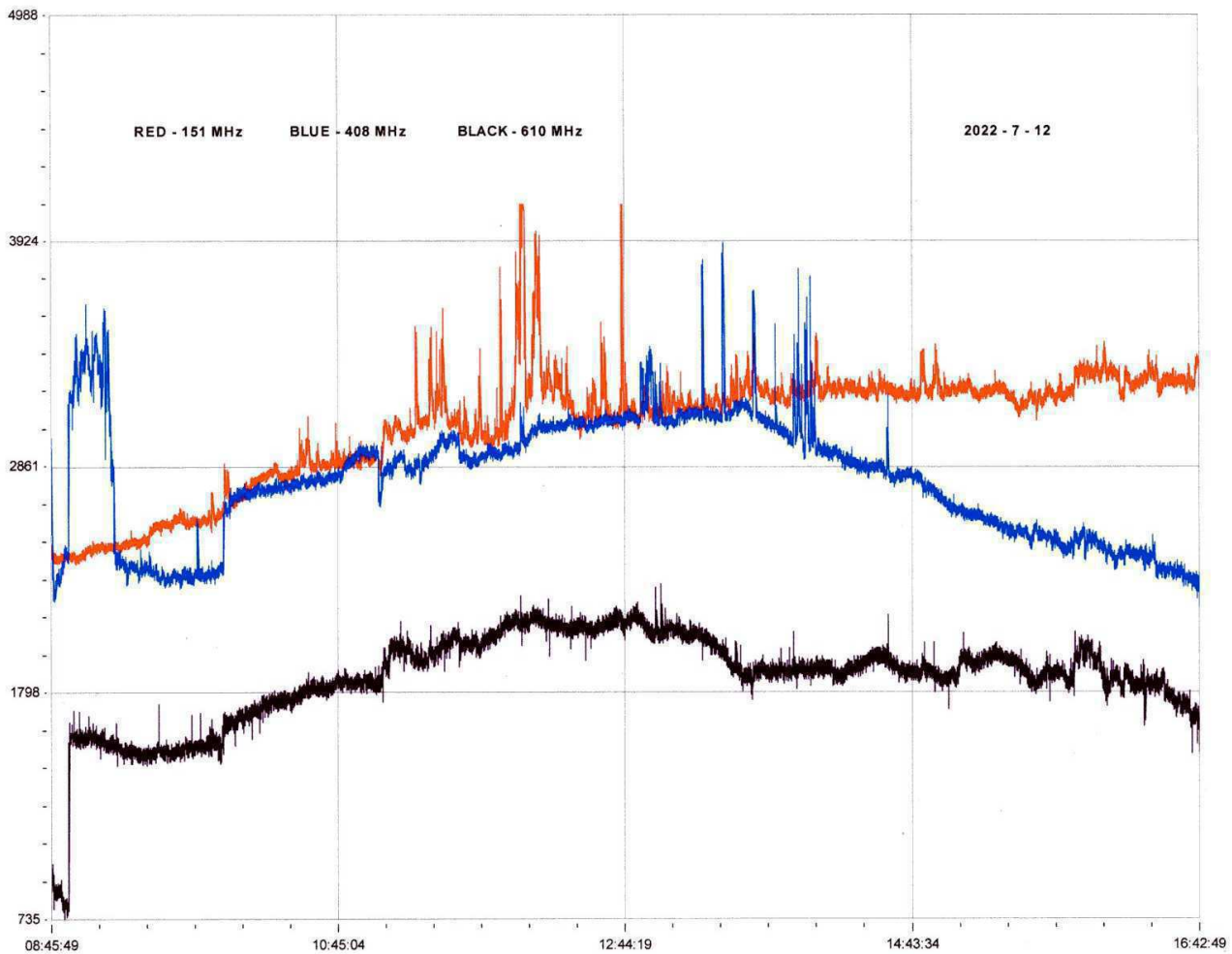
SOLAR EMISSIONS.



Colin Briden recorded this type III/2 28MHz emission starting at 09:27UT on the 15th. It has three distinct peaks, followed by a number of smaller peaks over a period of about 2 minutes 30 seconds. This is not related to any of the flares that we have recorded, although the X-ray data does show a very tiny unclassified flare peaking at 09:30. Colin Clements did not report any VHF effects at this time.

Colin Clements also reported VHF/UHF emissions from some of the smaller flares in July. His recording from the 12th, on the next page, shows a significant noise burst on 151MHz (red) around the time of the C2.5 and C4.0 flares, and a noise burst on 408MHz (blue) matching the C7.5 flare. 610MHz (black) does not show any effects from these flares.

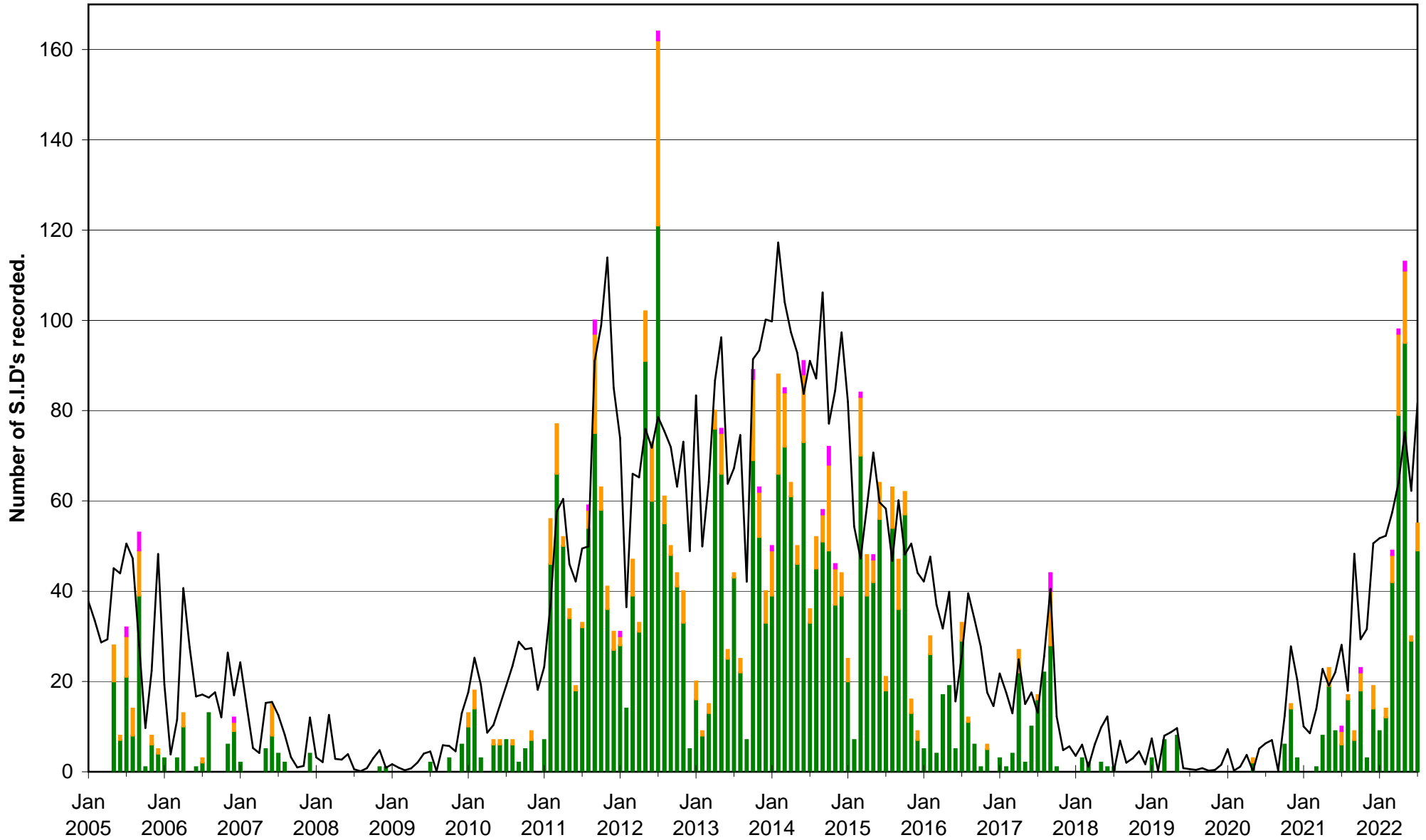
Colin Briden reports a large number of discrete emissions during July, with 64 events recorded over six and a half hours on the 12th. Colin notes that the Kp index was at 4..5 during this time.



The Perseid meteor shower was active during August, so please do send in any activity reports that you have collected. The series of on-line meetings continues through the autumn, so please do check the Radio Astronomy pages of the BAA web site for full details. Paul Hearn sends out joining details prior to each event, so do let him know if you would like to be added to the mailing list.

VLF flare activity 2005/22

C M X — Relative sunspot number



DAY	X-ray class	Observers	John Cook (23.4kHz/22.1kHz)				Roberto Battaola 20.9kHz				Paul Hyde (22.1kHz/24kHz)				Mark Edwards (24.0/19.6/23.4kHz)				Colin Clements (37.5kHz)			
			Tuned radio frequency receiver, 0.58m frame aerial.				Modified AAVSO receiver.				Spectrum Lab / PC 1.5m frame aerial.				Spectrum Lab / PC 2m loop aerial.				Tuned Radio Frequency receivers, 0.76m screened loop aerial.			
			START	PEAK	END (UT)		START	PEAK	END (UT)		START	PEAK	END (UT)		START	PEAK	END (UT)		START	PEAK	END (UT)	
3	B8.3	1													15:32	15:45	16:02	1+				
3	C3.1	1													19:51	19:57	20:16	1				
4	C5.1	8	13:28	13:37	14:12	2	13:26	13:36	13:52	1+	13:27	13:36	14:05	2	13:28	13:38	14:21	2+	13:28	13:37	13:47	1
5	C2.4	1													12:05	12:10	?	-				
5	C7.5	8	12:34	12:40	14:00	3					12:33	12:42	13:38	2+	12:34	12:40	13:45	2+	12:23	12:43	13:21	2+
8	M2.5	1													20:20	20:42	21:58	3				
9	C1.5	1													11:03	11:09	11:30	1+				
9	C1.7	1													11:36	11:38	11:43	1-				
9	C8.5	8	13:42	13:50	14:24	2	13:35	13:49	14:08	2	13:37	13:53	15:07	3	13:40	13:52	14:47	2+	13:18	13:48	15:14	3
9	?	1													16:13	16:17	16:24	1-				
9	C5.1	1													21:03	21:04	21:13	1-				
10	C2.9	2									09:20	09:26	09:50	1+	09:22	09:30	09:43	1				
10	C2.5	2									11:49	11:55	12:05	1-	11:53	11:57	12:14	1				
10	C2.8	1													13:28	13:30	13:46	1-				
10	C4.1	4	14:00	14:04	14:24	1					13:56	14:06	14:26	1+	14:00	14:04	14:28	1+				
10	C2.7	2									15:09	15:18	15:25	1-	15:12	15:15	15:35	1				
10	C4.2	2									18:07	18:16	18:28	1	18:09	18:15	18:26	1-				
11	C5.1	4	07:14	17:19	07:46	1+					07:12	07:21	07:38	1+	07:15	07:20	08:16	2+				
11	M1.1	9	09:16	09:23	10:15	2+	09:11	09:23	10:01	2+	09:16	09:25	10:19	2+	09:16	09:29	10:23	2+	09:15	09:37	10:07	2+
12	C2.9	2									09:50	09:45	10:21	1+	09:41	09:51	10:05	1				
12	C2.5	3									11:52	12:02	12:08	1-	11:52	11:59	?	-				
12	C4.0	3													12:06	12:33	13:11	2+	12:20	12:37	13:07	2+
12	C3.3	4									13:41	13:45	?	-	13:43	13:46	?	-				
12	C7.5	7	13:52	13:55	14:15	1					13:51	13:58	14:44	2+	13:53	13:56	14:42	2+	13:07	13:58	15:11	3
13	?	2									07:28	07:37	07:46	1-								
13	C1.7	1													15:20	15:39	16:12	2+				
13	C2.2	2									16:15	16:32	17:11	2+	16:18	16:31	17:07	2+				
13	?	1													?	?	?	-				
13	C3.2	1													19:27	19:34	19:53	1+				
14	C4.5	1	05:40	05:46	?	-																
14	M1.2	2													04:27	04:31	04:43	1-				
14	C3.0	6	10:07	10:10	10:25	1-					10:05	10:14	10:54	2+	10:08	10:15	10:36	1+				
14	?	1													11:35	11:41	11:46	1-				
14	C2.8	4	12:02	12:05	?	-					11:56	12:09	?	-	12:01	12:10	?	-				
14	C2.9	5	12:21	12:24	12:39	1-					12:20	12:26	12:41	1	12:22	12:27	13:07	2				
14	C2.4	3	13:30	13:34	?	-					13:16	13:24	?	-	13:19	13:25	?	-				
14	?	5									13:28	13:36	?	-	13:30	13:36	?	-				
14	?	2									13:39	13:47	?	-	13:43	13:46	?	-				
14	?	3									13:59	14:05	15:35	3	14:00	14:03	14:51	2+				
14	C3.6	2									16:47	16:56	17:05	1-	16:23	16:41	?	-				
14	?	1													16:50	16:55	17:05	1-				
14	M2.8	2									21:44	21:47	?	-	21:46	21:49	22:01	1-				
15	C5.5	8	07:58	08:00	08:22	1	07:55	08:02	08:15	1	07:55	08:03	09:08	2+	07:59	08:07	09:11	2+	07:58	08:01	08:53	2+
15	C5.5	9	12:03	12:06	12:16	1-	11:56	12:04	12:14	1-	11:59	12:11	12:47	2+	12:02	12:11	12:49	2+	11:58	12:10	12:50	2+
15	C5.8	3	18:18	18:25	18:35	1-					18:13	18:17	18:30	1-	18:15	18:19	18:42	1+				
16	M1.1	7	06:20	06:22	06:31	1-	06:17	06:29	06:42	1					06:28	06:31	06:55	1+				
16	?	1													10:43	10:47	10:53	1-				
16	?	1													12:01	12:10	12:18	1-				
16	?	1													13:11	13:22	13:33	1				
16	C2.9	7	13:36	13:40	14:08	1+					13:28	13:43	14:03	2	13:37	13:41	14:19	2	13:07	13:42	14:17	2+
16	M1.4	9	15:37	15:41	16:55	2+	15:35	15:41	15:58	1	15:35	15:44	17:33	3	15:36	15:40	?	-	15:33	15:42	16:33	2+
16	?	1													16:44	16:48	17:01	1-				
17	C1.9	1																				
17	C6.5	8	12:23	12:29	12:57	2	12:20	12:30	12:42	1	12:20	12:33	13:20	2+	12:23	12:31	13:08	2				
17	C2.1	1													16:14	16:20	16:31	1-				
17	C3.6	2									17:23	17:33	18:03	2	17:25	17:37	18:08	2				
19	C1.6	1													17:21	17:25	17:40	1				
20	?	1													12:21	12:32	12:36	1-				
20	C2.0	1													15:04	15:14	15:19	1-				
20	C3.9	2									19:31	19:36	19:46	1-	19:28	19:37	?	-				
20	?	1													19:47	19:54	20:42	2+				
21	C3.1	1													11:26	11:49	12:33	2+				
21	C2.6	4									12:50	13:01	13:31	2	12:52	12:59	13:25	2				
23	C1.8	1									09:56	10:07	10:29	2								
23	?	1									13:03	13:19	13:55	2+								
23	C1.8	1													15:10	15:12	15:39	1+				
23	C1.9	2									17:56	18:08	18:30	2	18:02	18:09	18:33	1+				
23	C1.6	2									19:37	19:45	?	-	19:44	19:47	19:54	1-				
24	C1.8	2									09:56	10:07	10:32	2	10:22	10:26	10:45	1				
24	?	1									17:56	18:09	18:30	2								
26	C8.5	9	15:22																			

DAY	Xray class	Steve Parkinson (Various)				Andrew Thomas (19.2/20.9/22.1kHz)				Phil Rourke (23.4kHz)			Mark Prescott (20.9kHz)			Christopher Bailey				
		Tuned radio frequency receiver, frame aeriels.				Tuned radio frequency receiver, 0.6m frame aerial.				Spectrum Lab, 0.6m frame aerial.						Spectrum Lab				
		START	PEAK	END (UT)		START	PEAK	END (UT)		START	PEAK	END (UT)	START	PEAK	END (UT)	START	PEAK	END (UT)		
3	B8.3																			
3	C3.1																			
4	C5.1	13:28	13:36	14:02	2								13:32	13:37	14:07	2	13:28	13:36	13:50	1
5	C2.4																			
5	C7.5	12:34	12:42	13:35	2+	12:05	12:43	13:52	3				12:34	12:46	13:33	2+	12:30	12:45	13:15	2
8	M2.5																			
9	C1.5																			
9	C1.7																			
9	C8.5	13:39	13:49	14:30	2+	13:37	13:52	15:00	2+				13:43	13:58	14:47	2+				
9	?																			
9	C5.1																			
10	C2.9																			
10	C2.5																			
10	C2.8																			
10	C4.1															13:40	13:52	14:24	2	
10	C2.7																			
10	C4.2																			
11	C5.1	07:13	07:20	07:30	1-															
11	M1.1	09:15	09:28	10:17	2+	09:15	09:27	10:18	2+				09:18	09:32	10:21	2+	09:16	09:25	09:57	2
12	C2.9																			
12	C2.5					11:37	11:49	11:55	1-											
12	C4.0					12:22	12:34	13:12	2+											
12	C3.3	13:42	13:45	?	-								13:40	13:49	13:54	1-				
12	C7.5	13:53	13:56	14:25	1+	13:53	13:58	14:30	2				13:54	13:59	14:35	2				
13	?	07:28	07:36	07:50	1															
13	C1.7																			
13	C2.2																			
13	?																			
13	C3.2																			
14	C4.5																			
14	M1.2					04:29	04:32	04:48	1											
14	C3.0	10:07	10:14	10:34	1+	10:07	10:14	10:39	1+				10:11	10:19	10:41	1+				
14	?																			
14	C2.8	12:00	12:06	?	-															
14	C2.9	12:22	12:27	12:40	1-	11:55	12:25	13:12	2+											
14	C2.4																			
14	?	13:30	13:35	?	-	13:16	13:48	15:17	3				13:32	13:48	14:33	2+				
14	?																			
14	?	14:00	14:04	14:15	1-															
14	C3.6																			
14	?																			
14	M2.8																			
15	C5.5	07:58	08:03	08:30	1+	07:58	08:02	08:37	2				07:58	08:06	08:16	1-				
15	C5.5	12:02	12:08	12:35	2	12:02	12:07	12:47	2				12:05	12:15	12:38	2	12:02	12:10	12:40	2
15	C5.8																			
16	M1.1	06:21	06:32	07:10	2+	06:19	06:30	07:13	2+				06:27	06:37	07:16	2+	06:20	06:30	06:58	2
16	?																			
16	?																			
16	?																			
16	C2.9	13:36	13:43	14:04	1+	13:35	13:40	13:58	1				13:33	13:46	14:06	2				
16	M1.4	15:37	15:35	16:35	2+	15:37	15:42	16:23	2+				15:39	15:45	16:25	2+	15:37	15:40	16:40	2+
16	?																			
17	C1.9	09:47	09:57	10:16	1+															
17	C6.5	12:22	12:30	13:14	2+	12:22	12:31	13:28	2+				12:25	12:35	13:11	2+	12:21	12:30	12:55	2
17	C2.1																			
17	C3.6																			
19	C1.6																			
20	?																			
20	C2.0																			
20	C3.9																			
20	?																			
21	C3.1																			
21	C2.6					12:51	13:00	13:14	1				12:53	13:02	13:31	2				
23	C1.8																			
23	?																			
23	C1.8																			
23	C1.9																			
23	C1.6																			
24	C1.8																			
24	?																			
26	C8.5	15:24	15:38	16:20	2+	15:22	15:38	16:08	2+				15:24	15:45	16:25	2+	15:25	15:40	16:00	2
27	C3.5	10:54	11:00	11:23	1+	10:53	11:00	11:45	2+				10:53	11:03	11:38	2	10:52	11:00	11:23	1+

