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BAA Radio Astronomy Section.

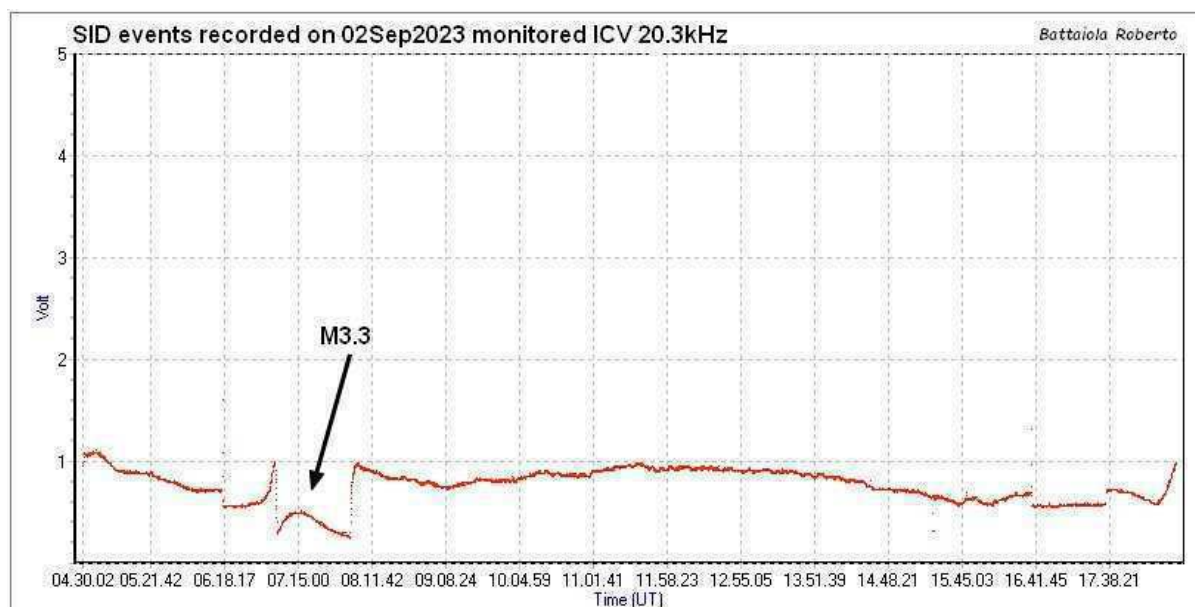
Director Paul Hearn.

RADIO SKY NEWS

2023 SEPTEMBER.

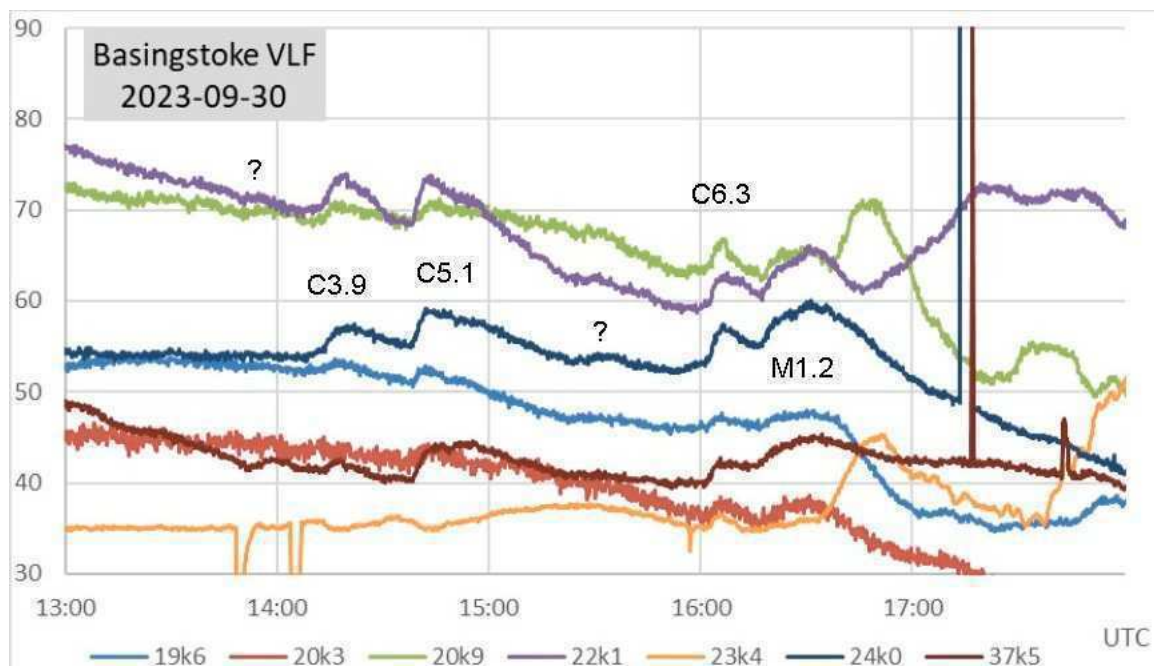
VLF SID OBSERVATIONS.

Activity in September was a little higher than in August, with 71 C and 17 M-class flares recorded. The GOES data does not show any X-class flares, although some of the M flares were very close. Most of the SIDs that we recorded were less complex than in previous months, and so the total SID count including the unclassified peaks is lower than in August. September also includes the autumn equinox, so our daytime recording period is getting shorter. Roberto Battaiola in Milan had the advantage of monitoring the 20.3kHz from Isola di Tavolara, and recorded this 'well timed' flare peaking at 07:15UT on the 2nd:

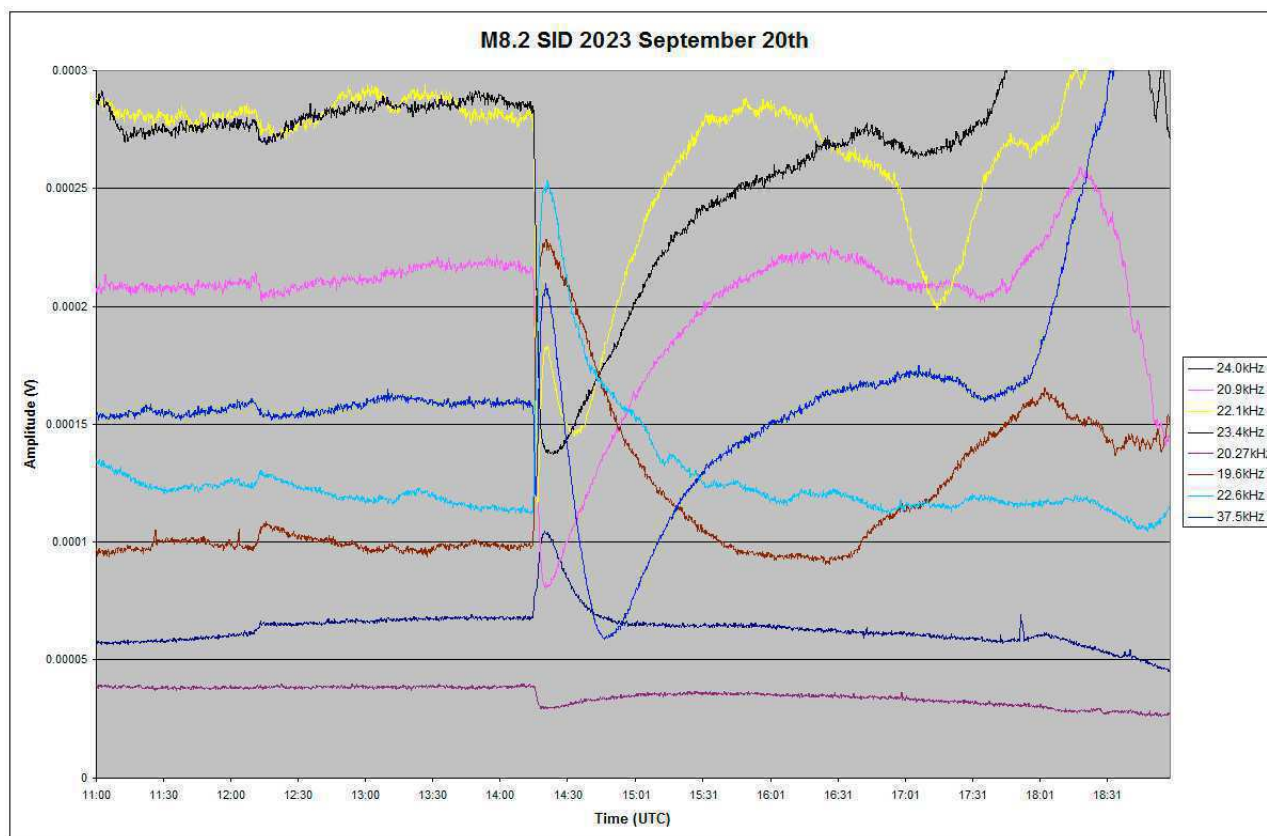


The flare started just before the sudden drop in signal level, but the peak sits neatly near the middle before the signal rises again and the flare fades out. Excellent timing! Isola di Tavolara is a small island near Sardinia, due south of Milan, at 9 degrees east.

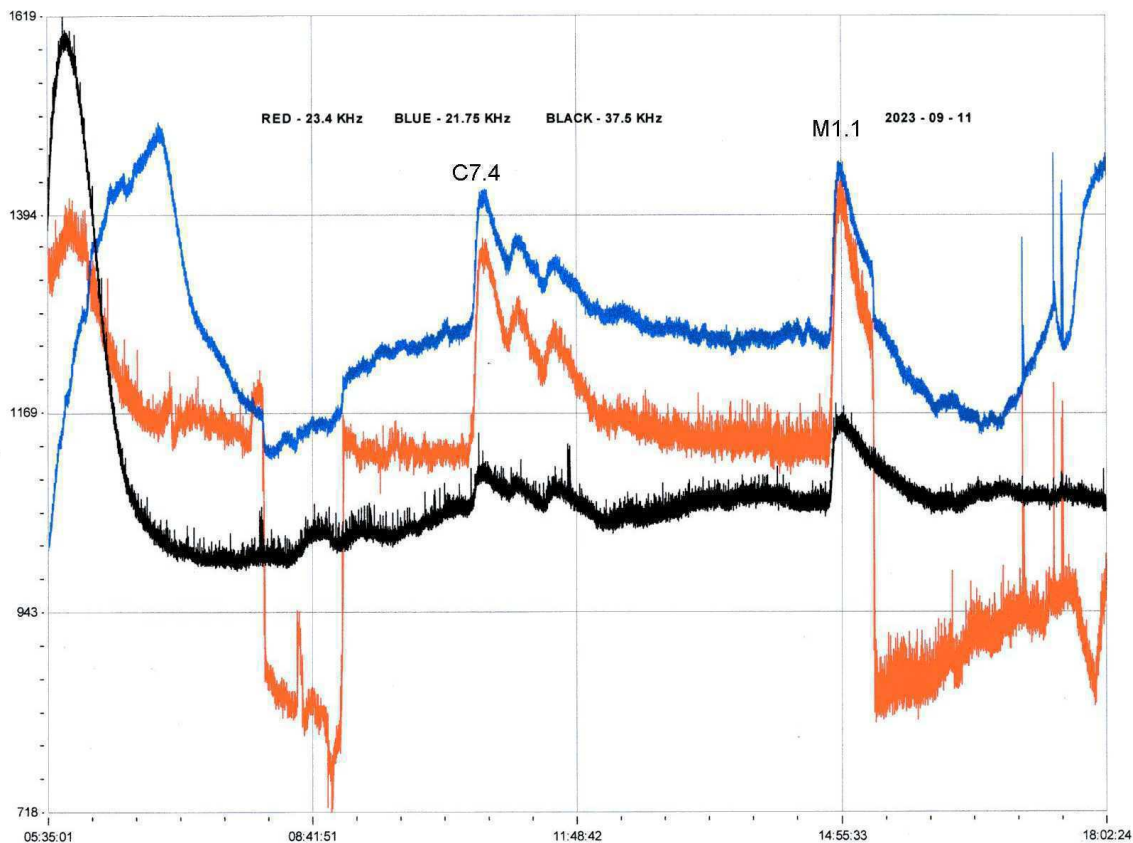
The 30th. was the busiest day of the month with 12 SIDs recorded. Paul Hyde's recording shows the afternoon's activity on several VLF signals:



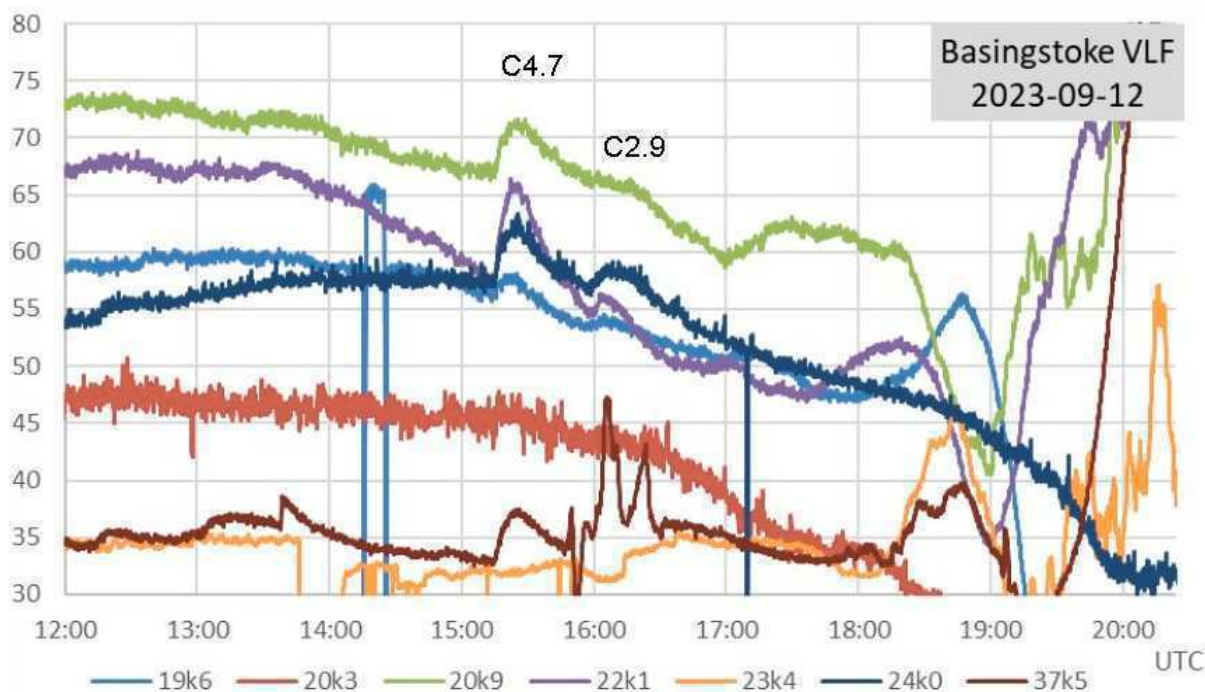
Some of the minor unclassified flares have produced small indistinct SIDs, but not on all of the signals. The M1.2 flare has produced a very odd looking SID at 20.9kHz compared to the smooth response at 24kHz.



The M8.2 flare peaking at 14:22UT on the 20th was one of the strongest, and shows a good variety of SID shapes on this recording by Mark Edwards. The chart runs from 11:00 to 19:00, and also just shows the much weaker C3.4 flare at 12:13, the C4.2 at 18:04 and C5.5 at 18:40. The last two show best on the Atlantic path at 24kHz, dark blue on the chart.

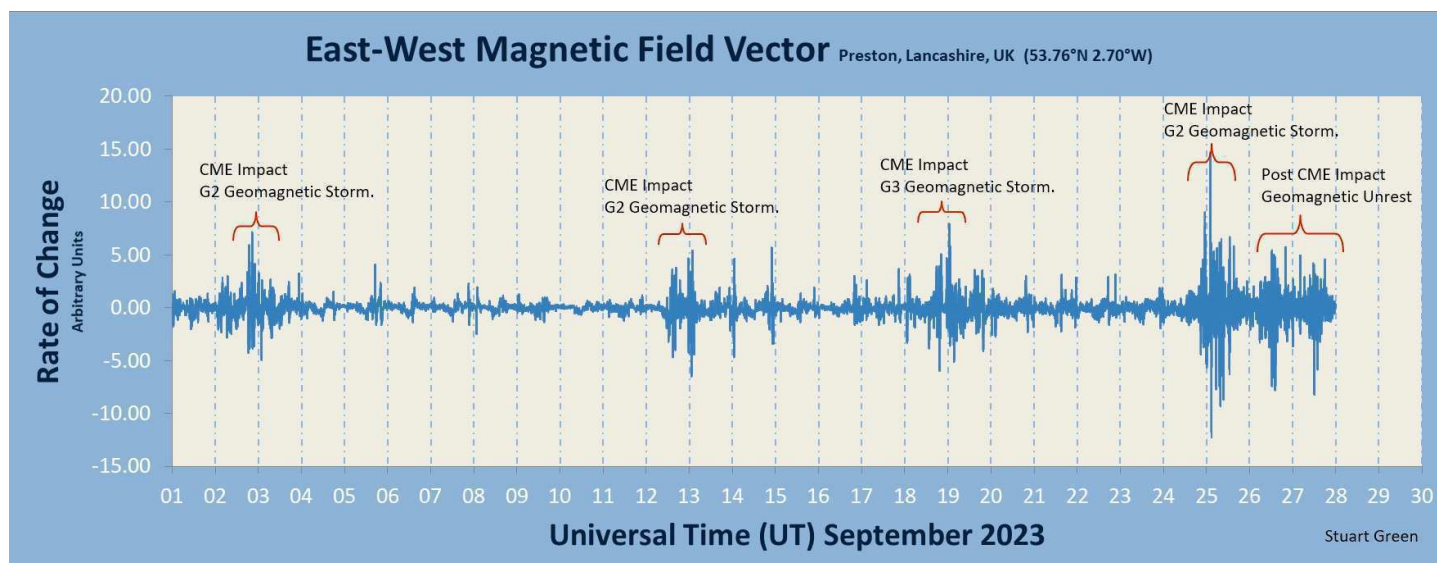


Colin Clements' recording from the 11th shows the strong M1.1 flare at 14:50, along with the more complex SID from the C7.4 flare at 10:40. The main peak of this flare was followed by two smaller peaks, unclassified in the GOES data.

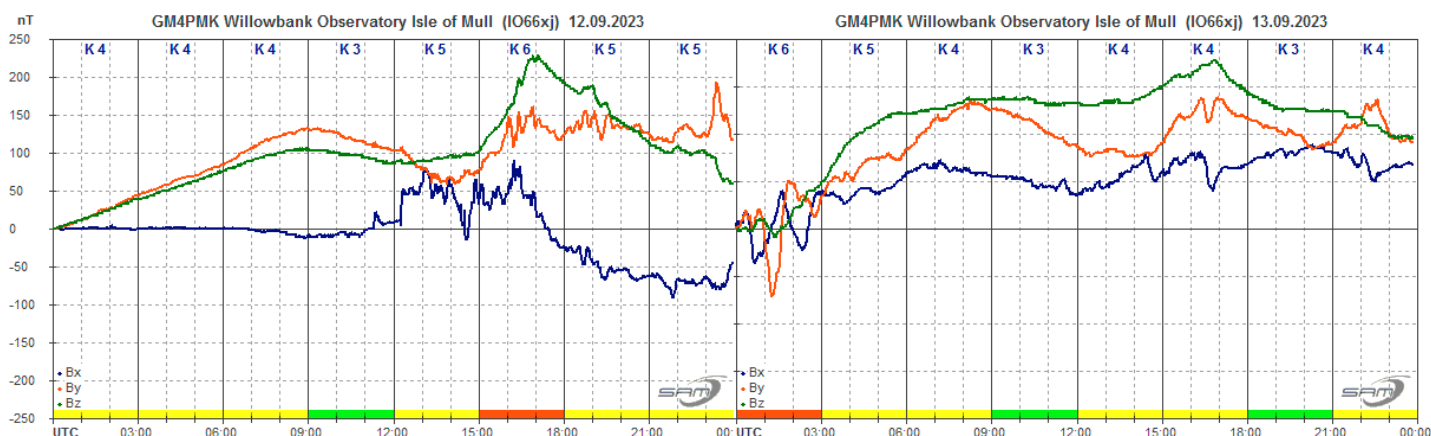


There was more activity on the 12th, the afternoon shown in the recording by Paul Hyde. The two SIDs shown were from much weaker flares, but are accompanied by a strong disturbance at 37.5kHz linked to a very active magnetic period.

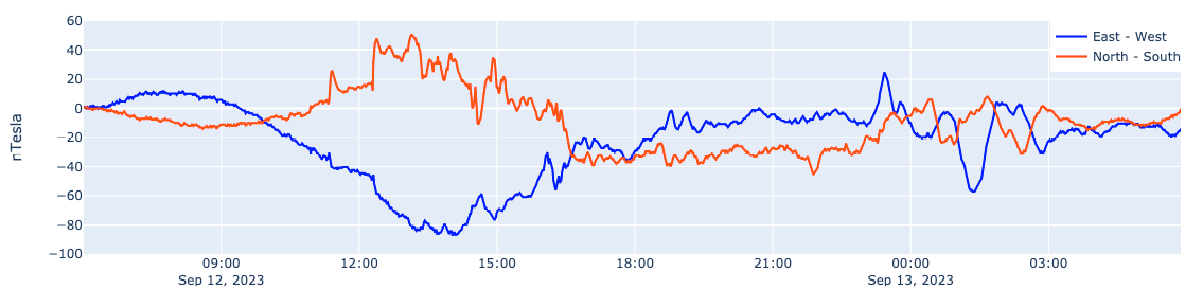
MAGNETIC OBSERVATIONS.



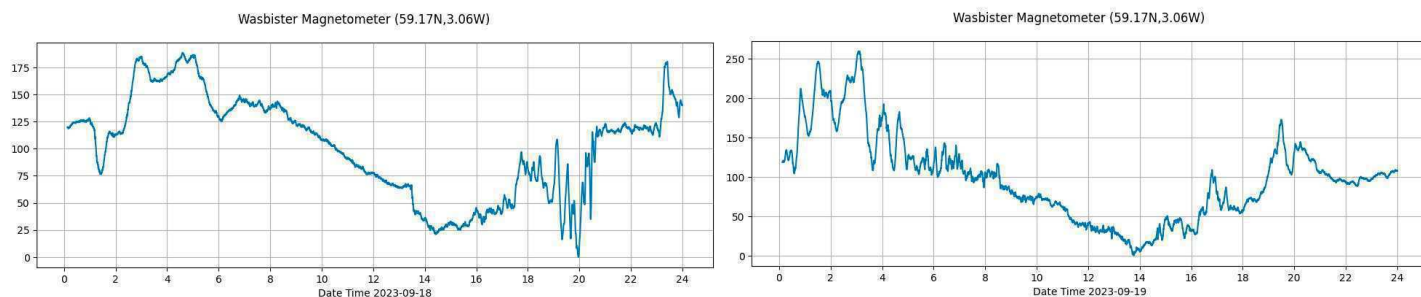
Stuart Green's monthly summary of magnetic activity shows several periods of disturbance with some quiet periods in between. The 37.5kHz disturbance shown in Paul Hyde's recording from the 12th matches well with the very active magnetic disturbance shown in the charts from Roger Blackwell and Nick Quinn:



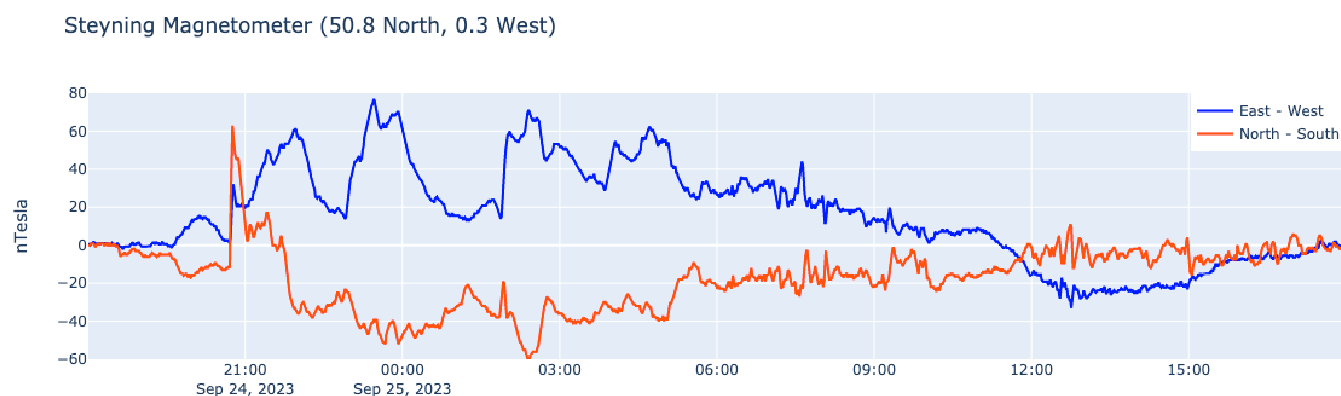
Steysing Magnetometer (50.8 North, 0.3 West)



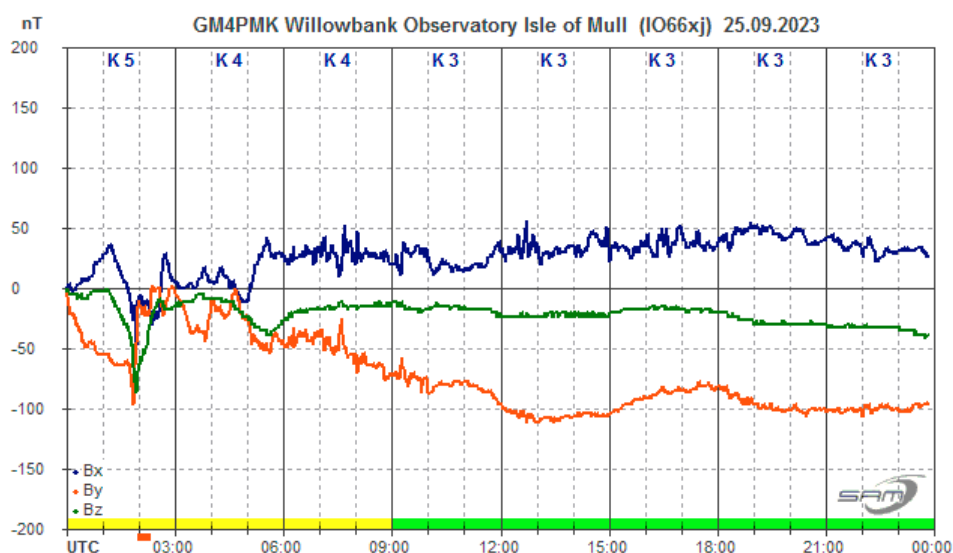
There were numerous CMEs shown in the satellite data, so assigning a specific event to this disturbance is difficult. The STCE bulletin suggests a link to a halo CME from the 7th. The sensor midnight reset in Roger Blackwell's recording makes the chart for the 13th look more disturbed than the conditions were at the time. The disturbance did continue at a lower level through the next few days until the arrival of another CME on the 18th. All of our recordings show a sudden impact at about 13:30, with a strong disturbance for the rest of the day.



Callum Potter's recording shows the sudden impact, followed about four hours later by some rapid turbulence in the magnetic field. The chart for the 19th covers a larger magnetic range up to 250nT, while the chart for the 18th is 175nT. The STCE bulletin links this to a large filament eruption on the 16th.



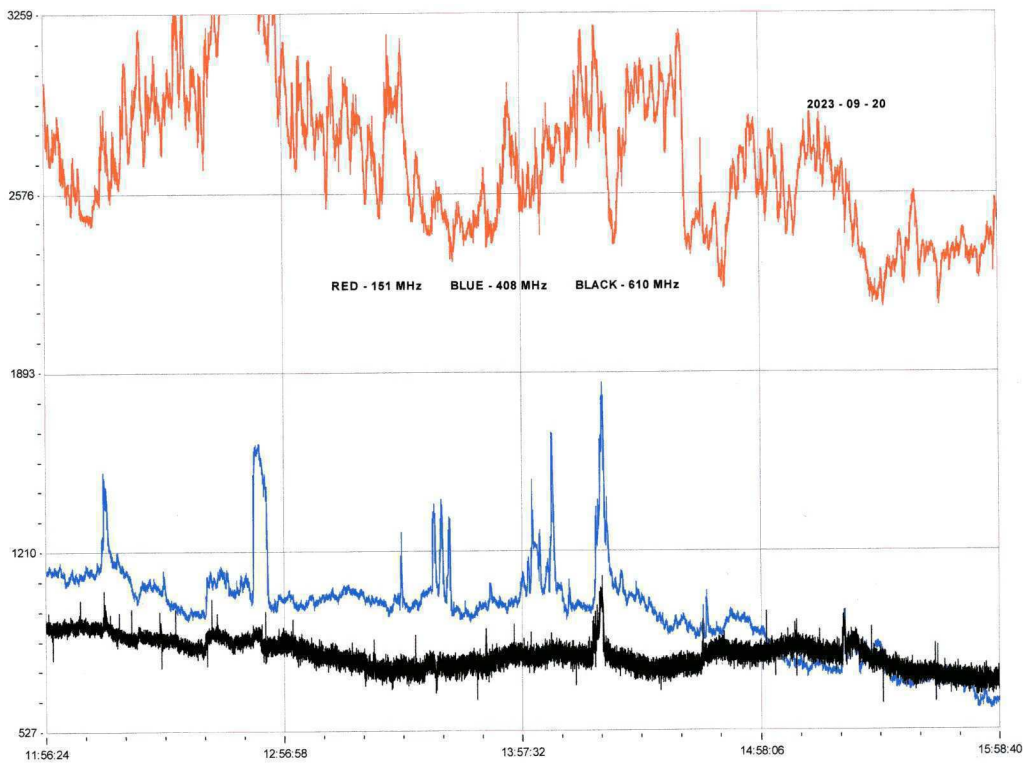
The summary chart shows strong magnetic activity from the 24th through to the end of the month. Nick Quinn's recording for the 24th / 25th shows another strong impact feature at about 20:45, followed by some large but slow disturbance through the early morning of the 25th. The turbulence then decreases in amplitude, but increases rapidly in speed. Roger Blackwell's chart for the 25th shows this well:



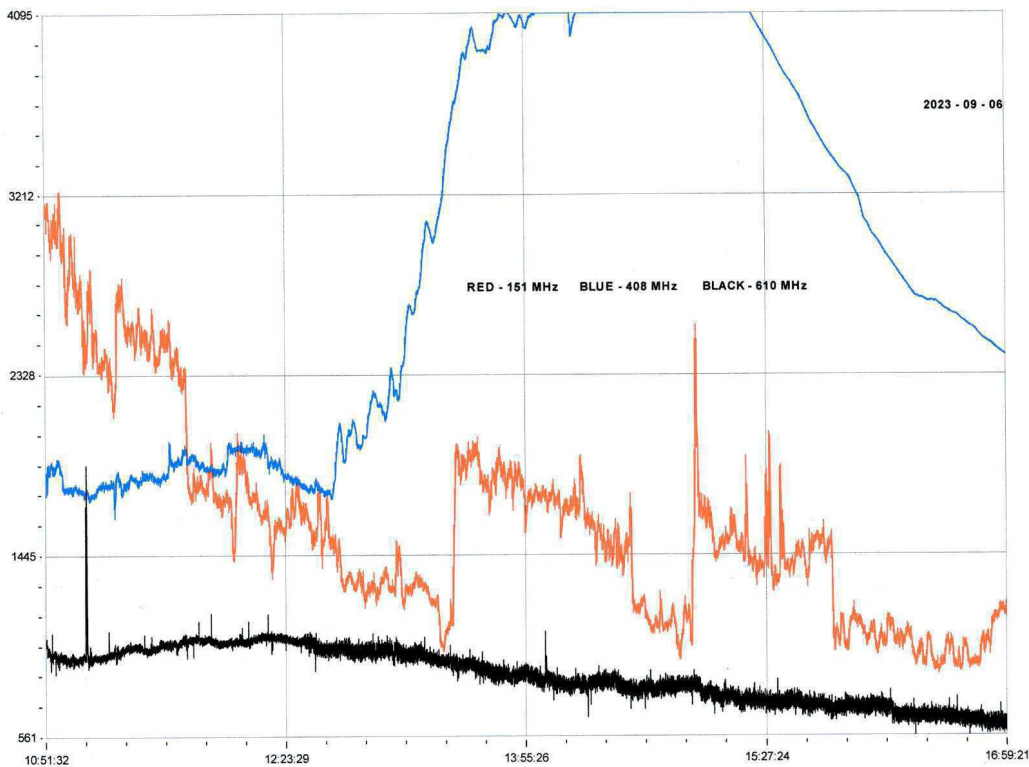
The source of the activity seems to be a combination of multiple CME's and a coronal hole high speed wind. The disturbance continued right through to the end of the month, fading slowly. Callum Potter also reported that the activity on the 12th / 13th also produced some excellent aurora visible in Orkney.

Magnetic observations received from Roger Blackwell, Stuart Green, Callum Potter, Nick Quinn and John Cook.

SOLAR EMISSIONS.

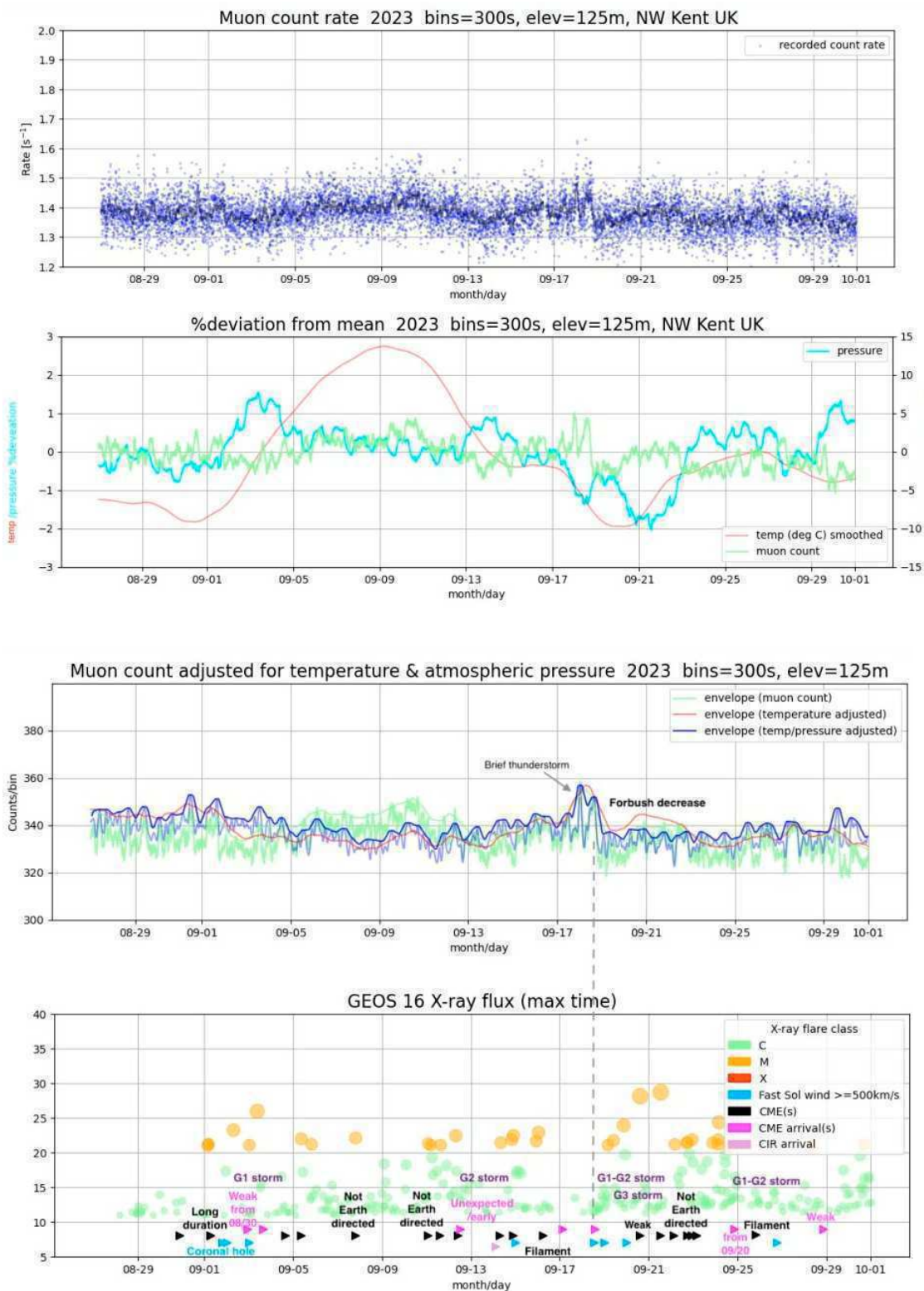


Colin Clements' VHF recording from the 20th shows some significant noise, particularly at 151 MHz (red) through the afternoon. The M8.2 flare at 14:20 UT matches with the strong 408 MHz (blue) spike, along with a much weaker spike at 610 MHz (black).



The recording from the 6th is more of a puzzle, with a very strong 408 MHz signal over the entire afternoon. There was a series of C-flares in the afternoon, but unlikely to be responsible for this signal. With the sun now much lower in the sky, Colin's outdoor aerials will lose their view of the sun over the next month.

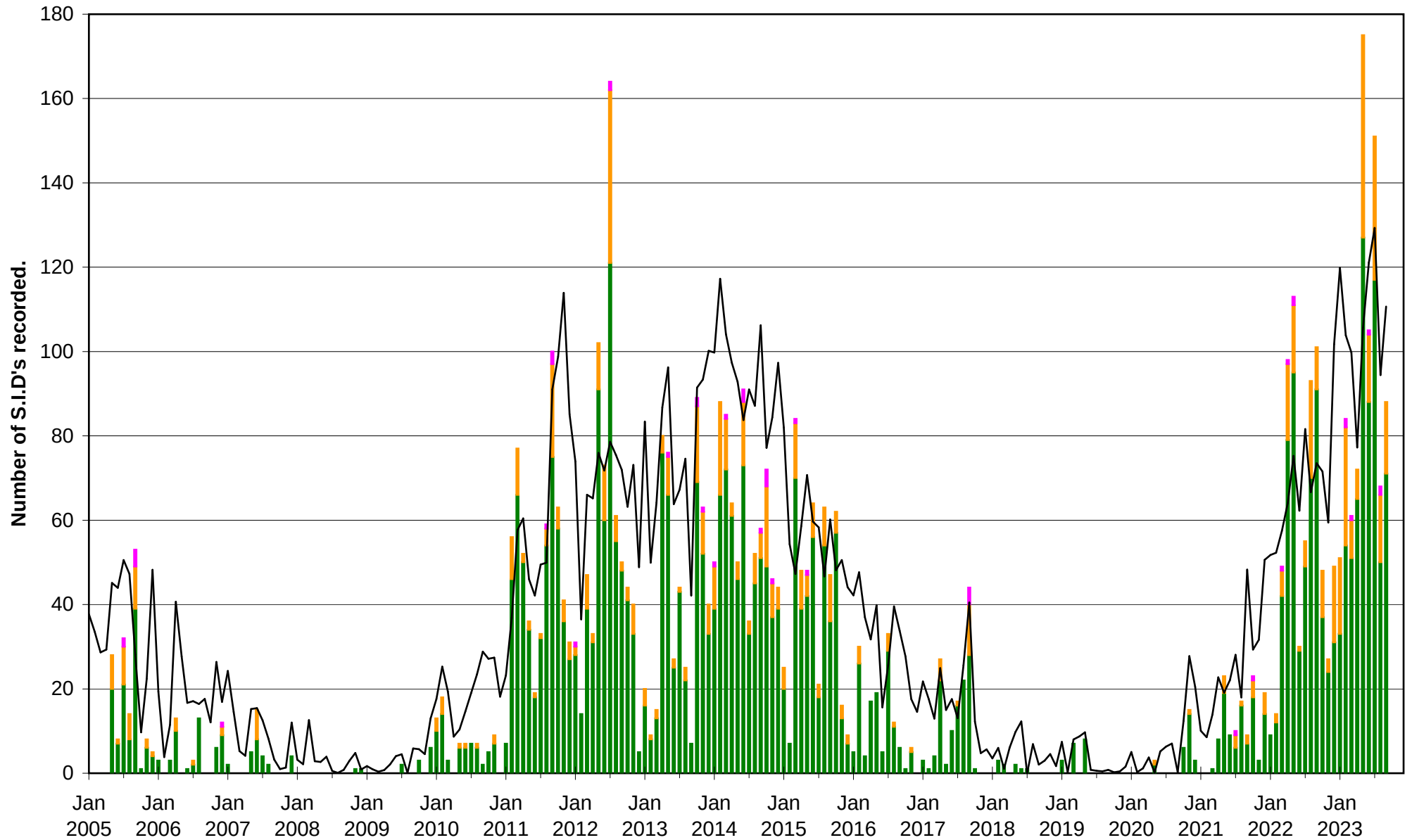
MUONS.



Mark Prescott's Muon recordings show another strong Forbush decrease on the 18th, following the large CME impact seen in our magnetic observations. It is slightly camouflaged by a local thunderstorm overnight on the 17th, but the adjusted average does show it. There were also Forbush decreases on the 13th and 15th, but were not clear in Mark's data.

VLF flare activity 2005/23

C M X — Relative sunspot number



BARTELS DIAGRAM

ROTATION	KEY:	DISTURBED.	ACTIVE	SFE	B, C, M, X = FLARE MAGNITUDE.	Synodic rotation start (carrington's).
2556	F	24 25	2239 26 27 28 29 30 31	2021 January 1 2	3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19	
2557	F	20 21 22	2240 23 24 25 26 27 28 29 30 31	2021 February 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15		
2558	F	16 17 18	2241 19 20 21 22 23 24 25 26 27 28	2021 March 1 2 3 4 5 6 7 8 9 10 11 12 13 14		
2559	F	15 16 17	2242 18 19 20 21 22 23 24 25 26 27 28 29 30 31	2021 April 1 2 3 4 5 6 7 8 9 10		
2560	F	11 12 13	2243 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	2021 May 1 2 3 4 5 6 7		
2561	F	8 9 10	2244 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	2021 June 1 2 3		
2562	F	4 5 6 7	2245 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30			
2563	F	1 2 3 4	2246 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27			
2564	F	28 29 30 31	2021 August 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23			
2565	F	24 25 26 27 28 29 30 31	2248 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19			
2566	F	20 21 22 23 24	2249 25 26 27 28 29 30 31	2021 October 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16		
2567	F	17 18 19 20 21	2250 22 23 24 25 26 27 28 29 30 31	2021 November 1 2 3 4 5 6 7 8 9 10 11 12		
2568	F	13 14 15 16 17	2251 18 19 20 21 22 23 24 25 26 27 28 29 30	2021 December 1 2 3 4 5 6 7 8 9		
2569	F	10 11 12 13 14	2252 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	2022 January 1 2 3 4 5		
2570	F	6 7 8 9 10 11	2253 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31			
2571	F	2 3 4 5 6 7	2254 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28			
2572	F	1 2 3 4 5 6 7	2255 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27			
2573	F	28 29 30 31	2022 April 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23			
2574	F	24 25 26 27 28 29 30	2022 May 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20			
2575	F	21 22 23 24 25 26 27 28 29 30 31	2258 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16			
2576	F	17 18 19 20 21 22 23	2259 24 25 26 27 28 29 30	2022 July 1 2 3 4 5 6 7 8 9 10 11 12 13		
2577	F	14 15 16 17 18 19 20 21	2260 22 23 24 25 26 27 28 29 30 31	2022 August 1 2 3 4 5 6 7 8 9		
2578	F	10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	2261 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 28 29 30 31	2022 September 1 2 3 4 5		
2579	F	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	2262 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 28 29 30 31	2022 October 1 2		
2580	F	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 29	2263 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 28 29			
2581	F	30 31	2022 November 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			
2582	F	26 27 28 29 30	2022 December 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22			
2583	F	23 24 25 26 27 28 29 30 31	2023 January 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18			
2584	F	19 20 21 22 23 24 25 26 27 28	2267 29 30 31	2023 February 1 2 3 4 5 6 7 8 9 10 11 12 13 14		
2585	F	15 16 17 18 19 20 21 22 23 24 25 26 27 28	2268 1 2 3 4 5 6 7 8 9 10 11 12 13	2023 March 1 2 3 4 5 6 7 8 9 10 11 12		
2586	F	14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	2269 1 2 3 4 5 6 7 8 9	2023 April 1 2 3 4 5 6 7 8 9		
2587	F	10 11 12 13 14 15 16 17 18 19 20	2270 21 22 23 24 25 26 27 28 29 30	2023 May 1 2 3 4 5 6		
2588	F	7 8 9 10 11 12 13 14 15 16 17	2271 18 19 20 21 22 23 24 25 26 27 28 29 30 31	2023 June 1 2		
2589	F	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 29	2272 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29			
2590	F	30 31	2023 July 1 2 3 4 5 6 7 8 9 10	2273 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26		
2591	F	27 28 29 30 31	2023 August 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22			
2592	F	23 24 25 26 27 28 29 30 31	2023 September 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18			
2593	F	19 20 21 22 23 24 25 26 27 28 29 30	2023 October 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15			

	X-ray class	Observers	John Cook (23.4kHz/22.1kHz)				Roberto Battaiola 20.3kHz				Paul Hyde (22.1kHz/24kHz)				Mark Edwards (24.0/19.6/37.5kHz)				Colin Clements (21.75kHz/23.4kHz)			
			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.			
DAY			START	PEAK	END (UT)		START	PEAK	END (UT)		START	PEAK	END (UT)		START	PEAK	END (UT)		START	PEAK	END (UT)	
2	M3.3	4	06:53	06:58	?	-	06:56	07:15	07:59	2+					06:39	07:17	09:05	3+				
2	C2.1	1													16:38	16:42	16:56	1-				
3	M6.0	9	08:15	08:38	10:34	3+	08:09	08:36	09:21	2+	08:11	08:34	09:47	3	08:16	08:38	10:24	3+	08:16	08:41	10:29	3+
3	C5.0	6	11:35	11:49	?	-	11:27	11:45	12:03	2	11:34	11:49	12:03	1+					11:38	11:54	12:05	1+
3	C5.7	5	12:08	12:28	12:57	2+	12:02	12:25	12:50	2+									12:05	12:35	13:58	3
4	C6.6	8	10:46	11:01	11:57	2+					10:43	11:00	12:08	2+	10:44	11:06	12:11	3	10:30	11:17	12:55	3+
4	C2.4	1																	13:43	13:49	14:05	1
5	M2.0	8	08:07	08:13	?	-	08:01	08:12	09:01	2+	08:02	08:14	?	-	08:07	08:14	09:02	2+				
5	C7.2	8	09:25	09:39	10:29	2+	09:20	09:34	09:51	1+	09:23	09:41	10:27	2+	09:27	09:42	10:39	2+				
5	C3.6	1													18:09	18:24	18:47	2				
5	M1.2	2									19:35	19:45	20:17	2	19:40	19:45	20:34	2+				
6	C3.7	4	07:54	07:58	08:12	1-	07:45	07:57	08:15	1+	07:52	07:55	08:13	1	07:54	07:58	08:13	1				
6	C1.8	2									10:35	10:42	11:02	1+	10:39	10:45	11:12	2				
6	C2.8	3									13:21	13:26	13:30	1-	13:23	13:27	?	-	13:13	13:29	13:46	2
6	C3.2	3									13:42	13:46	13:58	1-	13:43	13:48	14:06	1	13:46	13:49	14:50	2+
7	C3.4	3	10:29	10:33	10:45	1-					10:26	10:32	11:06	2	10:30	10:35	10:41	1-				
7	C3.0	2									11:42	11:45	12:00	1-	11:46	11:49	12:02	1-				
7	M2.1	2									18:59	19:09	20:01	2+	19:03	19:12	19:45	2				
8	C3.7	4	11:16	11:18	11:31	1-					11:13	11:17	11:47	2	11:16	11:20	11:44	1+	11:17	11:22	11:36	1
8	C2.6	2									13:49	13:53	13:56	1-	13:51	13:54	14:08	1-				
8	?	1													14:44	14:50	?	-				
8	?	1													13:56	15:04	15:15	2+				
8	C1.4	1													16:17	16:27	16:47	1+				
9	C2.0	1													13:36	13:43	13:50	1-				
10	C2.2	4	11:47	11:49	12:00	1-					11:42	11:49	12:12	1+	11:47	11:53	12:23	2	11:42	11:56	12:22	2
11	C6.8	1					06:05	06:18	06:41	2												
11	C7.4	7	10:33	10:36	?	-	10:31	10:40	10:53	1	10:29	10:37	?	-	10:32	10:41	?	-	10:32	10:43	11:00	1+
11	?	3									10:56	11:03	?	-	10:58	11:06	?	-	11:00	11:06	11:24	1
11	C3.7	5	11:25	11:29	11:38	1-					11:20	11:30	12:04	2	11:23	11:32	12:12	2+	11:24	11:33	12:08	2
11	M1.1	6	14:45	14:49	14:57	1-					14:41	14:50	16:56	3+	14:45	14:52	15:46	2+	14:44	14:54	16:00	2+
12	M2.5	7	06:55	07:06	07:49	2+	06:56	07:10	07:21	1	06:51	07:05	07:56	2+	06:53	07:11	?	-	07:03	07:12	07:53	2+
12	C7.3	6	08:02	08:08	08:36	2					07:59	08:08	08:50	2+	08:03	08:15	08:46	2	08:04	08:11	08:58	2+
12	C3.6	5	11:11	11:16	11:34	1					11:07	11:13	?	-	11:11	11:17	?	-	11:12	11:24	11:34	1
12	C3.1	3									11:30	11:37	11:57	1+	11:35	11:39	11:54	1	11:34	11:41	12:24	2+
12	C4.7	5	15:17	15:22	15:48	1+					15:14	15:24	?	-	15:17	15:26	?	-				
12	C2.9	2									15:58	16:10	16:33	2	16:00	16:08	16:43	2				
13	C5.5	5	08:08	08:12	08:37	1+					08:04	08:11	08:59	2+	08:06	08:11	08:18	1-				
14	M1.4	1	07:43	07:51	08:12	1+																
14	C4.6	5	15:25	15:30	15:55	1+					15:20	15:29	16:06	2+	15:24	15:34	16:06	2				
14	C2.9	1													18:36	18:47	18:54	1-				
14	M1.9	2									19:26	19:32	19:51	1	19:30	19:33	19:49	1				
15	C2.1	1													13:16	13:19	13:35	1				
15	?	1													14:47	14:58	15:27	2				
16	C2.1	1													12:03	12:07	12:17	1-				
16	C1.9	1													13:25	13:27	13:40	1-				
16	?	1													15:51	15:52	?	-				
16	?	2									15:47	15:59	16:13	1+	15:55	16:01	16:13	1-				
16	?	1													18:35	18:47	19:05	1+				
17	C3.5	2									16:01	16:05	16:35	2	16:05	16:08	16:27	1				
18	C2.6	2									10:33	10:40	10:53	1	10:38	10:44	11:05	1+				
19	M1.8	9	09:32	09:38	10:30	2+	09:28	09:37	10:04	2	09:27	09:37	10:19	2+	09:31	09:40	10:29	2+	09:32	09:41	10:06	2
19	C5.0	1													10:36	10:54	11:26	2+				
19	C3.1	2									13:10	13:18	13:58	2+					13:06	13:37	14:13	`
19	C4.2	2									15:44	15:51	16:08	1	15:49	16:03	16:22	2				
20	C3.4	4	12:11	12:13	12:31	1					12:07	12:13	12:33	1+	12:09	12:13	12:29	1				
20	?	1													13:15	13:24	13:40	1				
20	M8.2	9	14:15	14:21	15:48	3	14:13	14:19	14:56	2	14:14	14:19	16:06	3	14:15	14:22	14:56	2	14:16	14:21	16:12	3
20	C4.2	1													17:48	18:04	?	-				
20	C5.5	1													18:38	18:40	18:45	1-				
21	M8.7	9	12:50	12:56	14:02	2+	12:47	12:54	13:34	2+	12:48	12:55	14:15	3	12:50	12:57	13:36	2+	12:51	12:54	15:29	3+
22	C5.3	6	08:39	08:43	09:06	1+	08:36	08:41	08:45	1-	08:37	08:44	09:06	1+								

	X-ray class		Steve Parkinson (Various)	Andrew Thomas (18.3kHz)	Phil Rourke (23.4kHz)	Mark Prescott (20.9kHz)	John Elliott (19.6kHz)
			Tuned radio frequency receiver, frame aeri	Tuned radio frequency receiver, 0.6m frame aerial.	Spectrum Lab, 0.6m frame aerial.	SpectrumLab/Starbase, Active mini-whip aerial.	Tuned radio frequency receiver, 0.5m frame aerial.
DAY			START PEAK END (UT)	START PEAK END (UT)	START PEAK END (UT)	START PEAK END (UT)	START PEAK END (UT)
2	M3.3					06:57 07:15 08:45 3	
2	C2.1						
3	M6.0		08:16 08:40 10:50 3+		08:21 08:40 10:05 3	08:17 08:41 10:48 3+	08:20 08:40 10:20 3
3	C5.0				11:36 11:51 ? -	11:43 11:51 ? -	
3	C5.7				? 12:30 14:06 -	? 12:30 15:01 -	
4	C6.6		10:50 11:06 12:15 2+		10:50 11:06 12:09 2+	10:54 11:10 12:29 3	10:55 11:05 12:15 2+
4	C2.4						
5	M2.0		08:06 08:18 09:10 2+		08:07 08:16 09:03 2+	08:11 08:20 09:22 2+	08:09 08:15 09:30 2+
5	C7.2		09:27 09:45 10:30 2+		09:28 09:43 10:08 2	09:31 09:47 10:26 2+	09:35 09:40 10:30 2+
5	C3.6						
5	M1.2						
6	C3.7						
6	C1.8						
6	C2.8						
6	C3.2						
7	C3.4						
7	C3.0						
7	M2.1						
8	C3.7						
8	C2.6						
8	?						
8	?						
8	C1.4						
9	C2.0						
10	C2.2						
11	C6.8						
11	C7.4		10:31 10:38 10:58 1+			10:37 10:49 ? -	
11	?						
11	C3.7					11:28 11:33 12:22 2+	
11	M1.1		14:44 14:50 15:29 2			14:49 14:55 16:03 2+	
12	M2.5		06:55 07:11 ? -			07:04 07:14 07:55 2+	
12	C7.3		08:02 08:11 08:56 2+			08:08 08:19 08:55 2+	
12	C3.6		11:10 11:16 11:33 1				
12	C3.1						
12	C4.7		15:17 15:26 15:50 2			15:21 15:30 16:04 2	
12	C2.9						
13	C5.5		08:08 08:13 08:43 2			08:12 08:20 09:02 2+	
14	M1.4						
14	C4.6		15:24 15:34 15:57 2			15:31 15:38 16:28 2+	
14	C2.9						
14	M1.9						
15	C2.1						
15	?						
16	C2.1						
16	C1.9						
16	?						
16	?						
16	?						
17	C3.5						
18	C2.6						
19	M1.8		09:31 09:40 10:35 2+		09:32 09:41 10:46 2+	09:35 09:44 10:30 2+	09:30 09:40 10:30 2+
19	C5.0						
19	C3.1						
19	C4.2						
20	C3.4					12:14 12:19 ? -	
20	?						
20	M8.2		14:15 14:21 15:40 2+		14:15 14:21 15:58 3	14:19 14:24 15:47 3	14:15 14:20 15:30 2+
20	C4.2						
20	C5.5						
21	M8.7		12:50 12:58 14:50 3		12:51 12:56 14:57 3+	12:54 13:01 14:45 3	12:50 12:58 14:15 2+
22	C5.3					08:42 08:50 09:08 1+	
22	C7.3		11:33 11:45 12:30 2+		11:29 11:45 12:15 2+	11:39 11:50 12:23 2	11:40 11:45 12:30 2+
22	?						
22	M1.4		16:11 16:25 17:17 2+			16:17 16:27 17:08 2+	
22	M1.5						
23	C7.6		09:02 09:19 09:50 2+		09:08 09:17 09:47 2	09:09 09:24 10:01 2+	09:10 09:20 10:00 2+
23	C3.0						
23	C2.7						
23	C3.4		12:46 12:50 13:02 1-				
23	C3.2		13:13 13:18 13:28 1-				
23	C2.8		13:44 13:47 14:00 1-				
23	C8.7		15:10 15:20 15:50 2		15:16 15:22 16:06 2+	15:16 15:22 15:54 2	
24	C2.6					09:17 09:27 ?	
24	C6.9		09:37 09:45 10:00 1		09:39 09:45 ? -	09:41 09:48 ? -	
24	C9.7				? 10:14 ? -	10:14 10:17 ? -	
24	C8.6				? 10:23 10:53 -	? 10:27 11:27 -	
24	C2.8						
24	C4.3		12:05 12:12 12:30 1				
24	?						
24	M1.0		14:57 15:03 15:39 2		14:57 15:03 15:32 2	15:00 15:06 15:56 2+	14:55 15:00 15:45 2+
24	C3.0						
24	C3.4						
25	C9.9						
26	C4.3						
26	?						
26	C3.2		16:13 16:32 17:00 2+				
28	M1.2		09:06 09:10 10:00 2+		09:06 09:09 09:34 1+	09:09 09:13 09:57 2+	09:08 09:10 09:45 2
28	C2.4						
28	C3.0		14:03 14:07 14:35 1+				
29	C1.9						
29	C2.3						
29	C7.5						
30	C2.6		10:43 10:50 11:02 1				
30	C9.6		11:55 12:02 ? -		11:55 12:01 ? -	11:58 12:05 ? -	
30	C4.9		12:27 12:31 12:50 1		? 12:30 12:52 -	12:29 12:32 ? -	
30	?						
30	C3.9		14:15 14:20 ? -				
30	C5.1		14:41 14:46 15:05 1				
30	?						
30	?						
30	?						
30	C6.3		16:03 16:09 16:22 1				
30	M1.2						
30	?						