



Please send all reports and observations to jacook@jacook.plus.com

BAA Radio Astronomy Section.

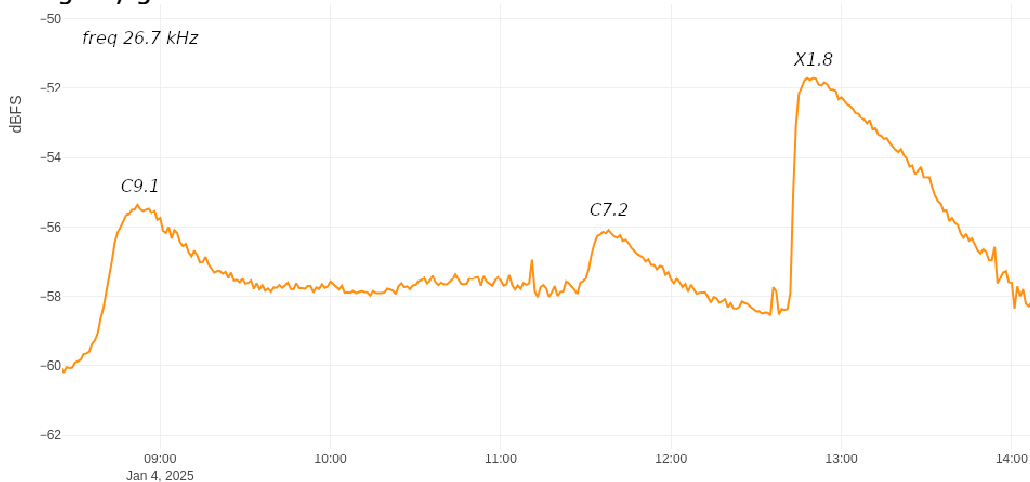
Director Paul Hearn.

RADIO SKY NEWS

2025 JANUARY.

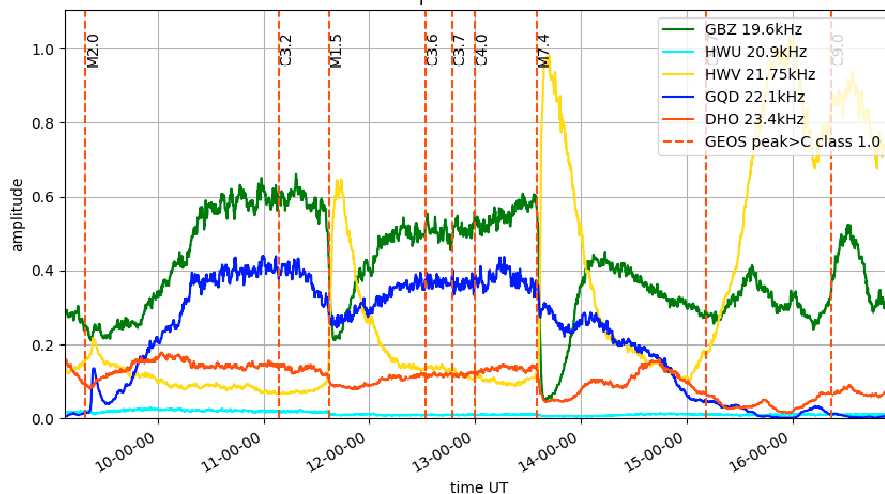
VLF SID OBSERVATIONS.

Solar activity in January was very low in comparison with previous months, just 45 classified flares being recorded. There were two X-class flares early in the month, but they were followed by a week in which we did not record any SIDs. The satellite data shows some weaker flares during the gap from the 6th to 13th, along with a couple of M-flares that we have missed. The ionosphere was very unstable during this period, hiding any genuine events.

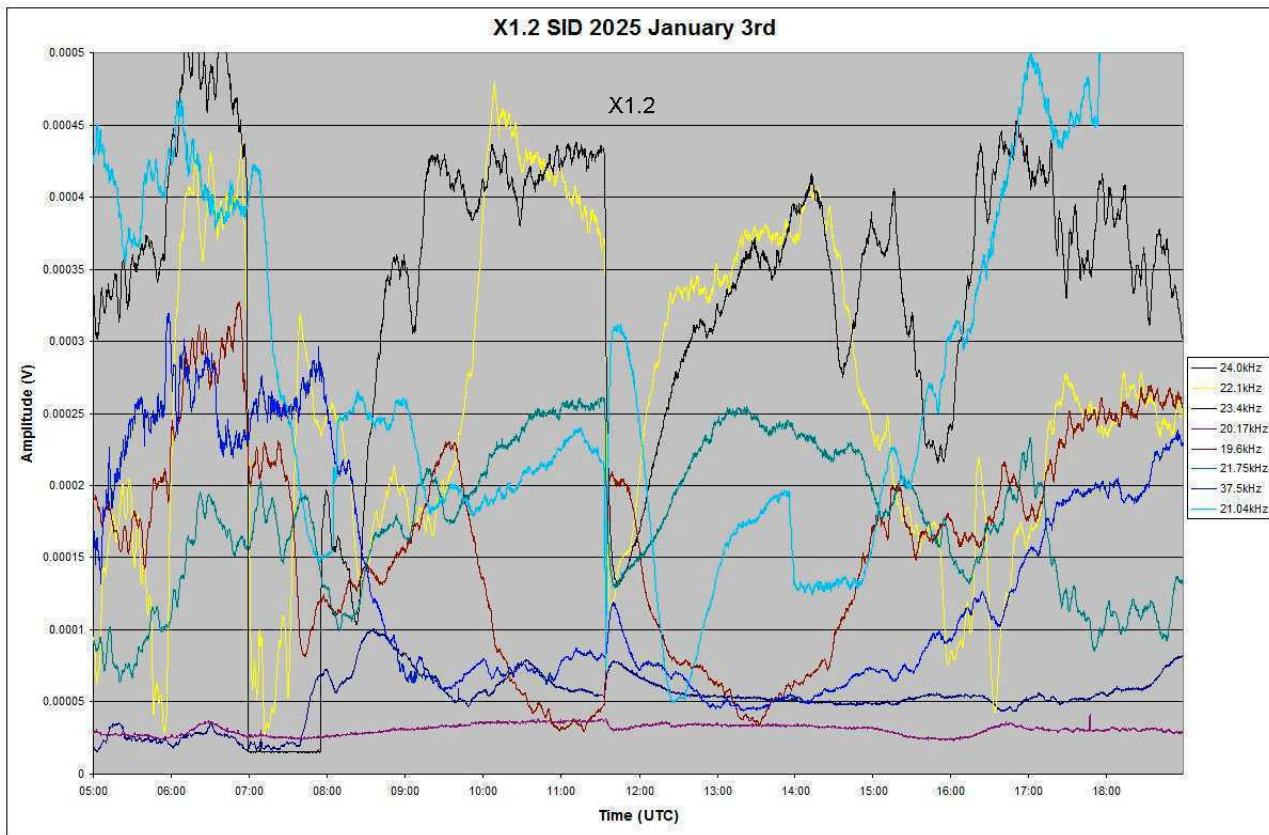


The X1.8 flare on the 4th was widely recorded, well timed at 12:50UT. The recording by Thomas Mazzi in Italy was made at 26.7kHz, a Turkish signal. The C9.1 and C7.2 flares have also produced good SIDs.

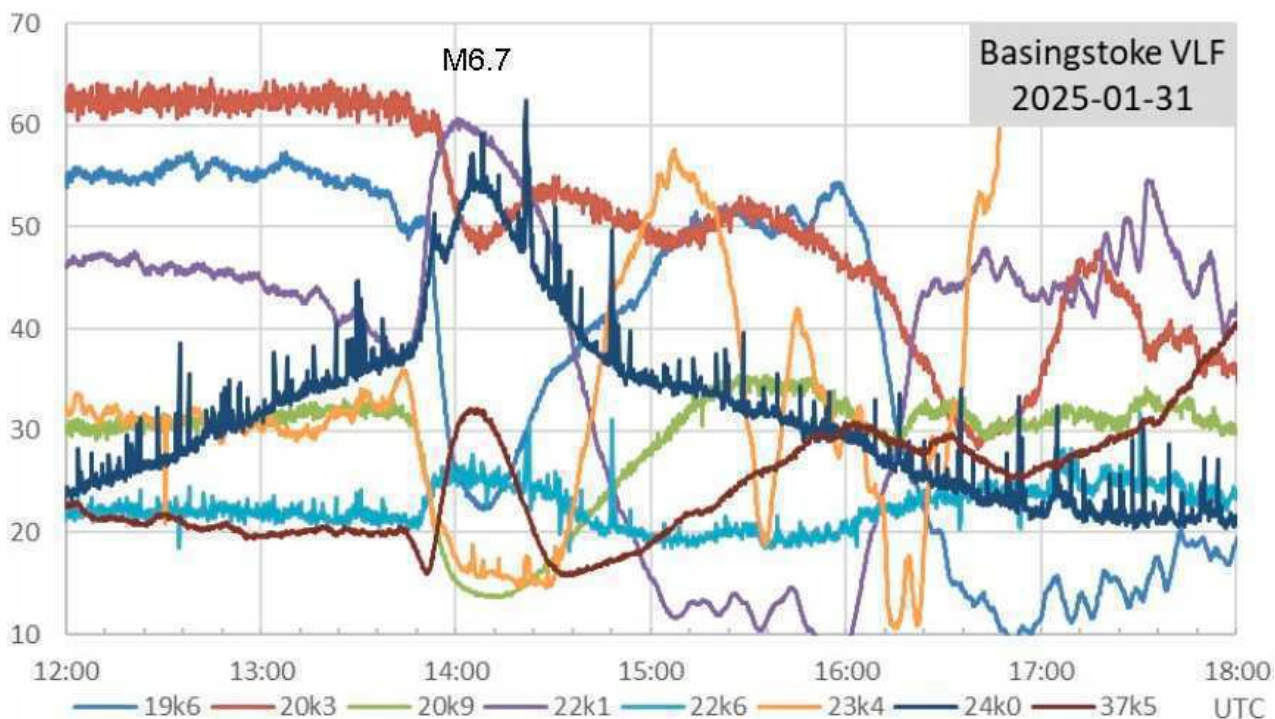
SIDs vlf profile for 2025-01-17



Mark Prescott's recording from the 17th shows a more active day, with two strong M-flares. 23.4kHz has not responded as well as the other signals to either of the M-flares. None of the signals show any trace of the weaker C-flares. The M2.0 flare at 09:20UT has produced a fairly weak SID at 22.1kHz and 21.75kHz.



The X1.2 flare on the 3rd was again well timed at 11:40UT, shown in Mark Edwards' recording. All of the signals show general instability. 21.04kHz shows a very strong 'spike and wave' SID, while the other signals show an ordinary 'shark fin'.

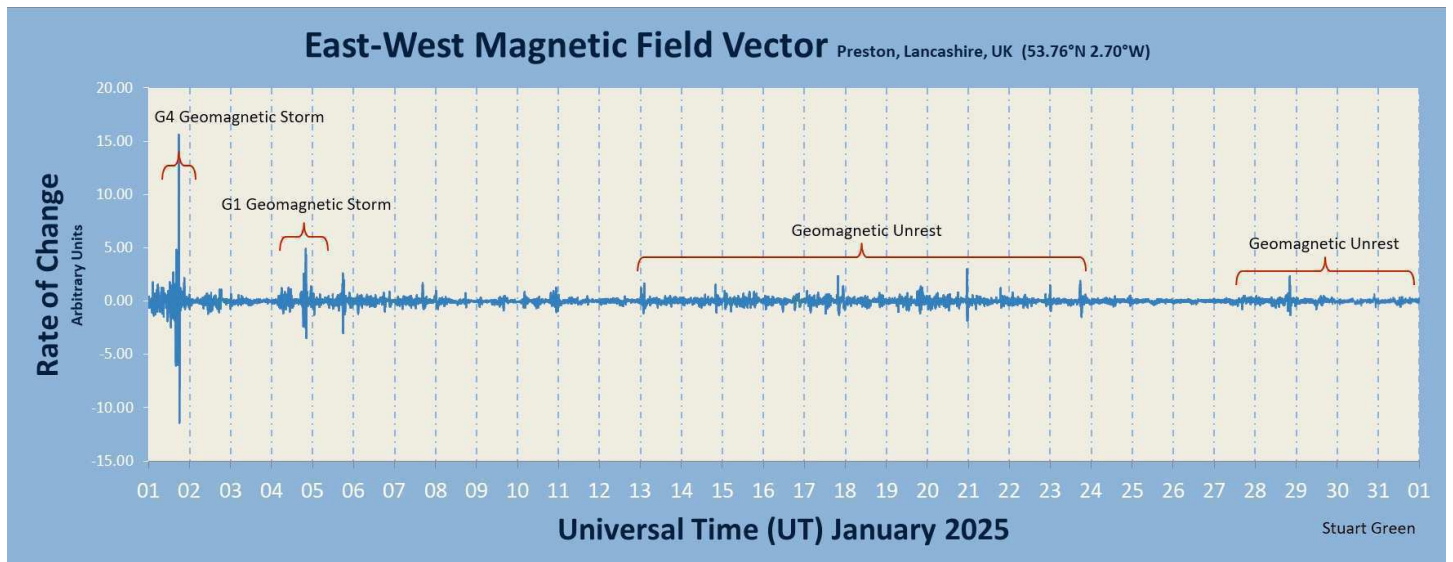


Activity increased again with a strong M6.7 flare on the 31st, shown in the recording by Paul Hyde. Most of the signals show a clear SID, but the background noise is also very strong. The series of smaller flares after 15:00UT are not easy to identify .

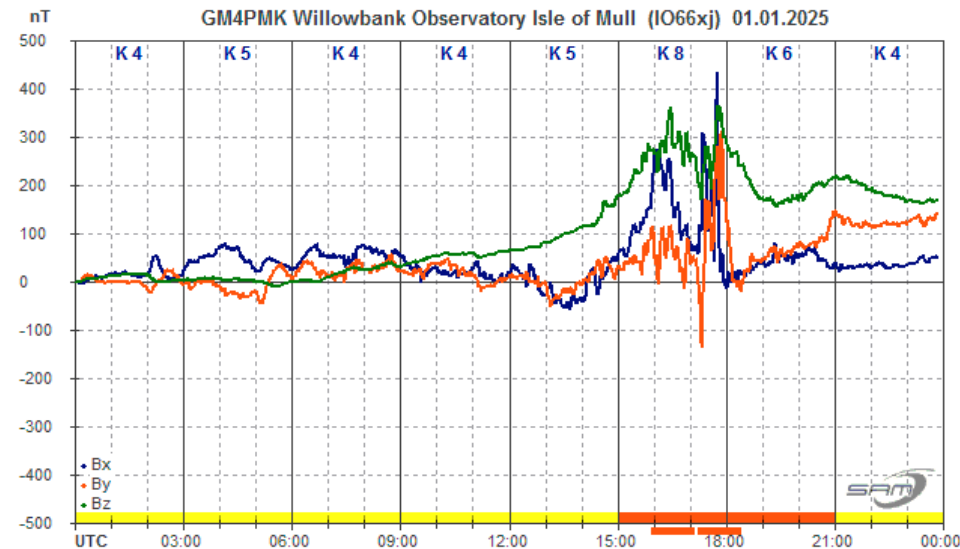
Unfortunately I made an error in the December report. In Paul’s chart from December 8th I said that 37.5kHz had shown the strongest SID, where I should have said 22.1kHz. It can be tricky to correctly identify the colours used when there are lots of signals present.

We have a small partial eclipse to look forward to on March 29th. The greatest eclipse will be seen from north eastern Canada, but the path then crosses the Atlantic to reach the UK, ending in Italy. The maximum eclipse here in the UK is about 45 to 50%, just after 11UT, depending on location. There are charts and timings in the February Journal. We should see some effects on many of our signals, so worth checking. I also hope for some clear weather for a visual observation.

MAGNETIC OBSERVATIONS.

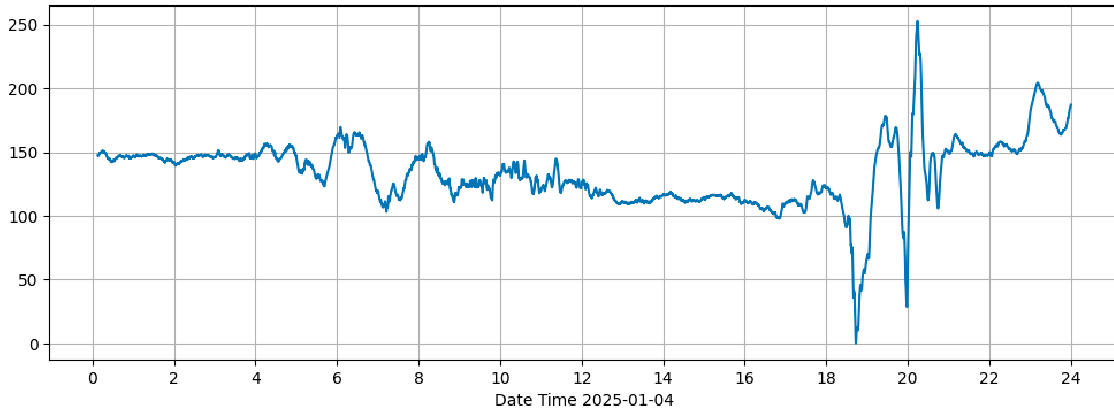


Stuart Green has re-scaled his chart of the month’s magnetic activity to show the strong G4 storm on January 1st. The rest of the month looks very quiet, but the Bartels chart does show gentle disturbance through most of the month. Roger Blackwell has also re-scaled his chart from the 1st:

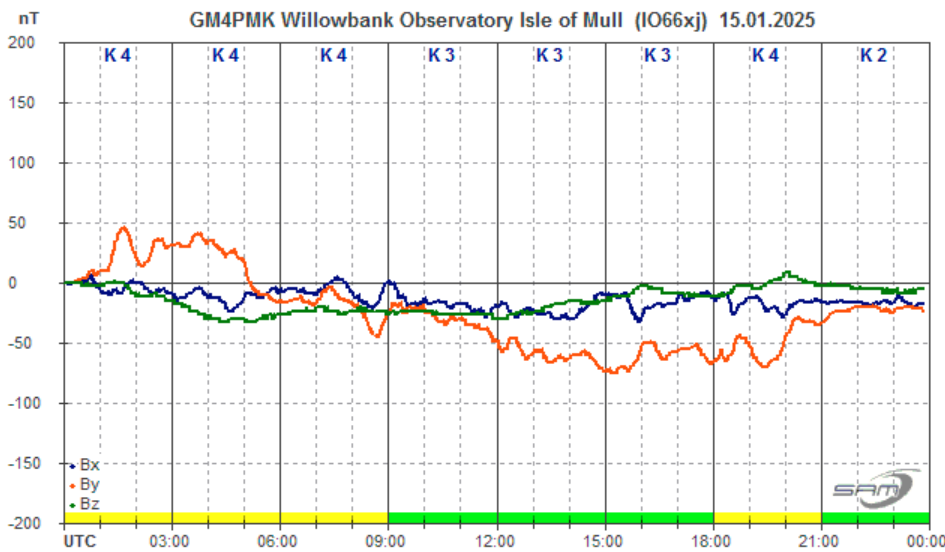
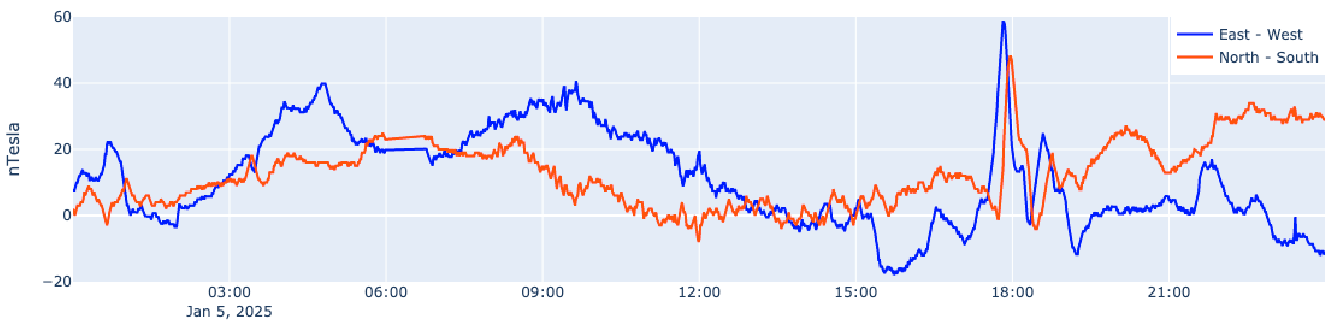


This disturbance appears to be from a number of CMEs from the flaring at the end of December. It continued into the 2nd, although much weaker, followed on the 4th with the addition of a stronger solar wind. Callum Potter's chart shows stronger disturbance in the evening of the 4th, Nick Quinn's chart showing more activity in the evening of the 5th.

Wasbister Magnetometer (59.17N,3.06W)



Steying Magnetometer (50.8 North, 0.3 West)

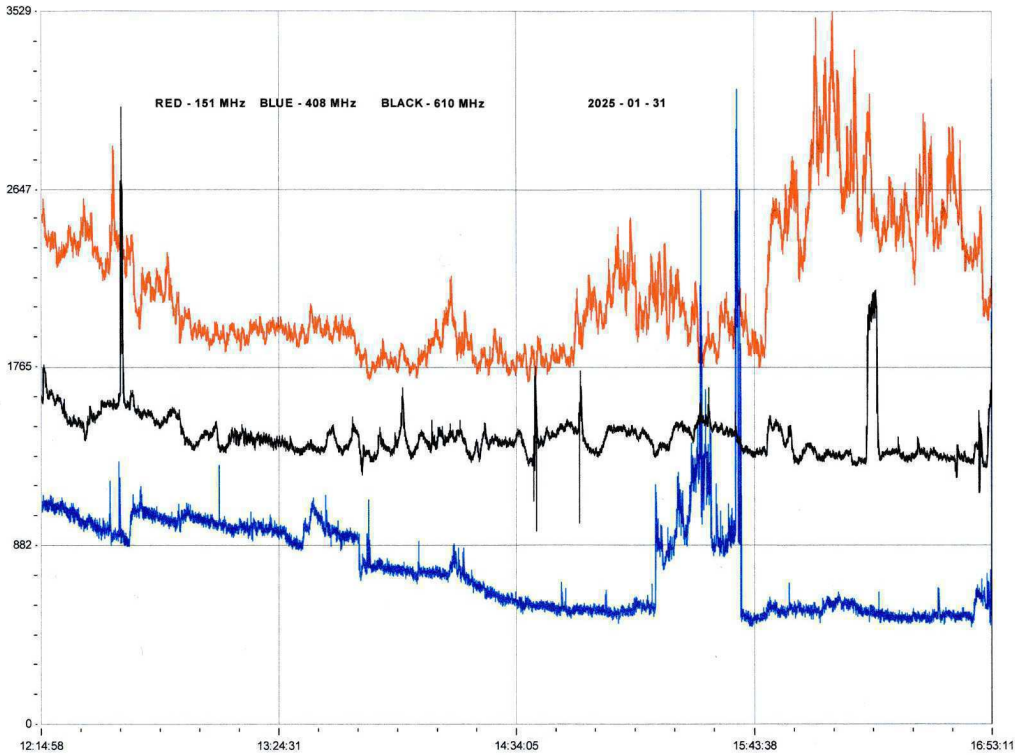


The remainder of the month's activity was much weaker, Roger Blackwell's recording from the 15th being typical. This appears to be mostly from some mild solar wind.

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

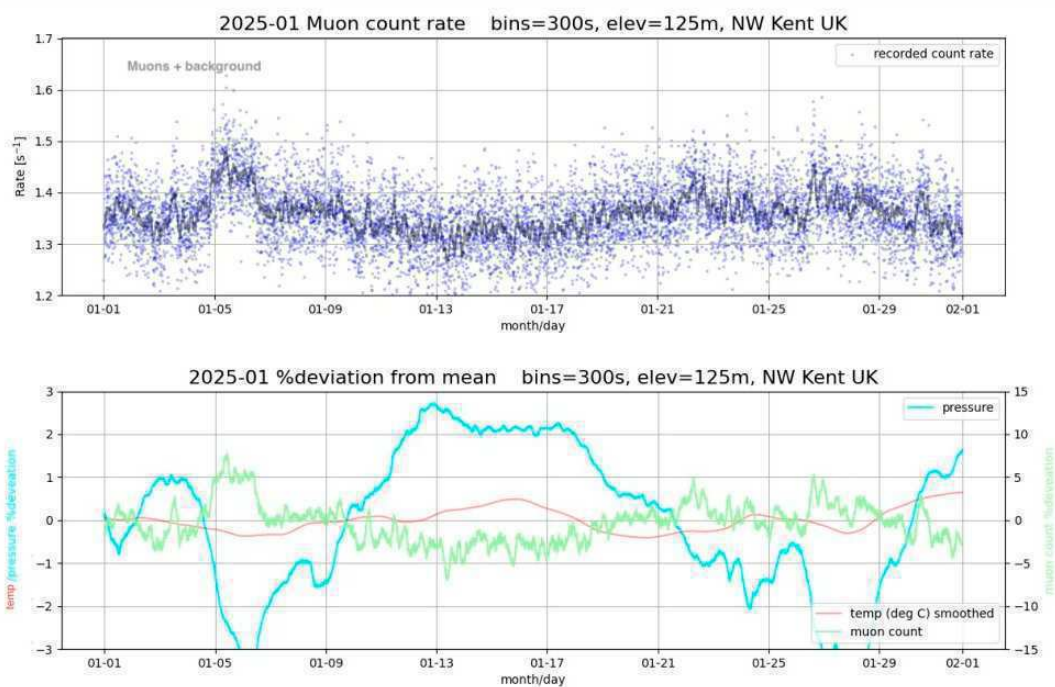
SOLAR EMISSIONS

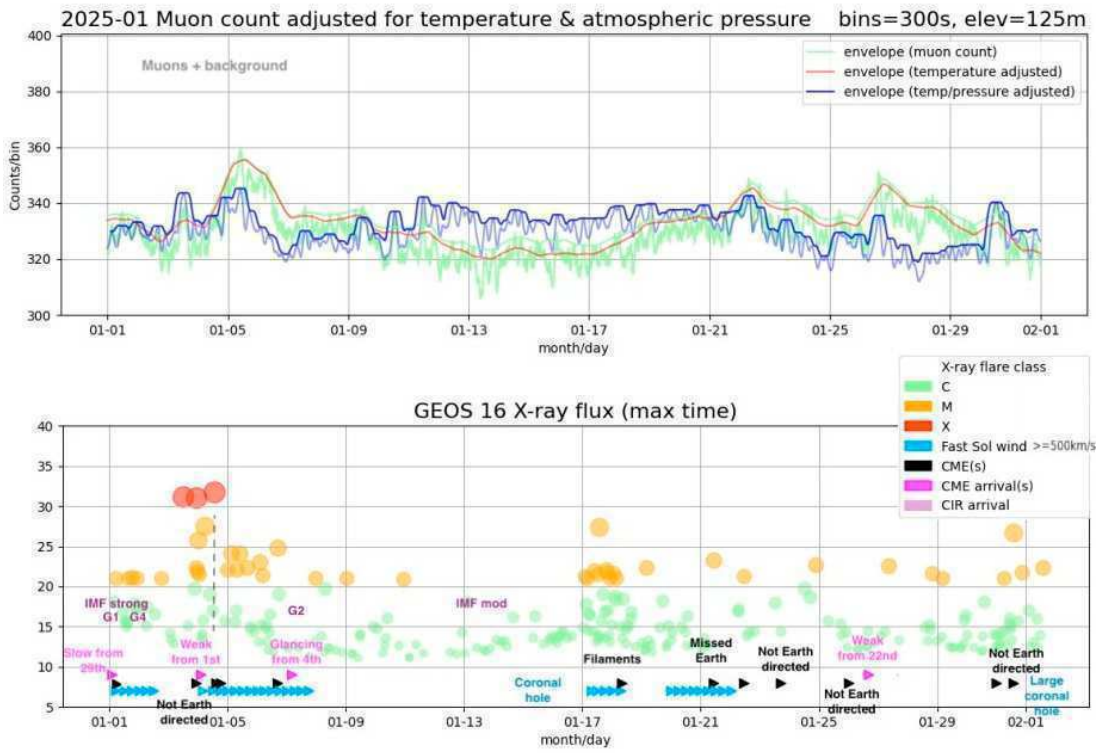
Colin Clements reports a very quiet month for radio emissions, nothing being recorded from either of the early X-flares. He did record some activity on the 31st, with what appears to be a delayed noise burst from the M6.7 flare.



408MHz (blue) starts at about 15:14, continuing for about 30 minutes. 151MHz (red) emissions start shortly afterwards, continuing to the end of the recording.

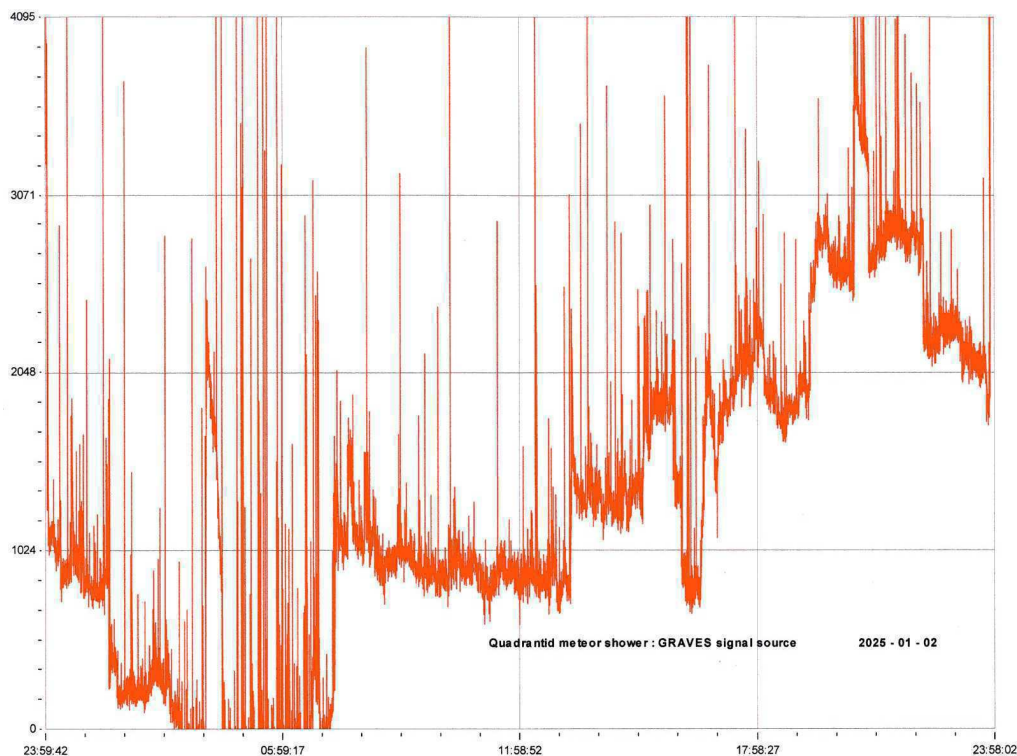
MUONS





Mark Prescott's muon recordings show some strong variation through January. The chart on the previous page also shows that we had some very strong atmospheric pressure changes. The temperature / pressure corrected chart above still shows a muon increase following the strong flares early in the month. Through the middle of the month it is rather more stable, but does show a large drop after the 23rd, with another peak right at the end of the month.

QUADRANTIDS.



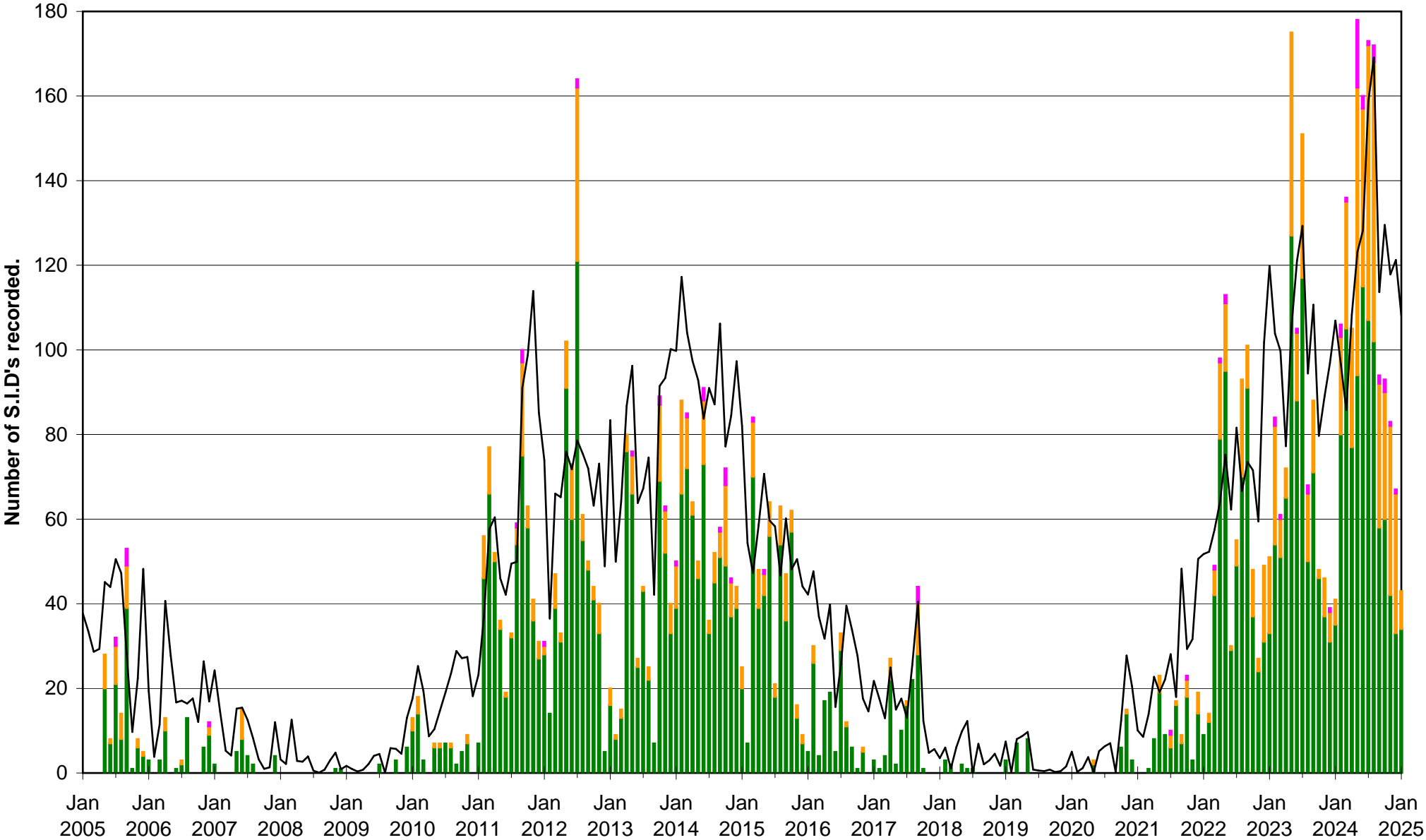
Colin Clements recorded the Quadrantid meteor shower using the GRAVES signal. His chart covers the full 24 hours on 2nd January, and shows rising activity through the day. The most active period is in the evening, fading a little in the last hour.

I have already mentioned the partial solar eclipse on the 29th. It will be interesting to compare recordings from different parts of the country as we have done for previous eclipses.

The Historical section newsletter was published earlier this week, and includes a very interesting article by Wayne Orchiston about Dr Elizabeth Alexander and her part in the development of Radio Astronomy after world war II. We all know of the work done by Sir Bernard Lovell, but much more was being done at the time and has since been overlooked. Well worth looking for Historical Section Newsletter 31 on the website.

VLF flare activity 2005/25

C M X — Relative sunspot number



BARTELS DIAGRAM

ROTATION	KEY:	DISTURBED.	ACTIVE	SFE	B, C, M, X = FLARE MAGNITUDE.	Synodic rotation start (carrington's).
2575	F	21 22 23 24 25 26 27 28 29 30 31	2258	2022 June	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 24 25 26 27 28 29 30	2259	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 22 23 24 25 26 27 28 29 30 31	2260	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	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	2022 October	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	
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	2022 October	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 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	2264	2022 November	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 25	
2582	F	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 22	2265	2022 December	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 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	2266	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 29 30 31 1 2 3 4 5 6 7 8 9 10 11 12 13 14	2267	2023 February	29 30 31 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 29 30 31 1 2 3 4 5 6 7 8 9 10 11 12 13	2268	2023 March	1 2 3 4 5 6 7 8 9 10 11 12 13	
2586	F	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 8 9	2269	2023 April	1 2 3 4 5 6 7 8 9	
2587	F	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 5 6	2270	2023 May	21 22 23 24 25 26 27 28 29 30 31 1 2 3 4 5 6	
2588	F	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 1 2	2271	2023 June	18 19 20 21 22 23 24 25 26 27 28 29 30 31 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	2023 June	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	
2590	F	30 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	2273	2023 July	11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26	
2591	F	27 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	2274	2023 August	27 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	
2592	F	23 24 25 26 27 28 29 30 31 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	2275	2023 September	23 24 25 26 27 28 29 30 31 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 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	2276	2023 October	19 20 21 22 23 24 25 26 27 28 29 30 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	
2594	F	16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 1 2 3 4 5 6 7 8 9 10 11 12	2277	2023 November	16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 1 2 3 4 5 6 7 8 9 10 11 12	
2595	F	13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 1 2 3 4 5 6 7 8 9	2278	2023 December	13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 1 2 3 4 5 6 7 8 9	
2596	F	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 5	2279	2024 January	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 5	
2597	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 1	2280	2024 January	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 1	
2598	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	2281	2024 February	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	
2599	F	29 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	2282	2024 March	29 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	
2600	F	27 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	2283	2024 April	27 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	
2601	F	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 19	2284	2024 May	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 19	
2602	F	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 15	2285	2024 June	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 15	
2603	F	16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 1 2 3 4 5 6 7 8 9 10 11 12	2286	2024 July	16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 1 2 3 4 5 6 7 8 9 10 11 12	
2604	F	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 8	2287	2024 August	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 8	
2605	F	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	2288	2024 September	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	
2606	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	2289	2024 October	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	
2607	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	2290	2024 October	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	
2608	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	2291	2024 November	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	
2609	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	2292	2024 December	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	
2610	F	22 23 24 25 26 27 28 29 30 31 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17	2293	2025 January	22 23 24 25 26 27 28 29 30 31 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17	
2611	F	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 12 13	2294	2025 February	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 12 13	

DAY	X-ray class	Observers	John Cook (23.4kHz/22.1kHz)				Roberto Battaiola 23.4kHz				Paul Hyde (22.1kHz/24kHz)				Mark Edwards (24/21.04/21.75kHz)				Colin Clements (23.4kHz/21.75kHz)			
			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)	
1	C5.8	2	11:51	11:55	12:00	1-	12:06	12:22	12:45	2												
2	*	1																				
2	C6.6	1													09:55	10:04	?	-				
3	X1.2	8	11:33	11:41	13:17	3	11:27	11:36	12:16	2+	11:32	11:41	14:05	3+	11:33	11:41	12:39	2+	11:35	11:45	12:22	2+
4	C9.1	1													08:39	08:53	09:12	2				
4	C7.1	3					11:20	11:34	12:00	2					11:31	11:35	11:40	1-	11:23	11:47	12:42	2+
4	X1.8	9	12:42	12:51	14:52	3+	12:38	12:53	13:30	2+	12:42	12:46	14:41	3	12:42	12:50	13:45	2+	12:42	12:51	14:21	3
5	M4.1	2	09:32	09:36	09:45	1-									09:17	09:37	10:52	3				
5	M2.4	1									15:31	15:39	15:51	1								
14	C2.6	1	10:20	10:22	10:27	1-									15:23	15:27	15:40	1-				
14	C6.2	1													09:14	09:20	09:25	1-	09:16	09:20	09:32	1-
17	M2.0	4	09:17	09:20	09:32	1-					09:17	09:18	09:29	1-	11:33	11:37	11:45	1-	11:34	11:39	11:54	1
17	M1.5	8	11:32	11:38	11:54	1					11:32	11:36	12:25	2+	11:56	11:59	12:07	1-				
17	?	1																				
17	C4.0	1	12:59	13:01	13:06	1-																
17	M7.4	8	13:31	13:38	14:13	2					13:31	13:37	14:19	2+	13:32	13:34	13:55	1	13:35	13:37	13:50	1-
17	C9.0	1													16:20	16:22	16:29	1-				
18	C4.7	2	11:09	11:11	11:17	1-									11:08	11:11	?	-				
18	?	1													11:18	11:21	11:26	1-				
18	C5.1	2	11:46	11:48	11:52	1-									11:45	11:48	11:57	1-				
18	C5.0	1													13:09	13:13	13:26	1-				
18	C6.1	1													14:38	14:39	14:47	1-				
18	C6.9	2	15:47	15:52	15:57	1-									15:50	15:53	15:58	1-				
19	C4.9	3	14:13	14:16	14:30	1-					14:14	14:16	14:40	1+	14:14	14:17	14:21	1-				
19	C8.2	1													17:07	17:08	17:24	1-				
20	C4.3	4	11:18	11:19	11:30	1-					11:17	11:20	11:31	1-	11:17	11:20	11:27	1-				
20	C6.3	5	13:13	13:17	13:21	1-					13:13	13:16	13:24	1-	13:14	13:17	13:23	1-				
21	M3.3	7	10:17	10:38	11:11	2+					10:19	10:33	11:09	2+	10:03	10:34	10:59	2+				
21	?	2													12:19	12:25	12:51	1+				
22	M1.3	2													10:51	11:09	11:23	1+				
22	C3.9	1													13:24	13:31	13:43	1				
23	C3.7	1													13:39	13:42	13:52	1-				
23	C3.7	2	14:34	14:37	?	-									14:36	14:39	14:47	1-				
23	?	1													16:32	16:38	16:57	1				
24	C5.8	1	11:29	11:31	11:39	1-																
24	C9.8	2													11:44	12:27	13:14	3				
24	?	1													13:52	14:04	14:23	1+				
24	C8.8	1													16:19	16:25	16:28	1-				
26	C2.5	1													14:55	15:00	15:12	1-				
26	C4.5	1													15:46	15:52	16:00	1-				
27	M2.6	2	08:07	08:10	08:16	1-									08:06	08:12	08:29	1				
28	C4.9	1													13:07	13:17	13:24	1-				
28	C3.3	1													16:00	16:02	16:05	1-				
30	C3.8	2	12:12	12:14	12:19	1-									12:12	12:15	12:30	1-				
30	C8.1	2	14:11	14:16	14:25	1-									13:54	14:14	14:47	2+				
31	C4.8	2	11:04	11:08	11:17	1-									11:02	11:08	11:20	1-				
31	C5.2	2	11:27	11:31	11:39	1-									11:26	11:32	11:46	1				
31	C3.4	1													12:03	12:09	12:18	1-				
31	M6.7	6	13:44	14:04	15:07	2+					13:45	14:00	15:07	2+	13:46	14:09	14:54	2+	13:53	14:09	14:34	2
31	*	1													15:13	15:19	15:24	1-				
31	?	1													15:54	15:58	16:05	1-				
31	C5.4	1													17:03	17:05	17:12	1-				
31	C5.8	1													17:46	17:49	18:04	1-				

