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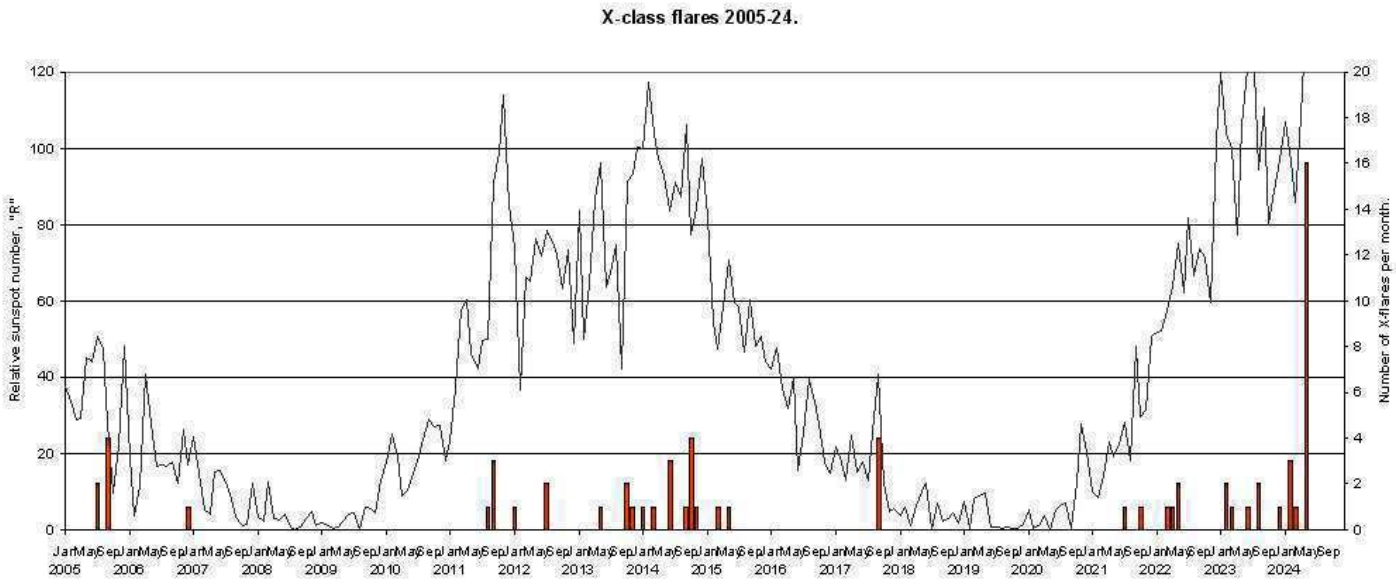
BAA Radio Astronomy Section. Director Paul Hearn.

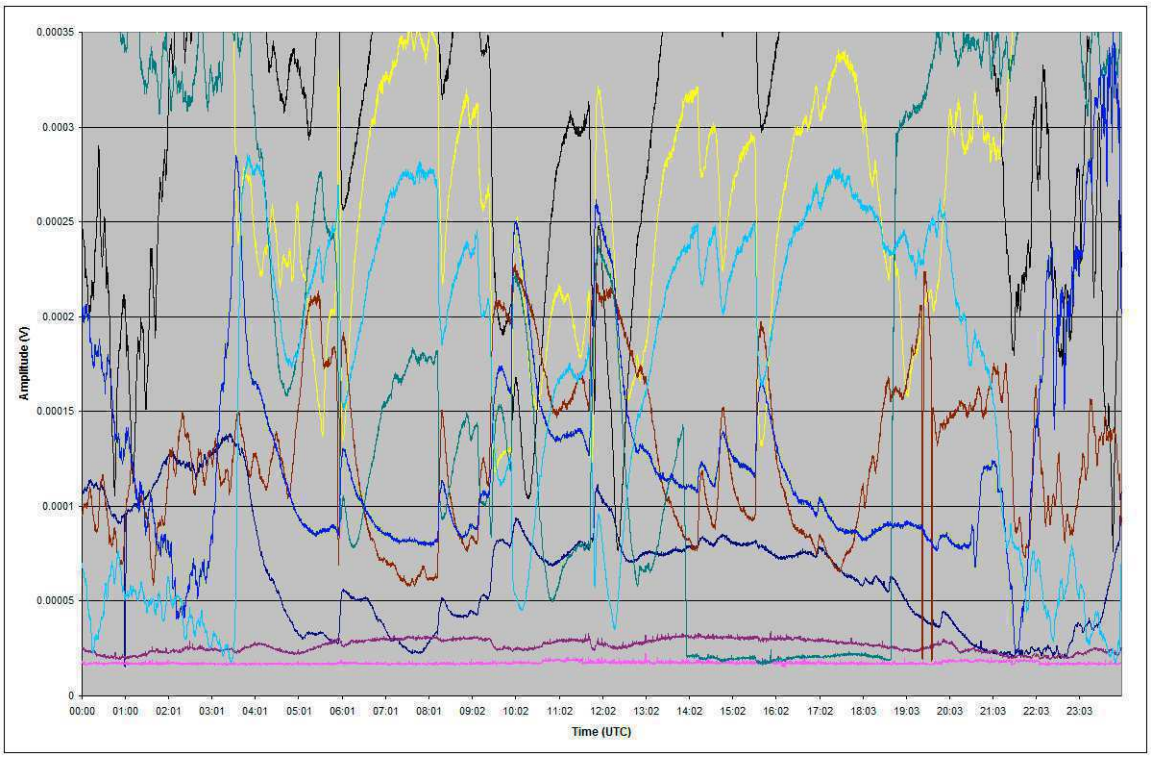
RADIO SKY NEWS 2024 MAY.

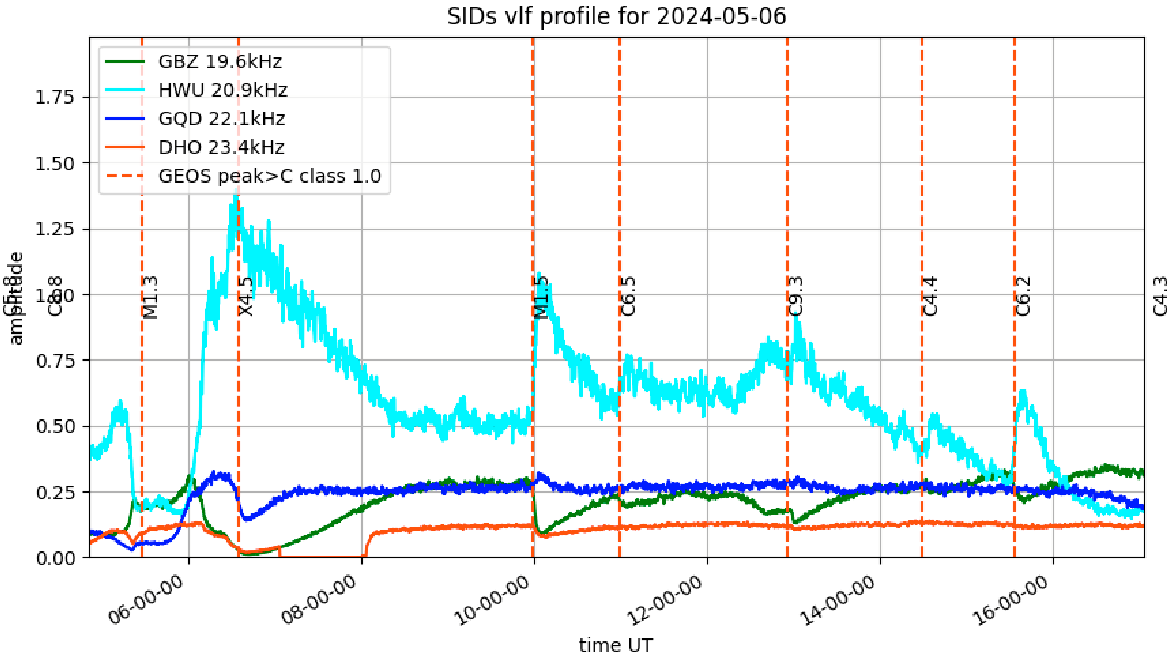
VLF SID OBSERVATIONS.



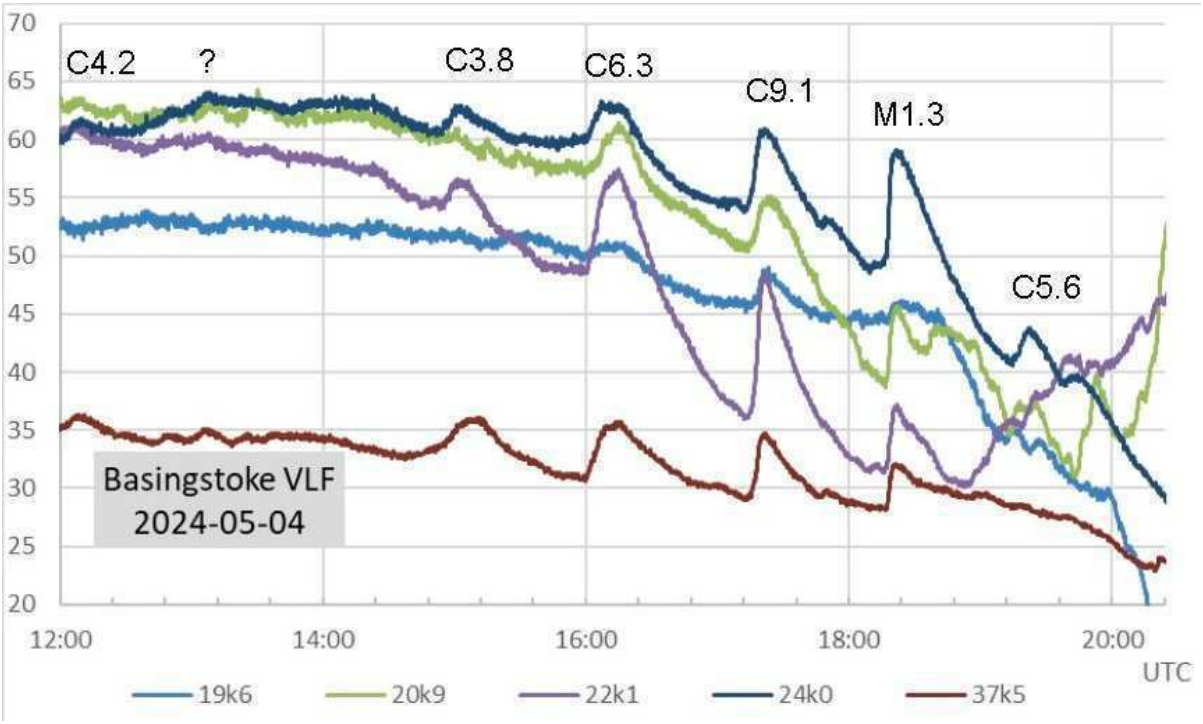
This chart shows the number of X-class flares that we have recorded since 2005 May, with the solar section's relative sunspot number added to highlight the solar cycles. The 16 X-flares recorded in 2024 May dominates the chart. The activity chart on page 12 also shows a new peak in the total number of flares recorded. The most energetic flare that we have recorded so far was the giant X17 in 2005 September. The designation is correct, as it exceeded X9.9, the top of the official classification system. We also had an X9.3 flare in 2017 September. Cycle 25 seems to be far stronger than the original predictions made about five years ago. Since then new methods of predicting activity have emerged that have suggested a stronger cycle. We are roughly at the mid-point in the cycle, with a peak predicted later this year or early 2025.

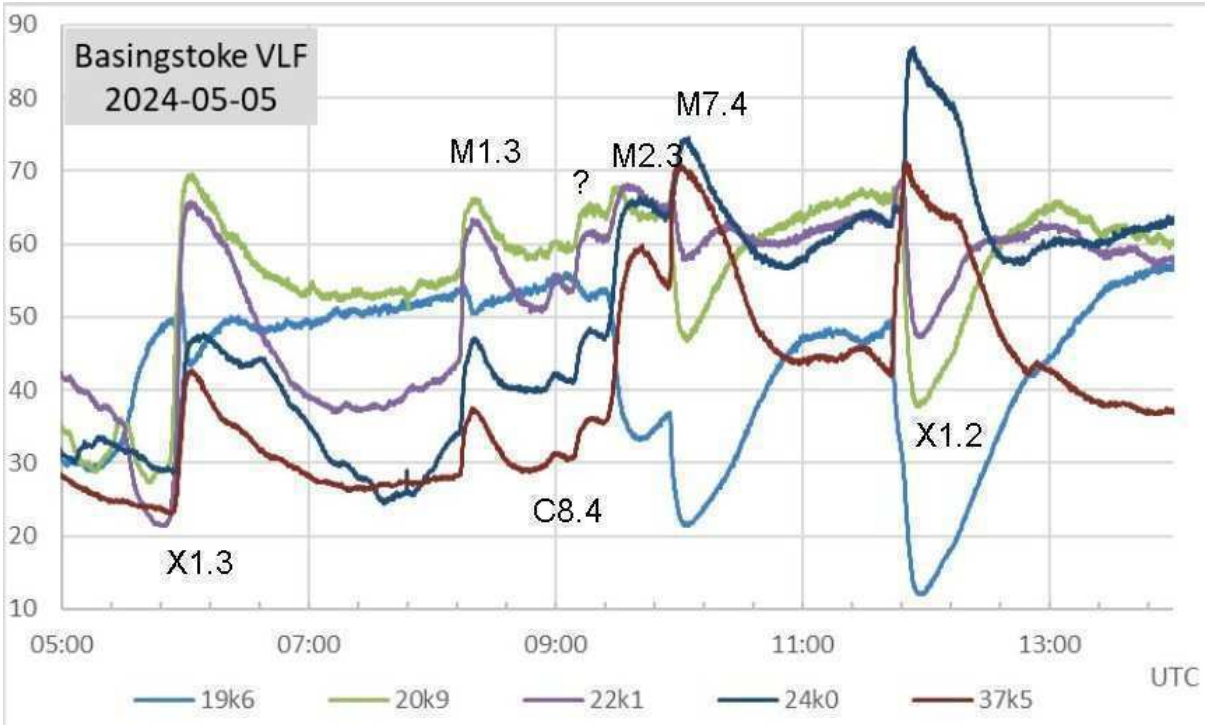
It has been very difficult to identify individual flares in our recordings as they have occurred so fast that even some of the stronger M-class flares have been hidden by adjacent events. To add further to the confusion, the high level of magnetic activity has produced some SIDs even on the European signals. A great auroral display to go with that of course! Mark Edwards has provided a recording from the 6th that shows just how complex the analysis has been. Having several signals to compare usually helps, but here it just makes it harder:





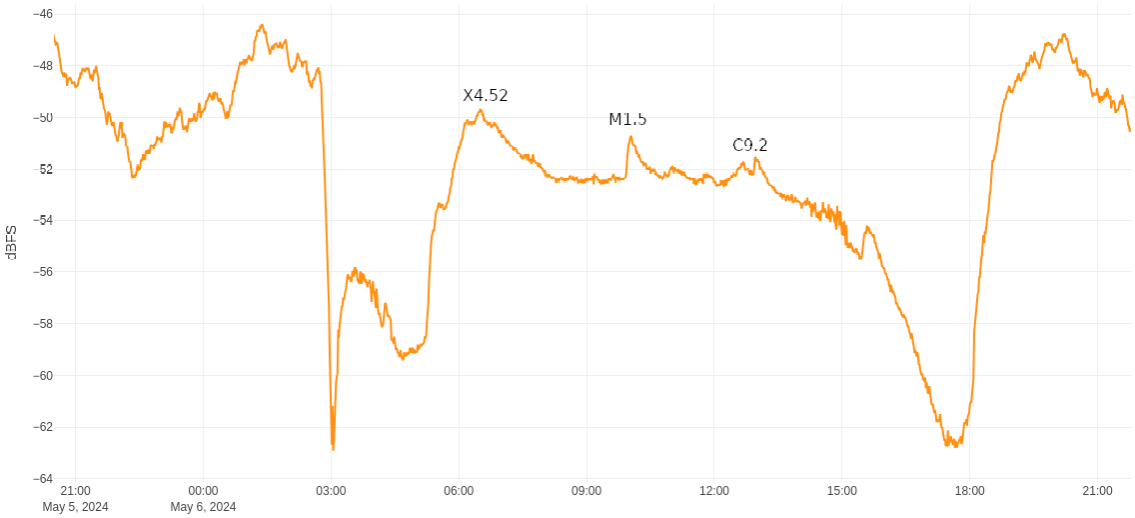
Mark Prescott's recording is rather easier to follow, clearly showing the X4.5 flare at about 06:40UT. The French 20.9kHz signal also shows the rest of the SIDs merging into each other, the end timings more difficult to determine. The C4.4 and C6.2 flares are particularly interesting, as the satellite data lists them as both being from the same active region (AR13663), with nearly simultaneous peaks. The C4.4 starts much earlier, with a rise time of over an hour, while the C6.2 has a more normal rise time of about 12 minutes. The C4.4 peak is listed at 15:28, the C6.2 at 15:34.



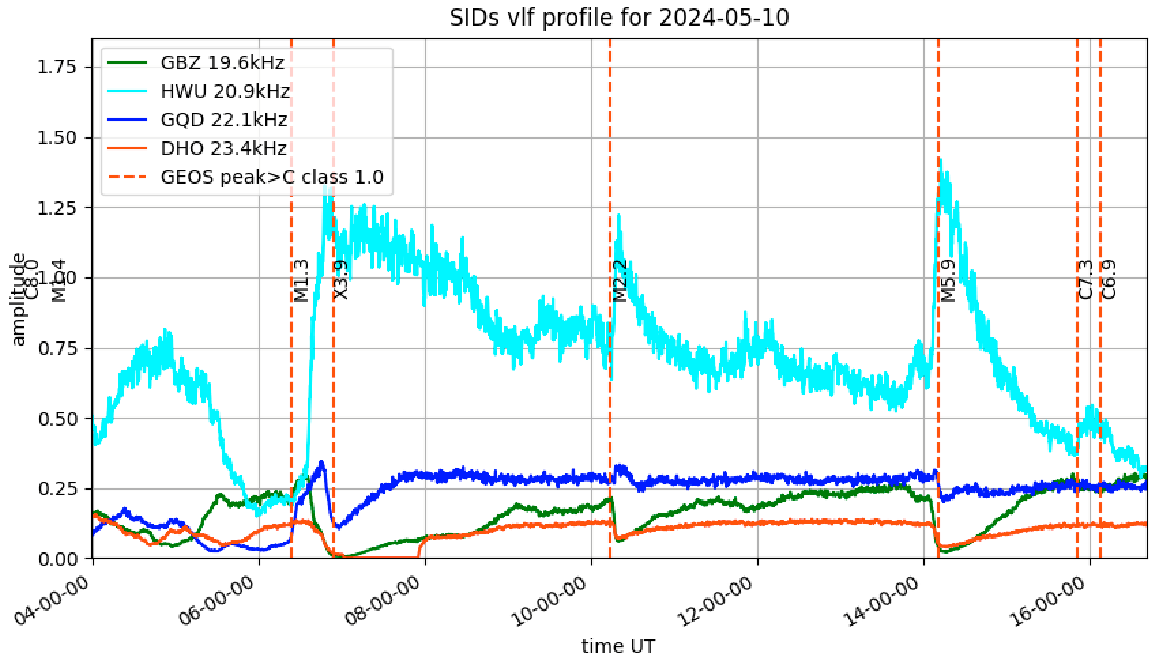


These two recordings by Paul Hyde show activity on the 4th and 5th. The afternoon SIDs on the 4th are again merging into each other, running into the sunset. The longer day length in May has helped us to catch this activity, and does of course influence the number of events recorded compared with the shorter winter days. The morning of the 5th starts with a clean SID on all frequencies from an X1.3 flare, 19.6kHz showing an inverted SID. After the M1.3 flare there is a rapid succession of smaller peaks, including from the M2.3 flare, merging together. The M7.4 and X1.2 flares have produced more complex SIDs, some signals showing a spike and wave response. The afternoon continued with plenty more M and larger C-class flares.

Strong flaring continued over the next few days, Thomas Mazzi recording activity on the 6th at 26.7kHz. This signal is from Turkey, providing Thomas in Italy with a good path:

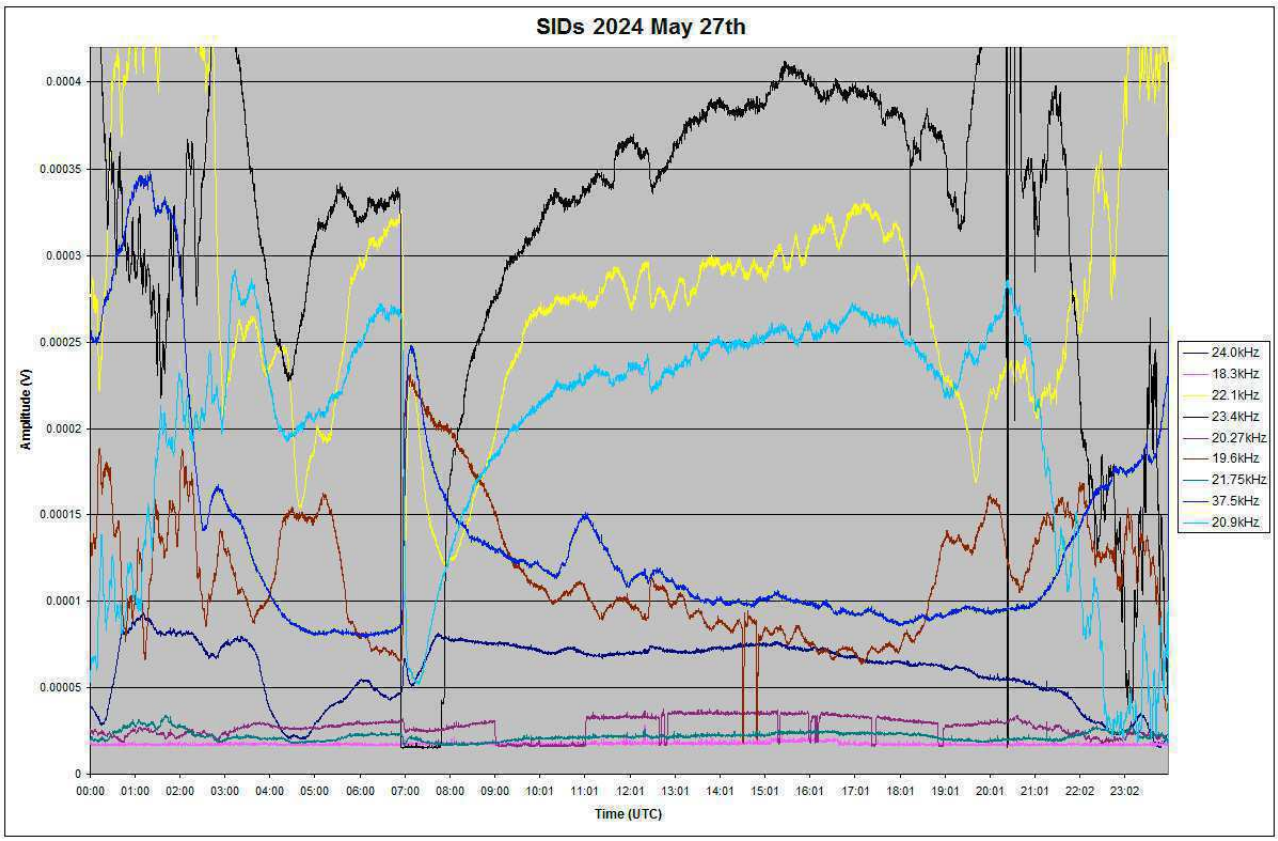


All of this strong activity produced plenty of CMEs, culminating in a magnificent auroral display seen throughout Europe on the night of the 10th/11th May. Flaring on the 10th remained strong, shown here by Mark Prescott:

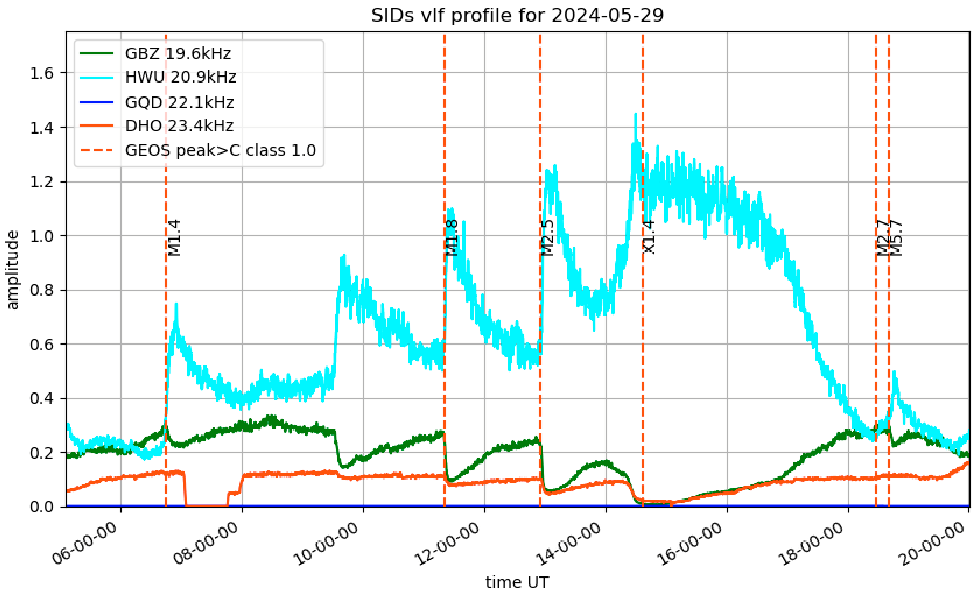


20.9kHz has again produced clean SIDs for the major flares, the X3.9 early in the morning showing a very long fade through the day. There is also evidence of the unlisted flare at 12UT on 20.9kHz and 19.6kHz.

The frequency of very strong flares did reduce a little in the second half of May, although there were still some strong X-flares recorded. Mark Edwards' recording from the 27th shows some interesting activity:

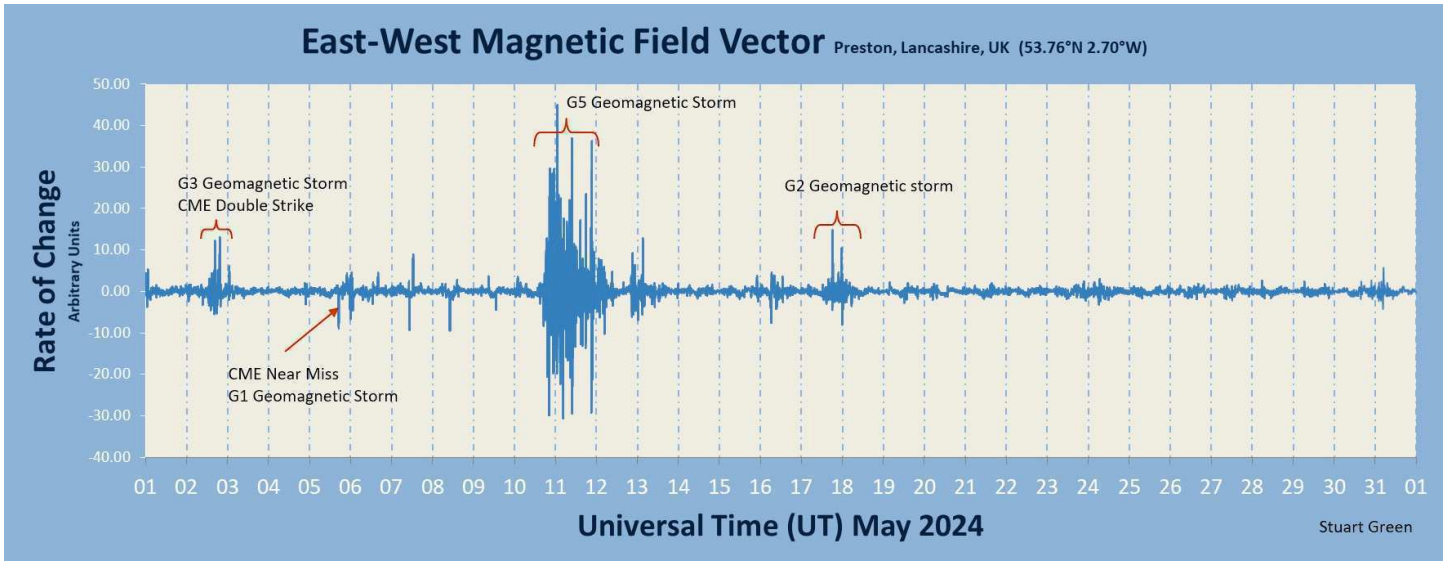


The early morning break in the 23.4kHz signal looks like a giant SID, particularly as it exactly matches the X2.8 flare starting just before 07UT. 22.1kHz shows a good spike and wave SID, most of the other signals showing a simple shark's fin SID. The recovery time varies between the various signals, several of which then show some strong oscillations. 22.1kHz and 19.6kHz show the clearest effect, while it is much weaker at 24kHz and 37.5kHz.

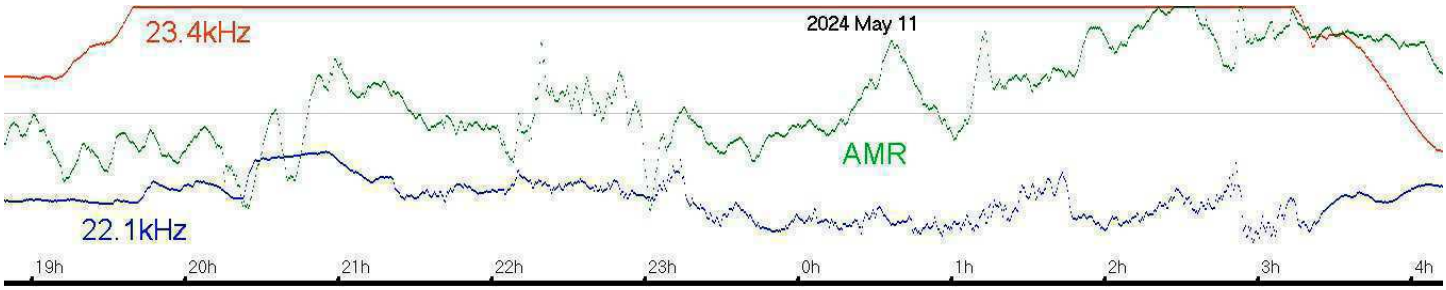


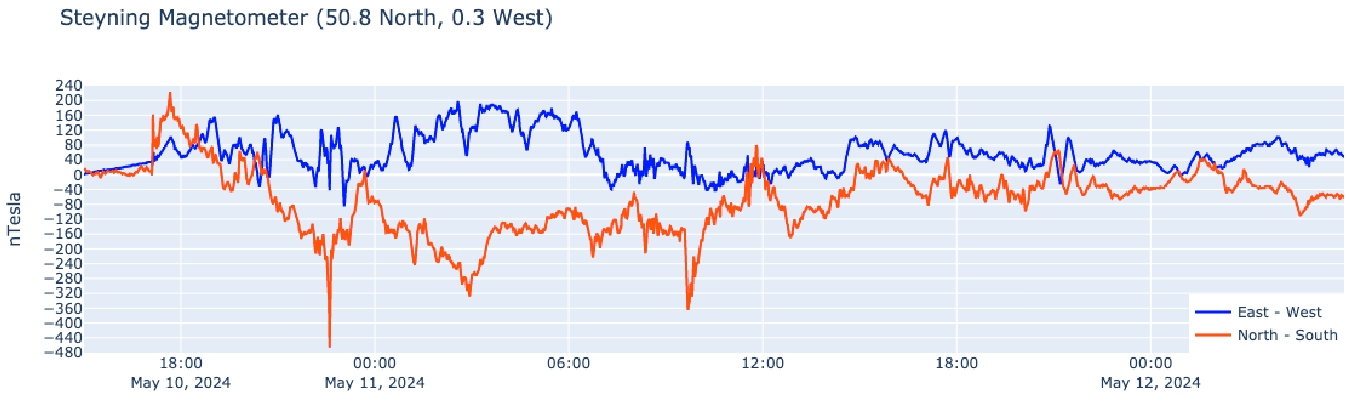
Mark Prescott's recording from the 29th shows the last of the X-flares, along with some of the M-flares. The unmarked SID around 09:30 is from the C8.2 flare. This selection of charts hardly does justice to the array of flares recorded, but I hope that it shows some of the variety and analysis problems.

MAGNETIC OBSERVATIONS.

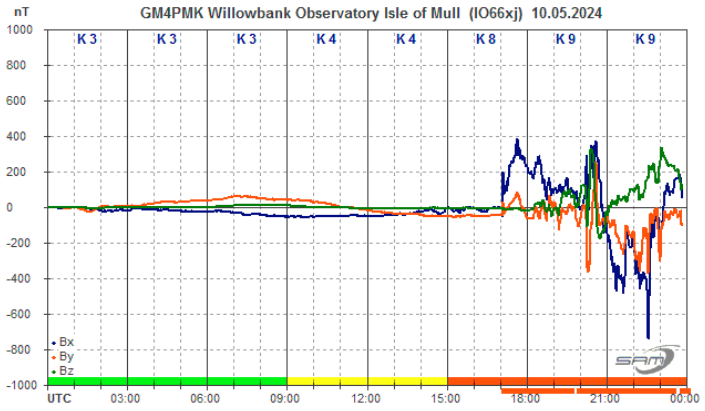


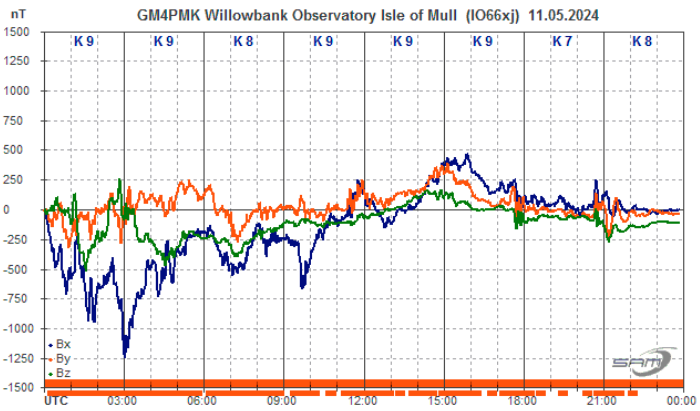
Stuart Green's chart of magnetic activity looks fairly quiet for most of the month, the magnetic storm of the 10th - 12th standing out as the only significant activity. The vertical axis has however been re-scaled compared to previous months, with a scale of +/- 50 compared to +/- 30. These are arbitrary units, as the chart shows rate of change rather than magnetic strength. The increased range does however show that the big storm had some of the most rapid fluctuations in magnetic field strength that we have seen. My own recording shows just how intense the turbulence was from 19UT on the 10th to 04UT on the 11th. The green trace is the magnetometer, red and blue are the VLF signals. The magnetic turbulence can be seen reflected in the 22.1kHz signal after midnight, while 23.4kHz has saturated the receiver.



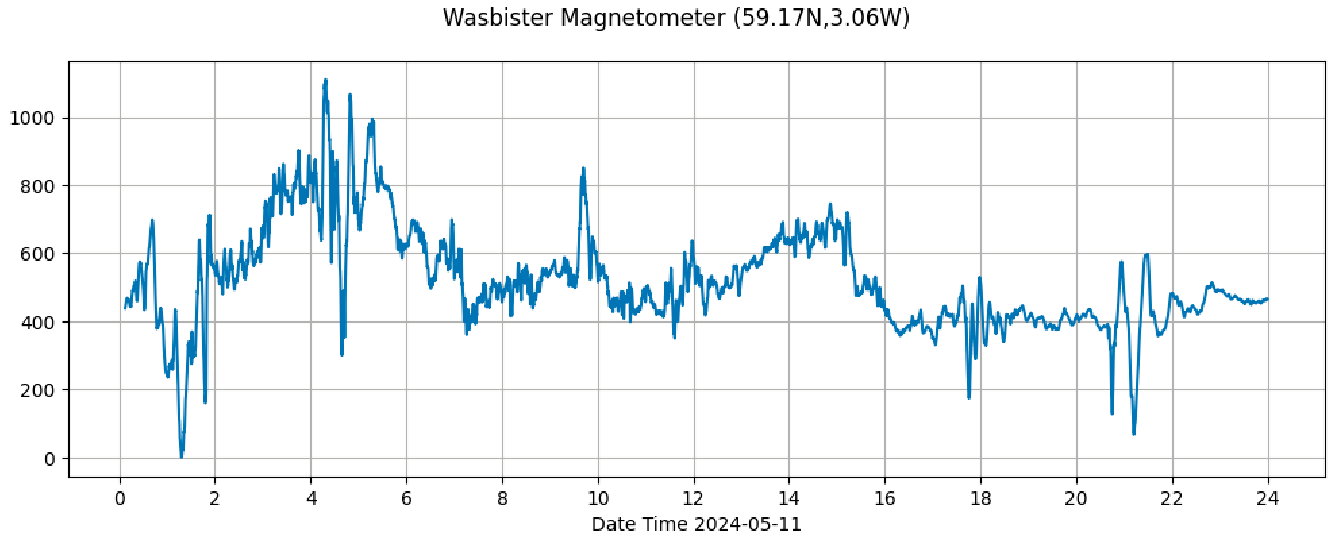


Nick Quinn's recording covers more of the activity, including the sudden start at 17:00UT. The amplitude range is +240/-480nT, recorded from near the south coast.

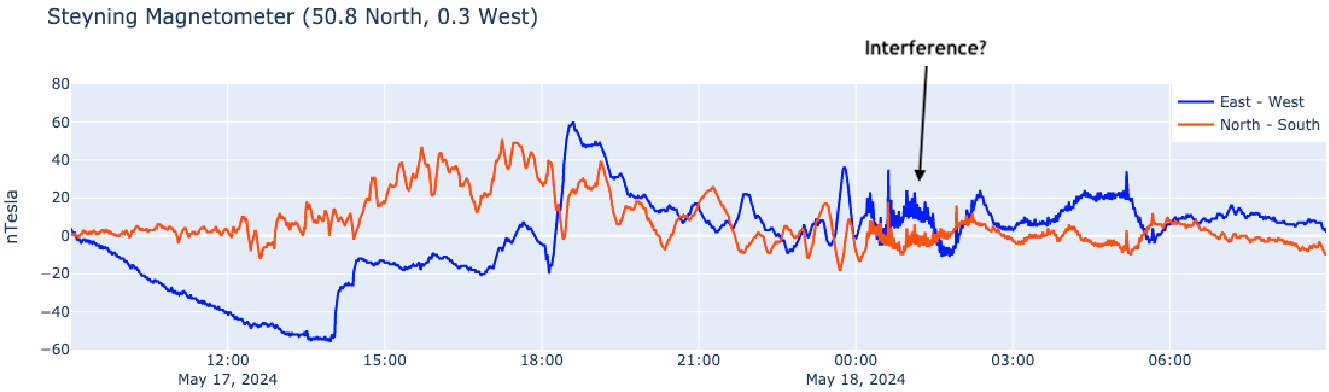




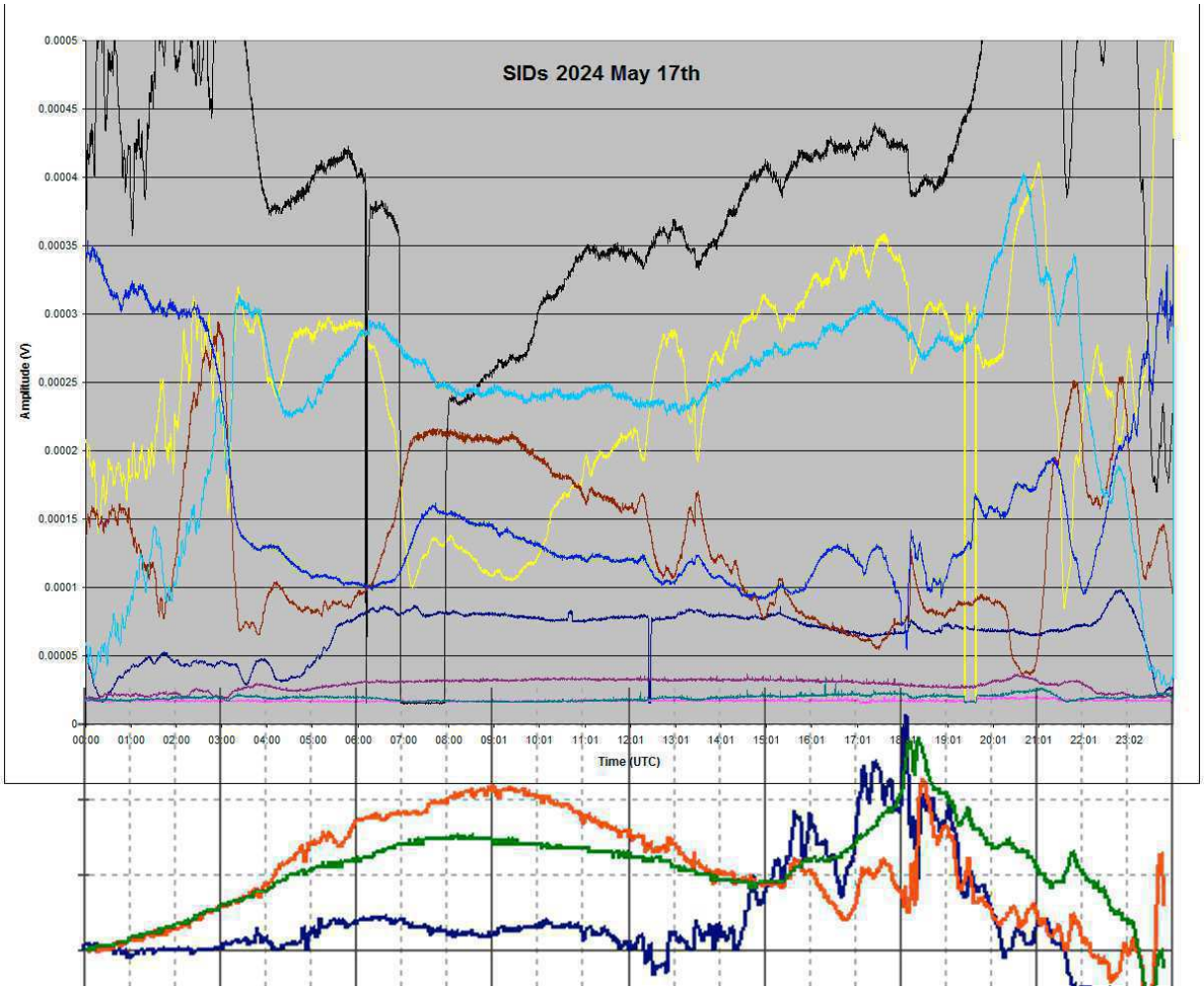
Roger Blackwell's Mull recordings of the storm also have increased the vertical axis magnetic strength, +/- 1000nT on the 10th and +/-1500nT on the 11th. The sudden start at 17:00 appears to be from a barrage of CMEs related to the multiple strong flares recorded over the previous days. There may also have been SFEs associated with these flares, but the strong activity has hidden them.



Callum Potter in Orkney has also re-scaled his recordings, this one showing the 11th. The sensors used in these recordings all have slightly different orientations and sensitivities, but they do show the severity of the storm, the background to the best auroral display seen here in the UK for a long time. Reports seen online show that it was also visible across most of the world, light pollution permitting.



Nick Quinn's recording from the 17th shows further complex magnetic activity from midday through to around 06UT on the 18th.



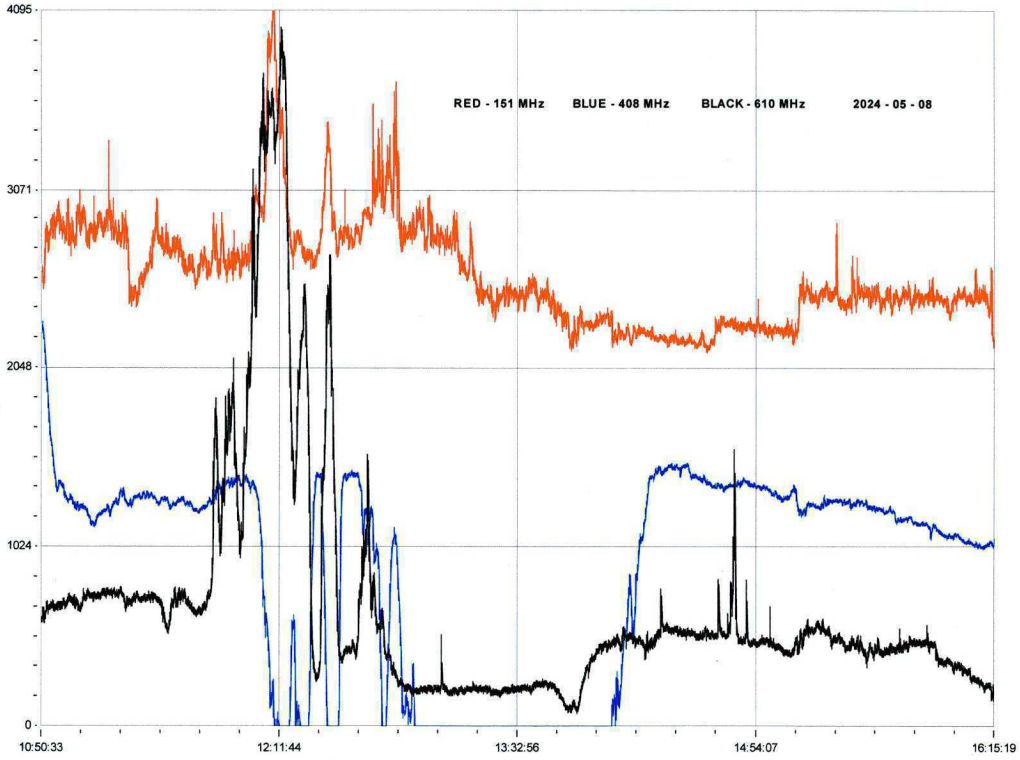
Mark Edwards' has added Roger Blackwell's magnetic chart to his VLF recording of the 17th, showing how the afternoon VLF signals have been influenced by the magnetic turbulence. The space weather web site also shows a proton event early in the morning of the 18th, possibly a source of the activity that Nick Quinn has indicated as interference on his recording. It is quite possible that some of the other SIDs recorded during this very stormy month also have magnetic or precipitation links.

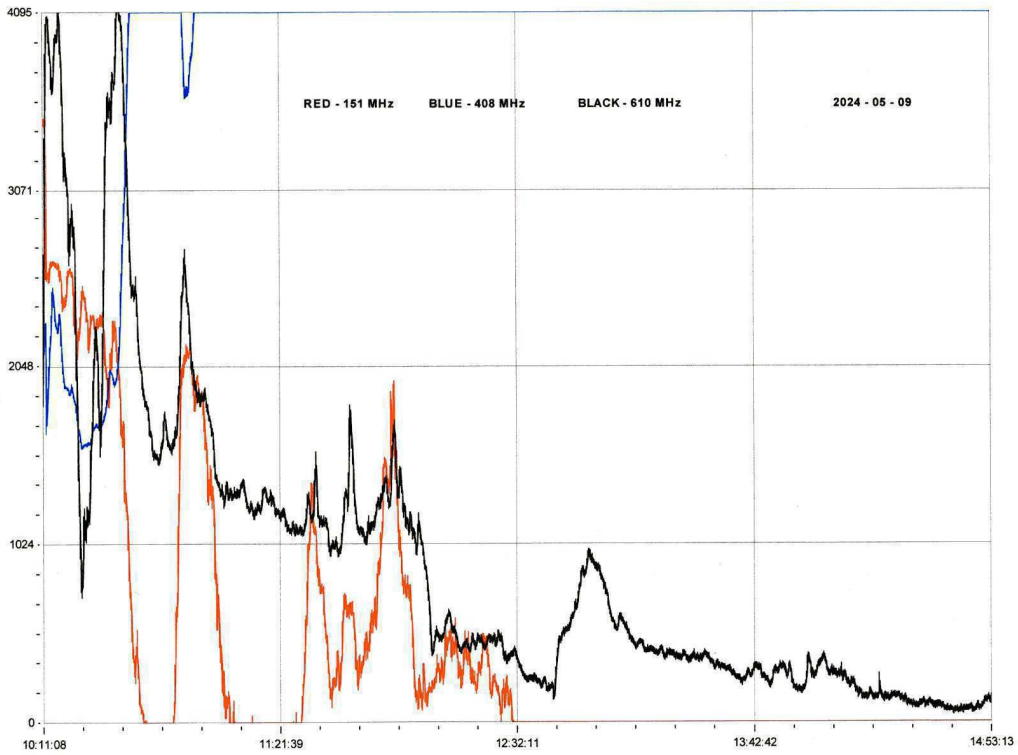
Thomas Mazzi recorded the magnetic storm on the 2nd. This had a sudden start at 14UT, probably from another CME impact. The STCE suggest that a flare on April 29th could be the source. The Mull magnetometer shows +/- 150nT, Callum Potter in Orkney recorded a 200nT swing. Most days in May showed some activity, but very mild compared to these storms.

Magnetic observations received from Roger Blackwell, Andrew Thomas, Thomas Mazzi, Callum Potter, Nick Quinn and John Cook.

SOLAR EMISSIONS

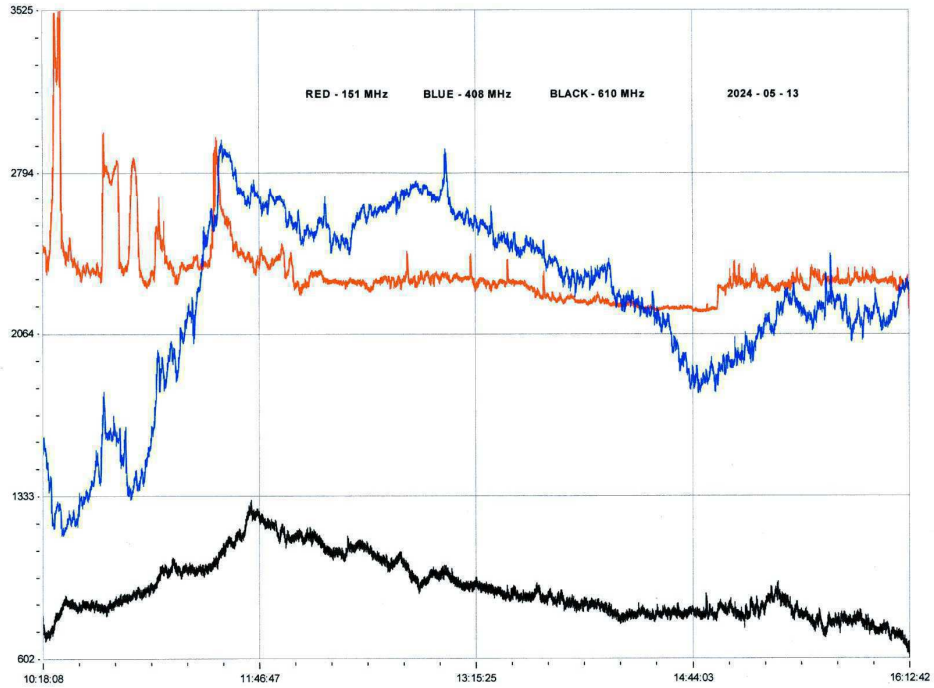
Colin Clements recorded some strong solar emissions on the 5th, 6th, 8th, 9th, 12th and 13th, following the intense flaring activity. Recordings from the 8th and 9th show activity leading up to the storm on the 10th.





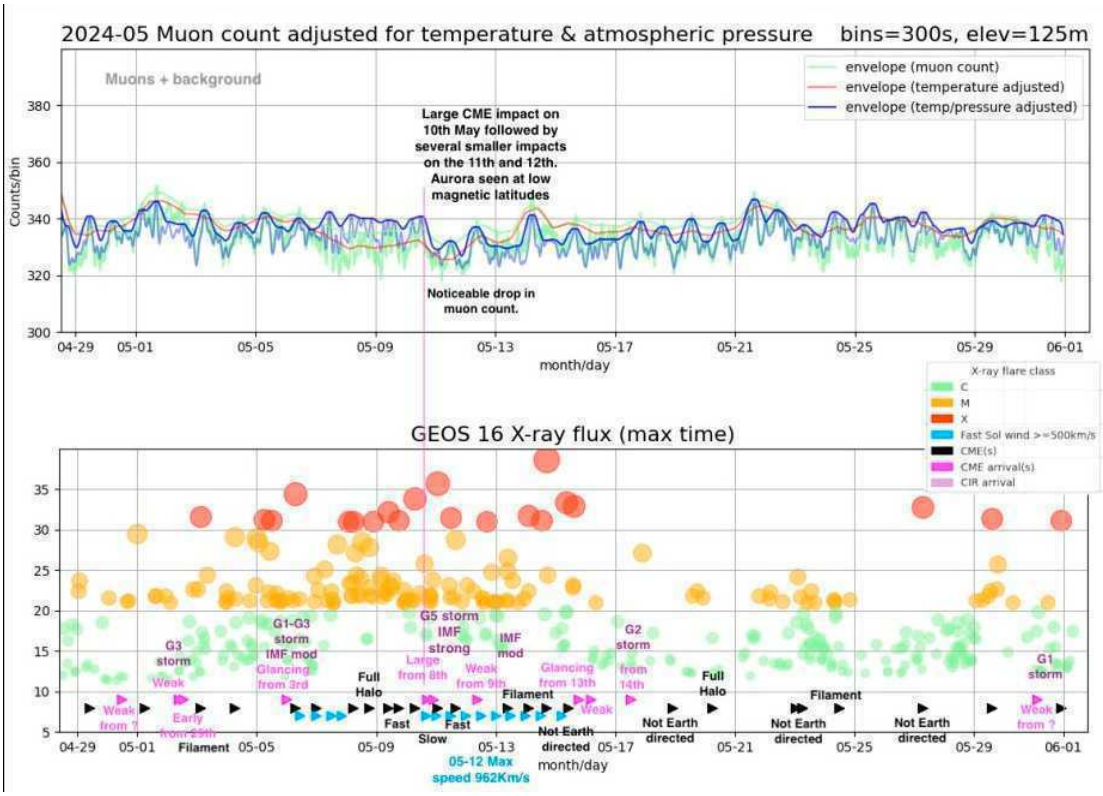
The M4.1 flare at 12UT on the 8th has produced a very strong noise burst at 610MHz (black) and a less intense burst at 151MHz (red). The 408MHz (blue) behaviour is very strange, with reduced activity following the flare. This may perhaps be due to a stronger response to the earlier flares not shown on this chart. On the

9th both 151 and 610MHz can be seen falling in activity, while 408MHz rises and remains off scale for the rest of the recording. The X2.2 flare at 09:15 and subsequent M-flares appear to be responsible.



The sequence of M-flares on the 13th seem to have produced several hours of 408MHz activity, as well as a shorter peak at 610MHz. 151MHz is probably showing activity from the earlier M6.6 flare that is less evident at 408MHz. There were also some strong noise bursts on the 5th, 6th and 12th.

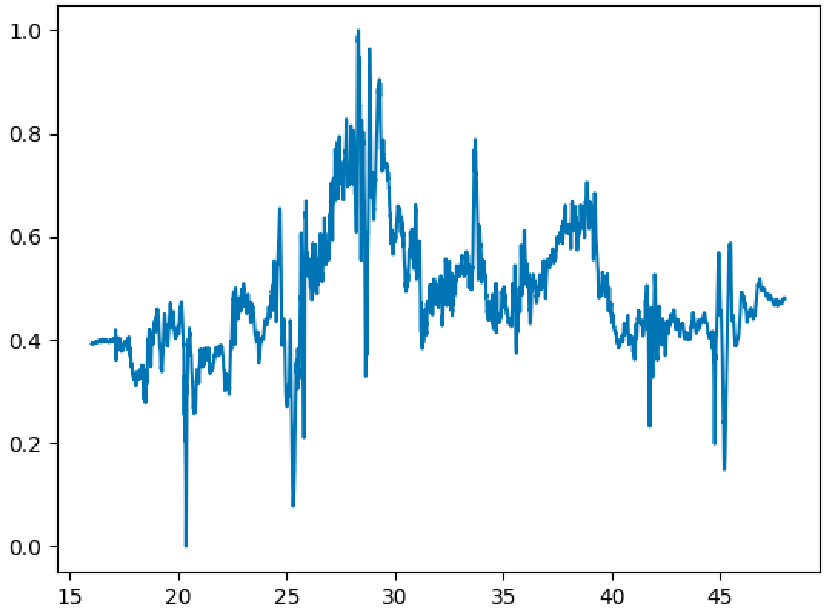
MUONS

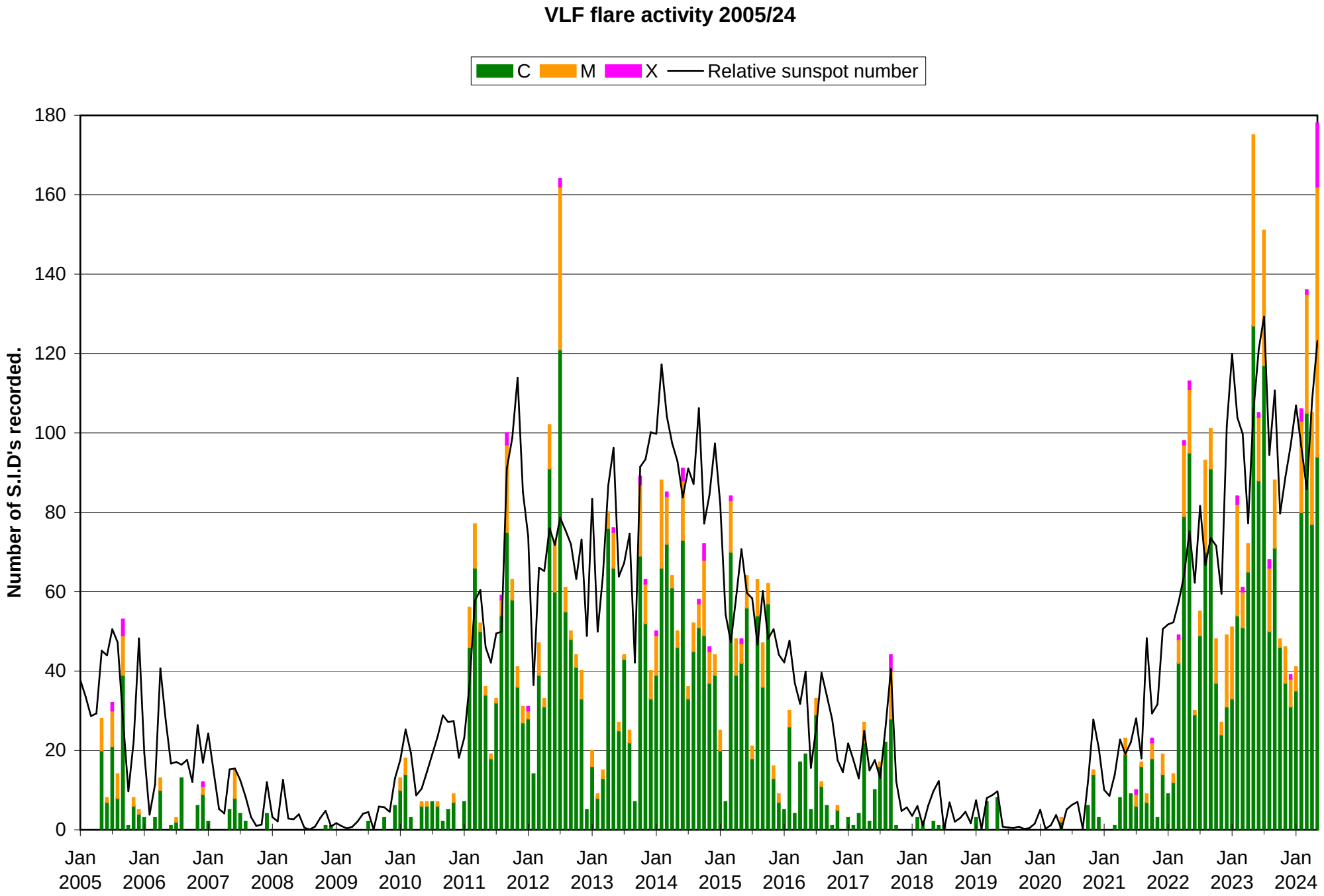


Mark Prescott's chart of Muon activity shows a distinct Forbush decrease in the temperature / pressure corrected count matching the storm on the 10th and 11th. The strong magnetic activity has prevented cosmic rays from entering the atmosphere to produce the Muons. The top portion of Mark's chart shows a gentle recovery over the next week. The lower portion of the chart is a very good summary of the flare and magnetic activity in the days leading up to the storm.

AR13664 was the main culprit in this activity, although several nearby groups also produced some of the flares. It was a very large and complex sunspot group, the 12th largest recorded in 150 years of Greenwich observatory recording. It has been compared in size to the famous 1859 group recorded by Carrington, although there does not appear to have been a 'white light' flare from this one. It could well survive its time as it rotates out of view, making a return visit after a couple of weeks.

The recent Greenock BAA meeting included a talk on the sonification of recorded data to produce sound files. This prompted Callum Potter to try out the technique with his magnetic data from the big storm over night on the 10th and 11th. The result is both very strange and very interesting. I am including his mp3 file for you to have a listen. The data section used in the recording is shown below. Feedback most welcome!




VLF flare activity 2005/24
C
M
X
Relative sunspot number
Number of S.I.D's recorded.
180
160
140
120
100
80
60
40
20
0
Jan 2005
Jan 2006
Jan 2007
Jan 2008
Jan 2009
Jan 2010
Jan 2011
Jan 2012
Jan 2013
Jan 2014
Jan 2015
Jan 2016
Jan 2017
Jan 2018
Jan 2019
Jan 2020
Jan 2021
Jan 2022
Jan 2023
Jan 2024

BAA Radio Astronomy Section.

BARTELS DIAGRAM

ROTATION	KEY:	DISTURBED.	ACTIVE	SFE	B, C, M, X = FLARE MAGNITUDE.	Synodic rotation start (carrington's).

2570

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	1
F							C	C											C	CC		C	BCCC			C

2571

2022 February 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
F CC		CC					C			MCCC		CCM														C

2572

2022 March 1	2	3	4	5	6	2255 7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
F CM					C	C				CCCC	C		M	CCMC					CC		CC	CCCC	C		C	C

2573

2022 April 28	29	30	31	1	2	3	2256 4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
F CMC	MCCC	CCCC	CCCX	CCCC	CCMM	CC	C		C		CC	C			CBCC			MMCC	CCCM	CCCM	MMCM	CCCC	CMCC	CC	CMC	C

2574

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
F	MCCC	CCCC	CCC	CC	MCCM	MMXM	CCCC		MCX	BMCM	CMMC	CC	CC	CCC	C	CCX	CCMM	CCCM	CCCC	CCCC	C	CMC	CCCC	CCCC	CMMM	CMM

2575

21	22	23	24	25	26	27	2258 28	29	30	31	2022 June 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
F CCC	CC	CC	CC	CCM	CC	CC	CC												CC	CCMC	C			CCCC		C

2576

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
F CCCC	CCC	C	CC	C	CC	CC	C	C								BC	C	CC			M	CCCC	CCCC	CM	CCCC	CCC

2577

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
F CMCM	CCC	MCM	CCCC		C	CCCC			CCCC	C		C	C						CC	C		CC				

2578

10	11	12	13	14	15	16	17	2261 18	19	20	21	22	23	24	25	26	27	28	29	30	31	2022 September 1	2	3	4	5
F	C	CC	CCCC	C	CMMM	MCC	CCMM	CMMM	MCCC		C	C			CCCM	CMMM	CMMM	CCMM	CMMM	CCCM	C	CC	CCCC	CCCC	CCCC	CCMC

2579

6	7	8	9	10	11	12	13	2262 14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	2022 October 1	2
F CC				C	CCCC	CCCC	CCCC	MCCC		MM	M	CC	C	MCCC	M	CCCC	CCCM	CCCC		CCC	CCCC			CC	CCMM	CC	CMMC

2580

2022 October 3	4	5	6	7	8	9	10	2263 11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
F CMMM	M	C		CM	C	CCCC	CM	MMCC	CC	C	M	C	C		C		CC		CB		CC	C	C			

2581

30	31	2022 November 1	2	3	4	5	6	7	2264 8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
F							C	C			C	MCCM	CC	C	C	CCC	CC	CC	CCC	M			CCC				

2582

26	27	28	29	30	2022 December 1	2	3	4	2265 5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
F			C		C	M					C				C			MMMM	CMCM	MMMC		CC	CCC	M	C	C

2583

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
F CC	C		CCC	CM		CM	CCCM	C							CC	MCCM	MM	MCMM	MC	MCMC	MC	CCC	CM	C		MC

2584

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
F MMC	CC	CC	CMCM	C	CCC	MCM	CMCC		C		C	CC		C		C	C	C	CC	CM	MMMM	MCCM	MMXM	MMMM	CCCM	CCM

2585

15	16	17	18	19	20	21	22	23	24	2268 25	26	27	28	2023 March 1	2	3	4	5	6	7	8	9	10	11	12	13
F CCCC	C	CX	C	CC	CMCC	MCCM	CCCM	CMCC	CCM	CCMM	CC	CC		CC	CCCC	MCCX	CMMC	CCMC	MCCC	C	MC	CCC	CCCC	C		

2586

14	15	16	17	18	19	20	21	22	23	2269 24	25	26	27	28	29	30	31	2023 April 1	2	3	4	5	6	7	8	9
F C		C	CCCM	C	CCC	C	C			C		CC	CCC	CC	MC	M	CC					CCC	MC		CC	CCCC

2587

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
F MCCC	MC	CCC	CCCC	CCMC	CCCC	C	CC	CCC	CCC	CCCC	M	CC		CC		C	M	CC	CCCC	CCM	CCMC	CCCC	MMMM	MCCC	CMM	CC

2588

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
F C	CCCM	MCMM	MCCC	MCCM	CCCC	CCCC	C	C	CCCM	CCCC	MMMM	MCCM	MMMM	CCCM	CCMC	MCCM	CCMC	CCC	MC	C	MMMC	CMCM	CCCC	CC		

2589

3	4	5	6	7	8	9	10	11	12	13	2272 14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
F CC	CCCC	C	CCCC	CMCC	CC	CM	C		CCCC	CCCC	CC	CC	MCMM	CC	M	MC	CCMX	CMMC	CMCC	C	CCMC	CCCC	CCMC	CMCC	MCC	CCCM

2590

30	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
F CCCC	CCCC	CCCC	MCCC	MC	CCCM	CCM	MC	C	CCC	CCCC	MMMM	MMCC	CCCM	MCCC	MMMC	MCMM	CCC	MMMM	CMCM	C	C	CC	CC	C	CCCM	CMCM

2591

27	28	29	30	31	2023 August 1	2	3	4	5	6	2274 7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
F CMCC	CMCC	CCCM	MC	CMCC	MMMM	MMMM	CMCC	CC	MMCX	CM	CMMX	MC	C		CCCC	CCCC	C		C	CC	CCC		C	CC	CC	

2592

23	24	25	26	27	28	29	30	31	1	2023 September 2	2275 3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
F CCC	C	C	C				C			MC	MCC	CC	MCC	CCCC	CCM	CCC	C	C	CCCM	MCCC	C	CCM	C	CC	C	C

2593

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
F MCCC	CMCC	M	CCMM	CCCC	CCMC	C	CC		MCC	CCC	CCCM	CCCC	CCM	CCCC	C	C	CC	CC	CC	CCC	CMCC	CC			C	C

2594

16	17	18	19	20	21	22	23	24	25	26	27	2277 28	29	30	2023 November 1	2	3	4	5	6	7	8	9	10	11	12
F CCC			C	C					CC	CC			CCCC		MCM	CCM			MCM	C		C	C	C	CCC	

2595

13	14	15	16	17	18	19	20	21	22	23	24	2278 25	26	27	28	29	30	2023 December 1	2	3	4	5	6	7	8	9
F C	CCCC	C			CM	CC	MCCC	CCCC		CCMC	MC		C			C		CC				CCC	C			MCM

2596

10	11	12	13	14	15	16	17	18	19	20	21	2279 22	23	24	25	26	27	28	29	30	31	2024 January 1	2	3	4	5
F CCC	CCCC	CC	C	MMX	MCCM	CC	C	C						MM							C	CCCC	M			

2597

6	7	8	9	10	11	12	13	14	15	16	17	2280 18	19	20	21	22	23	24	25	26	27	28	29	30	31	1
F C		CC		CM	CCM	C		CC						C	CCC	C	CMMM	CCC	CCCC			CCC	CCC	C	C	CC

2598

2024 February 2	3	4	5	6	7	8	9	10	11	12	13	14	2281 15	16	17	18	19	20	21	22	23	24	25	26	27	28
F CCCC	CCCC	MMMM	CC	CC	CCM	MMMM	CXM	C	C	CMCM	CC	MCCC	CCCM	XCC	C	C	CC	CC	CCCC	XCCM	CMMM	MMMM	CM	C	C	CC

2599

29	2024 March 1	2	3	4	5	6	7	8	9	10	11	12	2282 13	14	15	16	17	18	19	20	21	22	23	24	25	26
F		CCC		C	CC	C	CCCC	C		CMCC	CC	CCCC		MCC		CCMC	CCCC	CCCC	CCCC	MCCC	CC	CCCM	MMMM	MMMM	MCCC	MMMM

2600

27	28	29	30	31	2024 April 1	2	3	4	5	6	7	8	2283 9	10	11	12	13	14	15	16	17	18	19	20	21	22
F MCCC	MMMX	CCCC	CCCC	CCCC					C					CCCC	CCCM	CCCC	MCCC	CCCC	MMMM	CCCM	CCCC	CMCC	MCCC	CCCC	MMM	MMMM

2601

23	24	25	26	27	28	29	30	2024 May 1	2	3	4	5	2284 6	7	8	9	10	11	12	13	14	15	16	17	18	19
F MCCM	CCMC	CMCM	CC	MC	CC	CCC	CCMM	MC	CCCM	CMCC	MMCM	XMXM	MXMC	MMMM	XMMX	MXMX	XMMM	MXMM	MMMX	XCXM	CMMX	M	CCC			MM

2602

20	21	22	23	24	25	26	27	28	29	30	31	2024 June 1	2	2285 3	4	5	6	7	8	9	10	11	12	13	14	15
F	CCCM	CM	CMMM	MCCC	C	CCCC	XCC	CCCC	MMXM	CM	CMCX															

BAA Radio Astronomy Section. **2024 MAY.**

	Xray class	Observers	John Cook (23.4kHz/*22.1kHz*) Tuned radio frequency receiver, 0.58m frame aerial.				Roberto Battaiola (20.9kHz) Modified AAVSO receiver.				Paul Hyde (Various) Spectrum Lab / PC 1.5m frame aerial.				Mark Edwards (24.0/*19.6*/**22.1kHz**) Spectrum Lab / PC 2m loop aerial.				Colin Clements (21.75kHz/*23.4kHz*) 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)	
1	**M1.8**	9	14:28	14:33	16:12	3	14:18	14:38	15:37	2+	14:23	14:32	15:50	3	14:24	14:27	15:35	2+	14:27	14:46	16:30	3
1	?	2													*14:39*	*14:44*	*16:18*	*3*				
1	?	1													16:49	16:51	16:57	1-				
1	C3.7	2									17:06	17:14	17:47	2	17:08	17:14	17:35	1+				
2	C2.7	3	08:52	08:58	09:06	1-									08:55	09:01	09:07	1-	08:53	09:05	09:12	1
2	C2.5	1													*09:19*	*09:26*	*09:31*	*1-*				
2	C4.3	6	09:49	09:52	10:07	1-					09:47	09:54	10:10	1	09:48	09:53	10:04	1-	09:50	09:55	10:34	2
2	?	1													11:16	11:21	11:24	1-				
2	?	1													***11:42***	***12:05***	***?***	**-**				
2	?	1													12:12	12:24	12:48	2				
2	C3.6	6	13:54	13:58	14:17	1					13:54	13:59	14:20	1+	13:55	14:00	14:21	1+	13:58	14:04	14:22	1
2	?	1													**14:14**	**14:15**	**14:32**	**1-**				
2	?	1													*15:13*	*15:23*	*15:41*	*1+*				
2	?	1													*16:09*	*16:16*	*?*	-				
2	C3.7	4	16:22	16:28	16:41	1					16:21	16:30	16:48	1+	16:24	16:28	16:49	1				
2	C6.3	3									16:58	17:03	17:24	1+	16:59	17:03	17:19	1				
2	C8.7	4	17:40	17:41	17:55	1-					17:28	17:33	18:14	2+	17:27	17:34	18:05	2				
2	C4.0	2									18:54	19:00	19:18	1	18:55	19:01	19:30	2				
2	**M2.7**	2									20:55	21:00	21:23	1+	20:55	21:00	21:15	1				
3	C6.7	2					05:15	05:25	05:37	1					*05:10*	*05:23*	*05:32*	*1*				
3	C5.3	3	06:33	06:36	06:40	1-					06:33	06:37	06:53	1	***06:34***	***06:38***	***06:43***	***1-***				
3	**M4.4**	8	08:06	08:13	09:12	2+	08:05	08:13	08:44	2	08:05	08:12	09:10	2+	08:06	08:14	09:32	3	08:11	08:18	09:24	2+
3	C8.0	8	16:09	16:14	16:34	1					16:08	16:16	17:11	2+	16:10	16:16	16:41	1+	16:11	16:22	17:21	2+
3	C7.5	2									18:46	18:55	19:28	2	18:48	18:56	19:15	1+				
4	**M9.1**	7	06:13	06:25	?	-	06:07	06:22	06:53	2+	06:13	06:22	?	-	06:13	06:28	?	-	06:20	06:27	07:09	2+
4	**M1.5**	5	07:06	07:08	07:59	2+					07:05	07:09	07:40	2	07:05	07:07	07:37	1+	07:09	07:13	07:56	2+
4	C4.5	7	08:36	08:39	08:48	1-					08:34	08:39	09:08	2	**08:36**	**08:39**	**09:01**	**1**	08:39	08:44	08:59	1
4	C4.2	2	12:03	12:07	12:15	1-									12:05	12:09	12:20	1-				
4	?	2	13:02	13:08	13:19	1-									13:02	13:06	13:16	1-				
4	C3.8	5	14:58	15:01	15:25	1+					14:55	15:01	15:40	2	14:57	15:01	15:17	1	14:55	15:09	16:03	2+
4	C6.3	7	16:00	16:15	16:38	2					16:00	16:16	16:57	2+	16:01	16:08	16:41	2	16:03	16:19	17:20	2+
4	C9.1	7	17:17	17:21	17:33	1-					17:13	17:22	?	-	17:14	17:22	17:48	2	17:20	17:27	17:38	1-
4	C4.0	1									17:47	17:50	18:10	1								
4	**M1.3**	4									18:17	18:21	18:53	2	18:17	18:24	19:06	2+				
4	C5.6	2									19:14	19:23	?	-	19:19	19:21	19:39	1				
4	C6.0	2									19:38	19:45	20:06	1+	19:40	19:42	20:00	1				
5	C5.5	1													*05:31*	*05:37*	*?*	-				
5	**X1.3**	8	05:53	06:02	07:05	2+	05:46	06:01	06:39	2+	05:56	06:03	07:15	2+	05:56	06:04	07:13	2+				
5	**M1.3**	9	08:14	08:21	08:46	1+	08:11	18:18	08:34	1	08:12	08:21	08:53	2	08:14	08:21	08:38	1	08:18	08:25	09:00	2
5	C8.4	6	09:09	09:14	?	-	09:07	09:13	09:21	1-	08:55	09:02	?	-	08:56	09:01	?	-				
5	?	5									09:08	09:16	?	-	09:08	09:18	?	-	09:13	09:22	09:28	1-
5	**M2.3**	8	09:25	09:39	?	-	09:22	09:38	09:52	1+	09:24	09:34	?	-	09:23	09:43	?	-	09:28	09:45	10:00	1+
5	**M7.4**	9	09:56	10:03	?	-	09:53	10:01	10:48	2+	09:56	10:04	11:00	2+	09:54	10:03	10:54	2+	10:00	10:04	11:06	2+
5	**X1.2**	9	11:43	11:55	13:36	3	11:40	11:54	12:42	2+	11:43	11:57	13:31	3	11:43	11:56	12:41	2+	11:47	11:55	14:00	3+
5	?	1													*12:50*	*12:54*	*13:32*	*2*				
5	C7.5	8	14:14	14:17	?	-	14:13	14:18	14:36	1	14:13	14:17	14:35	1	14:14	14:20	?	-	14:16	14:24	14:42	1+
5	**M1.3**	8	14:39	14:47	?	-	14:37	14:46	15:18	2	14:37	14:46	15:03	1+	14:40	14:49	15:02	1	14:42	14:53	15:35	2+
5	**M2.2**	9	15:33	15:42	16:33	2+	15:31	15:39	16:25	2+	15:32	15:40	16:29	2+	*15:32*	*15:41*	*16:26*	*2+*	15:35	15:49	16:32	2+
5	**M1.3**	5	16:59	17:02	17:12	1-	16:57	17:02	17:12	1-	16:58	17:03	17:48	2+	16:59	17:04	17:22	1				
5	C6.4	2									18:02	18:06	18:15	1-	18:04	18:07	?	-				
5	C8.7	2									18:17	18:20	?	-	18:15	18:22	?	-				
5	**M1.0**	2									18:37	18:42	19:07	1+	18:39	18:42	19:14	2				
5	**M1.3**	2									19:48	19:55	20:16	1+	19:50	19:54	20:34	2				
6	**M1.3**	1	05:17	05:21	05:34	1-																
6	**X4.5**	8	*06:23*	*06:34*	*07:16*	*2+*	05:40	06:36	07:31	3	06:21	06:36	08:26	3	05:57	06:36	08:09	3+	06:23	06:36	08:42	3+
6	**M1.5**	10	09:55	10:01	?	-	09:50	10:00	10:24	2	09:54	10:01	10:40	2+	09:55	10:02	10:39	2	09:59	10:06	10:57	2+
6	C6.5	6	10:55	11:00	11:10	1-	10:51	10:58	11:18	1+	10:56	11:01	11:26	1+	10:55	11:02	11:25	1+	10:57	11:05	11:29	1+
6	?	1													*11:08*	*11:11*	*11:40*	*1+*				
6	?	2													*12:19*	*12:41*	*?*	-	12:17	12:43	12:56	2
6	C9.3	8	12:55	12:58	13:20	1	12:50	12:57	13:11	1	12:54	12:57	13:37	2	*12:52*	*12:58*	*13:20*	*1+*	12:56	13:01	13:52	2+
6	?	1													*14:11*	*14:13*	*?*	-				
6	?	7					14:27	14:30	14:38	1-	14:28	14:32	14:48	1	*14:29*	*14:32*	*14:46*	*1-*	14:32	14:37	15:15	2
6	C6.2/4.4	9	15:27	15:35	15:56	1+	15:24	15:35	16:24	2+	15:26	15:37	16:14	2+	*15:28*	*15:36*	*16:03*	*2*	15:30	15:42	16:34	2+
6	C4.3	2					17:04	17:06	17:09		17:06	17:11	17:24	1-								
6	C9.4	2									19:15	19:22	20:53	3	*19:17*	*19:21*	*19:38*	*1*				
7	C5.7	1	04:58	05:14	?	-																
7	**M5.1**	5	06:04	06:16	?	-					06:01	06:15	?	-	*06:01*	*06:18*	*07:12*	*2+*				
7	?	5									07:15	07:20	?	-	*07:15*	*07:21*	*?*	-				
7	?	5									07:30	07:35	07:52	1	*07:32*	*07:34*	*?*	-				
7	?	1													*08:07*	*08:12*	*?*	-				
7	**M1.3**	9	08:18	08:27	09:14	2+	08:16	08:25	08:58	2	08:18	08:24	?	-	08:20	08:27	?	-	08:23	08:39	09:20	2+
7	?	2									08:28	08:33	09:11	2	08:29	08:34	09:08	2				
7	?	1													09:17	09:19	09:26	1-				
7	?	2													09:51	09:57	10:17	1+				
7	C9.5	9	10:34	10:44	11:29	2+	10:36	10:40	11:08	1+	10:35	10:44	11:18	2	10:35	10:45	11:20	2				
7	**M2.4**	9	11:42	11:51	?	-	11:39	11:51	12:41	2+	11:42	11:51	?	-	11:42	11:45	12:36	2+				
7	**M1.5**	9	12:49	12:55	?	-	12:45	12:53	13:22	2	12:50	12:54	?	-	12:49	12:54	?	-				
7	**M1.0**	6	13:19	13:24	14:22	2+					13:18	13:25	14:18	2+	13:16	13:26	?	-				
7	**M1.0**	1													13:31	13:35	?	-				
7	?	1													13:54	13:59	14:20	1+				
7	?	1													14:39	14:42	15:06	1+				
7	**M8.2**	10	16:27	16:33	18:00	3	16:21	16:45	17:49	3	16:25	16:33	17:24	2+	16:28	16:32	17:22	2+	16:32	16:36	17:49	2+
7	?	2									17:35	17:40	17:59	1	17:36	17:41	18:03	1+				
7	?	2									18:51	18:59	19:31	2	18:52	19:01	19:31	2				
7	**M2.1**	1													20:20	20:24	20:47	1+				
7	**M3.3**	1													21:19	21:31	22:15	2+				
8	**X1.0**	2	04:58	05:14	?	-									*04:27*	*04:39*	*04:57*	*1+*				
8	?	7									06:45	06:55	?	-	06:46	06:55	?	-	06:50	07:00	07:36	2+
8	**M4.5**	6	*07:36*	*07:43*	*08:02*	*1+*					07:31	07:42	?	-	07:27	07:41	07:51	1				
8	?	5	08:34	08:41	09:05	1+					08:34	08:40	09:05	1+	08:32	08:41	?	-				
8	?	2									09:17	09:26	?	-	09:18	09:27	?	-				
8	**M1.8**	5	09:33	09:38	?	-					09:32	09:38	?	-	09:30	09:39	?	-				
8	**M2.1**	6	09:45	09:49	?	-					09:44	09:50	?	-	09:44	09:53	?	-	09:36	09:56	10:59	2+
8	?	4	09:58	10:01	10:16	1-					09:58	10:02	10:10	1-	09:57	10:02	?	-				
8	?	1													10:13	10:20	?	-				
8	?	1													10:31	10:37	10:54	1				
8	?	1													*10:55*	*10:58*	*?*	-				
8	?	1													11:12	11:19	?	-				
8	**M4.1**	10	12:06	12:34	13:52	3	11:13	12:01	12:28	2+	11:13	11:20	13:50	3+	11:28	12:05	?	-	11:11	11:48	13:36	3+

8	?	2													12:30	12:35	13:23	2+				
8	?	1													*12:46*	*12:50*	*?*	-				
8	?	1													*13:53*	*14:00*	*?*	-				
8	?	2									14:07	14:14	14:35	1+	13:57	14:12	14:29	1+				
8	?	1													14:37	14:46	15:05	1+				
8	?	3									15:12	15:20	?	-	15:16	15:19	?	-				
8	?	3									15:26	15:31	?	-	15:26	15:30	15:45	1				
8	C6.6	6	15:58	16:02	16:36	2	15:54	16:00	16:31	2	15:57	16:02	16:40	2	15:57	16:04	16:21	1				
8	C6.6	1													***16:18***	***16:21***	***16:31***	***1-***				
8	**M7.9**	9	17:45	17:54	?	-	17:38	17:54	18:25	2+	17:45	17:53	18:15	1+	17:37	17:53	?	-	17:49	17:58	18:47	2+
8	**M2.9**	1													18:16	18:37	?	-				
8	**M2.0**	2									19:16	19:22	19:54	2	19:18	19:22	19:47	1+				
8	**X1.0**	1													21:18	21:38	22:07	2+				
9	**M1.7**	2					04:46	04:50	05:01	1-					***04:46***	***04:52***	***05:05***	***1***				
9	**M2.3**	6	06:08	06:13	?	-	06:04	06:13	06:52	2+	06:08	06:15	?	-	*06:04*	*06:14*	*?*	-				
9	?	6	06:26	06:29	?	-					06:25	06:30	07:02	2	*06:25*	*06:32*	*?*	-				
9	?	2									07:06	07:09	07:15	1-	*07:02*	*07:08*	*07:16*	*1-*				
9	?	1													*07:47*	*07:50*	*?*	-				
9	?	2									07:55	08:00	08:11	1-	*07:55*	*08:02*	*?*	-				
9	?	1													*08:11*	*08:21*	*?*	-				
9	**X2.2**	9	08:33	09:09	?	-	08:44	09:13	10:42	3	08:51	09:14	10:19	3	08:25	09:15	09:59	3	08:32	09:01	11:59	3+
9	?	1													*11:37*	*11:41*	*?*	-				
9	**M3.1**	8	*11:55*	*11:58*	*?*	-	11:50	11:57	12:02	1-	11:54	11:59	?	-	11:54	11:57	?	-	11:59	12:02	12:10	1-
9	**M2.9**	9	*12:09*	*12:14*	*12:50*	*2*	12:03	12:11	12:39	2	12:07	12:13	12:46	2	12:10	12:13	12:35	1	12:10	12:17	17:31	3+
9	?	1													*13:00*	*13:03*	*?*	-				
9	**M3.7**	9	13:20	13:25	14:32	2+	13:15	13:24	14:06	2+	13:21	13:25	13:48	1+	13:20	13:24	13:48	1+	*13:21*	*13:28*	*13:56*	*2*
9	?	1													*13:53*	*13:57*	*?*	-				
9	?	1													*14:32*	*14:35*	*15:18*	*2+*				
9	?	1													15:14	15:25	15:40	1+				
9	?	1													15:47	15:48	15:54	1-				
9	?	1													17:10	17:21	?	-				
9	**X1.1**	10	17:31	17:40	18:45	2+	17:23	17:42	18:26	2+	17:28	17:37	18:14	2+	17:27	17:40	18:13	2+	17:31	17:45	18:40	2+
10	**X3.9**	7	06:32	06:53	09:03	3+					06:42	06:48	08:04	2+	06:19	06:51	07:43	2+				
10	?	1													08:14	08:20	08:53	2				
10	?	2									09:16	09:21	09:43	1+	09:16	09:21	09:30	1-				
10	?	1													*09:34*	*09:46*	*?*	-				
10	?	1													09:55	09:58	10:09	1-				
10	**M2.2**	10	10:11	10:15	11:15	2+	10:06	10:15	10:35	1+	10:11	10:16	10:47	2	10:11	10:16	?	-	10:15	10:20	10:52	2
10	?	1													10:46	10:51	11:01	1-				
10	?	2	11:45	11:47	11:57	1-									11:31	11:34	?	-				
10	?	1													11:40	11:49	?	-				
10	?	1													12:00	12:06	12:23	1				
10	?	1													**12:32**	**12:37**	**12:49**	**1-**				
10	?	1													**12:57**	**13:00**	**13:09**	**1-**				
10	?	2	13:47	13:52	?	-									13:46	13:52	?	-				
10	**M5.9**	10	14:00	14:11	15:30	3	13:58	14:09	14:49	2+	14:04	14:11	15:15	2+	14:00	14:10	14:52	2+	14:05	14:12	15:12	2+
10	C6.9	5	15:47	15:53	15:57	1-					15:45	15:54	16:27	2	*15:39*	*15:44*	*?*	-				
10	?	1													15:47	15:57	?	-				
10	?	1													16:00	16:09	16:34	2				
10	?	1													*16:15*	*16:20*	*16:30*	*1-*				
10	?	2									16:49	17:00	17:14	1	*16:57*	*17:02*	*17:14*	*1-*				
10	C9.1-M1.1	2									17:55	17:58	18:12	1-	18:18	18:34	18:55	2				
10	**M1.7**	1													18:40	18:49	19:08	1+				
11	?	1													08:15	08:19	08:29	1-				
11	?	1													*08:47*	*09:00*	*?*	-				
11	?	2													*09:06*	*09:18*	*?*	-				
11	**M3.1**	8	10:08	10:16	?	-	09:51	10:18	10:43	2+	10:09	10:18	10:46	2	10:09	10:18	10:48	2				
11	**M1.6**	6	10:55	10:58	?	-	10:51	10:58	11:06	1-	10:53	10:59	11:16	1	10:56	10:58	11:14	1-				
11	**X1.5**	9	11:22	11:41	13:28	3+	11:14	11:52	12:27	2+	11:24	11:42	12:36	2+	11:23	11:44	12:37	2+				
11	?	1													12:58	13:00	13:08	1-				
11	?	1													13:33	13:35	13:42	1-				
11	**M1.7**	8	13:47	13:52	14:18	1+	13:46	13:55	14:06	1	13:46	13:53	?	-	13:47	13:57	?	-				
11	?	3									14:16	14:21	14:30	1-	14:14	14:16	14:29	1-				
11	?	1													14:51	15:19	?	-				
11	**M8.8**	9	15:26	15:40	16:49	2+	14:38	15:24	16:25	3	15:02	15:15	16:29	3	15:23	15:25	?	-				
11	?	1													16:35	16:37	17:21	2+				
11	?	1													17:42	17:47	17:55	1-				
12	?	3									08:38	08:42	08:57	1	**08:38**	**08:44**	**09:09**	**1+**				
12	?	1													*09:23*	*09:39*	*09:45*	*1*				
12	C9.2	4	10:17	10:22	10:42	1					10:17	10:22	10:33	1-	*10:16*	*10:29*	*?*	-				
12	?	1													*10:36*	*10:41*	*?*	-				
12	?	1													*10:55*	*11:14*	*?*	-				
12	?	2	11:36	11:38	11:54	1-									*11:28*	*11:36*	*12:03*	*2*				
12	?	1													*12:08*	*12:12*	*12:18*	*1-*				
12	**M1.6**	10	12:33	12:44	13:38	2+	12:30	12:43	13:11	2	12:32	12:42	13:25	2+	12:36	12:42	13:18	2	12:36	12:49	13:50	2+
12	?	1													13:23	13:25	13:33	1-				
12	**M1.5**	8	13:46	13:48	?	-					13:45	13:49	?	-	*13:45*	*?*	*?*	-				
12	**M1.0**	3	13:51	13:58	?	-					13:51	13:55	?	-	*?*	*13:59*	*?*	-				
12	?	2													*14:03*	*14:06*	*?*	-	13:50	14:04	14:21	1+
12	?	3									14:19	14:22	14:41	1	*14:18*	*14:21*	*?*	-	14:21	14:26	14:40	1
12	C7.0	4	15:24	15:28	15:38	1-	16:10	16:25	16:59	2+					*15:02*	*15:31*	*15:15*	*1-*				
12	C7.3	1													**15:45**	**15:46**	**16:00**	**1-**				
12	**X1.0**	9	16:14	16:25	17:42	3					16:12	16:21	17:13	2+	16:19	16:27	17:03	2	16:17	16:27	17:29	2+
12	?	1													17:28	17:44	18:04	2				
13	M1.4/M1.2	5	08:06	08:21	?	-									*08:05*	*08:27*	*?*	-	08:01	08:31	08:49	2+
13	**M6.6**	10	*09:09*	*09:35*	*10:44*	*3*	08:43	09:40	11:08	3+	08:50	09:42	11:56	3+	*08:49*	*09:45*	*12:15*	*3+*	08:49	09:42	12:52	3+
13	**M3.7**	10	13:01	13:10	13:59	2+	12:56	13:11	13:53	2+	13:00	13:06	14:00	2+	*12:56*	*13:13*	*?*	-	12:59	13:14	14:05	2+
13	?	1													*13:58*	*14:11*	*?*	-				
13	?	1													*14:12*	*14:20*	*14:58*	*2+*				
13	?	1													*15:42*	*15:46*	*?*	-				
13	?	1													*15:52*	*16:04*	*?*	-				
13	?	1													*16:11*	*16:25*	*16:34*	*1*				
13	?	1													*16:47*	*16:59*	*17:34*	*2+*				
14	?	1													11:59	12:04	12:24	1				
14	**X1.2**	10	12:43	12:55	14:10	3	12:40	13:00	13:44	2+	12:42	12:55	13:59	2+	12:47	12:52	13:32	2	12:03	13:15	13:54	3
14	C9.6	3	15:17	15:32	15:50	2									*15:20*	*15:32*	*?*	-				
14	?	1													*15:59*	*16:03*	*?*	-				
14	?	2													16:22	16:27	16:33	1-	16:26	16:34	16:48	1
14	**X8.7**	9	16:46	16:52	18:10	2+	16:43	16:55	17:31	2+	16:47	16:57	18:02	2+	16:47	16:48	17:48	2+	16:56	17:17	18:50	3
14	**M4.4**	1													*17:39*	*17:41*	*?*	-				
14	?	1													*18:04*	*18:06*	*18:39*	*2*				
14	?	1													*19:30*	*19:55*	*20:22*	*2+*				
15	C9.9	9	08:16	08:38	09:50	3	08:16	08:30	08:34	1-	08:26	08:28	09:34	2+	08:29	08:39	09:28	2+	*08:03*	*08:42*	*09:50*	*3*
15	?	2									09:47	10:06	11:44	3	**09:44**	**10:29**	**11:17**	**3**				
15	**M2.9**	3	*13:58*	*14:07*	*?*	-					13:58	14:04	?	-	14:01	14:08	?	-				
15	**M3.2**	4	*14:11*	*14:18*	*?*	-					14:11	14:16	?	-	14:11	14:17	?	-				
15	**X2.9**	8	*14:23*	*14:37*	*15:40*	*2+*					14:23	14:36	16:53	3+	14:19	14:29	15:28	2+	14:40	15:07	17:21	3+

16	**M1.0**	4	?	08:05	08:41	-									***07:53***	***08:08***	***08:52***	***2+***				
17	?	1													*11:03*	*11:09*	*11:15*	*1-*				
17	C3.7	1													*12:09*	*12:16*	*?*	-				
17	C4.8	2	12:45	12:48	13:00	1-									*12:44*	*12:48*	*?*	-				
17	?	1													***13:02***	***13:05***	***13:12***	***1-***				
17	C3.1	3	13:26	13:28	13:37	1-									*12:57*	*13:26*	*?*	-				
17	?	1													*13:52*	*14:01*	*?*	-				
17	?	1													*14:14*	*14:20*	*14:29*	*1-*				
19	**M1.9**	10	13:42	13:46	14:43	2+	13:39	13:45	14:05	1+	13:42	13:46	14:55	2+	13:44	13:45	14:03	1	13:45	13:50	14:35	2+
19	**M2.5**	6	*17:55*	*17:56*	*18:20*	*1*	17:52	17:58	18:17	1	17:55	18:00	18:47	2+	*17:55*	*18:00*	*18:40*	*2*				
21	C4.8	2	*07:29*	*07:35*	*08:03*	*2*									***07:31***	***07:33***	***07:57***	***1+***				
21	C7.0	8	13:33	13:37	?	-					13:31	13:38	?	-	13:35	13:38	?	-	13:37	13:43	14:11	2
21	C6.6	8	14:08	14:16	14:51	2					14:06	14:15	14:57	2+	14:06	14:17	14:30	1	14:11	14:19	15:07	2+
21	C6.9	8	16:01	16:06	16:37	2					15:59	16:08	16:52	2+	16:01	16:09	16:23	1	16:01	16:13	17:08	2+
21	**M1.9**	1									19:28	19:35	20:10	2								
22	C3.6	2	11:37	11:43	12:12	2									*11:36*	*11:46*	*12:15*	*2*				
22	**M1.2**	10	14:00	14:06	16:09	3+	13:52	14:08	14:26	2	13:48	14:05	14:47	2+	14:01	14:03	14:30	1+	13:51	14:12	15:38	3
23	C9.7	5	06:40	06:45	?	-					06:39	06:44	07:15	2	***06:40***	***06:47***	***07:41***	***2+***				
23	C5.5	3	08:08	08:10	08:25	1-					08:04	08:11	08:45	2	*08:08*	*08:12*	*08:20*	*1-*				
23	C8.3	7	09:18	09:23	?	-					09:17	09:24	?	-	09:21	09:27	?	-				
23	?	6	09:34	09:35	09:52	1-					09:32	09:36	09:49	1-	09:33	09:36	09:51	1-				
23	**M1.0**	5	10:07	10:11	10:20	1-									10:01	10:09	?	-	09:53	10:15	10:42	2+
23	C7.8	8	10:39	10:42	?	-					10:38	10:43	?	-	10:38	10:43	?	-	10:42	10:48	11:13	1+
23	C6.0	8	11:09	11:12	11:40	1+					11:08	11:10	11:32	1	11:10	11:12	11:25	1-	11:13	11:16	12:08	2+
23	C4.0	1													*12:04*	*12:14*	*?*	-				
23	C4.5	1													*12:21*	*12:26*	*?*	-				
23	C5.8	2	12:32	12:35	12:47	1-									*12:30*	*12:37*	*?*	-				
23	**M2.5**	10	12:56	13:15	14:30	3	12:51	13:15	13:59	2+	12:51	13:10	14:34	3	12:58	13:17	14:17	2+	12:08	13:21	15:28	3+
23	?	1													*14:26*	*14:31*	*14:45*	*1*				
23	C6.8	3	15:46	15:49	?	-					15:46	15:50	?	-	15:49	15:51	?	-				
23	**M1.0**	8	15:56	16:00	16:16	1					15:54	16:00	16:18	1	15:56	15:57	16:17	1	15:28	16:04	16:50	2+
23	?	2									17:09	10:12	17:30	1	17:11	17:12	17:26	1-				
24	?	2													*06:57*	*07:12*	*07:38*	*2*				
24	**M1.0**	5									07:58	08:03	08:11	1-	*07:59*	*08:04*	*?*	-				
24	?	3													*08:09*	*08:26*	*?*	-	08:05	08:34	09:01	2+
24	?	1													**08:45**	**08:49**	**?**	**-**				
24	?	2									08:57	09:01	09:31	2	**08:58**	**09:03**	**?**	**-**				
24	C9.7	5													**09:06**	**09:12**	**09:38**	**1+**	09:01	09:15	09:44	2
24	C5.6	7	10:49	10:52	?	-					10:49	10:53	11:06	1-	*10:50*	*11:01*	*?*	-				
24	?	1													*11:07*	*11:09*	*11:21*	*1-*				
24	?	2	11:04	11:10	11:29	1									*11:32*	*11:42*	*11:52*	*1*				
24	C3.4	1													***13:54***	***13:59***	***14:21***	***1+***				
25	C5.8	5					17:22	17:28	17:38	1-	17:22	17:25	18:01	2	17:24	17:28	17:51	1+				
26	C5.2	8	09:32	09:38	10:13	2					09:31	09:37	10:19	2+	09:33	09:37	10:21	2+	09:12	09:48	10:42	3
26	?	1													***10:17***	***10:28***	***10:40***	***1***				
26	?	1													*11:50*	*11:58*	*12:08*	*1-*				
26	?	1													*12:28*	*12:37*	*?*	-				
26	C2.4	1													*12:59*	*13:04*	*13:16*	*1-*				
26	C2.3	1													*13:21*	*13:26*	*?*	-				
26	C5.4	7	14:04	14:15	14:33	1+					14:03	14:13	14:58	2+	*14:05*	*14:17*	*15:18*	*2+*	14:05	14:22	16:43	3+
26	C3.3	2									16:05	16:09	?	-	*16:05*	*16:12*	*16:34*	*1+*				
26	C5.9	3	*16:36*	*16:41*	*16:58*	*1*					16:35	16:43	?	-	16:39	16:46	?	-				
26	C7.4	2									16:57	17:06	17:28	1+	16:58	17:05	17:24	1+				
27	**X2.8**	8	*06:56*	*07:05*	*07:55*	*2+*	06:54	07:08	08:28	3	06:54	07:01	10:22	3+	06:55	07:10	07:47	2+	07:01	07:06	10:43	3+
27	?	1													*10:41*	*10:55*	*11:22*	*2*				
27	C6.7	5	12:26	12:30	12:50	1					12:25	12:29	12:44	1	12:29	12:28	12:47	1-	12:26	12:38	13:29	2+
27	C8.9	1													19:12	19:17	19:45	2				
28	C7.8	1	03:38	03:42	03:56	1-																
28	C4.9	5	09:02	09:12	09:27	1					09:00	09:11	?	-	09:02	09:14	09:30	1+				
28	C5.6	5	09:34	09:37	09:48	1-					09:33	09:40	09:52	1	09:37	09:38	?	-				
28	?	1													09:47	09:56	10:05	1-				
28	C7.5	7	10:21	10:27	?	-					10:20	10:27	?	-	10:21	10:28	?	-				
28	C8.5	8	10:42	10:46	11:28	2+	10:40	10:50	10:56	1-	10:40	10:47	11:14	2	10:42	10:47	11:17	2				
28	C5.4	6	11:59	12:04	?	-					11:58	12:04	?	-	11:58	12:07	?	-				
28	C5.6	6	12:21	12:32	13:02	2					12:21	12:31	13:00	2	12:18	12:31	13:28	2+				
28	C4.5	3	13:42	13:47	?	-					13:40	13:46	?	-	13:40	13:47	?	-				
28	C5.1	3	13:58	14:03	14:45	2+					13:56	14:03	14:31	2	13:56	14:03	14:47	2+				
28	C6.0	3	14:55	14:59	?	-					14:53	15:00	15:19	1+	14:56	14:59	?	-				
28	C4.7	3	15:21	15:26	16:13	2+					15:21	15:26	15:52	1+	15:19	15:25	15:45	1+				
28	C3.4	1													15:59	16:04	16:44	2				
28	?	1													*16:12*	*16:17*	*?*	-				
28	C3.9	1													18:06	18:08	18:18	1-				
28	C8.9	2									18:38	18:42	19:23	2	18:40	18:44	19:19	2				
28	C7.2	2									19:45	19:51	20:26	2	19:48	19:52	20:09	1				
29	**M1.4**	7	06:39	06:48	?	-	06:36	06:45	06:53	1-	06:40	06:45	07:32	2+	*06:40*	*06:51*	*06:59*	*1*				
29	C8.2	8	09:28	09:36	10:20	2+					09:28	09:35	10:22	2+	09:27	09:36	?	-	*09:26*	*09:45*	*12:21*	*3+*
29	?	1													09:51	09:59	?	-				
29	?	1													10:21	10:29	10:40	1				
29	**M1.8**	10	11:17	11:22	12:30	2+	11:13	11:22	11:41	1+	11:16	11:22	12:08	2+	11:17	11:23	11:55	2	*11:21*	*11:29*	*12:59*	*3*
29	**M2.5**	10	12:53	12:56	13:57	2+	12:49	13:00	13:34	2	12:51	13:00	?	-	12:50	12:54	13:29	2	*12:59*	*13:05*	*13:39*	*2*
29	**X1.4**	9	14:18	14:33	16:06	3	14:04	14:37	17:07	3+	14:20	14:28	17:39	3+	14:21	14:29	16:49	3+	*14:11*	*14:49*	*16:11*	*3*
29	**M5.7**	4													*18:26*	*18:43*	*19:08*	*2*				
30	**M1.0**	5					06:50	07:07	07:22	1+	06:58	07:05	07:47	2+	*06:59*	*07:15*	*08:48*	*3*				
30	?	1													11:56	12:02	12:29	2				
30	C6.8	3	18:42	18:44	18:55	1-					18:42	18:48	19:13	1+	18:43	18:50	19:16	2				
31	C2.7	1	04:44	04:47	04:55	1-																
31	**M1.0**	6	11:13	11:22	11:53	2	11:08	11:21	12:00	2+	11:14	11:21	12:31	2+	11:15	11:23	12:17	2+				
31	C5.4	6	12:39	12:42	13:23	2	12:36	12:44	13:05	1+	12:38	12:43	13:24	2+	12:40	12:45	12:59	1				
31	C8.0	6	16:10	16:13	16:50	2	16:07	16:13	16:28	1	16:09	16:13	16:37	1+	16:11	16:15	?	-				
31	C3.6	1													16:36	16:42	17:03	1+				
31	C5.6	3									17:17	17:24	17:48	1+	17:18	17:30	17:49	1+				
31	**X1.1**	2									21:59	22:07	22:41	2	22:00	22:05	22:16	1-				

BAA Radio Astronomy Section. **2024 MAY.**

			Steve Parkinson (Various)				Andrew Thomas (19.6/*22.1*/**21.7kHz**)				Phil Rourke (23.4kHz)				Mark Prescott (19.6/*20.9*/**22.1kHz**)				John Elliott (19.6kHz)			
	Xray class		Tuned radio frequency receiver, frame aerials.				Tuned radio frequency receiver, 0.6m frame aerial.				Spectrum Lab, 0.6m frame aerial.				SpectrumLab/Starbase, mini-whip aerial. Active				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)	
1	**M1.8**		14:23	14:44	16:00	3	14:23	14:43	16:23	3					*14:29*	*14:35*	*?*	-	14:26	14:43	15:50	###
1	?														*?*	*14:46*	*15:59*	-				
1	?																					
1	C3.7																					
2	C2.7																					
2	C2.5																					
2	C4.3		09:49	09:53	10:05	1-									*09:52*	*09:56*	*?*	-				
2	?																					
2	?																					
2	?																					
2	C3.6		13:54	13:58	14:12	1-									*13:56*	*14:02*	*14:21*	*1*				
2	?																					
2	?																					
2	?																					
2	C3.7		16:24	16:28	16:37	1-																
2	C6.3		17:00	17:02	17:10	1-																
2	C8.7		17:30	17:33	17:40	1-																
2	C4.0																					
2	**M2.7**																					
3	C6.7																					
3	C5.3																					
3	**M4.4**						08:07	08:14	09:32	2+					08:11	08:18	09:33	2+	08:07	08:17	09:40	3
3	C8.0		16:10	16:16	17:00	2+					16:07	16:17	17:08	2+	16:15	16:23	16:39	1	16:08	16:15	17:00	2+
3	C7.5																					
4	**M9.1**						**06:14**	**06:23**	**08:06**	**3**					06:20	06:28	?	-				
4	**M1.5**														*?*	*07:11*	*07:53*	-				
4	C4.5		08:35	08:40	08:50	1-					08:33	08:40	09:00	1+					08:15	08:24	09:25	2+
4	C4.2																					
4	?																					
4	C3.8		14:57	15:01	15:16	1																
4	C6.3		16:00	16:14	16:40	2					16:01	16:18	17:06	2+	16:02	16:19	16:45	2				
4	C9.1		17:15	17:22	17:40	1					17:15	17:22	18:09	2+	**17:17**	**17:26**	**17:55**	**2**				
4	C4.0																					
4	**M1.3**		18:17	18:22	18:38	1									**18:21**	**18:27**	**18:56**	**2**				
4	C5.6																					
4	C6.0																					
5	C5.5																					
5	**X1.3**		05:53	06:04	07:15	2+	***05:56***	***06:02***	***07:44***	***3***					06:00	06:07	06:47	2+	05:55	06:03	07:30	3
5	**M1.3**		08:14	08:17	08:50	2	**08:13**	**08:21**	**08:55**	**2**					08:19	08:25	08:58	2	08:14	08:20	08:55	2
5	C8.4		08:55	09:00	?	-									09:11	09:19	?	-				
5	?		09:09	09:15	?	-	***09:08***	***09:16***	***09:25***	***1-***												
5	**M2.3**		09:26	09:39	?	-	09:25	09:40	09:55	1+					09:27	09:44	?	-				
5	**M7.4**		09:56	10:02	11:10	2+	***09:55***	***10:12***	***11:11***	***2+***					09:58	10:08	11:14	2+	09:55	10:07	11:15	2+
5	**X1.2**		11:44	11:57	13:40	3	**11:43**	**11:57**	**13:48**	**3**					11:46	11:55	13:20	3	11:43	11:50	14:12	3+
5	?																					
5	C7.5		14:13	14:20	?	-	*14:12*	*14:19*	*14:38*	*1+*					14:16	14:23	?	-				
5	**M1.3**		14:38	14:48	15:15	2	***14:38***	***14:49***	***15:32***	***2+***					14:42	14:52	?	-				
5	**M2.2**		15:33	15:42	16:30	2+	15:32	15:42	16:14	2					15:37	15:47	16:25	2+	15:42	15:43	16:20	2
5	**M1.3**		16:59	17:03	17:24	1																
5	C6.4																					
5	C8.7																					
5	**M1.0**																					
5	**M1.3**																					
6	**M1.3**																					
6	**X4.5**						06:05	06:40	08:52	3+					06:05	06:40	08:19	3+	06:20	06:40	09:00	3+
6	**M1.5**		09:57	10:02	10:50	2+	09:55	10:01	10:52	2+	09:54	10:01	10:21	1+	09:59	10:05	10:51	2+	09:55	10:02	10:55	2+
6	C6.5						10:56	11:02	11:36	2												
6	?																					
6	?																					
6	C9.3		12:55	12:58	13:12	1-	12:54	12:59	13:13	1					*12:56*	*13:01*	*?*	-				
6	?																					
6	?		14:29	14:31	14:50	1	14:27	14:32	14:48	1					*14:31*	*14:37*	*?*	-				
6	C6.2/4.4		15:28	15:36	16:10	2					15:28	15:34	16:22	2+	15:33	15:42	16:25	2+	15:27	15:42	16:50	2+
6	C4.3																					
6	C9.4																					
7	C5.7																					
7	**M5.1**						06:04	06:17	07:10	2+					06:11	06:22	07:01	2+				
7	?		07:16	07:20	?	-	07:17	07:20	07:31	1-					*?*	*07:24*	*?*	-				
7	?		07:31	07:35	?	-	07:31	07:36	08:01	1+					*?*	*07:40*	*?*	-				
7	?																					
7	**M1.3**		08:20	08:33	09:15	2+	08:18	08:34	09:32	2+					08:24	08:37	09:15	2+	08:15	08:33	09:15	2+
7	?																					
7	?																					
7	?						09:51	09:55	10:06	1-												
7	C9.5		10:38	10:44	?	-	10:33	10:44	11:30	2+	10:34	10:40	11:30	2+	10:39	10:49	11:24	2	10:35	10:44	11:55	2+
7	**M2.4**		11:43	11:49	?	-	11:42	11:51	12:48	2+	11:44	11:50	12:49	2+	11:46	11:56	?	-	11:40	11:53	12:45	2+
7	**M1.5**		12:49	12:57	?	-	12:48	12:56	13:21	2	12:50	12:56	13:19	1+	12:53	12:59	?	-	12:48	12:57	14:10	2+
7	**M1.0**		13:20	13:26	13:45	1	13:21	13:26	13:38	1-					?	13:31	?	-				
7	**M1.0**																					
7	?																					
7	?																					
7	**M8.2**		16:28	16:32	17:37	2+	16:29	16:32	17:43	2+	16:28	16:33	17:48	2+	16:31	16:38	17:44	2+	16:27	16:33	?	-
7	?																					
7	?																					
7	**M2.1**																					
7	**M3.3**																					
8	**X1.0**																					
8	?		06:47	06:54	07:30	2	06:46	06:54	07:32	2+					06:50	06:59	07:31	2	06:41	06:55	07:25	2
8	**M4.5**		07:35	07:44	08:35	2+	07:32	07:43	08:23	2+					07:37	07:48	08:30	2+				
8	?		08:34	08:41	08:57	1					08:31	08:42	?	-								
8	?																					
8	**M1.8**						09:34	09:38	10:51	2+	?	09:40	?	-								
8	**M2.1**										?	09:51	?	-	*?*	*09:56*	*09:54*	-				
8	?										?	10:01	10:34	-								
8	?																					
8	?																					
8	?																					
8	?																					
8	**M4.1**		11:13	12:03	13:45	3+	11:11	12:07	13:51	3+	11:09	12:04	13:55	3+	*11:19*	*11:26*	*?*	-	11:12	12:05	13:15	3
8	?														*?*	*12:30*	*13:25*	-				
8	?																					

8	?																					
8	?																					
8	?																					
8	?		15:14	15:19	?	-																
8	?		15:27	15:31	15:43	1-																
8	C6.6		15:57	16:04	16:30	2									*16:00*	*16:06*	*?*	-				
8	C6.6																					
8	**M7.9**		17:44	17:53	19:02	2+	17:44	17:54	18:40	2+					17:51	17:58	18:18	1+	17:45	17:54	18:45	2+
8	**M2.9**																					
8	**M2.0**																					
8	**X1.0**																					
9	**M1.7**																					
9	**M2.3**						06:03	06:14	06:26	1					*06:12*	*06:19*	*?*	-				
9	?		06:07	06:31	07:05	2+	06:26	06:33	07:27	2+					*06:29*	*06:40*	*07:27*	*2+*				
9	?																					
9	?																					
9	?																					
9	?																					
9	**X2.2**		08:35	09:11	10:21	3	08:25	09:13	11:53	3+	08:33	09:14	11:48	3+	08:52	09:06	?	-				
9	?																					
9	**M3.1**						11:53	11:58	12:07	1-	11:56	11:59	?	-	11:58	12:00	?	-				
9	**M2.9**		11:54	12:14	12:50	2+	12:07	12:15	13:00	2+	?	12:13	12:57	-	?	12:17	12:57	-				
9	?																					
9	**M3.7**		13:20	13:25	14:14	2+	13:20	13:24	13:48	1+	13:21	13:25	13:57	2	13:23	13:28	14:38	2+				
9	?																					
9	?																					
9	?																					
9	?																					
9	?																					
9	**X1.1**		17:29	17:44	18:35	2+	17:29	17:45	18:36	2+	17:29	17:34	17:43	1-	17:35	17:45	18:44	2+	17:25	17:43	18:40	2+
10	**X3.9**		06:33	06:55	08:15	3	06:30	06:55	09:04	3+					06:36	06:59	09:07	3+	06:27	06:55	09:00	3+
10	?																					
10	?																					
10	?																					
10	?																					
10	**M2.2**		10:12	10:16	11:05	2+	10:10	10:16	11:20	2+	10:11	10:17	11:04	2+	10:15	10:19	11:14	2+	10:11	10:15	11:25	2+
10	?																					
10	?																					
10	?																					
10	?																					
10	?																					
10	?																					
10	?																					
10	**M5.9**		14:02	14:11	15:15	2+	14:00	14:11	15:38	3	14:03	14:11	15:44	3	14:04	14:14	15:22	2+	14:00	14:12	15:45	3
10	C6.9		15:47	16:03	16:24	2	15:38	15:55	16:26	2+												
10	?																					
10	?																					
10	?																					
10	?																					
10	C9.1-M1.1																					
10	**M1.7**																					
11	?																					
11	?																					
11	?										08:34	08:54	09:50	2+								
11	**M3.1**		10:09	10:19	10:50	2	10:04	10:19	10:54	2+	10:01	10:21	10:54	2+	10:14	10:35	?	-				
11	**M1.6**						10:54	10:58	11:13	1					10:59	11:01	?	-				
11	**X1.5**		11:25	11:43	12:36	2+	11:16	11:41	12:41	2+	11:14	11:40	12:47	3	11:29	11:38	12:43	2+	11:25	11:50	12:35	2+
11	?																					
11	?																					
11	**M1.7**		13:48	13:53	14:33	2	13:46	13:54	14:26	2					13:52	13:55	14:18	1+	13:47	13:55	14:30	2
11	?										14:10	14:36	?	-								
11	?																					
11	**M8.8**		15:03	15:26	16:50	3	14:35	15:26	18:09	3+	?	15:24	16:59	-	15:07	15:29	16:26	2+	15:05	15:25	16:45	3
11	?																					
11	?																					
12	?		08:18	08:43	08:54	2																
12	?																					
12	C9.2														10:21	10:33	?	-				
12	?																					
12	?																					
12	?																					
12	?																					
12	**M1.6**		12:35	12:45	13:23	2+	12:30	12:46	13:39	2+	12:30	12:45	13:17	2+	12:40	12:48	13:36	2+	12:30	12:47	13:40	2+
12	?																					
12	**M1.5**		13:46	13:59	14:33	2+	13:39	14:03	15:20	3	13:51	13:59	15:12	2+	13:50	14:01	15:02	2+	13:45	13:55	15:00	2+
12	**M1.0**																					
12	?																					
12	?																					
12	C7.0		15:25	15:32	16:05	2																
12	C7.3																					
12	**X1.0**		16:14	16:28	17:30	2+	16:13	16:27	17:50	3	16:17	16:27	17:51	3	16:18	16:33	18:00	3	16:15	16:27	18:00	3
12	?																					
13	M1.4/M1.2						08:04	08:28	08:50	2+					08:12	08:31	?	-				
13	**M6.6**		08:06	09:46	12:00	3+	08:50	09:46	12:37	3+	08:51	09:46	11:30	3+	08:54	09:48	?	-	?	09:48	?	-
13	**M3.7**		13:01	13:15	14:02	2+	13:00	13:11	14:55	3	13:04	13:11	14:22	2+	13:05	13:16	14:05	2+	13:00	13:12	14:00	2+
13	?																					
13	?																					
13	?																					
13	?																					
13	?																					
13	?																					
14	?																					
14	**X1.2**		12:43	12:57	14:20	3	12:43	12:55	14:08	2+	12:46	13:00	14:19	3	12:48	12:55	14:06	2+	12:42	12:50	14:00	2+
14	C9.6														*15:23*	*15:34*	*16:07*	*2*				
14	?																					
14	?																					
14	**X8.7**		16:46	16:52	18:40	3	16:47	16:52	18:50	3					16:50	16:52	18:09	2+	16:46	16:48	18:15	3
14	**M4.4**																					
14	?																					
14	?																					
15	C9.9		08:16	08:38	11:46	3+	08:16	08:37	11:31	3+					08:29	08:36	09:51	2+	08:25	08:32	?	-
15	?																					
15	**M2.9**																					
15	**M3.2**														14:02	14:31	?	-				
15	**X2.9**		13:59	14:37	15:55	3	13:59	14:36	17:10	3+					?	14:53	?	-	13:57	14:28	16:20	3+
16	**M1.0**						*07:54*	*08:06*	*08:27*	*2*					*07:59*	*08:13*	*09:01*	*2+*				
17	?																					

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17	C3.7																				
17	C4.8																				
17	?																				
17	C3.1											13:26	13:30	13:58	1+						
17	?																				
17	?																				
19	**M1.9**		13:42	13:45	14:35	2+	13:42	13:46	14:39	2+		13:42	13:45	14:05	1	13:46	13:49	14:45	2+	13:43	13:55	14:25	2
19	**M2.5**		17:55	17:59	18:38	2														17:55	17:58	18:20	1
21	C4.8																				
21	C7.0		13:33	13:38	14:00	1+	13:32	13:39	14:05	2						13:37	13:42	?	-	13:34	13:38	14:05	1+
21	C6.6		14:08	14:14	14:39	1+	14:05	14:16	14:48	2						14:11	14:18	14:51	2	14:07	14:15	14:55	2+
21	C6.9		16:00	16:08	16:40	2	16:01	16:08	16:41	2						16:06	16:10	16:41	2	16:02	16:08	16:30	1+
21	**M1.9**																						
22	C3.6																						
22	**M1.2**		14:00	14:06	15:35	3	13:49	14:05	14:59	2+		14:00	14:07	15:02	2+	14:03	14:09	15:15	2+	13:58	14:07	14:55	2+
23	C9.7															*06:45*	*06:50*	*07:16*	*1+*	06:40	06:45	07:20	2
23	C5.5																						
23	C8.3		09:18	09:23	?	-	09:17	09:23	09:33	1-						*09:22*	*09:39*	*?*	-	09:18	09:24	?	-
23	?		09:33	09:36	09:48	1-	09:33	09:35	09:51	1-										09:38	09:40	09:53	1-
23	**M1.0**						10:07	10:11	10:36	1+						*?*	*10:13*	*?*	-				
23	C7.8		10:40	10:44	11:05	1	10:36	10:42	11:08	1+						*?*	*10:49*	*?*	-	10:40	10:42	10:53	1-
23	C6.0		11:09	11:13	11:35	1+	11:08	11:12	11:47	2						11:12	11:15	11:37	1	11:08	11:12	11:30	1
23	C4.0																						
23	C4.5																						
23	C5.8																						
23	**M2.5**		12:56	13:18	14:45	3	12:49	13:16	14:33	3		12:56	13:14	14:34	3	12:59	13:22	14:51	3	12:55	13:18	14:25	3
23	?																						
23	C6.8																						
23	**M1.0**		15:48	16:00	16:35	2+	15:53	15:59	16:27	2						16:00	16:03	?	-	15:55	16:00	16:30	2
23	?																						
24	?															*06:51*	*07:15*	*07:46*	*2+*				
24	**M1.0**		07:56	08:03	08:30	2	07:55	08:28	09:43	3										08:00	08:03	?	-
24	?															08:16	08:29	08:50	2				
24	?																						
24	?																						
24	C9.7		08:58	09:03	09:20	1										*09:01*	*09:15*	*09:40*	*2*	08:58	09:03	09:40	2
24	C5.6		10:50	10:52	11:05	1-	10:45	10:54	11:28	2						*10:52*	*11:02*	*11:25*	*2*	10:50	10:55	11:05	1-
24	?																						
24	?																						
24	C3.4																						
25	C5.8		17:24	17:27	17:55	1+														17:23	17:32	17:40	1-
26	C5.2		09:33	09:40	10:10	2	09:31	09:38	10:26	2+						09:35	09:45	10:23	2+	09:30	09:40	10:40	2+
26	?																						
26	?																						
26	?																						
26	C2.4																						
26	C2.3																						
26	C5.4						14:03	14:14	14:50	2+						14:08	14:20	15:12	2+	14:03	14:15	14:20	1-
26	C3.3																						
26	C5.9																						
26	C7.4																						
27	**X2.8**						06:55	07:09	10:50	3+						07:01	07:11	09:55	3+	06:57	07:12	10:20	3+
27	?																						
27	C6.7																			12:25	12:30	13:05	2
27	C8.9																						
28	C7.8																						
28	C4.9						08:59	09:09	09:33	2						*09:06*	*09:15*	*?*	-				
28	C5.6						09:33	09:42	10:21	2+						*09:39*	*09:43*	*?*	-				
28	?																						
28	C7.5						10:21	10:27	10:41	1		10:25	10:27	10:41	1-	10:25	10:30	?	-	10:20	10:27	?	-
28	C8.5						10:41	10:47	11:17	2		10:43	10:47	11:23	2	10:47	10:51	?	-	10:40	10:47	11:05	1
28	C5.4						11:59	12:04	12:21	1						12:01	12:11	?	-	11:58	12:08	?	-
28	C5.6						12:21	12:30	13:36	2+						12:26	12:36	13:13	2+	12:20	12:30	13:00	2
28	C4.5																						
28	C5.1																						
28	C6.0																						
28	C4.7																						
28	C3.4																						
28	?																						
28	C3.9																						
28	C8.9																						
28	C7.2																						
29	**M1.4**						06:38	06:53	07:55	2+						06:46	06:56	07:52	2+	06:40	06:50	07:35	2+
29	C8.2		09:28	09:36	?	-	09:27	09:37	11:16	3						09:32	09:40	10:27	2+	09:27	09:37	10:35	2+
29	?																						
29	?																						
29	**M1.8**		11:16	11:23	?	-	11:16	11:23	12:50	3		11:18	11:22	12:17	2+	11:20	11:28	12:14	2+	11:17	11:23	12:50	3
29	**M2.5**		12:53	12:59	13:50	2+	12:50	13:00	13:51	2+		12:53	13:00	14:09	2+	12:56	13:05	13:43	2+	12:50	12:58	13:50	2+
29	**X1.4**		14:19	14:40	16:05	3	13:51	14:49	18:17	3+						14:21	14:40	17:17	3+	14:15	14:50	15:35	2+
29	**M5.7**						18:38	18:43	19:07	1+						18:41	18:46	19:09	1+	18:40	18:47	19:10	1+
30	**M1.0**															07:06	07:20	08:14	2+	07:00	07:13	08:20	2+
30	?																						
30	C6.8																						
31	C2.7																						
31	**M1.0**															11:18	11:26	?	-	11:14	11:22	12:30	2+
31	C5.4															12:43	12:49	13:29	2+	12:39	12:43	13:10	1+
31	C8.0															*16:14*	*16:17*	*?*	-	16:10	16:14	16:35	1
31	C3.6																						
31	C5.6																			17:20	17:30	17:40	1
31	**X1.1**																						