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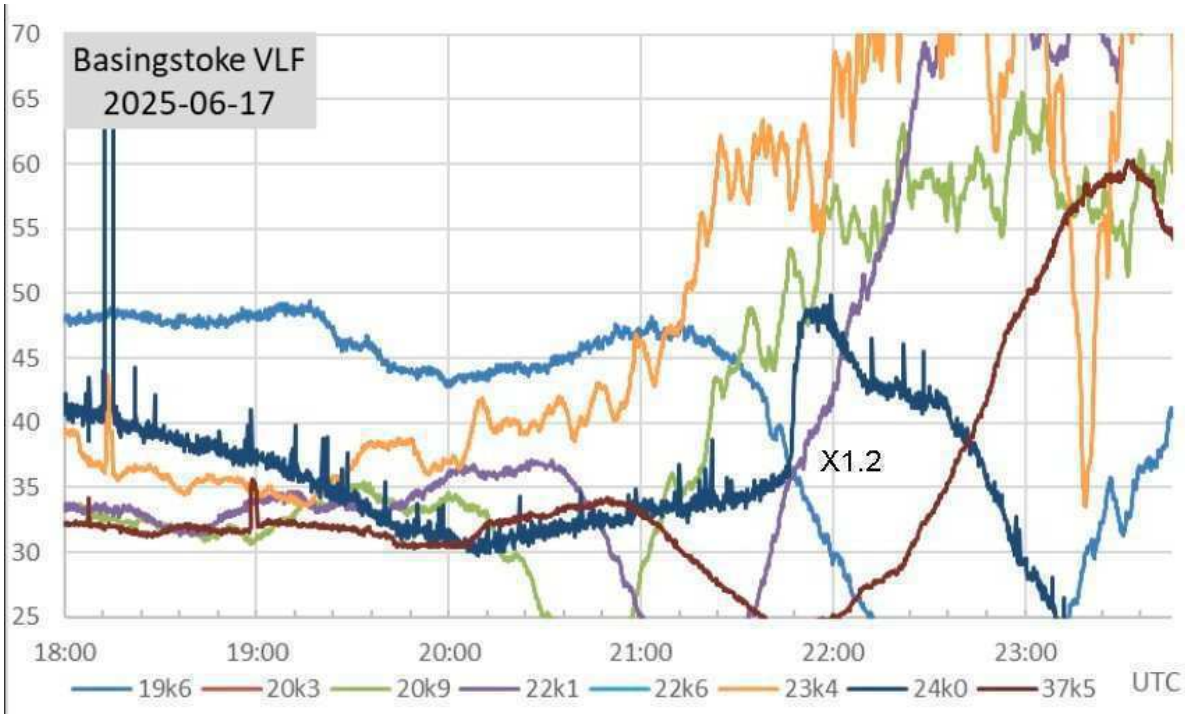
BAA Radio Astronomy Section. Director Paul Hearn.

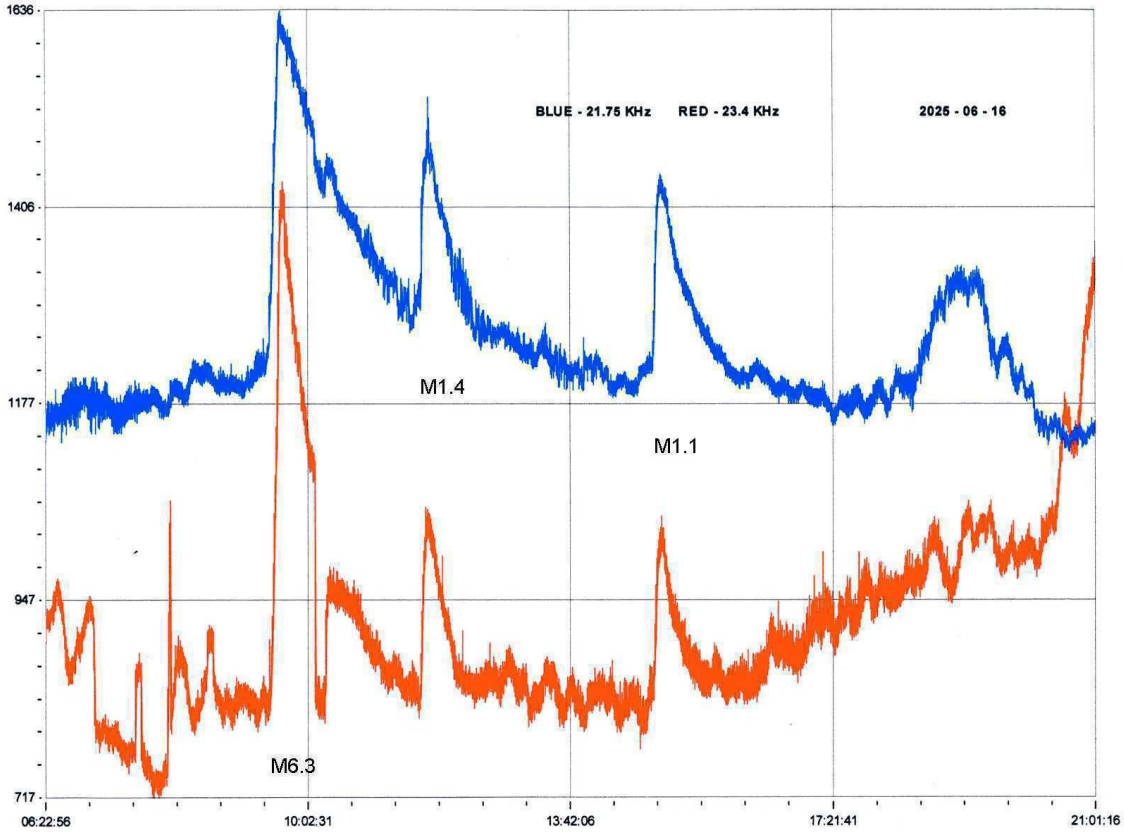
RADIO SKY NEWS 2025 JUNE.

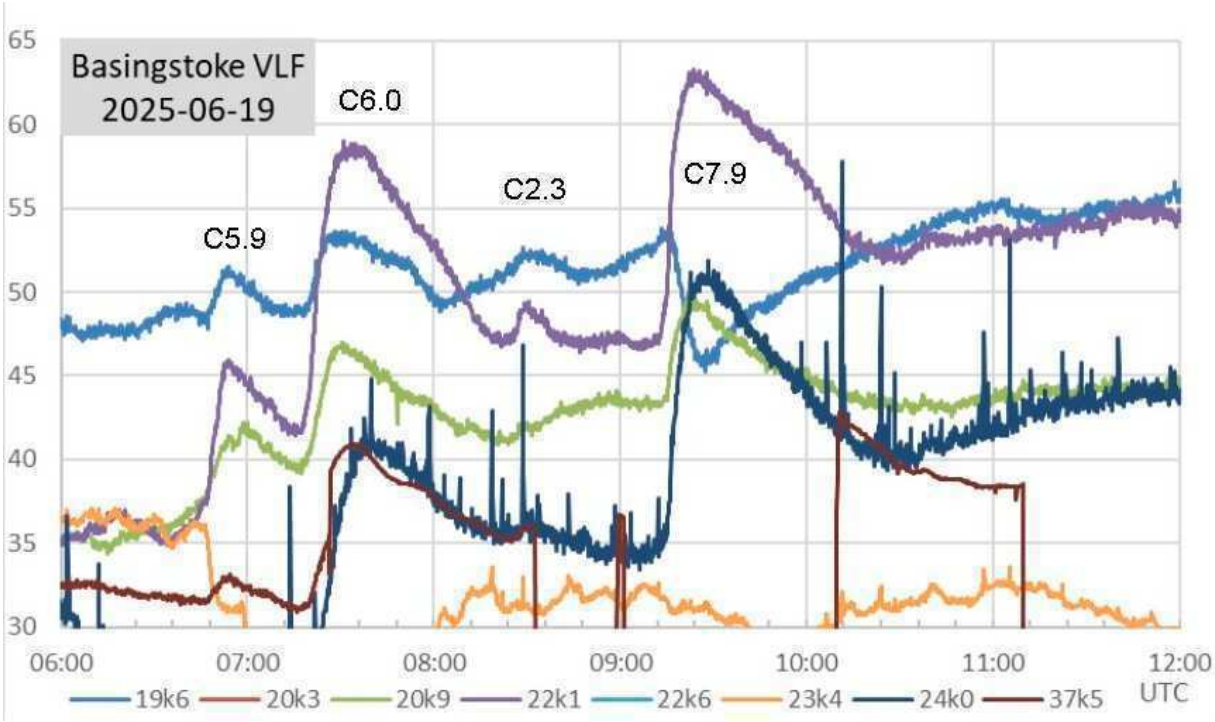
VLF SID OBSERVATIONS.

Solar flaring activity in June was quite low with just 50 classified flares recorded as SIDs. This is the lowest since 2025 January when 45 were recorded. Our day time in June is considerably longer than in January, so it probably represents even lower activity than the numbers suggest. The satellite data shows that there were two X-class flares, an X1.9 close to midnight on the 19th and an X1.2 at 21:53UT on the 17th. Paul Hyde recorded this one on the 24kHz signal from Cutler, USA. His recording shows a clear SID, fading into the sunset. All of the other signals were well past their local sunset times, and are mostly very noisy.

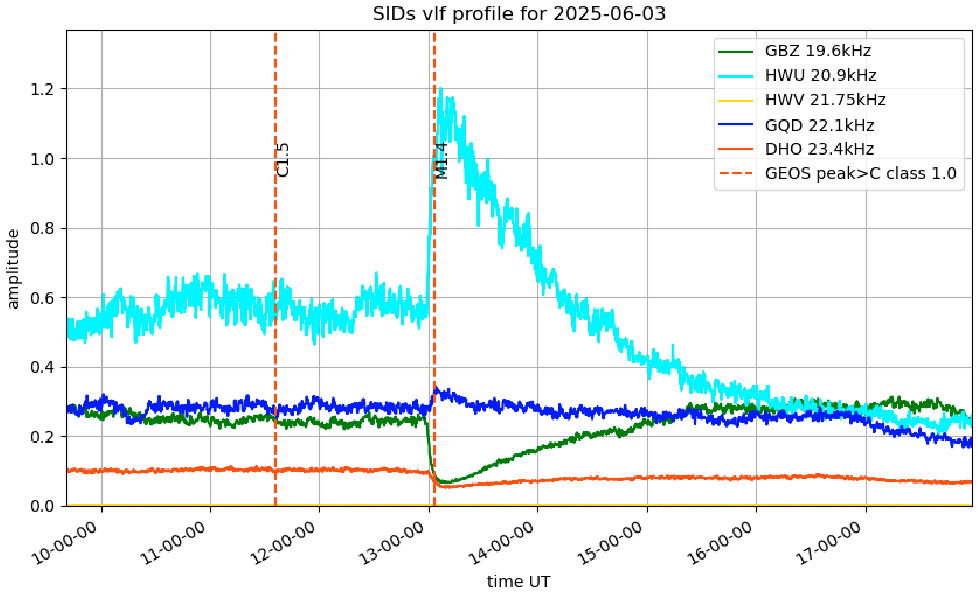


Most of June's activity was around mid-month, with a very quiet period in the last week when nothing was recorded. There were mostly just C-flares in the first two weeks, followed by four days of stronger flaring leading up to the X1.2. Colin Clements' recording shows the run of M-flares on 16th. 23.4kHz (red trace) has a short signal drop-out just after 10:02, an effect becoming more common on this signal. 21.75kHz also shows a minor drop-out at the same time.

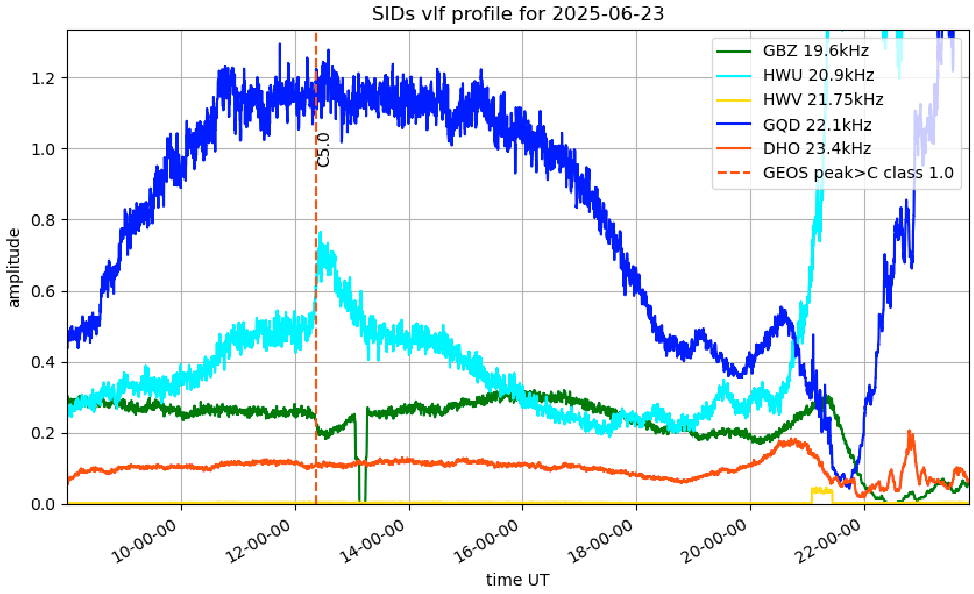




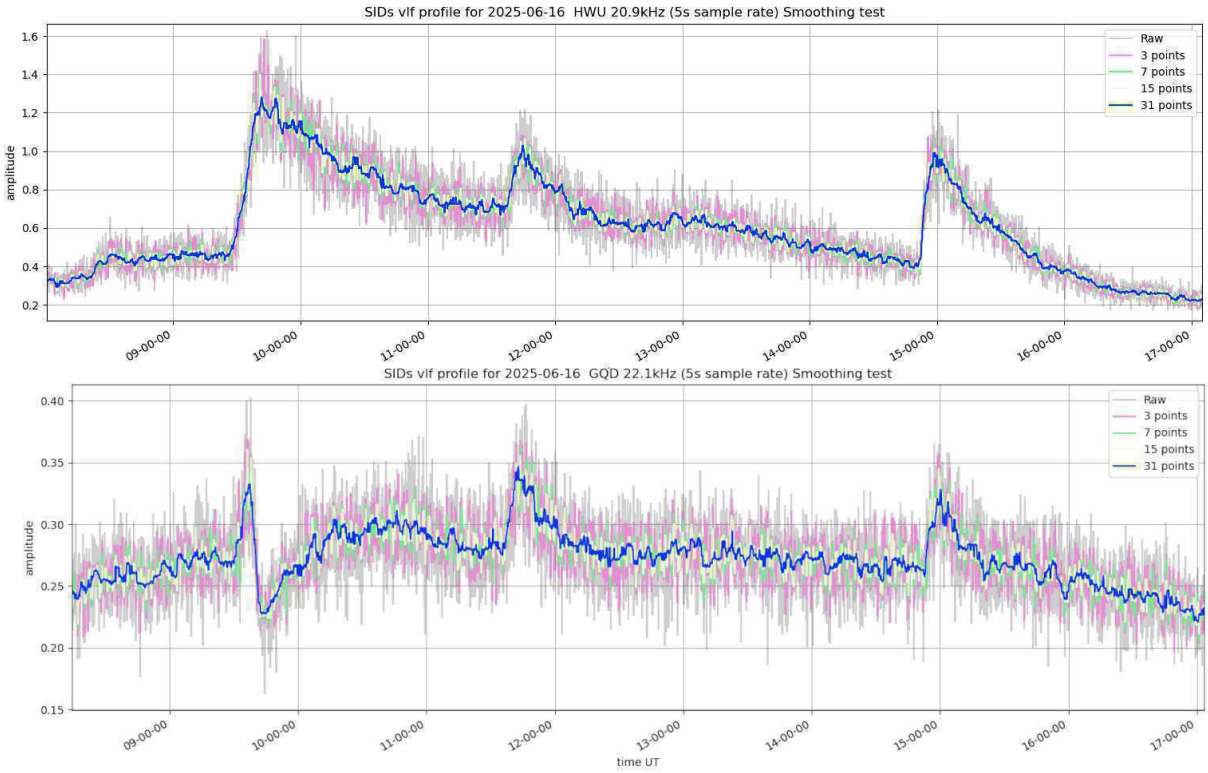
Paul Hyde's recording shows the run of C-flares on the 19th. The small C2.3 flare produced clear SIDs on both 19.6kHz and 22.1kHz, while the longer paths are much less clear. 23.4kHz shows its usual break between 07 and 08UT, and appears very noisy and unresponsive to the flares.



Mark Prescott's recording from the 3rd shows the M1.4 flare peaking at 13:05UT, along with the much weaker C1.5. 20.9kHz shows a very strong SID from the M1.4, with smaller SIDs on the other signals. The C1.5 has a very weak effect at 20.9kHz, but is rather lost in the noise. 22.1kHz also shows a very small dip matching the C1.5, but it does not look very SID-like. Mark's recording from the 23rd shows a very strange diurnal curve at 22.1kHz compared with its flat shape on the 3rd. The other signals on his recording look fairly normal, responding well to the C5.0 flare at 12:26. My receiver saturated on the 23rd which was rather unusual, but I have no other recordings for comparison.

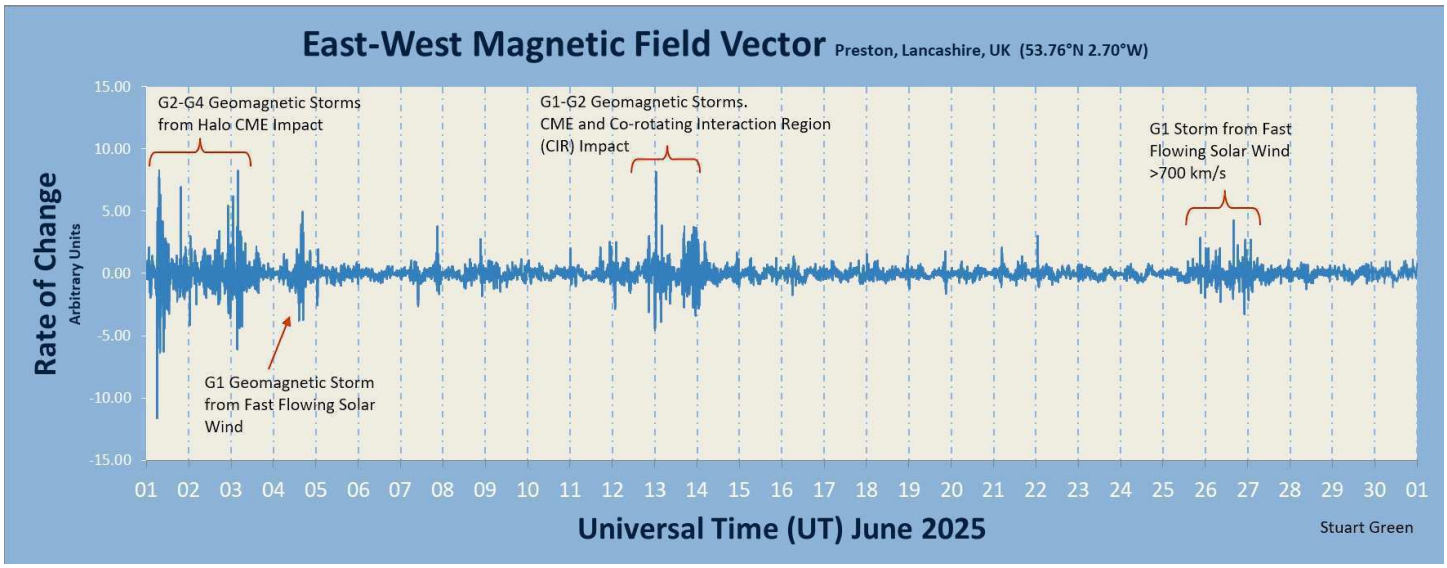


Mark has also included comparison charts for the M6.3 flare on the 16th (shown on the next page). The top panel shows HWU 20.9kHz with clean 'shark's Fin' SIDs for all three of the flares. The lower panel is GQD 22.1kHz with a rather noisier signal. The M6.3 flare at 09:45 shows what we have called a 'spike and wave' SID, where the signal goes through an in phase / out of phase interference pattern. Mark notes that in geophysics language this is known as a +90° peak/trough wavelet, more accurately describing the effect.

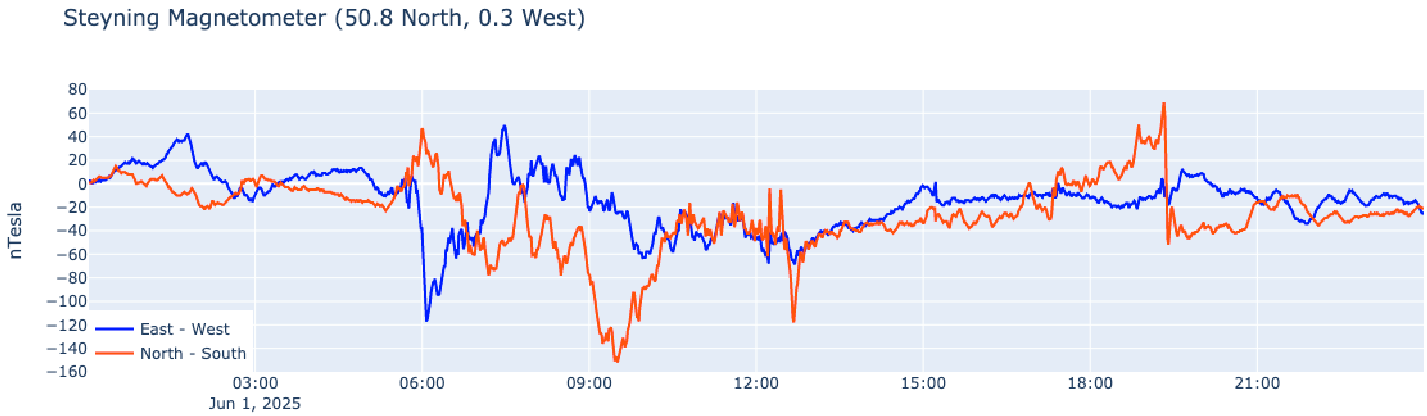


We often get interference problems at VLF, the lower cut-off for CE compliance being 150kHz, but tracking the source can be a problem. Colin Briden noticed a pulsing signal at 38.64kHz, with a related signal at 41kHz. Rotating the loop aerial had no effect, indicating a local source. After much time switching off various items of domestic equipment, the source was found to be an electric toothbrush charger!

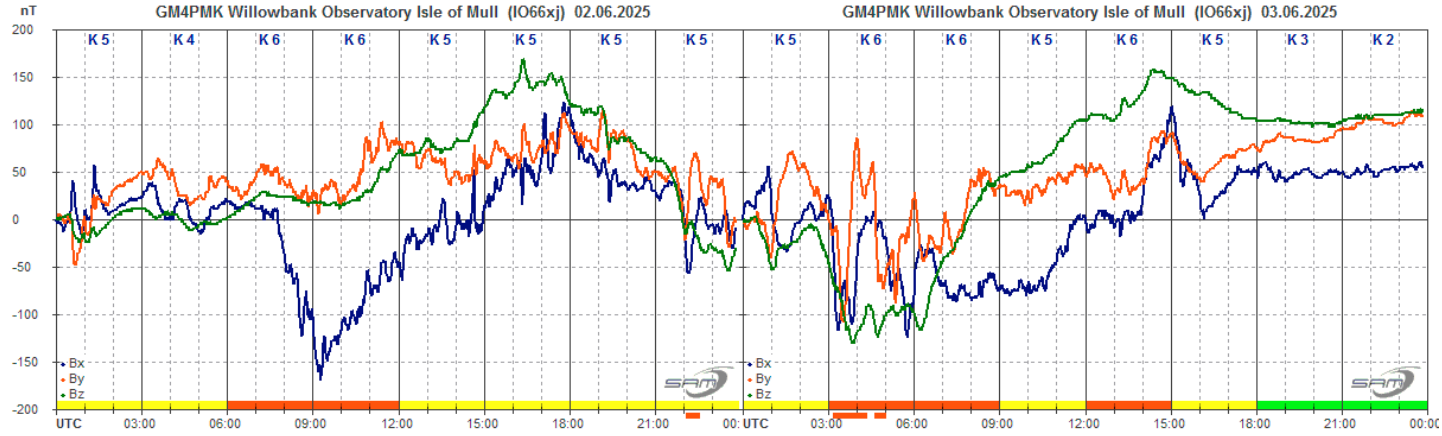
MAGNETIC OBSERVATIONS.



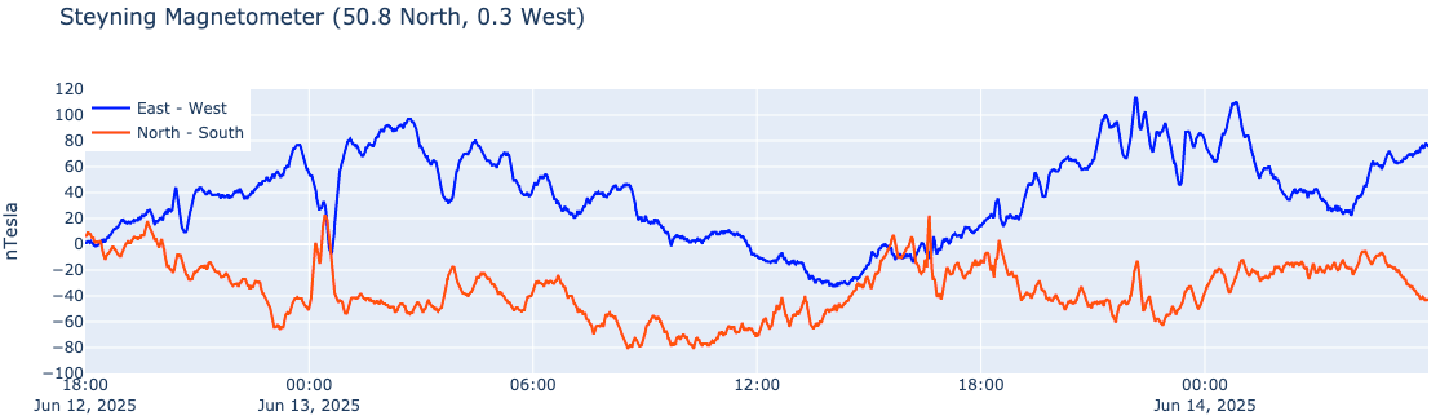
Stuart Green's summary of the magnetic activity in June shows a rather quiet month, matching the pattern of SID numbers recorded. May ended with a strong coronal hole solar wind, the disturbance continuing into the first few days of June. This was a combination of an earlier CME and a fast solar wind. Nick Quinn's recording from the 1st shows a strong disturbance starting about 06UT continuing through most of the day:

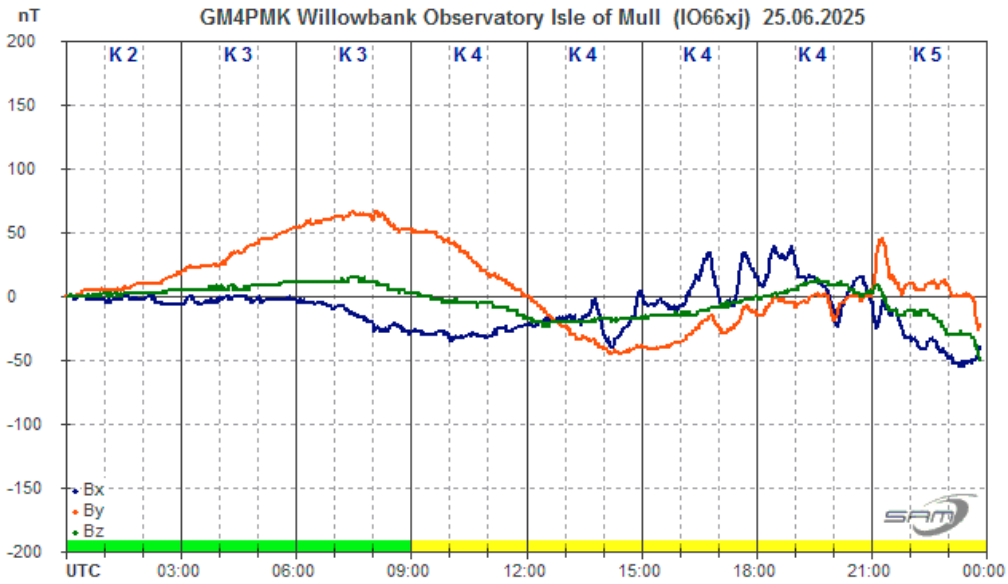


There is a very sharp change in the North-South axis at 19:20, also seen in the other recordings. This appears to be the arrival of a CME reported in the STCE bulletin from an M8.1 flare at 00:005UT on May 31st. There is also a smaller spike at about 12:30 that may also be linked to the CME impact.



Strong activity continued through the 2nd and 3rd, shown in Roger Blackwell's recording. This was aided by another coronal hole with a fast solar wind. There was a short active period in the afternoon of the 4th, but the disturbance then faded out over the next few days. Magnetic activity remained fairly quiet until the 12th, when another mixture of coronal hole winds and glancing CME impacts produced some mild disturbance. Nick Quinn's recording starts at 18:00 on the 12th, ending at 06:00 on the 14th, and shows some rapid turbulence with fairly small changes in the magnetic field.

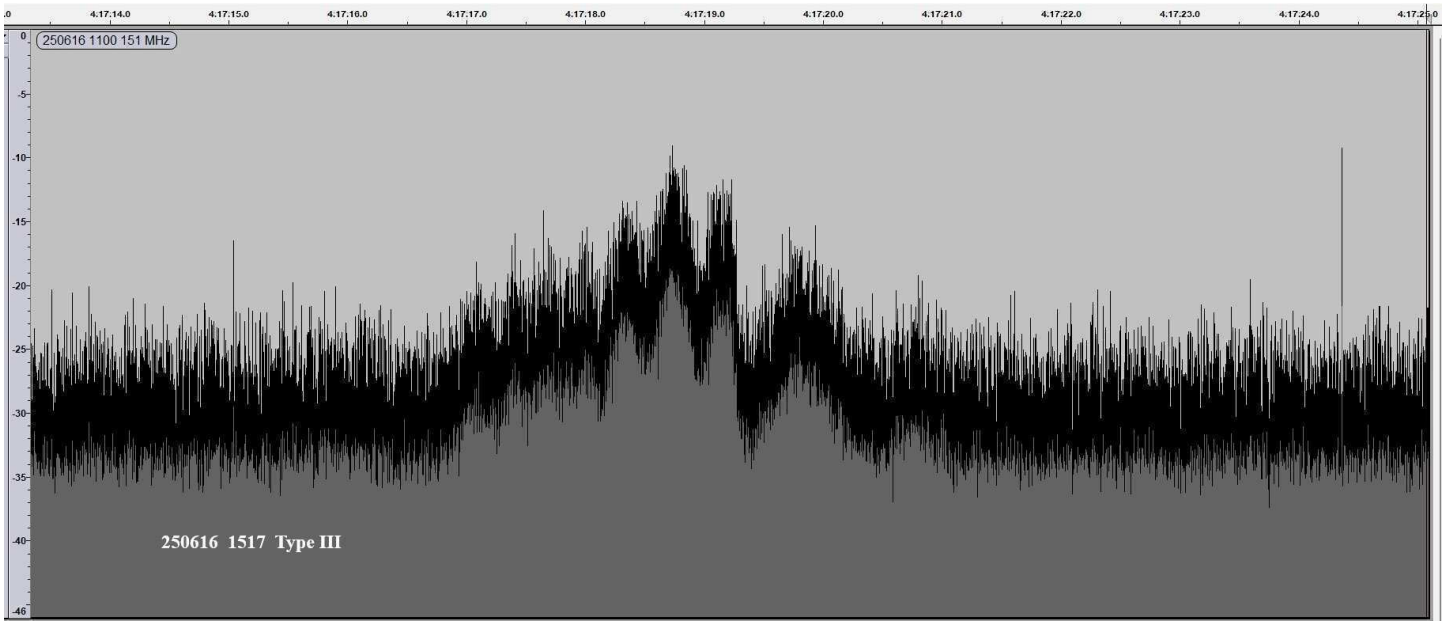




Roger Blackwell's recording shows the mild disturbance starting on the 25th, produced by further periods of faster solar wind. Unfortunately his magnetometer had several periods off-line, and so the following few days are missing.

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

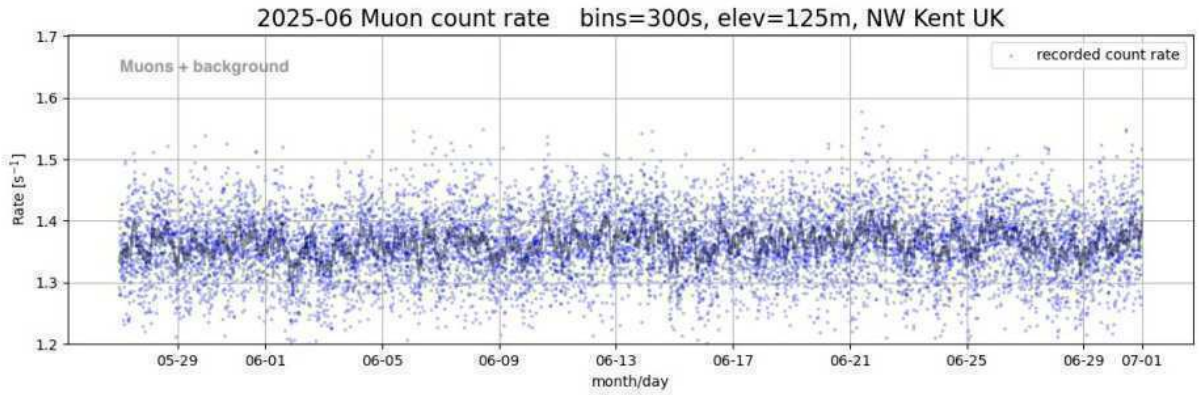
SOLAR EMISSIONS

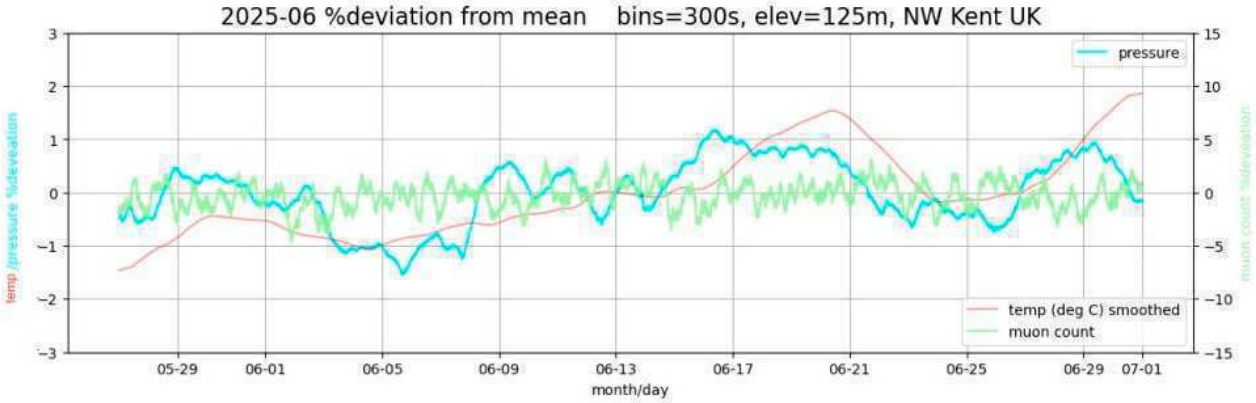


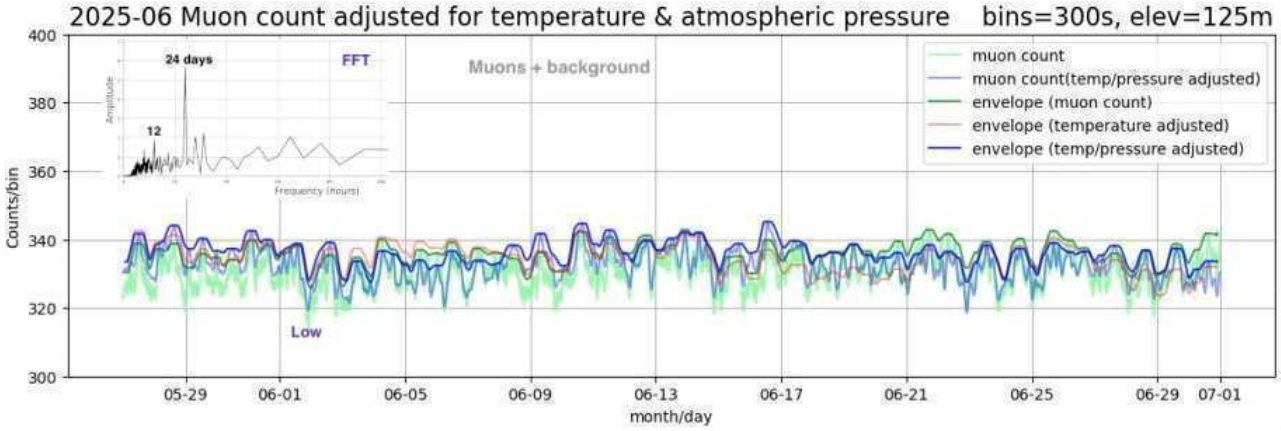
Colin Briden recorded a type III 151MHz emission at 15:17UT on the 16th. It has an amplitude of about 15-20dB, but only lasted for about 5 seconds, much shorter than usual. Our peak timings for the M1.1 flare on the 16th were around 14:53-15:00, matching the satellite listing of the X-ray peak at 14:55. Our SID timings did show a long decay time for the flare. Colin's receiver has a sample rate of 41k cycles / second.

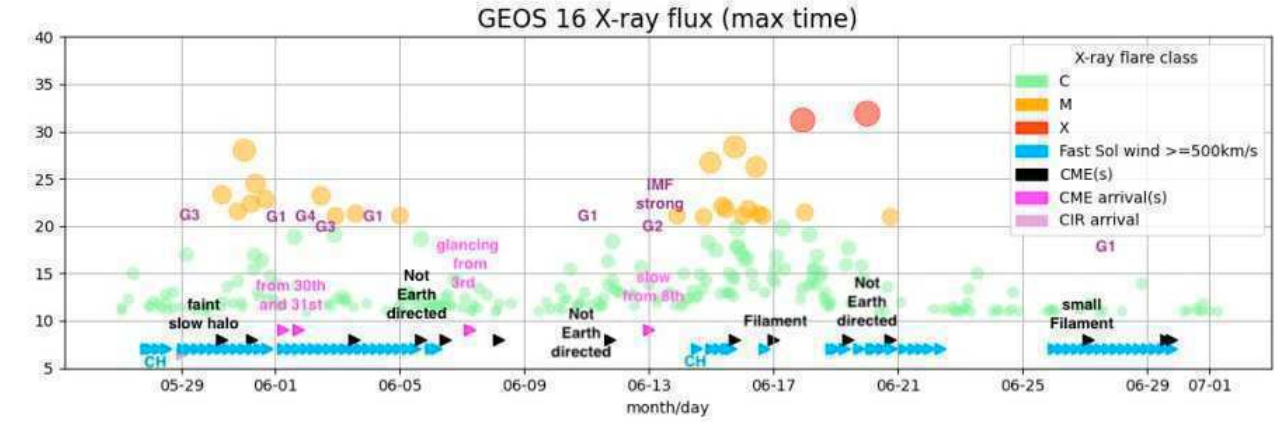
No other emissions were reported.

MUONS

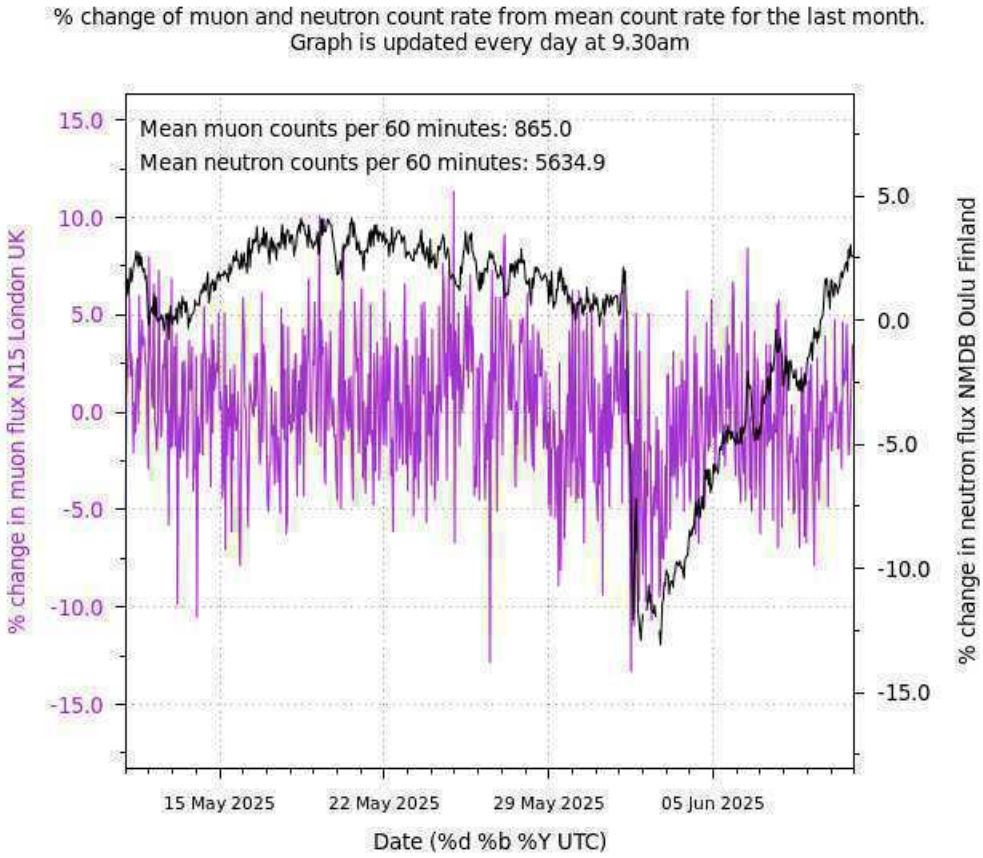

2025-06 Muon count rate bins=300s, elev=125m, NW Kent UK
Muons + background
recorded count rate
Rate [s⁻¹]
month/day


2025-06 %deviation from mean bins=300s, elev=125m, NW Kent UK
pressure
temp (deg C) smoothed
muon count
month/day


2025-06 Muon count adjusted for temperature & atmospheric pressure bins=300s, elev=125m
24 days
FFT
12
Muons + background
muon count
muon count(temp/pressure adjusted)
envelope (muon count)
envelope (temperature adjusted)
envelope (temp/pressure adjusted)
Low
Counts/bin
month/day

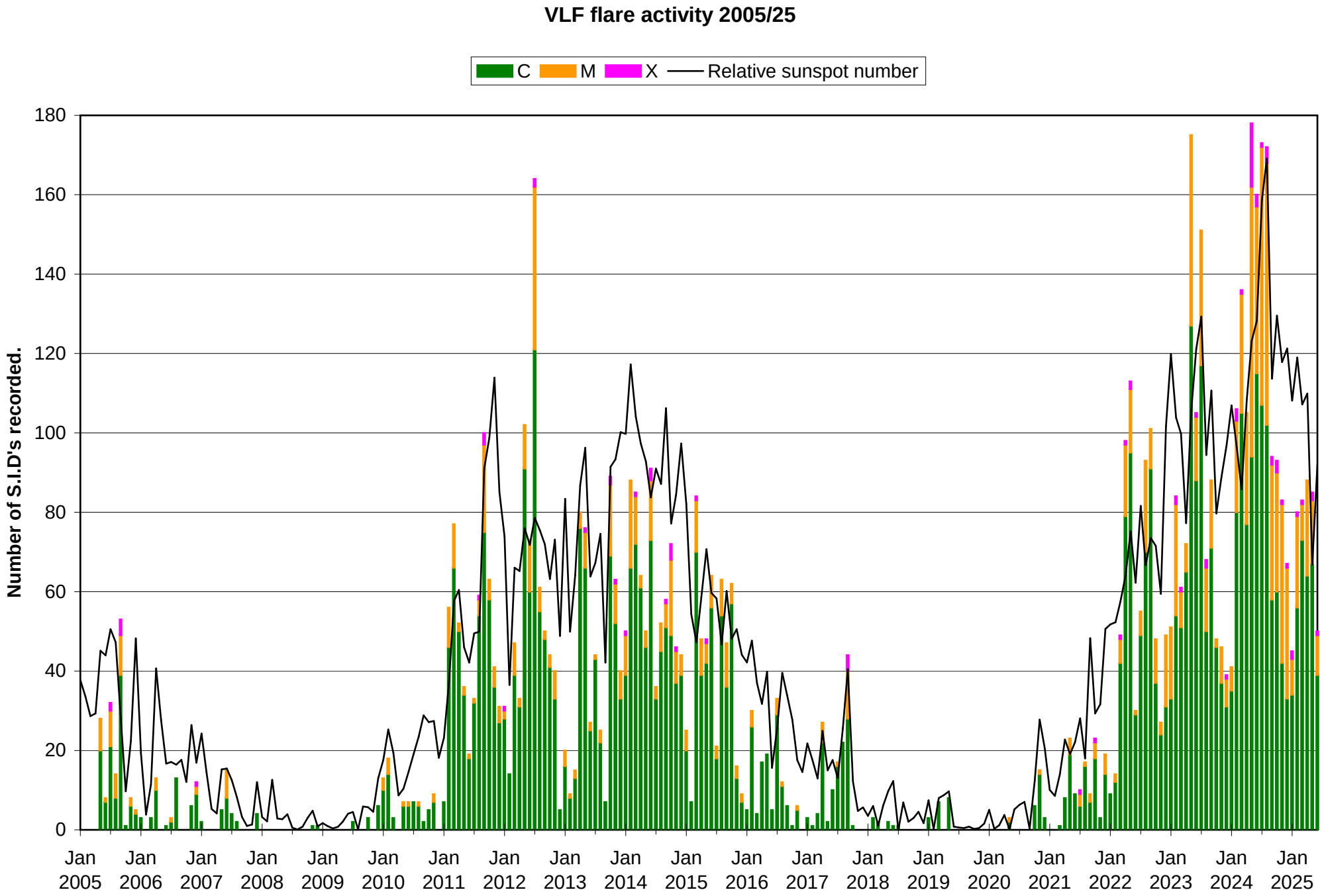

GEOS 16 X-ray flux (max time)
X-ray flare class
C
M
X
Fast Sol wind >=500km/s
CME(s)
CME arrival(s)
CIR arrival
G3
G1 G4
G3
G1
G1
IMF strong
G2
G1
glancing from 3rd
from 30th and 31st
faint slow halo
Not Earth directed
slow from 8th
Not Earth directed
Filament
Not Earth directed
small Filament
CH
CH
month/day

Mark Prescott's Muon charts show a fairly flat count through most of June. Inset is an FFT of the chart data, showing strong 12 and 24 hour diurnal peaks. There is a small drop in the flux on the 2nd, matching the CME timing. There is another dip between the 13th and 17th which also matches the other activity recorded.



Andrew Thomas has also been recording the muon flux. His recording (purple trace) is mostly from May, but includes the first week of June showing the sharp drop on the 2nd from the CME impact. Andrew has added the Oulu (Finland) neutron data shown in the black trace. Andrew's recording method is different to that used by Mark Prescott, but the effect of the CME is similar.

Muon recording has become much easier now that the UKRAA have their sensor available, so more observations would be welcome.


VLF flare activity 2005/25
C
M
X
Relative sunspot number
Number of S.I.D's recorded.
0
20
40
60
80
100
120
140
160
180
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
Jan 2025

BAA Radio Astronomy Section.

BARTELS DIAGRAM

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

2575

	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	16
F	CCC	CC	CC	CC	CCM	CC	CC	CC												CC	CCMC	C		C	CCCC		C

2258 | 2022 June

2576

	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	13
F	CCCC	CCC	C	CC	C	CC	CC	C	C								BC	C	CC			M	CCCC	CCCC	CM	CCCC	CCC

2259 | 2022 July

2577

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

2260 | 2022 August

2578

	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
F		C	CC	CCCC	C	CMMM	MCC	CCMM	CMMM	MCCC		C	C			CCCM	CMMM	CMMM	CCMM	CMMM	CCCM	C	CC	CCCC	CCCC	CCCC	CCMC

2261 | 2022 September

2579

	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	1	2
F	CC				C	CCCC	CCCC	CCCC	MCCC		MM	M	CC	C	MCCC	M	CCCC	CCCM	CCCC		CCC	CCCC		CC	CCMM	CC	CMMC

2262 | 2022 October

2580

	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
F	CMMM	M	C		CM	C	CCCC	CM	MMCC	CC	C	M	C	C		C		CC		CB		CC	C	C			

2022 October | 2263

2581

	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
F								C	C			C	MCCM	CC	C	C	CCC	CC	CC	CCC	M			CCC			

2022 November | 2264

2582

	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
F				C			C	M				C				C			MMMM	CMCM	MMMC			CC	CCC	M	C	C

2022 December | 2265

2583

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

2023 January

2584

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

2267 | 2023 February

2585

	15	16	17	18	19	20	21	22	23	24	25	26	27	28	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		

2268 | 2023 March

2586

	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
F	C		C	CCCM	C	CCC	C	C			C		CC	CCC	CC	MC	M	CC					CCC	MC		CC	CCCC

2269 | 2023 April

2587

	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	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

2270 | 2023 May

2588

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

2271 | 2023 June

2589

	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
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

2272

2590

	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
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

2273 | 2023 July

2591

	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
F	CMCC	CMCC	CCCM	MC	CMCC	MMMM	MMMM	CMCC	CC	MMCX	CM	CMMX	MC	C		CCCC	CCCC	C			CC	CCC		C	CC	CC	

2274 | 2023 August

2592

	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
F	CCC	C	C	C				C			MC	MCC	CC	MCC	CCCC	CCM	CCC	C	C	CCCM	MCCC	C	CCM	C	CC	C	C

2275 | 2023 September

2593

	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
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

2023 October

2594

	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
F	CCC			C	C					CC	CC			CCCC		MCM	CCM			MCM	C		C	C	CCC		

2277 | 2023 November

2595

	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
F	C	CCCC	C			CM	CC	MCCC	CCCC		CCMC	MC		C			C		CC			CCC	C				MCM

2278 | 2023 December

2596

	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
F	CCC	CCCC	CC	C	MMX	MCCM	CC	C	C						MM							C	CCCC	M			

2279 | 2024 January

2597

	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
F	C		CC		CM	CCM	C		CC						C	CCC	C	CMMM	CCC	CCCC			CCC	CCC	C	C	CC

2280

2598

	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
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

2281 | 2024 February

2599

	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
F			CCC		C	CC	C	CCCC	C		CMCC	CC	CCCC		MCC		CCMC	CCCC	CCCC	CCCC	MCCC	CC	CCCM	MMMM	MMMM	MCCC	MMMM

2282 | 2024 March

2600

	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
F	MCCC	MMMX	CCCC	CCCC	CCCC				C						CCCC	CCCM	CCCC	MCCC	CCCC	MCCC	CCCC	CMCC	MCCC	CCCC	CMCC	MMM	MMMM

2283 | 2024 April

2601

	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
F	MCCM	CCMC	CMCM	CC	MC	CC	CCC	CCMM	MC	CCCM	CMCC	MMCM	XMXM	MXMC	MMMM	XMMX	MXMX	XMMM	MXMM	MMMX	MMMM	XCXM	CMMX	M	CCC		MM

2284 | 2024 May

2602

	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
F		CCCM	CM	CMMM	MCCC	C	CCCC	XCC	CCCC	MMXM	CM	CMCX	XCXM	CMCC	MMMM	MMCC	MMCC	CCMC	CMCM	MMMC	MMCM	MMXM	CC	CC	CCMC	CCCC	MCCC

2024 June | 2285

2603

	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
F	CCCC	MCMM	CMMC	MCCC	CMCC	CCCC	MMCC	MMMC	MMCM	MC	C	CC	CC	CC		MC		MCC	CCMM	CCCC	CCCC	CCMM	CMCC	CCCC	MMMM	CMCC	CCC

2286 | 2024 July

2604

	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
F	MMMM	MCCM	MMCC	MCXM	MMMM	MMCC	CMCM	MCCM	MCCM	MCMC	CM	MCMC	CCM	MCC	MMMM	MMMM	MMMM	MMMM	MMMM	MMMM	MMMM	MMMM	MMMM	MMXX	CCCC	CCMM	MMMX

2287 | 2024 August

2605

	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
F	MMMM	CCMM	MCCM	MC	CCCM	XMMC	CCCC	CMC	MM	MCM	MCCC	CCM	MCCC	CCMC	CCMM	CCMM	CCCC	CMC	CMCC	C	CCC	CMCC	MCMC	MCCM	CMCC	MCCM	CCMC

2288 | 2024 September

2606

	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	1
F	MMMC	CCCC	MCCC	M	MMMM	CMC	MMMM	MXMM	MMMM	MCX	CC	C	C	C	C	C		C	M	C	C	CC	C	MMM	C	CCC

2289

2607

	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
F	CCMC	MXM	MC	MMCC	CMM	C	MCC	CCX	CMMC	CCMM	C		MC	MCCM	MCM	C	CCC	MCM	C		CCC	CCCC	MC	MCC	XMMM	CCCC	CCMM

2290 | 2024 October

2608

	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
F	CM	CC	CMMM	MCMM	MM	MCMM	MMMM	MMMM	MMMM	MMMX	CCCC	CCCC	M	C	C	CC	CCC	M		CC	MMMM			CC	M	M	

2291 | 2024 November

2609

	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
F	MC	CC	CCCM			CC	CC	C			MC	MMC	MCC	CCM	XCCM	C	MCM	MCCM	CCM	MCM		CCCC			MCCM	CCM	

2292 | 2024 December

2610

	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
F	CM	M	MCMC	C		M	MM	MMMM	MMMM		C	C	X	CCX	MM									CC			MMMC

2025 January | 2293

2611

	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
F	CCCC	CC	CC	M	MC	CC	CCC		CC	M	CC		CC	CCMC	CCCM	MMMM	MCCM	CMMC	CCCC	MCCC	C	CC	CC	C	CC	C	CMCC

2294 | 2025 February

2612

	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	1	2	3	4	5	6	7	8	9	10	11	12
F	MC	C	C	CCMC		CC	C	CMMC	C	MMMX	MCC	M	CCC	C	CCC	CCCC	C	CC	CCC	M			CC			MC	CCCC

2295 | 2025 March

2613

	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
F	CC	CCCC	CC	C	CCCC	C	CC	C	M	C	CCC	CC	CC	MCCC	CCC	CXMM	CCCC	CCMM	CMCC	MCCC	CCCC	CCC	CCC	C	C	CCCC	

2296 | 2025 April

2614

	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5
F	CCC	CCC	CCCM	MMMM	MMMM	MMCC	CMCM	C	CCC		C	CMC	M	M	C	CC		C			MMMC	CMC			CCCC	CCCC	C

2297 | 2025 May

2615

	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
F	CCCC	CCCC	CCCC	C	CC	CCCC	CC	CX	MXMM	CM				M	CCCC	C			CCCM	MCMM	CMM	C	CCCC	C	MCCM	MMCM	CC

2298

2616

	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
F	MC	M		CC	CC	CC	C		C	CCCC	C	C	CCM	MMCM	CCMM	CX	CCCC	CCCC		CM				C			

2299 | 2025 June

2617

	29	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
F																						C					

2300 | 2025 July

BAA Radio Astronomy Section. **2025 JUNE.**

			John Cook (23.4kHz/*22.1kHz*)				Roberto Battaiola 20.9kHz				Paul Hyde (22.1kHz/*24kHz*)				Mark Edwards (24.0/*19.6*/**22.1kHz**)				Colin Clements (23.4kHz/*21.75kHz*)			
	Xray class	Observers	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)	
1	*	1																				
1	C8.9	10	14:40	14:46	15:49	2+	14:36	14:42	15:10	2	14:39	14:46	15:30	2+	14:39	14:43	15:11	1+	14:44	14:52	15:23	2
1	C3.8	5	16:21	16:25	16:48	1+					16:20	16:25	16:51	1+	16:20	16:26	16:49	1+				
2	**M3.3**	10	11:07	11:20	12:33	3	11:02	11:19	12:03	2+	11:11	11:20	12:26	2+	11:07	11:12	11:55	2+	11:03	11:22	12:33	3
2	C1.6	1																				
3	**M1.4**	11	12:56	13:05	14:32	3	12:57	13:05	13:47	2+	12:53	13:06	14:28	3	*12:54*	*13:05*	*14:36*	*3*	12:53	13:04	13:52	2+
5	C2.4	1													*13:44*	*13:51*	*14:07*	*1*				
5	C8.7	10	15:38	15:48	16:21	2	15:36	15:43	15:51	1-	15:37	15:49	16:30	2+	15:38	15:47	16:06	1+	*15:33*	*15:50*	*17:43*	*3+*
6	C2.8	2	12:45	12:50	13:16	1+									*12:43*	*12:51*	*13:12*	*1+*				
6	C4.5	1																				
7	C3.5	5	12:21	12:27	12:45	1									*11:55*	*12:26*	*13:36*	*3*	*11:58*	*12:40*	*13:23*	*2+*
7	C2.8	1													18:40	18:43	18:47	1-				
8	C1.9	1													*13:02*	*13:13*	*13:35*	*2*				
10	C5.5	4									10:51	10:54	11:15	1	10:48	10:58	11:21	2				
11	C2.1	2									08:42	08:46	09:00	1-	08:43	08:53	09:19	2				
11	C1.5	1													**09:10**	**09:10**	**09:35**	**1**				
11	C2.5	2									12:28	12:34	12:50	1	12:31	12:34	12:49	1-				
11	C6.3	4	*15:29*	*15:42*	*16:42*	*2+*					15:27	15:40	?	-	15:30	15:42	?	-				
11	?	2									15:50	15:55	16:16	1+	15:48	15:54	?	-				
11	*	1													16:13	16:15	16:23	1-				
11	?	2									17:08	17:11	17:21	1-	17:07	17:18	17:27	1				
11	C8.5	1													19:10	19:16	19:24	1-				
12	C5.8	2									17:46	17:52	18:11	1	17:45	17:49	18:03	1-				
13	C3.1	3	13:55	14:00	14:06	1-									13:57	14:01	14:25	1+				
14	C3.3	5	*08:50*	*08:55*	*09:04*	*1-*	08:47	08:57	09:15	1+	08:50	08:58	09:17	1+	08:51	08:58	09:16	1				
14	C3.4	2									17:08	17:13	17:36	1+	17:10	17:15	17:49	2				
14	**M1.0**	4	*18:00*	*18:06*	*18:28*	*1+*					18:00	18:08	18:53	2+	17:59	18:05	18:26	1+				
15	**M2.2**	9	07:48	08:01	08:51	2+					07:48	07:59	08:35	2+	07:51	08:01	08:27	2	07:53	08:02	08:36	2
15	**M1.9**	10	10:41	10:47	11:43	2+	10:35	10:48	11:06	1+	10:40	10:48	11:22	2	10:37	10:45	11:51	2+	10:43	10:49	11:34	2+
15	?	2									12:12	12:15	12:28	1-	12:10	12:17	12:20	1-				
15	C5.0	7	13:15	13:18	13:30	1-					13:11	13:21	13:41	1+	13:13	13:18	13:31	1-	*13:11*	*13:19*	*14:05*	*2+*
15	C3.1	1													13:41	13:47	13:56	1-				
15	?	1													14:13	14:16	14:29	1-				
15	**M8.4**	9	17:55	18:08	18:47	2+					17:52	18:07	19:44	3	17:53	18:07	18:30	2	17:58	18:11	18:43	2
15	C7.9	1													19:23	19:33	?	-				
15	C9.8	1													19:41	19:47	20:10	1+				
16	C5.0	1																				
16	C3.8	2	08:19	08:23	08:28	1-																
16	**M6.3**	10	09:23	09:39	?	-	09:21	09:36	10:48	3	09:23	09:38	10:56	3					09:28	09:42	11:36	3+
16	**M1.4**	9	11:33	11:39	12:33	2+					11:33	11:41	12:36	2+					11:36	11:42	12:21	2
16	**M1.1**	9	14:48	14:56	15:50	2+	14:44	14:53	15:13	1+	14:47	14:59	18:23	3+					14:43	14:57	15:33	2+
17	C5.5	1	08:15	08:17	08:23	1-																
17	**X1.2**	1									21:46	21:53	22:34	2+								
18	C6.9	6					09:18	09:30	10:02	2	09:15	09:34	10:43	3								
18	C4.7	5	11:26	11:31	11:42	1-					11:24	11:33	11:56	1+								
18	C5.2	6	12:32	12:36	12:42	1-					12:31	12:37	13:08	2								
18	C2.6	1	14:05	14:08	14:11	1-																
18	C3.0	3	*16:13*	*16:20*	*16:39*	*1+*					16:13	16:22	17:01	2+								
19	C5.9	3	*06:47*	*06:53*	*?*	-					06:46	06:53	?	-								
19	C6.0	5	*07:19*	*07:28*	*08:00*	*2*					07:17	07:32	?	-								
19	C2.3	2	*08:26*	*08:28*	*08:38*	*1-*					08:25	08:30	08:39	1-								
19	C7.9	10	09:15	09:25	10:11	2+	09:13	09:25	10:05	2+	09:12	09:22	10:31	2+					09:12	09:29	10:10	2+
19	C5.9	1									19:23	19:32	19:49	1+								
20	C3.6	2	15:03	15:07	15:16	1-					15:02	15:07	15:30	1+								
20	**M1.0**	3	*17:31*	*17:43*	*18:40*	*2+*					17:32	17:45	18:21	2+								
23	C5.0	6	12:18	12:23	12:27	1-					12:10	12:25	13:01	2+					12:18	12:35	13:28	2+

BAA Radio Astronomy Section. **2025 JUNE.**

	Xray class		Steve Parkinson (Various)				Andrew Thomas (19.6kHz/*20.9kHz*)				Phil Rourke (23.4kHz)				Mark Prescott (19.6kHz/*20.9kHz*)				John Elliott (18.3kHz)			
			Tuned radio frequency receiver, frame aerials.				Tuned radio frequency receiver, 0.6m frame aerial.				Spectrum Lab, 0.6m frame aerial.				SpetrumLab/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	*																					
1	C8.9		14:39	14:46	15:25	2+	14:40	14:50	15:37	2+					14:44	14:49	15:50	2+	14:38	14:46	15:50	2+
1	C3.8		16:21	16:24	16:55	2																
2	**M3.3**		11:06	11:23	12:50	3	11:01	11:21	12:38	3					11:09	11:23	12:35	3	11:07	11:15	12:40	
2	C1.6																					
3	**M1.4**		12:55	13:06	14:30	3	12:52	13:08	15:28	3+	12:54	13:02	13:54	2+	12:58	13:07	14:45	3	12:55	13:08	14:25	3
5	C2.4																					
5	C8.7		15:38	15:47	16:32	2+	15:36	15:49	16:20	2					15:44	15:55	16:35	2+	15:38	15:48	16:30	2+
6	C2.8																					
6	C4.5																					
7	C3.5		12:21	12:24	13:10	2+									12:12	12:32	13:10	2+				
7	C2.8																					
8	C1.9																					
10	C5.5		10:49	10:54	11:15	1+									10:52	10:58	?	-				
11	C2.1																					
11	C1.5																					
11	C2.5																					
11	C6.3		15:28	15:57	17:00	3																
11	?																					
11	*																					
11	?																					
11	C8.5																					
12	C5.8																					
13	C3.1		13:55	14:01	14:23	1+																
14	C3.3														*08:54*	*09:00*	*09:38*	*2*				
14	C3.4																					
14	**M1.0**																					
15	**M2.2**		07:47	08:03	09:10	2+	07:47	08:02	08:50	2+	07:47	07:57	08:49	2+	07:55	08:02	08:55	2+				
15	**M1.9**		10:40	10:49	12:00	2+	10:37	10:49	11:37	2+	10:38	10:47	11:39	2+	10:44	10:51	11:40	2+				
15	?																					
15	C5.0		13:13	13:19	14:00	2+									13:18	13:23	?	-				
15	C3.1																					
15	?																					
15	**M8.4**		17:52	18:07	19:02	2+	17:57	18:10	19:04	2+					18:00	18:09	19:00	2+	17:55	18:08	19:20	2+
15	C7.9																					
15	C9.8																					
16	C5.0																					
16	C3.8																					
16	**M6.3**		09:24	09:39	?	-	09:26	09:42	11:34	3+	09:21	09:38	10:17	2+	09:27	09:44	?	-	09:28	09:40	11:20	3
16	**M1.4**		11:34	11:41	12:20	2+	11:34	11:43	12:12	2	11:31	11:41	12:29	2+	11:37	11:44	12:40	2+	11:33	11:40	13:10	3
16	**M1.1**		14:48	14:57	15:55	2+					14:47	14:54	15:21	2	14:52	15:00	?	-	14:47	14:55	16:00	2+
17	C5.5																					
17	**X1.2**																					
18	C6.9		09:15	09:34	10:20	2+	09:15	09:34	10:25	2+					09:28	09:38	10:15	2+				
18	C4.7		11:26	11:34	11:52	1+	*11:22*	*11:37*	*12:05*	*2*					11:22	11:35	12:05	2				
18	C5.2		12:31	12:36	12:52	1	*12:30*	*12:41*	*13:36*	*2+*					12:36	12:39	?	-				
18	C2.6																					
18	C3.0														*16:18*	*16:29*	*17:00*	*2*				
19	C5.9																					
19	C6.0						*07:21*	*07:34*	*08:25*	*2+*					07:26	07:33	08:05	2				
19	C2.3																					
19	C7.9		09:13	09:26	10:30	2+	09:09	09:26	10:41	3	09:13	09:24	09:58	2	09:18	09:30	10:20	2+	09:18	09:25	10:30	2+
19	C5.9																					
20	C3.6																					
20	**M1.0**		17:32	17:47	18:38	2+																
23	C5.0		12:15	12:26	13:10	2+									*12:19*	*12:26*	*13:15*	*2+*				

BAA Radio Astronomy Section. **2025 JUNE.**

	Xray class		Chris Bailey			Colin Briden												
			Spectrum Lab.			Spectrum Lab. Frame aerial.			1.2m									
DAY			START	PEAK	END (UT)	START	PEAK	END (UT)		START	PEAK	END (UT)	START	PEAK	END (UT)	START	PEAK	END (UT)
1	*					12:44	12:47	12:55	1-									
1	C8.9					14:40	14:48	14:58	1-									
1	C3.8					16:21	16:25	16:46	1									
2	**M3.3**					11:07	11:19	11:55	2+									
2	C1.6					17:32	17:35	17:40										
3	**M1.4**					12:55	13:05	13:45	2+									
5	C2.4																	
5	C8.7					15:37	15:44	16:07	1+									
6	C2.8																	
6	C4.5					16:55	17:06	17:15	1									
7	C3.5																	
7	C2.8																	
8	C1.9																	
10	C5.5																	
11	C2.1																	
11	C1.5																	
11	C2.5																	
11	C6.3																	
11	?																	
11	*																	
11	?																	
11	C8.5																	
12	C5.8																	
13	C3.1																	
14	C3.3																	
14	C3.4																	
14	**M1.0**					18:01	18:06	18:15	1-									
15	**M2.2**					07:49	08:00	08:11	1									
15	**M1.9**					10:41	10:49	11:06	1									
15	?																	
15	C5.0					13:15	13:21	13:30	1-									
15	C3.1																	
15	?																	
15	**M8.4**					17:53	18:06	18:25	1+									
15	C7.9																	
15	C9.8																	
16	C5.0					06:24	06:41	06:52	1+									
16	C3.8					08:18	08:26	08:34	1-									
16	**M6.3**					09:24	09:38	10:30	2+									
16	**M1.4**					11:34	11:42	12:02	1+									
16	**M1.1**					14:49	14:56	15:08	1									
17	C5.5																	
17	**X1.2**																	
18	C6.9					09:27	09:36	09:44	1-									
18	C4.7																	
18	C5.2					12:33	12:36	12:39	1-									
18	C2.6																	
18	C3.0																	
19	C5.9					06:47	06:55	07:05	1-									
19	C6.0					07:17	07:28	08:00	2									
19	C2.3																	
19	C7.9					09:14	09:27	09:39	1									
19	C5.9																	
20	C3.6																	
20	**M1.0**																	
23	C5.0					12:14	12:19	12:23	1-									