The British Astronomical Association

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Founded in 1890

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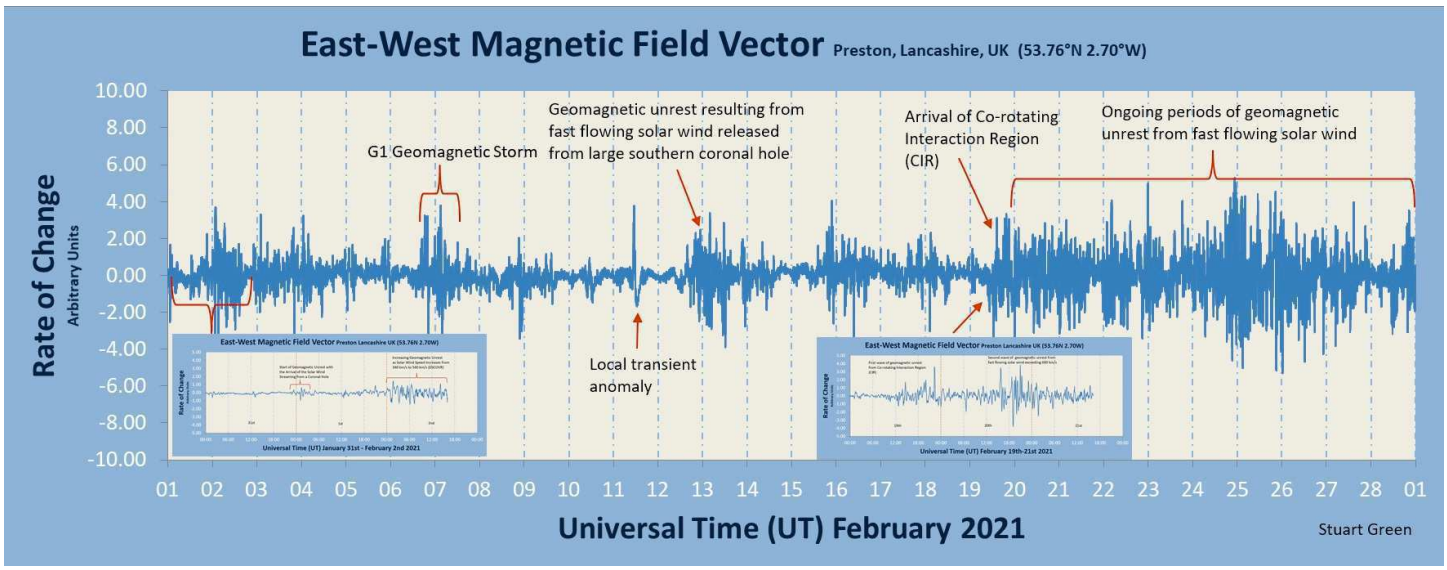
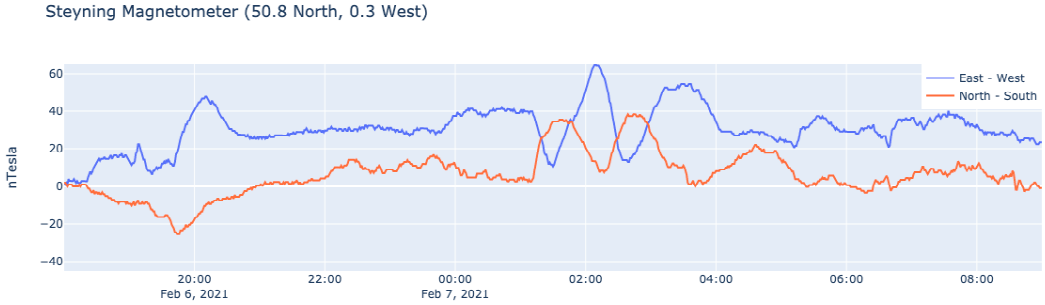
BAA Radio Astronomy Section. 2021 FEBRUARY.

February started with a very inactive sun, mostly without any sunspots. AR12804 became active in the last week of the month, producing many small B-class flares. The strongest event of the month being a C3.9 flare at 06:46UT on the 28th. This was far too early in the morning for us to detect, and so we have another month without any recorded SIDs. Signals have been very noisy due to the low level of solar activity.

MAGNETIC OBSERVATIONS.

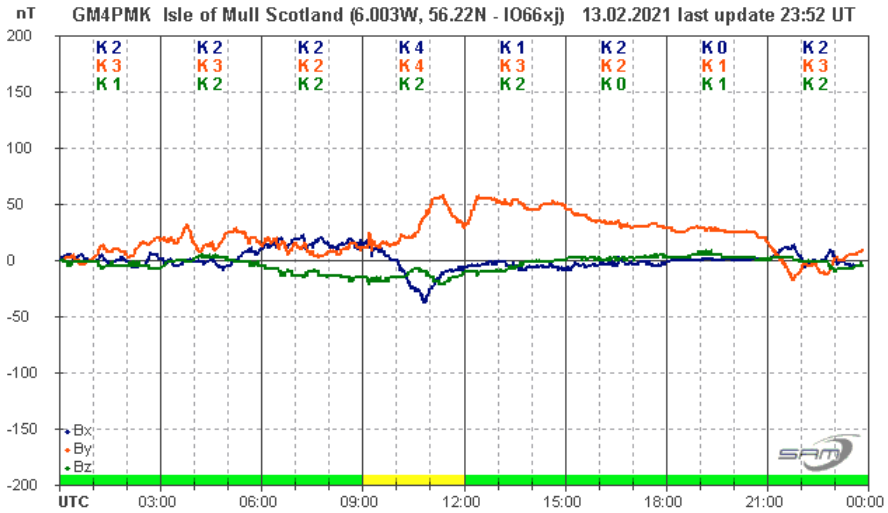


The monthly magnetic summary from Stuart Green shows that February was a very active month, with magnetic disturbances present on most days. The majority of the disturbance was due to the high speed wind from coronal holes.

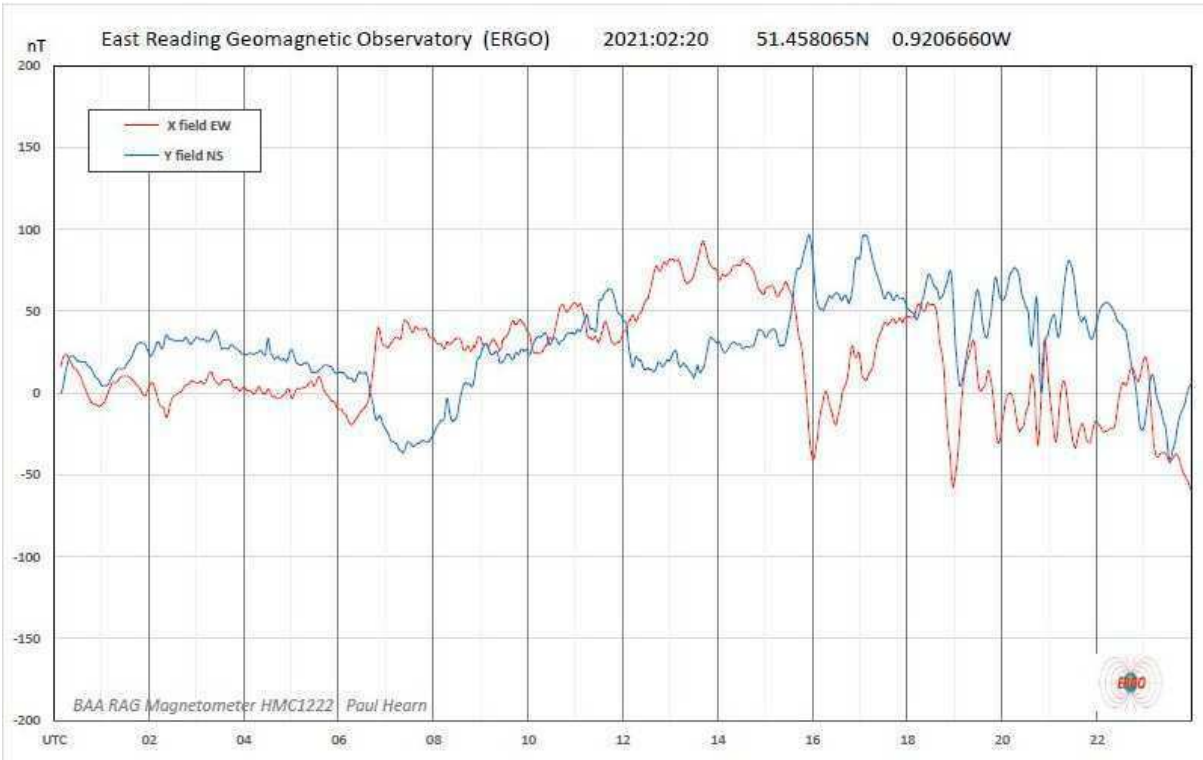


This recording by Nick Quinn shows quite a strong disturbance starting in the evening of the 6th and continuing into the 7th. This faded out later in the afternoon, but there was a further brief disturbance in the evening of the 8th.

Unusually, the disturbance on the 13th was at its strongest in the morning, fading out after midday. This is shown in the recording by Roger Blackwell:

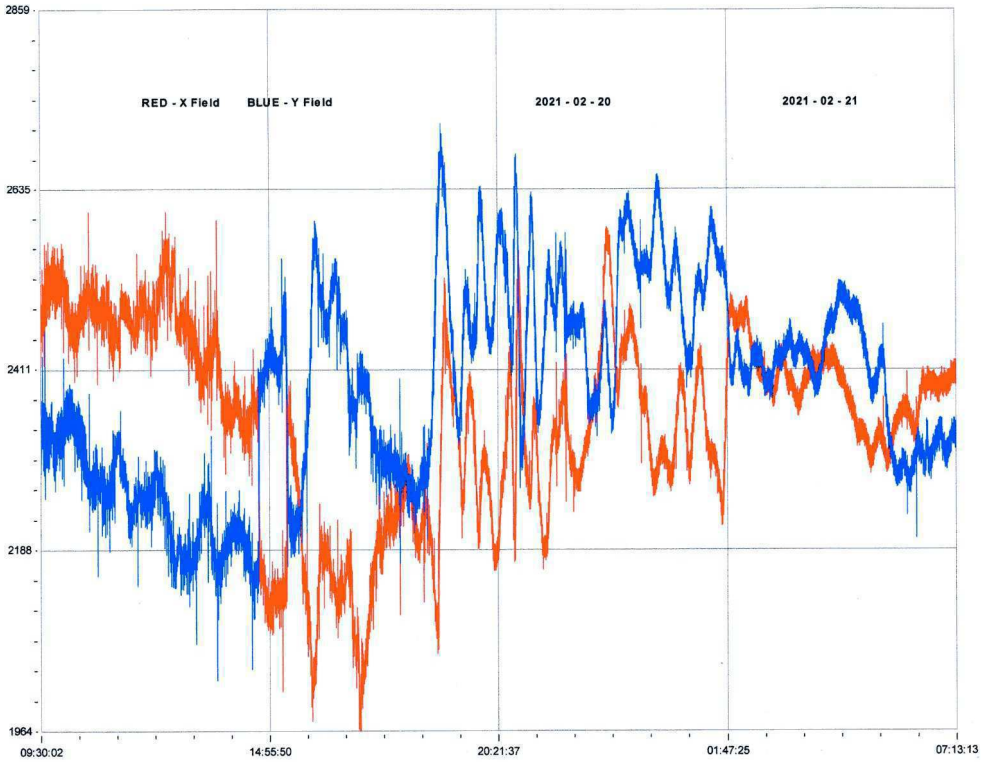


A combination of multiple coronal holes as well as a possible glancing blow from a small CME led to the magnetic disturbance starting on the 19th and running right through to the end of the month.

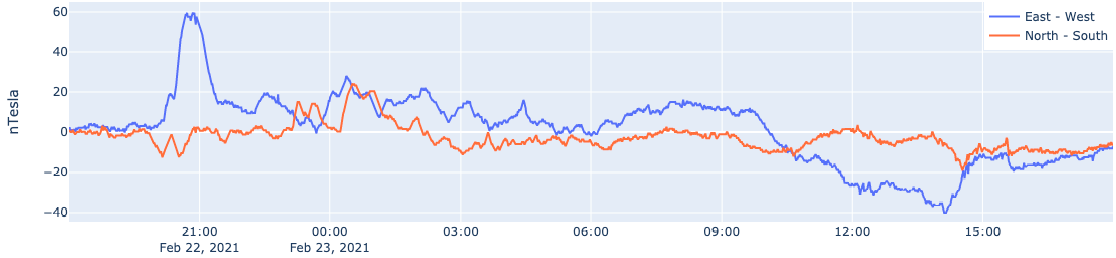


This recording by Paul Hearn shows a strong build-up of activity in the late afternoon of the 20th as the effects of the southern polar coronal hole and equatorial coronal hole combine. These coronal holes were over quite a large area, but were very patchy. The Earth-Sun geometry at this time of year allows easier access of the solar wind into the Earth's magnetosphere.

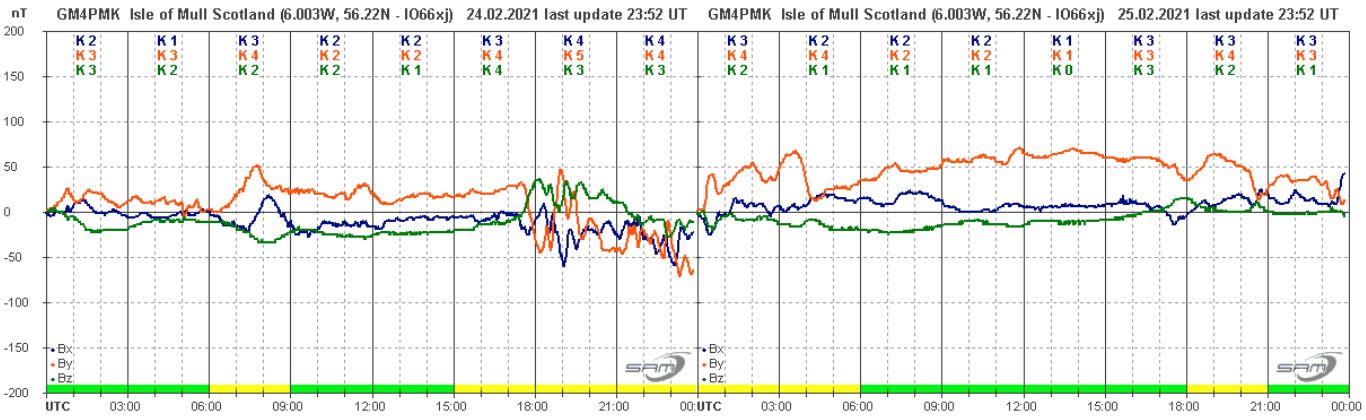
Activity reduced a little after 02UT on the 21st, shown in the following recording by Colin Clements:



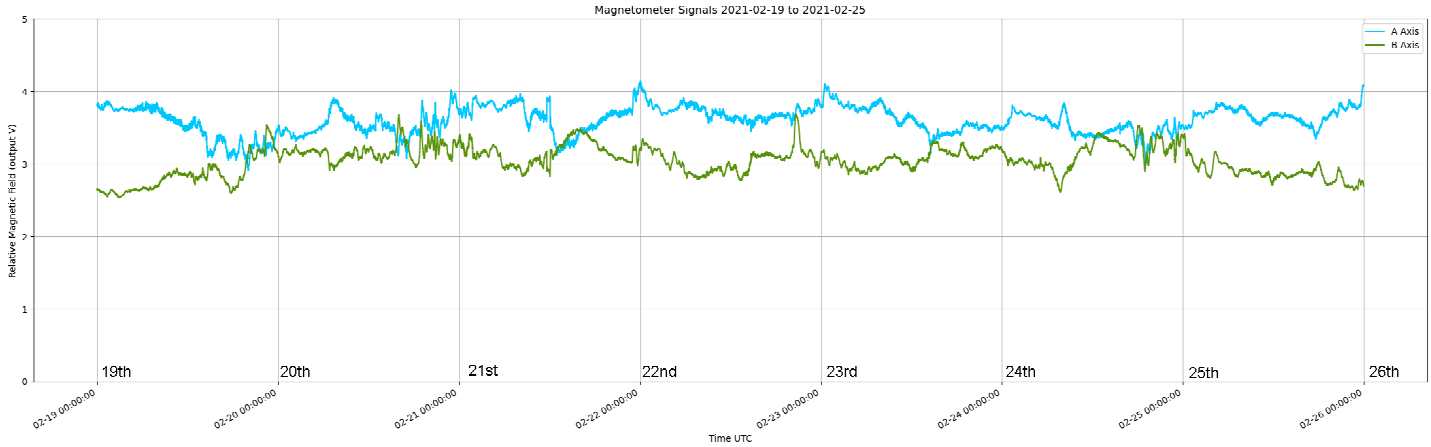
Steyning Magnetometer (50.8 North, 0.3 West)



Nick Quinn's recording shows a brief pulse of activity around 21UT on the 22nd, followed by more gentle disturbances in the morning of the 23rd.



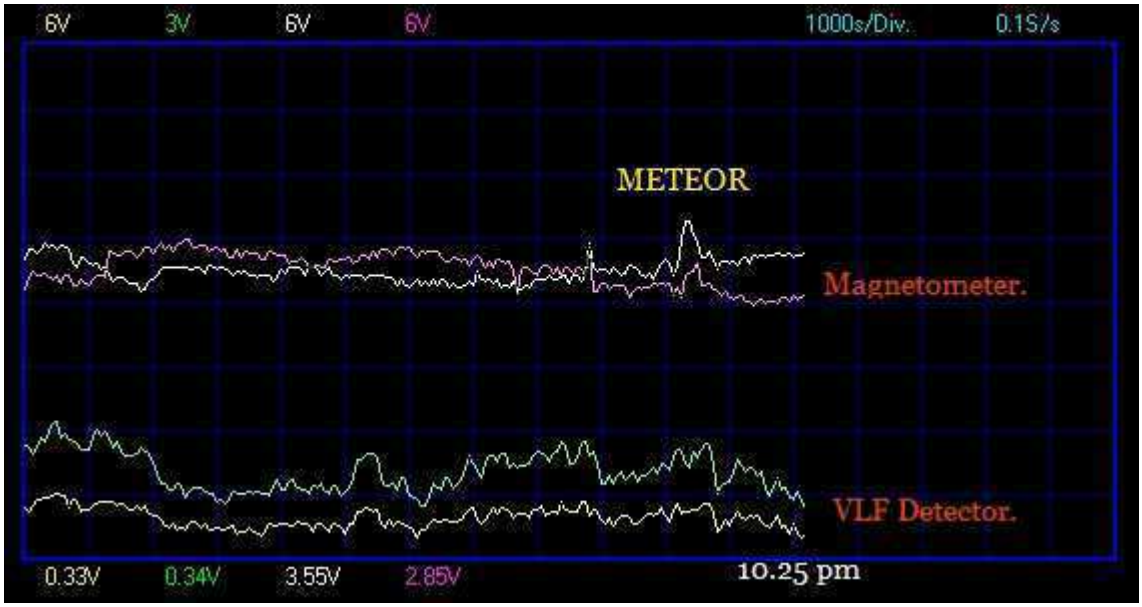
The recording by Roger Blackwell shows a further period of active disturbance in the evening of the 24th, with more gentle activity on the 25th. Mild disturbance continued through to the end of the month.



Andrew Thomas has combined the week's magnetic activity into a single chart, shown above.

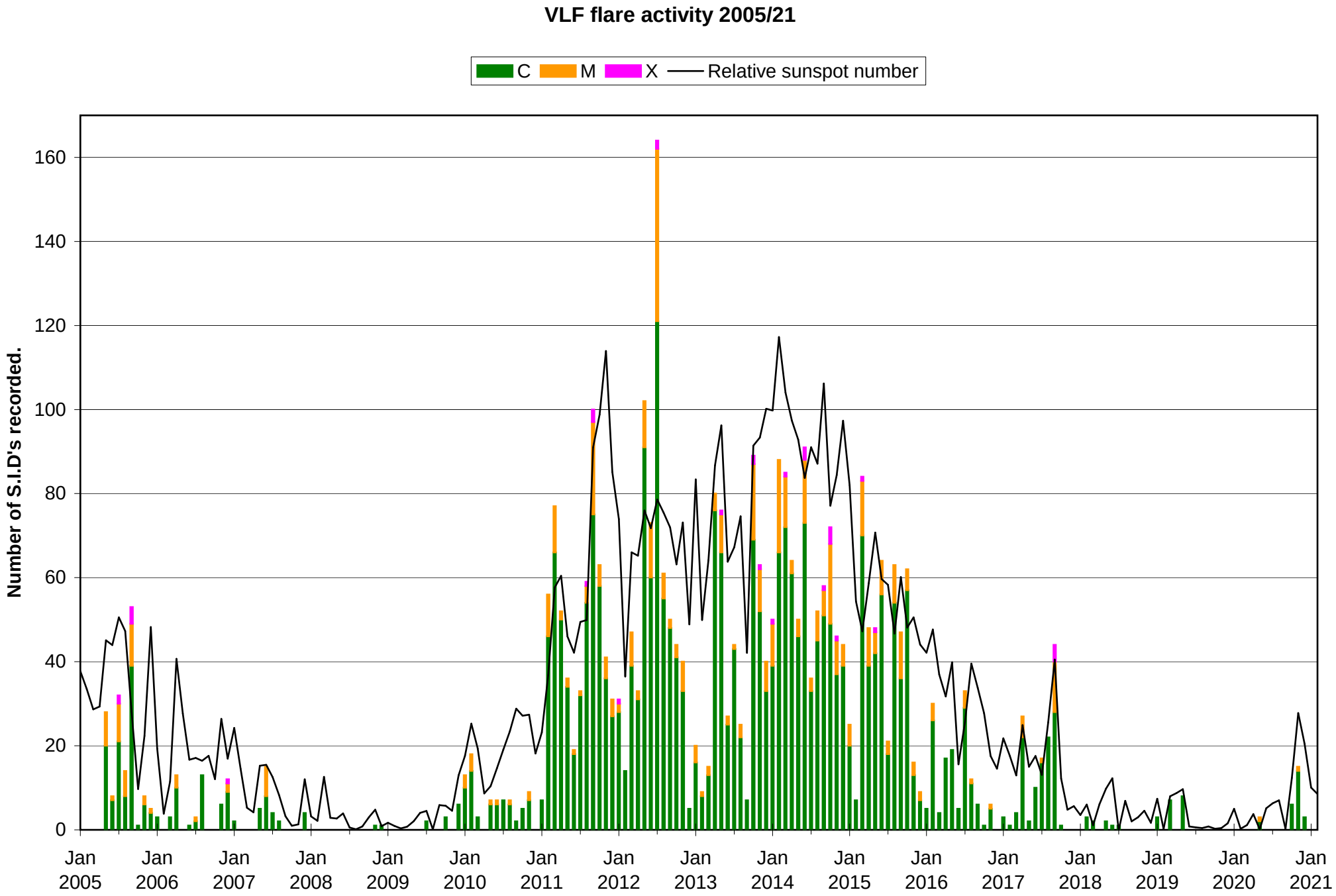
Magnetic observations received from Roger Blackwell, Colin Clements, Stuart Green, Paul Hearn, Nick Quinn, Andrew Thomas and John cook.

METEOR OBSERVATIONS.



Gordon Holmes, a new member, has sent in this recording made at the time of the widely seen fireball on February 28th. Grid lines are at 16 minute intervals. The fireball images that I have seen were timed at 21:54UT, about 10 minutes before the magnetic pulse recorded here. I have received no other recordings around this time. I suspect that this might just be a coincidence, but include it here to invite any comments. Meteors have been well documented producing VLF effects, but usually at frequencies lower that those used for SID detection. After sunset the signals are far too random to show any connection.

Paul Hearn has started a series of zoom meetings for the radio astronomy section. The first of these proved to be very popular and has led to a number of suggestions for topics to be covered in future meetings. A full programme is available on our BAA website (URL on the heading of this summary), and is being updated as more dates are confirmed. If you are interested and able to join in, then please do follow the links shown there. I do not have adequate equipment on this old XP PC, so I have had to take the back-seat for this. My thanks to Paul.


VLF flare activity 2005/21
C
M
X
Relative sunspot number
Number of S.I.D's recorded.
0
20
40
60
80
100
120
140
160
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

BAA Radio Astronomy Section.

BARTELS DIAGRAM

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

2529		26	27	28	29	30	31	2019 January 1	2	3	4	5	6 C	7	8	9	10	11	12	13	14	15	16	2213 17	18	19	20	21		
	F																													
2530		22	23	24	25	26 CB	27	28	29 C	30	31	2019 February 1	2	3	4	5	6	7	8	9	10	11	12	2214 13	14	15	16	17		
	F																													
2531		18	19	20	21	22	23	24	25	26	27	28	2019 March 1	2	3	4	5	6	7	8	9	10	11	12	2215 13	14	15	16		
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2532		17	18	19	20 C	21 CCC	22 CCCB	23 B	24	25	26	27	28	29	30	31	2019 April 1	2	3	4	5	6	7	8 B	2216 9	10	11	12 B		
	F																													
2533		13	14	15	16	17	18	19	20 B	21	22	23	24	25	26	27	28	29	30	2019 May 1	2	3	4	5 BB	2217 6 CCCC	7 BCC	8	9 C		
	F																													
2534		10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	2019 June 1	2	2218 3	4	5		
	F																													
2535		6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	2219 30	2019 July 1	2		
	F																													
2536		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	2220 27	28	29		
	F																													
2537		30	31	2019 August 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	2221 23	24	25		
	F																													
2538		26	27	28	29	30	31	2019 September 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	2222 19	20	21		
	F																													
2539		22	23	24	25	26	27	28	29	30	2019 October 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	2223 17	18		
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2540		19	20	21	22	23	24	25	26	27	28	29	30	31	2019 November 1	2	3	4	5	6	7	8	9	10	11	12	2224 13	14		
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2541		15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	2019 December 1	2	3	4	5	6	7	8	9	2225 10	11		
	F																													
2542		12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	2020 January 1	2	3	4	5	2226 6	7		
	F																													
2543		8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	2020 February 1	2	2227 3		
	F																													
2544		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	2228 1		
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2545		2020 March 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	2229 28		
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2546		29	30	31	2020 April 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
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2547		2230 25	26	27	28	29	30	2020 May 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21		
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2548		2231 22	23	24	25	26	27	28	29 MCCB	30	31	2020 June 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17		
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2549		2032 18	19	20	21	22	23	24	25	26	27	28	29	30	2020 July 1	2	3	4	5	6	7	8	9	10	11	12	13	14		
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2550		2033 15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	2020 August 1	2	3	4	5	6	7	8	9	10		
	F																													
2551		11	2234 12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	2020 September 1	2	3	4	5	6		
	F																													
2552		7	2235 8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	2020 October 1	2	3		
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2553		4	2236 5	6	7	8	9	10	11	12	13	14	15	16 CC	17	18	19	20	21	22	23	24	25	26	27 C	28	29 BCCC	30		
	F																													
2554		31	2237 1 B	2020 November 2	3	4 B	5 CBCC	6 CBC	7 B	8	9	10 C	11 C	12	13	14	15	16	17	18	19	20	21	22 CC	23	24	25	26 C		
	F																													
2555		27	28 C	2238 29 CM	30	2020 December 1	2	3	4	5	6 C	7 C	8	9	10	11	12	13	14 C	15	16	17	18	19	20	21	22	23		
	F																													
2556		24	25	2239 26	27	28	29	30	31	2021 January 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		
	F																													
2557		20	21	22	2240 23	24	25	26	27	28	29	30	31	2021 February 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
	F																													
2558		16	17	18	2241 19	20	21	22	23	24	25	26	27	28	2021 March 1	2	3	4	5	6	7	8	9	10	11	12	13	14		
	F																													