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Founded in 1890

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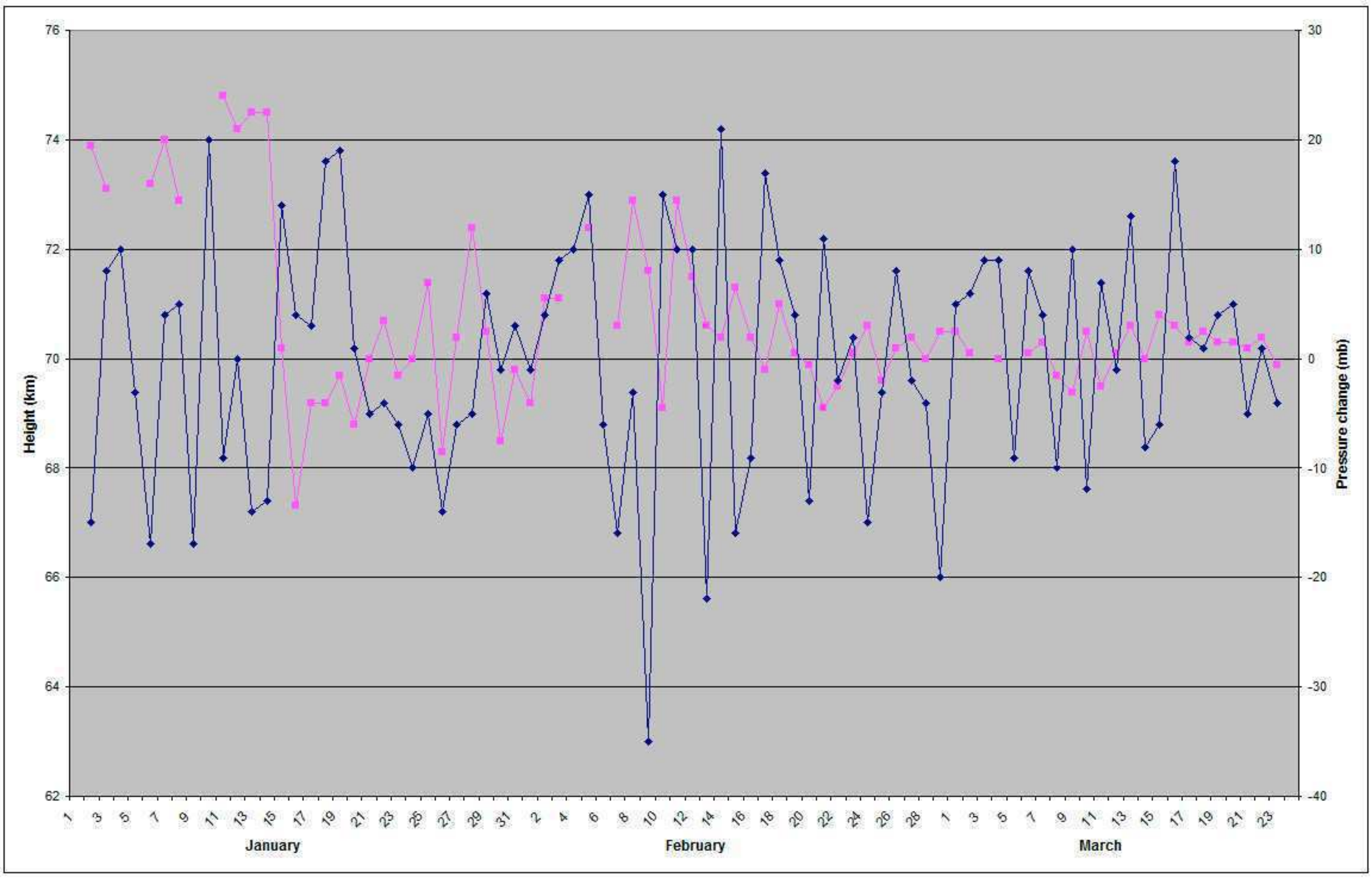
BAA Radio Astronomy Section. 2020 MARCH.

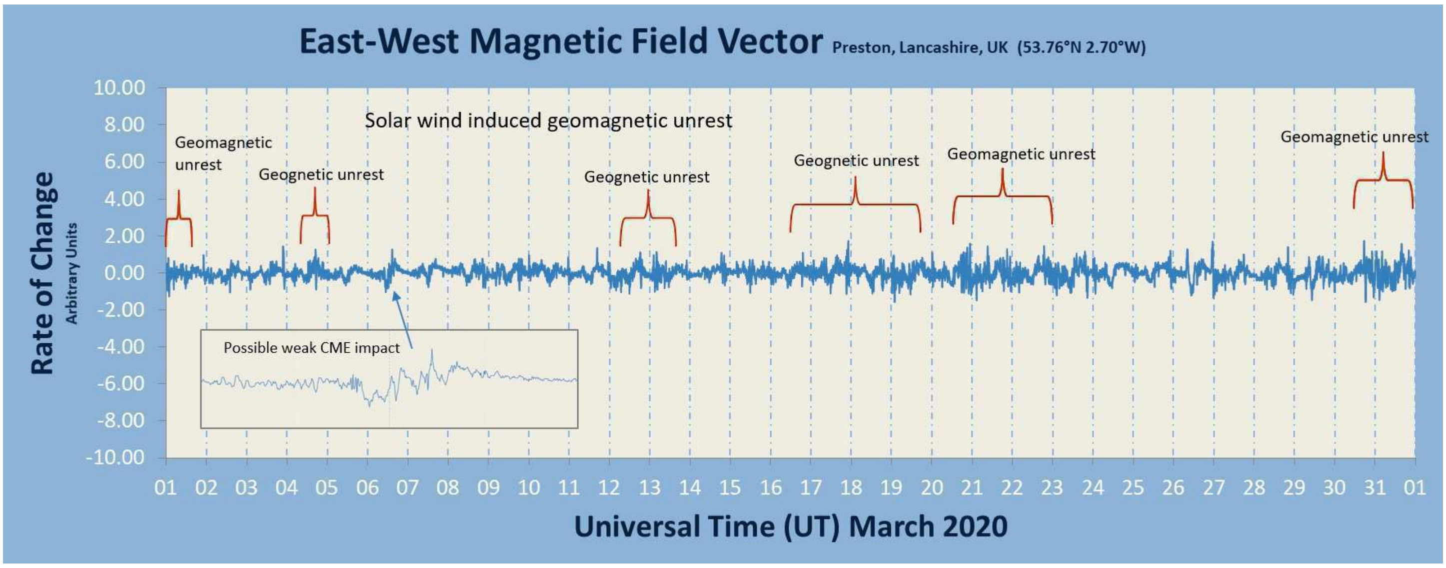
March was another month of very low solar activity, with just a few small flares reported in the satellite data. The most energetic event was a B2.3 flare on March the 11th. We did not record any SIDs. On March 16th the 23.4kHz went off-air, remaining off for the rest of the month. There have also been disruptions to the GOES X-ray charts on the NOAA website, although a new source has been found at www.polarlicht-vorhersage.de/goes-archive.



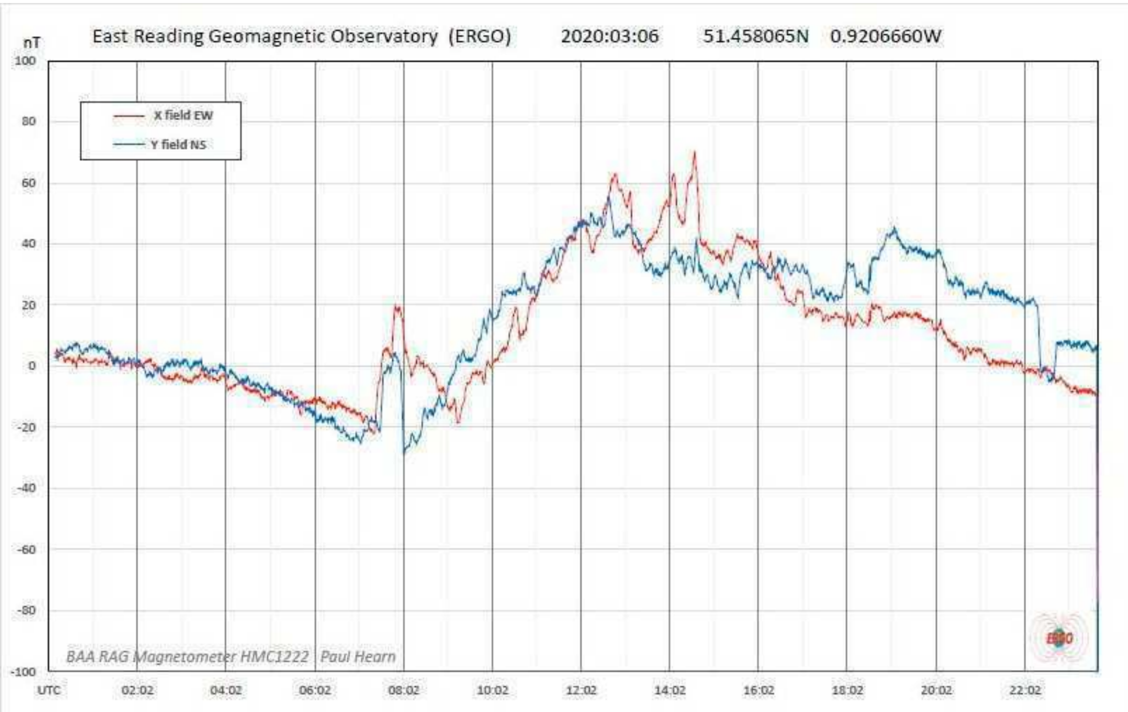
Following on from last month, Mark Edwards has continued to chart the D-region height against weather patterns. This chart shows the modelled D-region height with the daily pressure change measured at Manchester. There are periods when there seems to be some correlation, and periods when there is none, so no conclusions yet.

Colin Clements was able to resume VHF monitoring at 151MHz and 408MHz, but nothing of note was recorded.

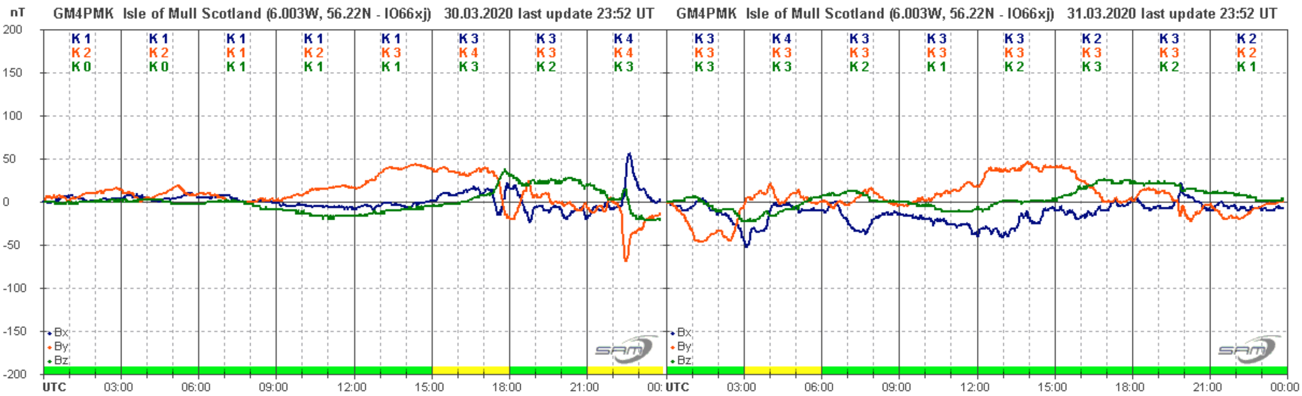
MAGNETIC OBSERVATIONS.



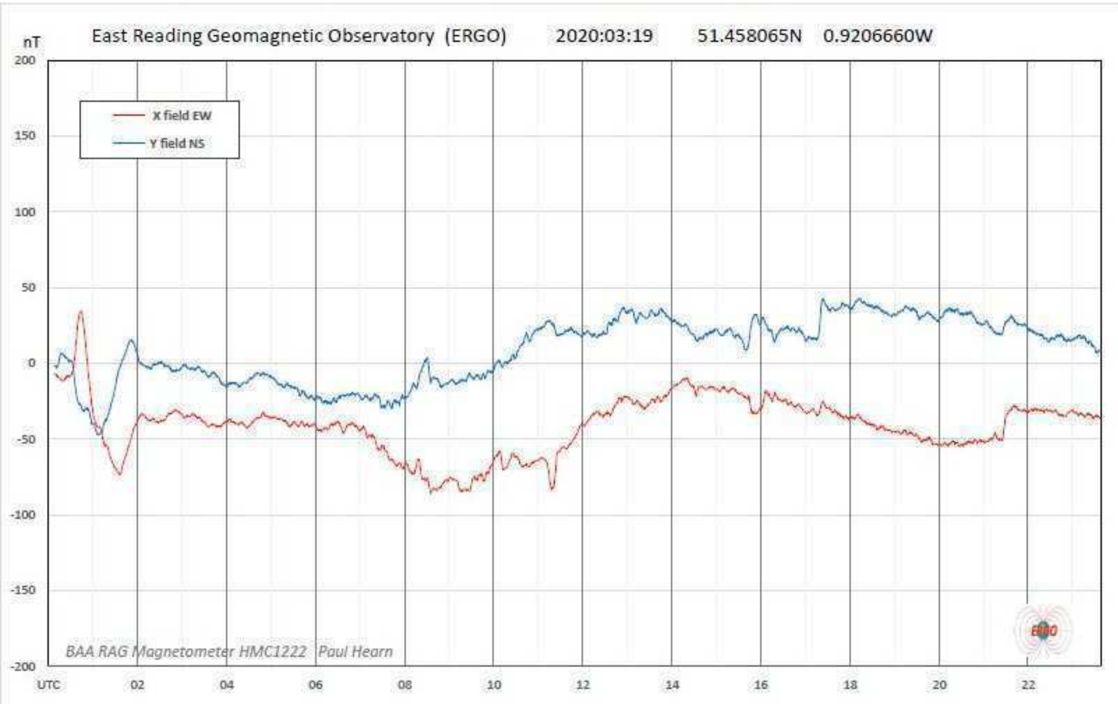
Stuart Green has provided a chart of the entire month's activity, plotted as the rate of change of magnetic flux. With minimal solar activity, most of the magnetic activity was from changes in solar wind speed, made even more effective by the ideal alignment of the Earth's magnetic field for solar wind access at this time of year. Stuart highlights a possible weak CME arrival on the 6th. The STEREO satellite detected weak CMEs on February 28th and March 2nd, either of which could be responsible for the disturbance.



This chart by Paul Hearn shows his dual-axis recording for the 6th. The pulse between 07 and 08UT appears to be local interference as it does not show on recordings from different locations, but the disturbance from 12UT onwards does show genuine magnetic activity. The source of the CME is not clear, but it was very slow moving judging by the STEREO data.



As already noted, the remainder of the activity was from coronal hole wind streams. This recording (above) by Roger Blackwell shows probably the strongest disturbance of the month, over the 30th and 31st.

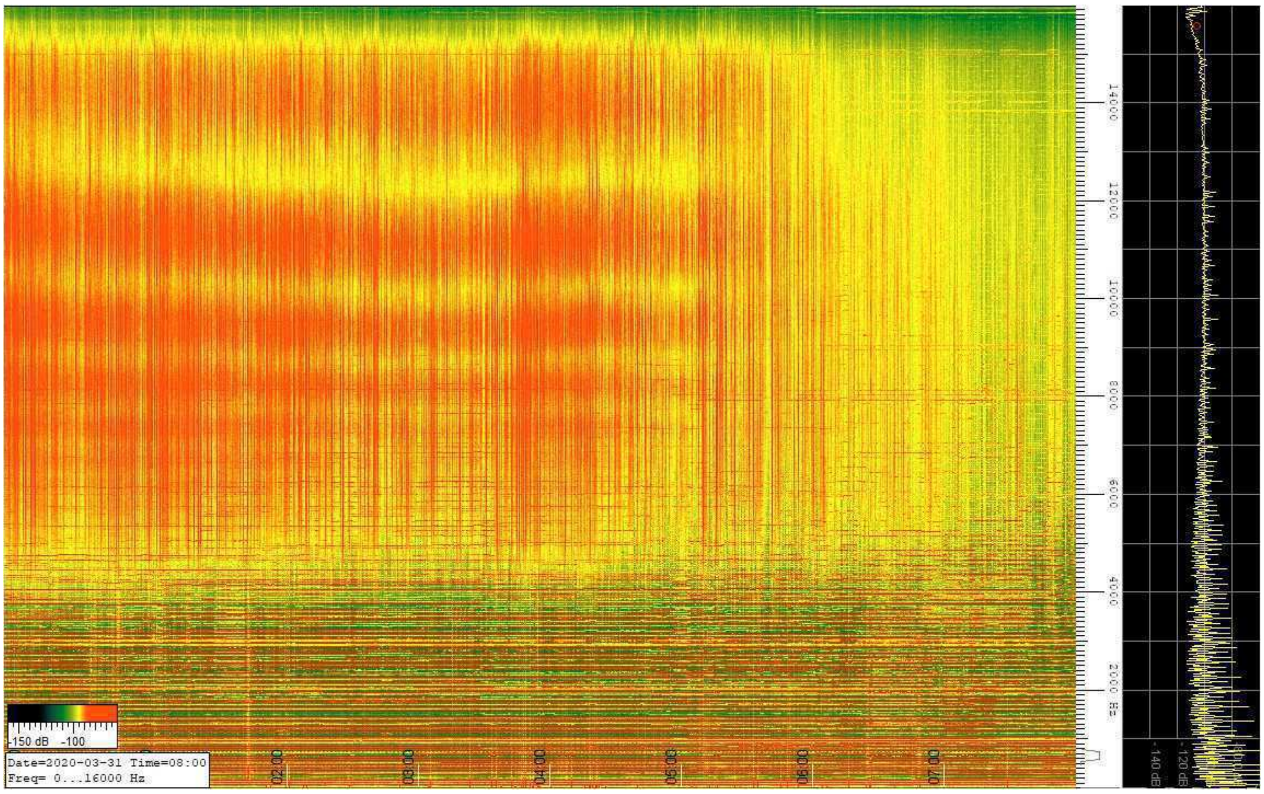


This recording by Paul Hearn shows a weaker disturbance on the 19th, from the second appearance of a coronal hole last seen in mid February. The low level of activity faded out over the next two days.

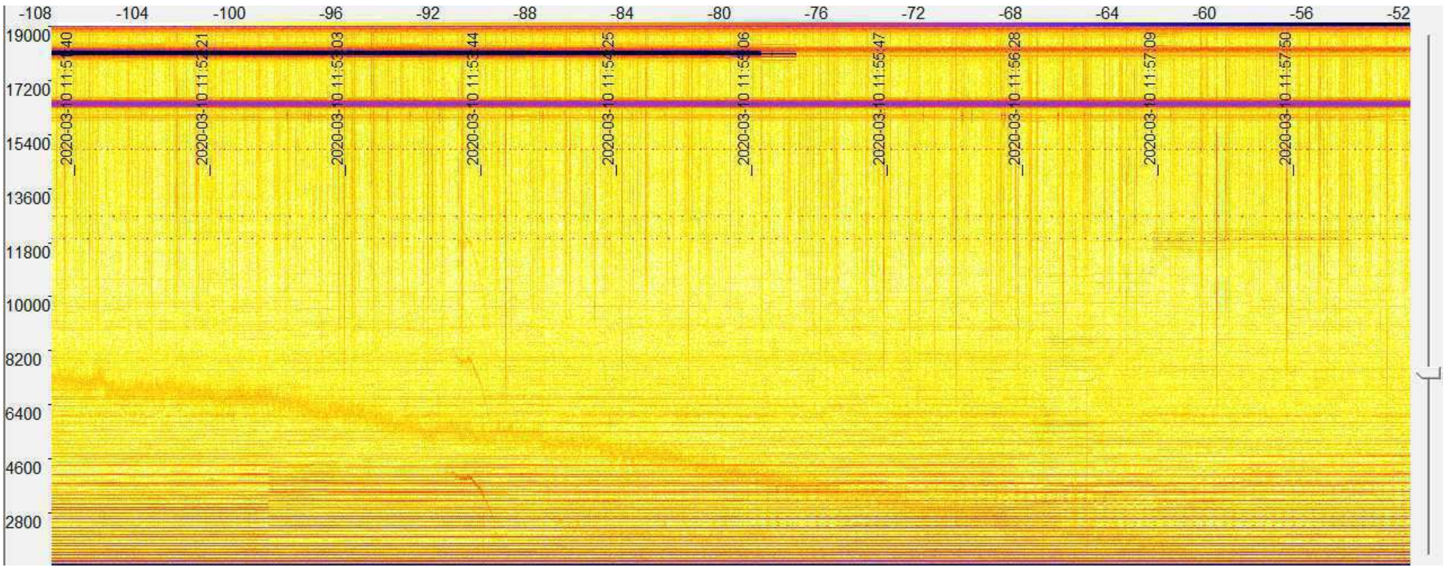
Magnetic observations received from Roger Blackwell, Colin Clements, Stuart Green, Paul Hearn and John Cook.

ATMOSPHERICS.

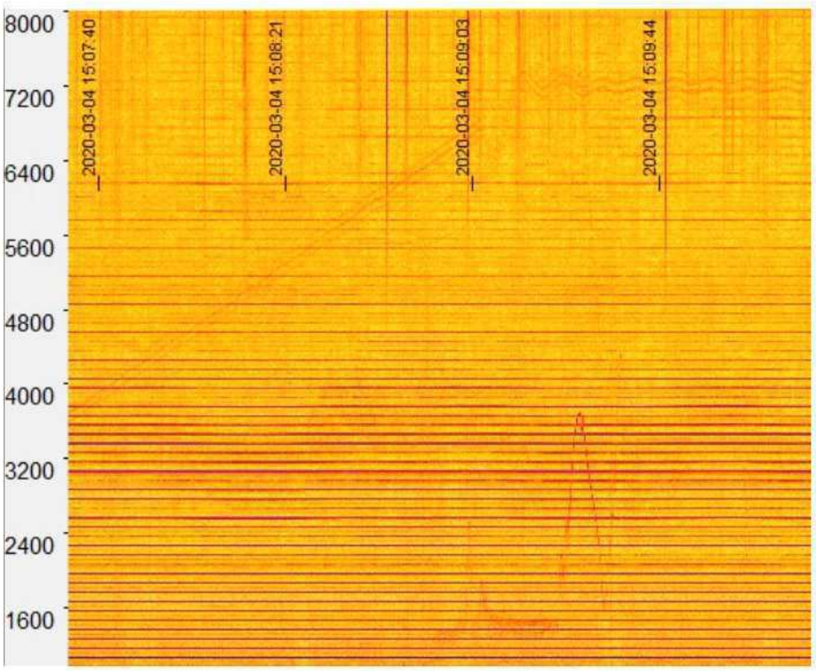
Colin Briden has made further observations of atmospherics during March. He has asked if anyone else within the radio astronomy section might be interested in making these observations from different locations, the idea being to see whether there is any correlation with the season, weather patterns, etc. He is recommending the use of Spectra Vue software as better for this type of work, and can supply a suitable configuration file. Please get in touch by email if you are interested.

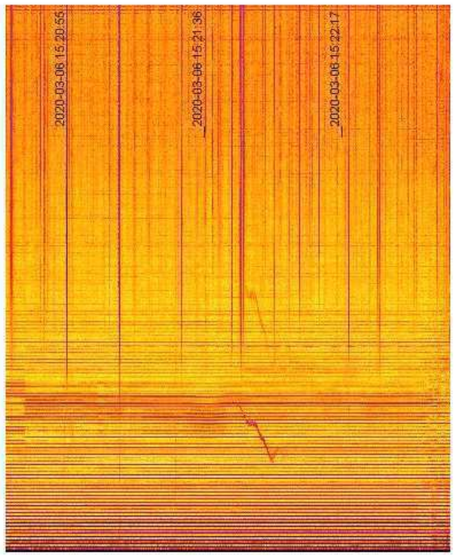


This recording shows the spectrum from 2kHz to 15kHz (vertical axis) over the period from 00 to 08UT on the 31st. The noise signals can be seen to fade out as dawn approaches at 06UT. Samples were taken at 30s intervals.



This recording covers the spectrum from 2.8kHz to 19kHz, from 11:50 to 11:58 on the 10th. There is a weak signal slowly decreasing in frequency over this period, along with a brief hook-signal and its second harmonic at 11:53. Two of the usual VLF signals are also visible at the top of the picture. Also visible are three narrow signals that appear to be rows of short dots between 11.9 and 14.9kHz. Colin is wondering whether they might be related to the old Alpha radar system in use some years ago.





March 4th 15:09UT

March 6th 15:22UT

These are two of the sample signals recorded during March. The first shows a steadily rising tone from about 4kHz to 7.2kHz, which then gently oscillates towards the end of the recording. Below this is an unusual rapidly rising / falling tone that fades out into the background. The second shows another rising / falling tone along with its second harmonic clearly visible. There are also plenty of 'spherics' visible in both recordings, appearing as vertical lines from the top of each picture. The horizontal lines appear to be 100Hz harmonics.

The book "Radio Nature" by Renato Romero covers many aspects of natural radio reception, along with recording methods and possible problems. This is still available from the UKRAA, and is well worth reading if the subject is of interest.

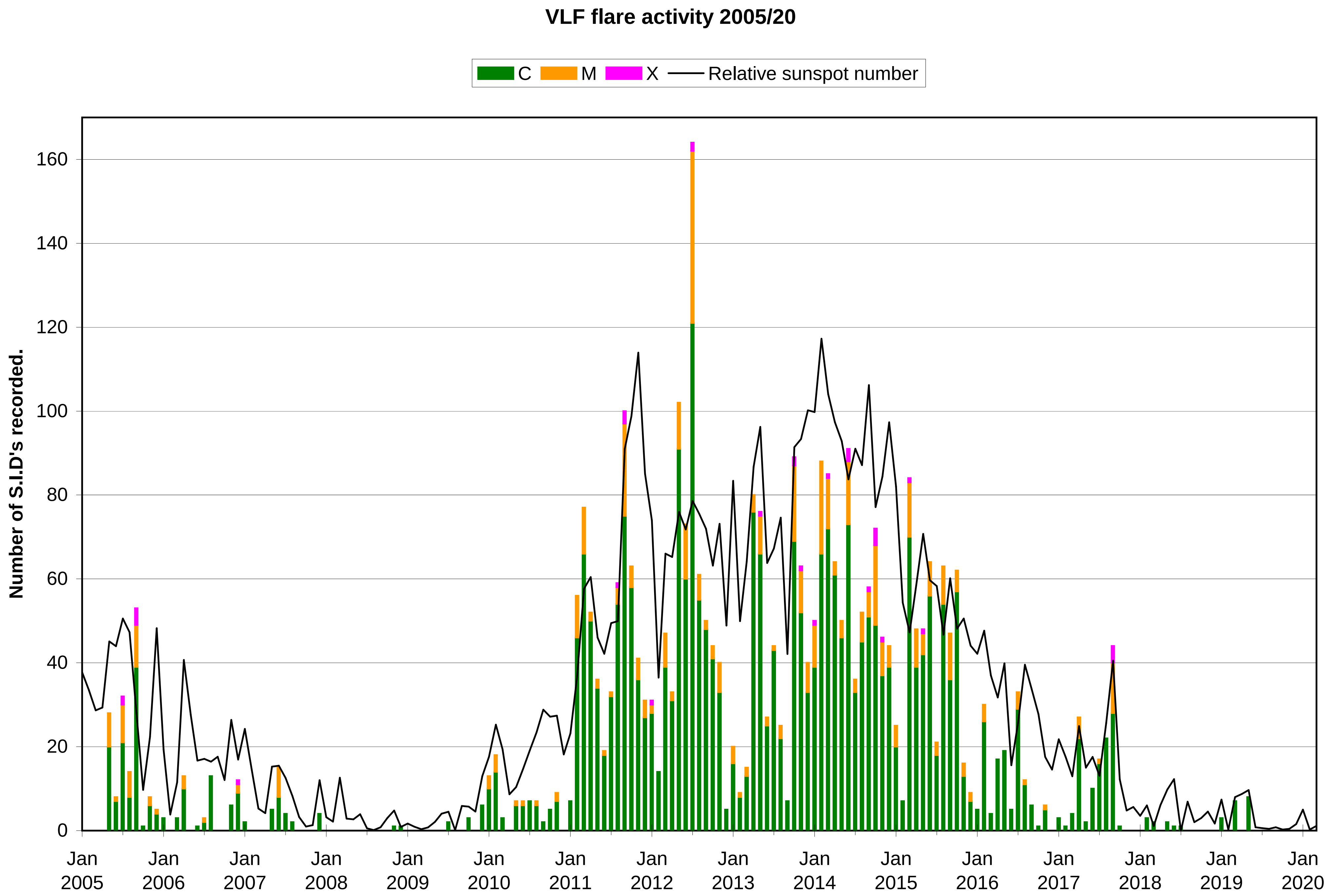
I do hope that everyone is keeping well and avoiding this virus that is causing us so many problems. My thoughts of a section meeting sometime this year have been abandoned for now. BAA meetings have also been cancelled or postponed, but there is a series of weekly 'webinars', details of which can be found at www.britastro.org.

BAA Radio Astronomy Section. **2020 MARCH.**

	Xray class	Observers	John Cook (23.4kHz/*22.1kHz*)	Roberto Battaiola	Paul Hyde (22.1kHz/*24kHz*)	Mark Edwards (24.0kHz)	Colin Clements (23.4kHz/*18.3kHz*)
			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)
		0					

	Xray class		Steve Parkinson (Various)	Andrew Thomas (23.4kHz)	Phil Rourke (23.4kHz)	Jim Barber	John Elliott (18.3kHz)
			Tuned radio frequency receiver, frame aerials.	Tuned radio frequency receiver, 0.6m frame aerial.	Spectrum Lab, 0.6m frame aerial.	Spectrum Lab, 0.6m frame aerial.	Tuned radio frequency receiver, 0.5m frame aerial.
DAY			START PEAK END (UT)	START PEAK END (UT)	START PEAK END (UT)	START PEAK END (UT)	START PEAK END (UT)

	Xray class		Colin Briden (22.1kHz)				
			Spectrum Lab / PC, 1.2m frame aerial.				
DAY			START PEAK END (UT)	START PEAK END (UT)	START PEAK END (UT)	START PEAK END (UT)	START PEAK END (UT)



VLF flare activity 2005/20
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

BAA Radio Astronomy Section.

BARTELS DIAGRAM

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

ROTATION		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
2516	F	9	10	11	12	13	14	15	16	17	18 B	19	20	21	22	23	24	25	26	2200 27	28	29	30	31	2018 February 1	2	3	4
2517	F	5	6	7 CC	8	9 BB	10 C	11	12	13	14	15	16	17	18	19	20	21	22	23	2201 24	25	26	27	28	2018 March 1	2 C	3
2518	F	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	2202 23	24	25	26	27	28	29	30 C
2519	F	31	2018 April 1 B	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	2203 19	20	21	22	23	24	25	26
2520	F	27	28	29	30	2018 May 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	2204 16	17	18	19	20	21	22 B	23 C
2521	F	24 B	25	26	27	28 BC	29	30	31	2018 June 1	2	3	4	5	6 C	7	8	9	10	11	12	2205 13	14	15	16	17	18	19
2522	F	20	21	22	23	24	25	26	27	28	29	30	2018 July 1	2	3	4	5	6 C	7	8	9	2206 10	11	12	13	14	15	16
2523	F	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	2018 August 1	2	3	4	5	2207 6	7	8	9	10	11	12
2524	F	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	2018 September 1	2	3	4	5	6	7	8
2525	F	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	2209 30	2018 October 1	2	3	4	5
2526	F	6	7	8	9	10	11	12 B	13	14	15	16	17	18	19	20	21	22	23	24	25	26	2210 27	28	29	30	31	1
2527	F	2018 November 2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	2211 23	24	25	26	27	28
2528	F	29	30	2018 December 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	2212 20	21	22	23	24	25
2529	F	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
2530	F	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
2531	F	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
2532	F	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
2533	F	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
2534	F	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
2535	F	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	2219 30	2019 July 1	2
2536	F	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	2220 27	28	29
2537	F	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
2538	F	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
2539	F	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
2540	F	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
2541	F	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
2542	F	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
2543	F	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
2544	F	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
2545	F	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
2546	F	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