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The British Astronomical Association

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Registered Charity No. 210769

Burlington House, Piccadilly, London, W1J 0DU

Telephone: 020 7734 4145

Fax No.: 020 7439 4629

Email: office@britastro.org

Website: www.britastro.org



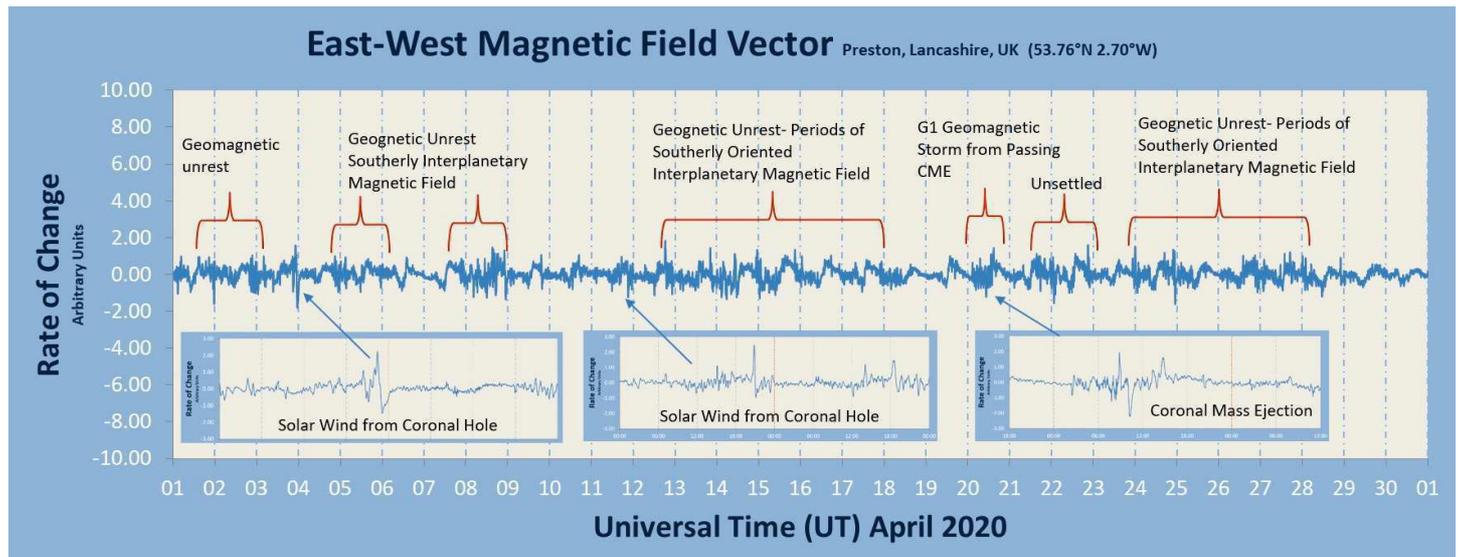
Please send all reports and observations to jacook@jacook.plus.com

BAA Radio Astronomy Section.

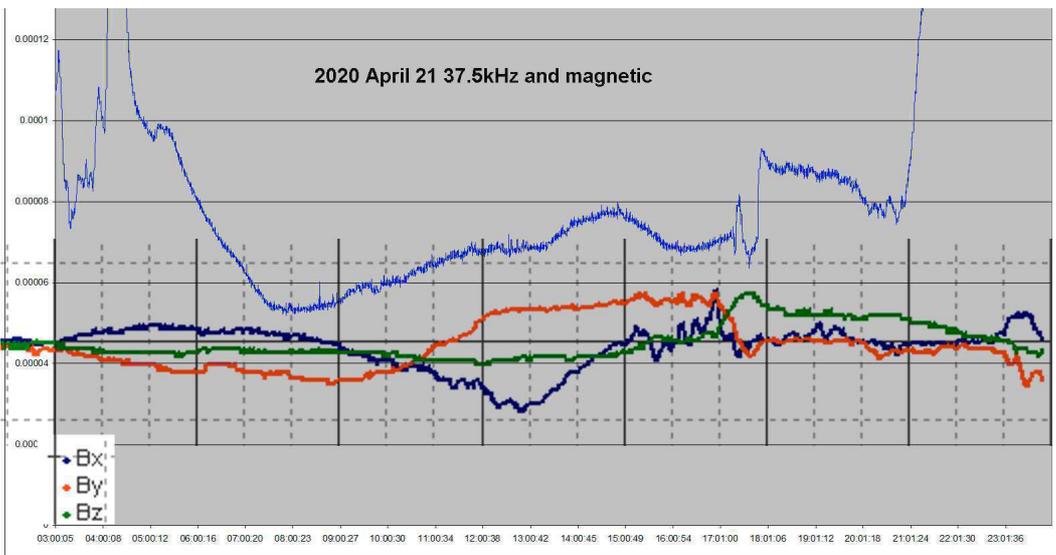
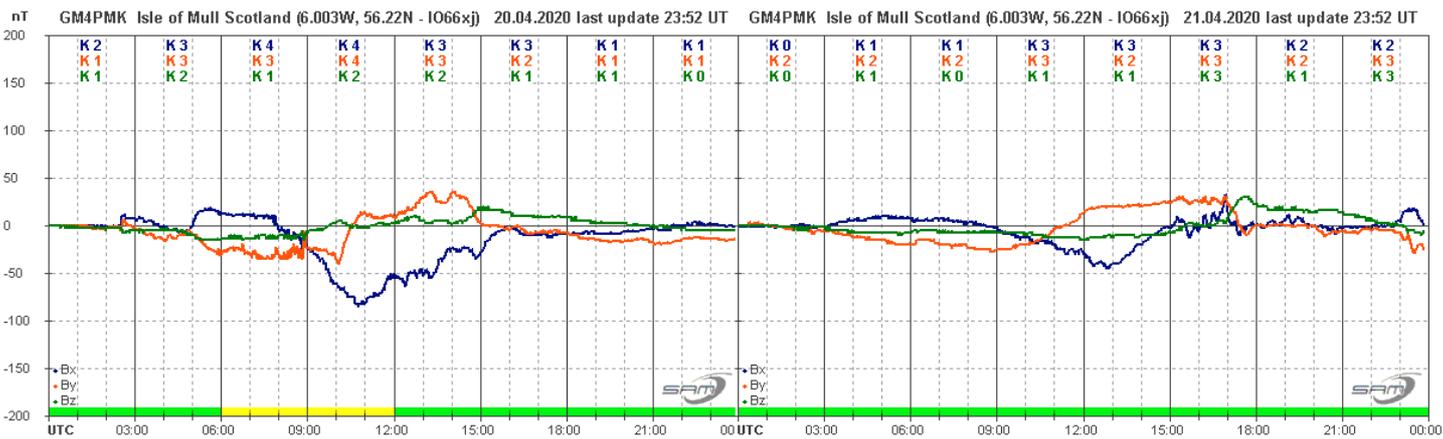
2020 APRIL.

April has been another very quiet month for solar activity. Some small active regions from both cycle 24 and 25 did appear, but were short-lived and not very active. The most energetic flares shown in the GOES data were a B4.5 on the 7th, and B4.2 on the 4th. They were both during our night-time and so not detectable as SIDs. After a long break, the 23.4kHz signal re-appeared on April 9th, and has been present with just a few short breaks for the rest of the month. My own recordings have shown quite a noisy signal for most of the time, making weak SIDs very difficult to detect. Colin Clements also noted the noisy 23.4kHz signal.

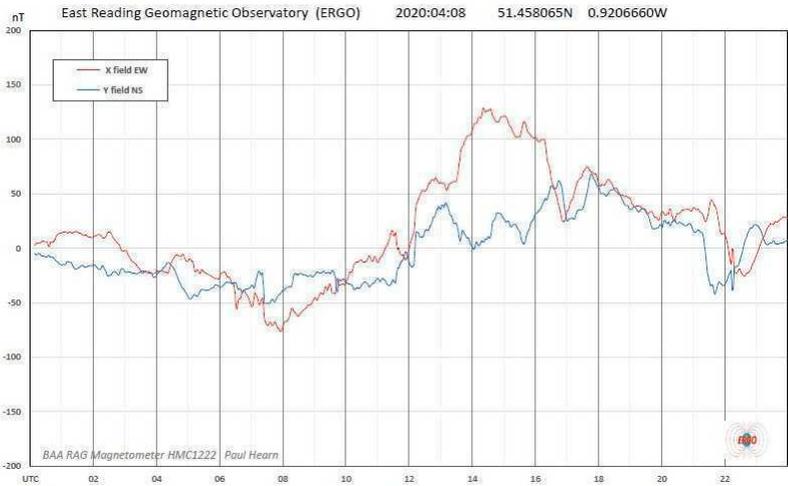
MAGNETIC OBSERVATIONS.



Stuart Green has provided a summary of April's magnetic activity, mostly due to coronal holes, but also a CME arrival recorded on the 20th. There is a background of general 'unrest' from small fluctuations in the orientation of the interplanetary magnetic field. The CME is of interest as it was not expected to cause any disturbance. On April 14th, the STEREO-A satellite recorded near-simultaneous CMEs from both the east and west limbs of the sun. Neither appeared to be Earth-directed, but then the magnetic impact was detected at about 02:30UT on the 20th, clearly visible in the recording by Roger Blackwell shown on the next page. A fairly mild disturbance followed during the day, fading out overnight. The disturbance picked up again during the afternoon of the 21st, and continued into the early morning of the 22nd.



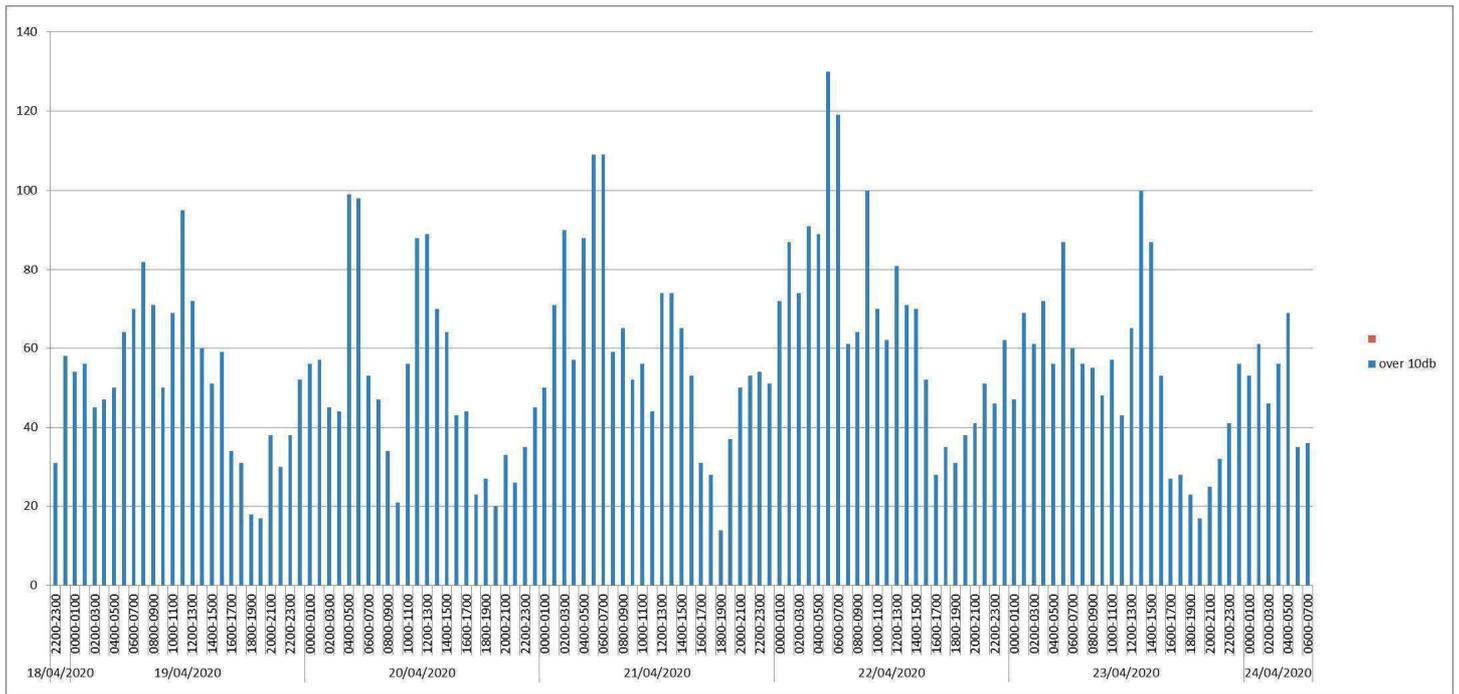
Mark Edwards has added his recording of the 37.5kHz signal from Grindavik onto Roger's magnetic chart for the 21st, showing the ionosphere's response to the magnetic disturbance in the afternoon. There was also some VLF disturbance on the 20th, but with much less correlation to the magnetic recording. The space weather bulletins report this as a G1 class magnetic storm. A small equatorial coronal hole produced another very minor storm on the 8th, recorded by Paul Hearn.



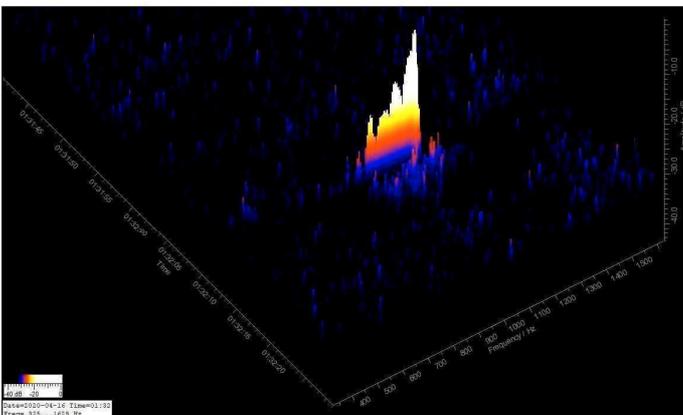
A southern polar hole was responsible for another minor disturbance over the 11th and 12th.

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

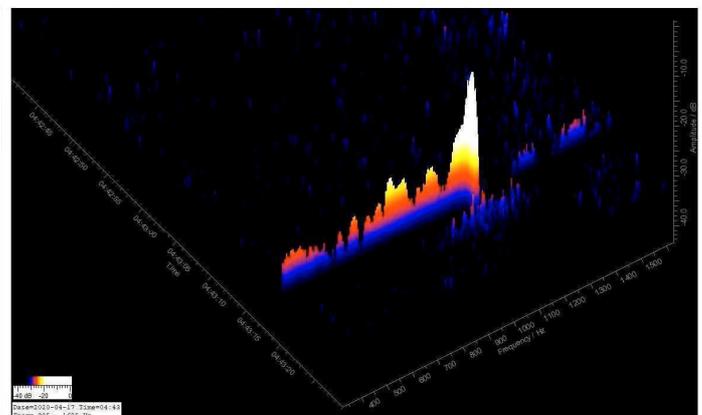
LYRID METEORS.



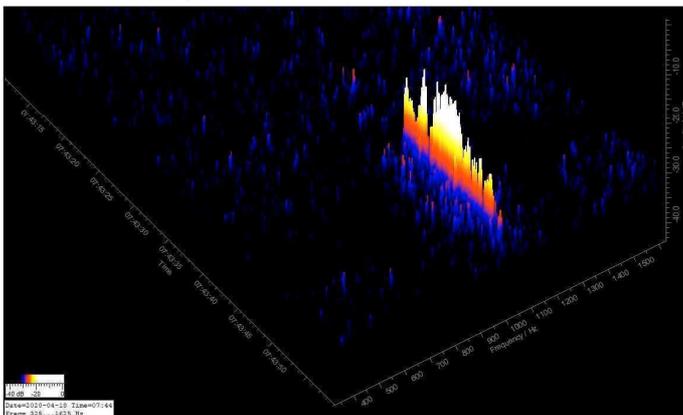
Chris Bailey made meteor observations over 18th to 24th of April, covering the annual Lyrids. The chart above summarises the numbers recorded over each one-hour period. A peak of over 120 echos were seen between 05 and 06UT on the 22nd. This peak matches well with the timing given in the 2020 BAA handbook. Some of the many echos recorded are shown below:



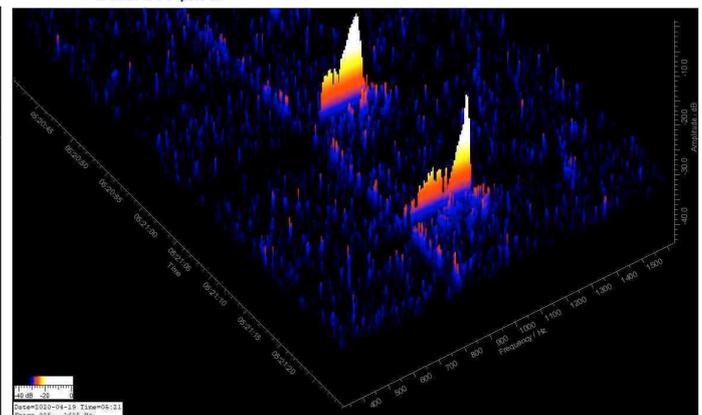
01:32UT April 16



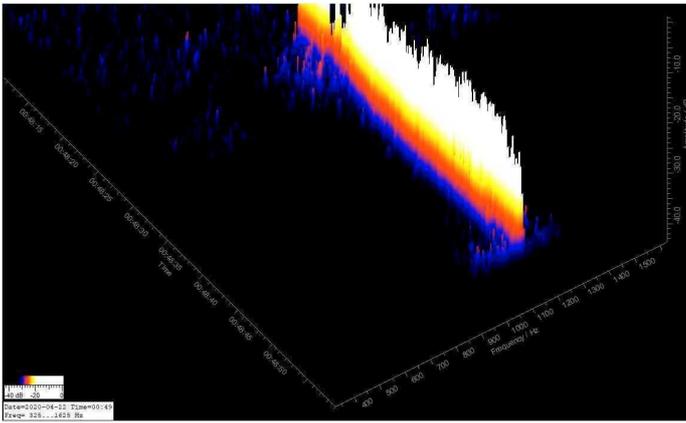
04:43UT April 17



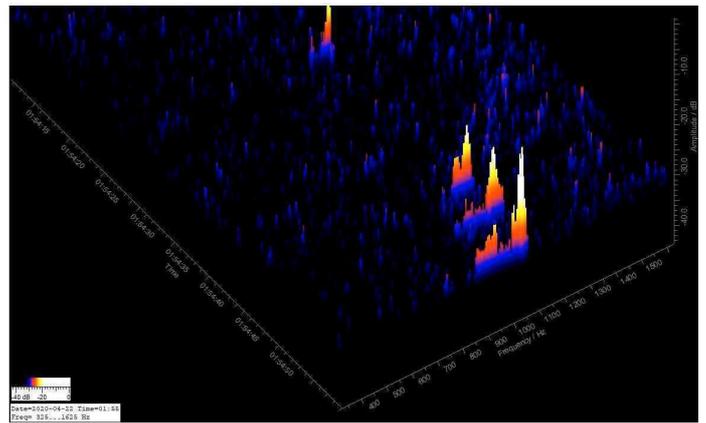
07:44UT April 18



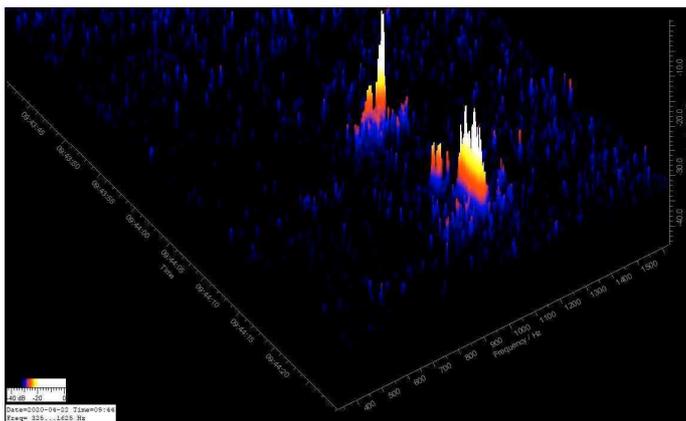
05:21UT April 19



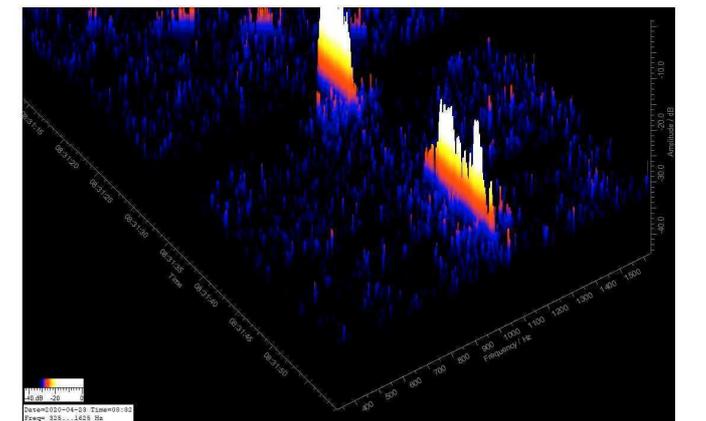
00:49UT April 22



01:56UT April 22

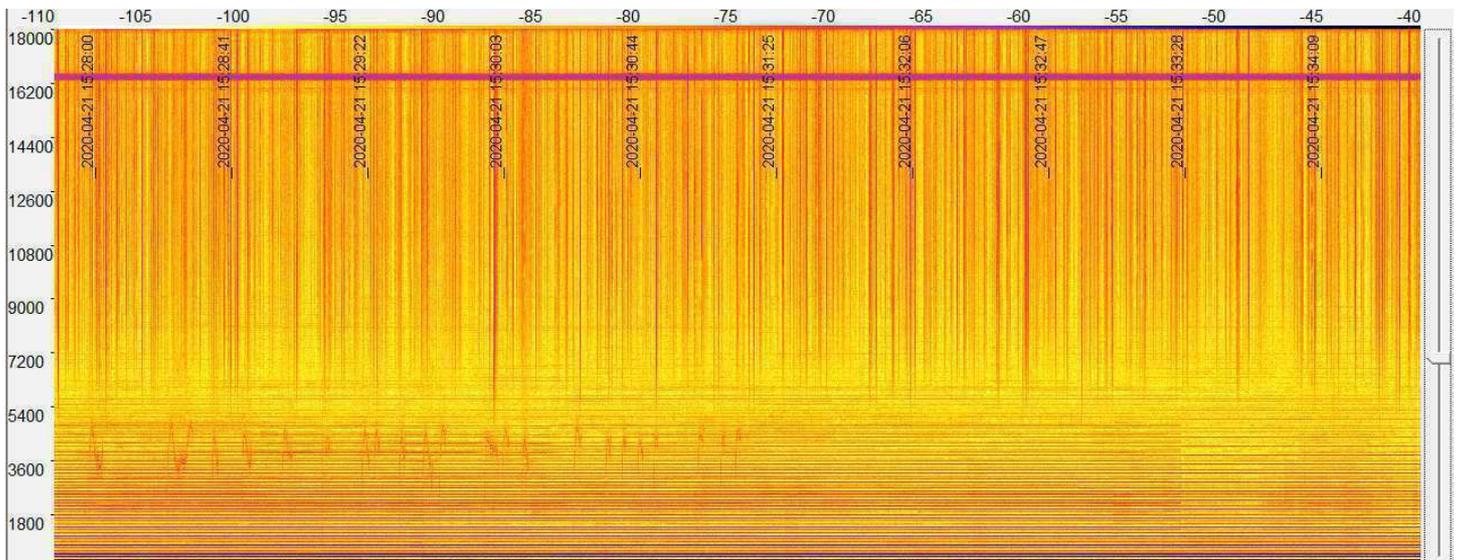


09:44UT April 22



08:32UT April 23

ATMOSPHERICS.



This recording by Colin Briden shows a group of about 20 discrete emissions starting at 15:28UT on April 21st. In trying to explain such a large group of signals, Colin noticed that they occurred after a rapid drop in the Dst magnetic disturbance index, probably following the earlier CME. The solar wind carries charged particles into the Earth's magnetosphere, producing ionospheric emissions. Two slightly smaller groups were also recorded on the 21st. Colin intends to continue monitoring these emissions to see how strong the Dst connection is.

BAA Radio Astronomy Section.

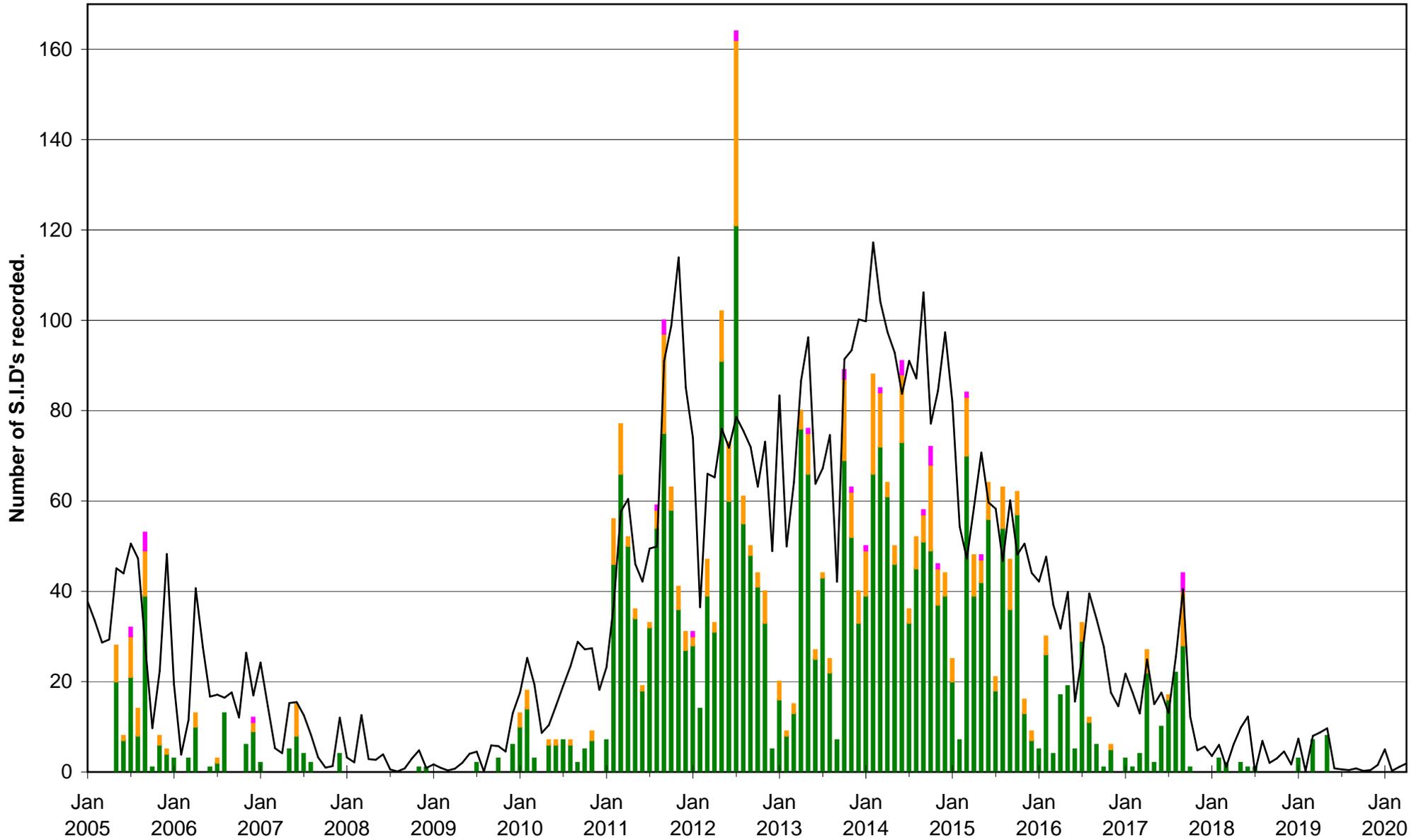
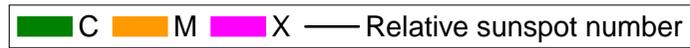
2020 APRIL.

	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		0	START PEAK END (UT)	START PEAK END (UT)	START PEAK END (UT)	START PEAK END (UT)	START PEAK END (UT)

	Xray class		Steve Parkinson (Various)	Andrew Thomas (23.4kHz)	Phil Rourke (23.4kHz)	Jim Barber	John Elliott (18.3kHz)
			Tuned radio frequency receiver, frame aeralis.	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)	Andrew Lutley (23.4kHz)			
			Spectrum Lab / PC, 1.2m frame aerial.	Tuned radio frequency receiver, 0.6m 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



BARTELS DIAGRAM

ROTATION	KEY:	DISTURBED.	ACTIVE	SFE	B, C, M, X = FLARE MAGNITUDE.	Synodic rotation start (carrington's).
2516	F	9 10 11 12 13 14 15 16 17 18	19 20 21 22 23 24 25 26	27 28 29 30 31	2200	2018 February 1 2 3 4
2517	F	5 6 7 8 9 10 11 12 13 14	15 16 17 18 19 20 21 22 23 24 25 26 27 28	29 30 31	2201	2018 March 1 2 3
2518	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 30	2202	
2519	F	2018 April 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 26	2203	
2520	F	2018 May 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 23	24 25 26 27 28 29 30	31	2204	
2521	F	2018 June 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 19	20 21 22 23 24 25 26 27 28 29 30	2205	
2522	F	2018 July 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 16	17 18 19 20 21 22 23 24 25 26 27 28 29 30	2206	
2523	F	17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 1 2 3 4 5	6 7 8 9 10 11 12	13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	2207	
2524	F	13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4 5 6 7 8	9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	2208	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 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 26 27 28 29 30	31	2209	2018 October 1 2 3 4 5
2526	F	6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26	27 28 29 30 31	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	2210	
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	23 24 25 26 27 28	29 30 31	2211	
2528	F	2018 December 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	26 27 28 29 30	31	2212	
2529	F	2019 January 26 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 23 24 25 26 27 28 29 30	31	2213	
2530	F	2019 February 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	18 19 20 21 22 23 24 25 26 27 28 29 30	31	2214	
2531	F	18 19 20 21 22 23 24 25 26 27 28 29 30 31 1 2 3 4 5 6 7 8 9 10 11 12	13 14 15 16	17 18 19 20 21 22 23 24 25 26 27 28 29 30	2215	
2532	F	17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 1 2 3 4 5 6 7 8 9 10 11 12	13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	31	2216	
2533	F	13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 1 2 3 4 5 6 7 8 9	10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	31	2217	
2534	F	10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4 5 6 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	2218	
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	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 26 27 28 29 30	2219	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	27 28 29	30 31	2220	
2537	F	2019 August 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	26 27 28 29 30	2221	
2538	F	2019 September 26 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 23 24 25 26 27 28 29 30	2222	
2539	F	22 23 24 25 26 27 28 29 30 31 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	17 18	19 20 21 22 23 24 25 26 27 28 29 30	2223	
2540	F	19 20 21 22 23 24 25 26 27 28 29 30 31 1 2 3 4 5 6 7 8 9 10 11 12	13 14	15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	2224	
2541	F	15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 1 2 3 4 5 6 7 8 9	10 11	12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	2225	
2542	F	12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4 5 6 7	8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	2226	
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	1 2 3	4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	2227	2020 February 1 2 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	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 26 27 28 29 30	2228	
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 28	29	30 31	2229	
2546	F	2020 April 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	25 26 27 28 29 30	31	2230	
2547	F	2020 May 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	22 23 24 25 26 27 28 29 30	31	2231	