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The British Astronomical Association

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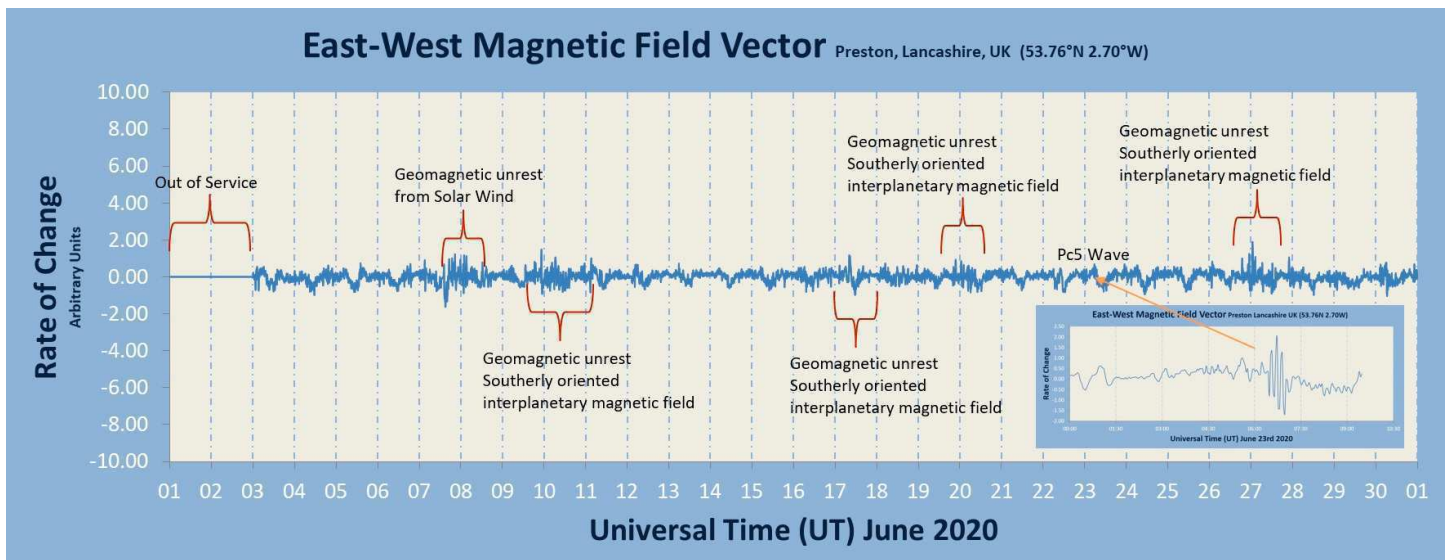
Please send all reports and observations to jacook@jacook.plus.com

BAA Radio Astronomy Section.

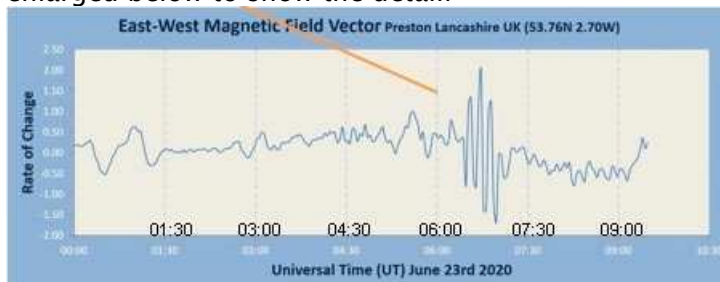
2020 JUNE.

After the activity last month, the sun has returned to minimum and remained quiet through most of June. AR12765 was still present at the start of the month, producing a few small B-class flares during the first week. The strongest of these was a B6.4 flare at 21:46UT on the 7th, after which only a few A-class flares are shown in the GOES data. No SIDs were recorded.

MAGNETIC OBSERVATIONS.

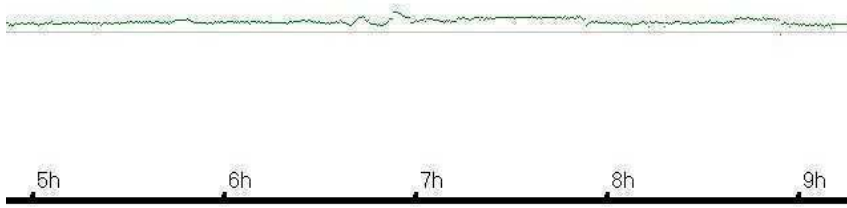


This is Stuart Green's summary of magnetic activity in June. Satellite data shows that solar wind speeds were very low through the month, with some gentle polarity reversals that gave rise to the disturbances recorded. This very gentle solar wind produced an unusual oscillation on the 23rd, shown in the inset chart and enlarged below to show the detail:

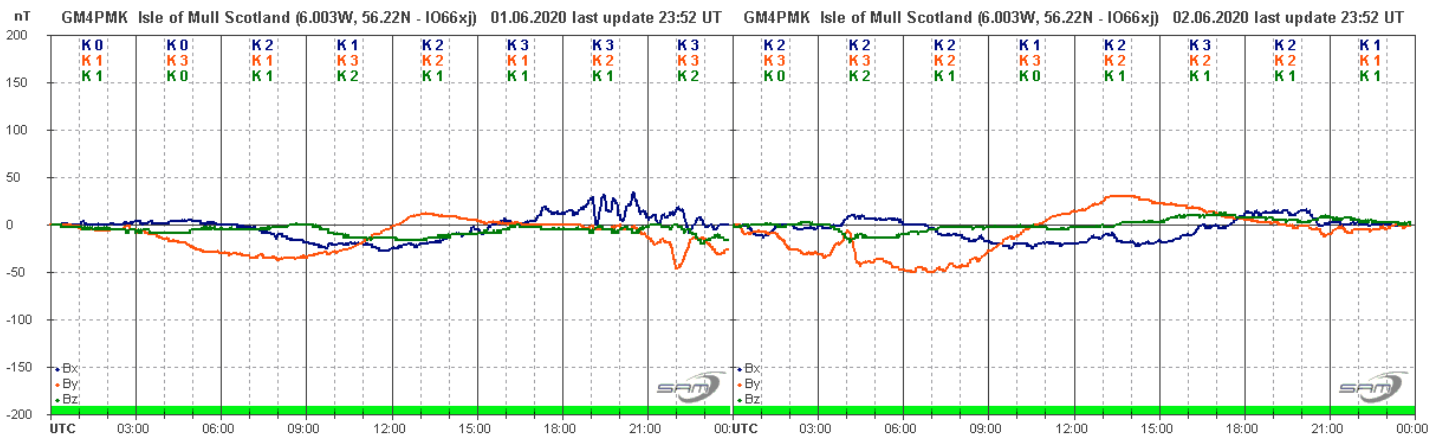


Between 06:00UT and 07:30 can be seen a 'Pc5' wave with a period of 10 minutes, produced when the solar wind causes the Earth's magnetic field to 'flutter' much like a sheet of paper held in a gentle breeze. The classification also involves a loss of particles from the Van Allen belt due to this activity. The very quiet conditions of solar minimum allow these subtle waves to be detected.

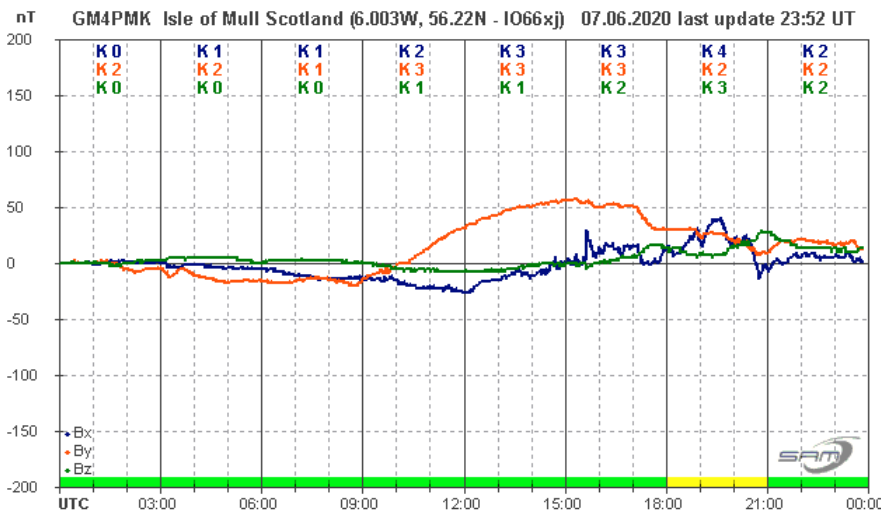
2020 June 23



Stuart's chart shows the rate of change of the magnetic field, while my own (above) shows the field recorded by a horizontally mounted single-axis sensor. There is a small ripple effect (about 20nT total) along with some minor local interference.



The disturbance recorded at the end of May continued into the 1st and 2nd of June, shown above in the recording by Roger Blackwell. This was very mild as the southern coronal hole rotated away from earth. A very patchy area of coronal holes produced a slightly stronger disturbance on the 7th, again recorded by Roger Blackwell:

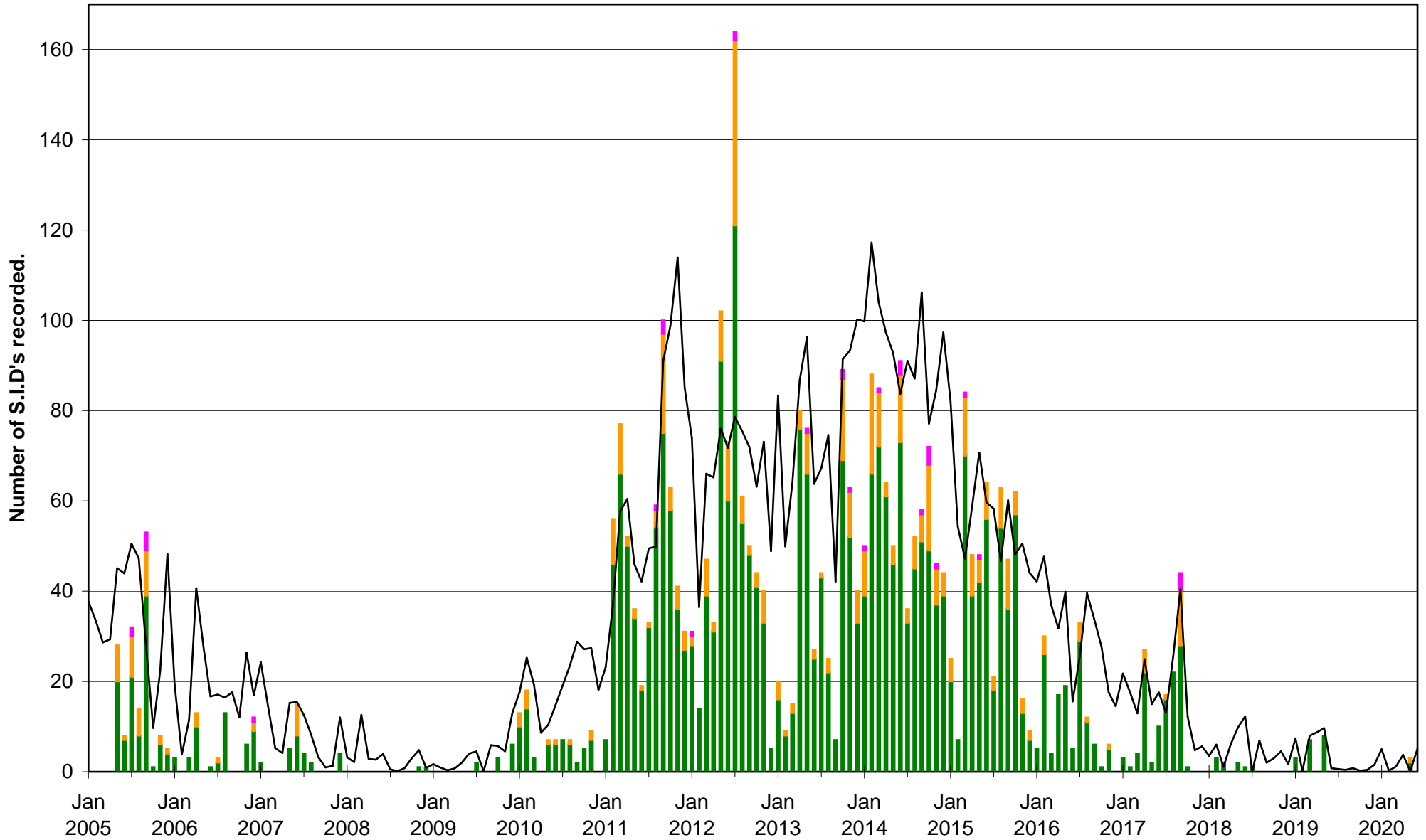
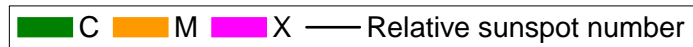


None of this activity caused any disturbances at 37.5kHz.

There were no meteor or atmospheric observations reported.

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

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	24 25 26 27 28 29 30 31	2018 June 1 2 3 4 5 6 7 8 9 10 11 12	13 14 15 16 17 18 19	2205	
2522	F	20 21 22 23 24 25 26 27 28 29 30	2018 July 1 2 3 4 5 6 7 8 9	10 11 12 13 14 15 16	2206	
2523	F	17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	2018 August 1 2 3 4 5	6 7 8 9 10 11 12	2207	
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		2208	2018 October 1 2 3 4 5
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		2018 October 1 2 3 4 5	2209	
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		2018 November 1	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		2018 December 23 24 25 26 27 28	2211	
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		2019 January 20 21 22 23 24 25	2212	
2529	F	26 27 28 29 30 31 2019 January 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21		2019 February 17 18 19 20 21	2213	
2530	F	22 23 24 25 26 27 28 29 30 31 2019 February 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17		2019 March 13 14 15 16 17	2214	
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		2019 April 13 14 15 16	2215	
2532	F	17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 2019 April 1 2 3 4 5 6 7 8 9 10 11 12		2019 May 9 10 11 12	2216	
2533	F	13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 2019 May 1 2 3 4 5 6 7 8 9		2019 June 6 7 8 9	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 2019 June 1 2 3 4 5		2019 July 27 28 29	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		2019 July 30 1 2	2219	
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		2019 August 27 28 29	2220	
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		2019 September 23 24 25	2221	
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		2019 October 19 20 21	2222	
2539	F	22 23 24 25 26 27 28 29 30 31 2019 October 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16		2019 November 17 18	2223	
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		2019 December 13 14	2224	
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		2020 January 10 11	2225	
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 6 7		2020 February 1 2 3	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 2020 February 1 2 3		2020 March 28 29	2227	
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		2020 March 28 29	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		2020 April 1 2 3 4	2229	
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		2020 May 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21		
2547	F	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		2020 June 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17		
2548	F	2231 22 23 24 25 26 27 28 29 30 31 2020 June 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17		2020 July 1 2 3 4 5 6 7 8 9 10 11 12 13 14		
2549	F	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				