The British Astronomical Association

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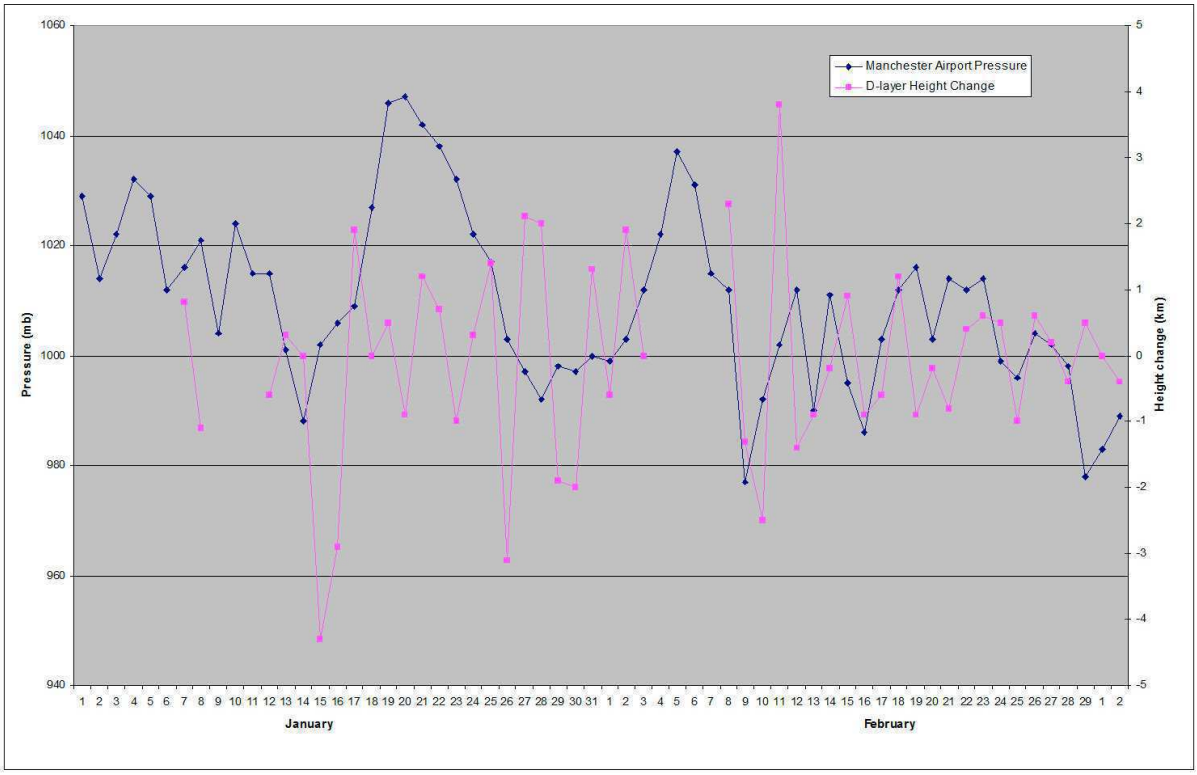
BAA Radio Astronomy Section. 2020 FEBRUARY.

February was another month of solar minimum conditions, with very low X-ray flux levels shown in the GOES data. The only event of any note was an A9.6 flare at 19:03 on the 26th. We did not record any SIDs. Following the notes on atmospheric pressure and D-region height last month, Mark Edwards has provided a chart comparing the atmospheric pressure recorded at Manchester airport with his measure of the daily change in D-region height derived from the 19.6kHz and 22.1kHz signals.

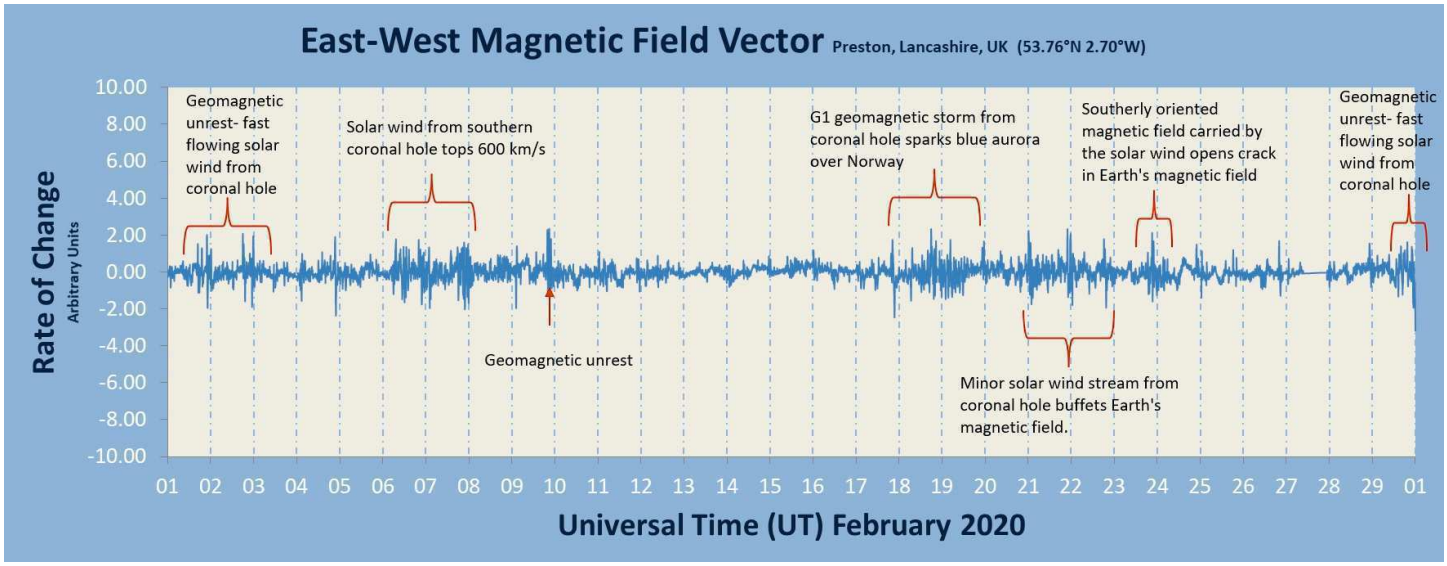


Although there are some gaps when both signals were not present, there could possibly be some correlation through February, and perhaps less so during January. While solar activity remains low, it will be interesting to see how this develops through the year.

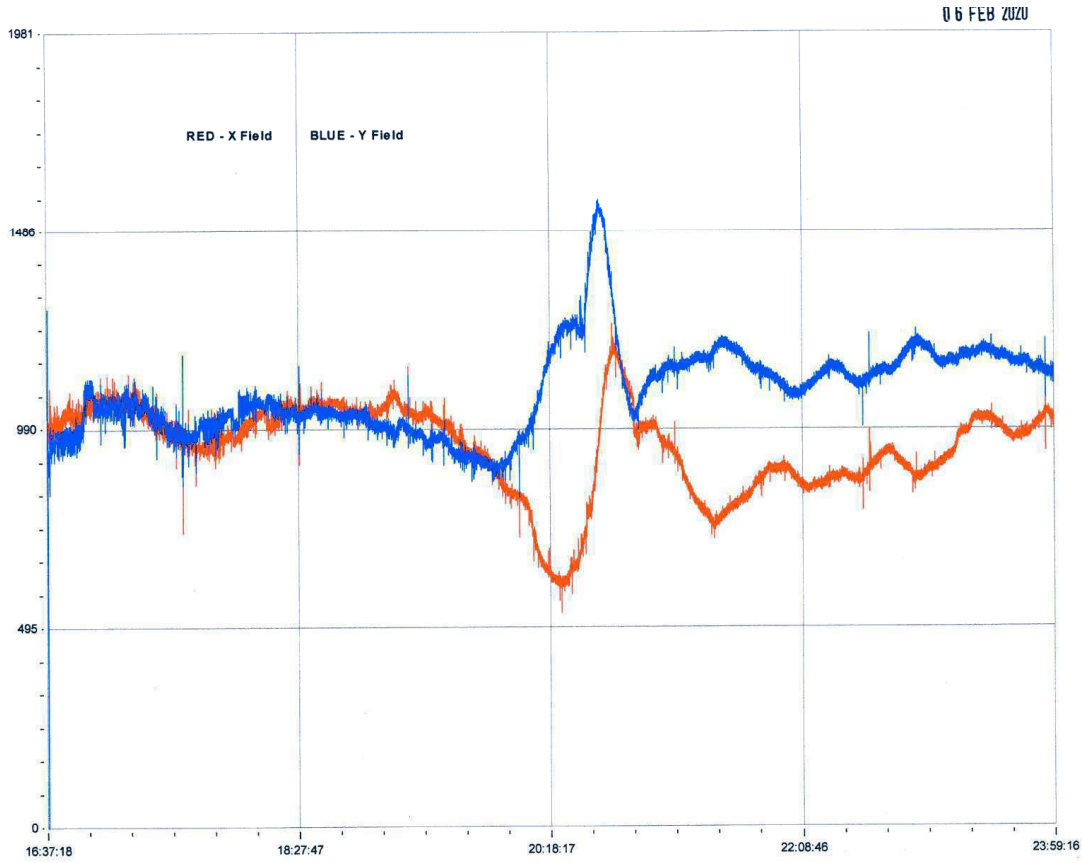
Colin Clements noted substantial noise on the 23.4kHz throughout February, declining slightly as the month progressed. The 18.3kHz signal remained much more stable over the much shorter path. Colin also noted that he should be able to restart VHF observations as the sun rises above local roof level for his aerials.

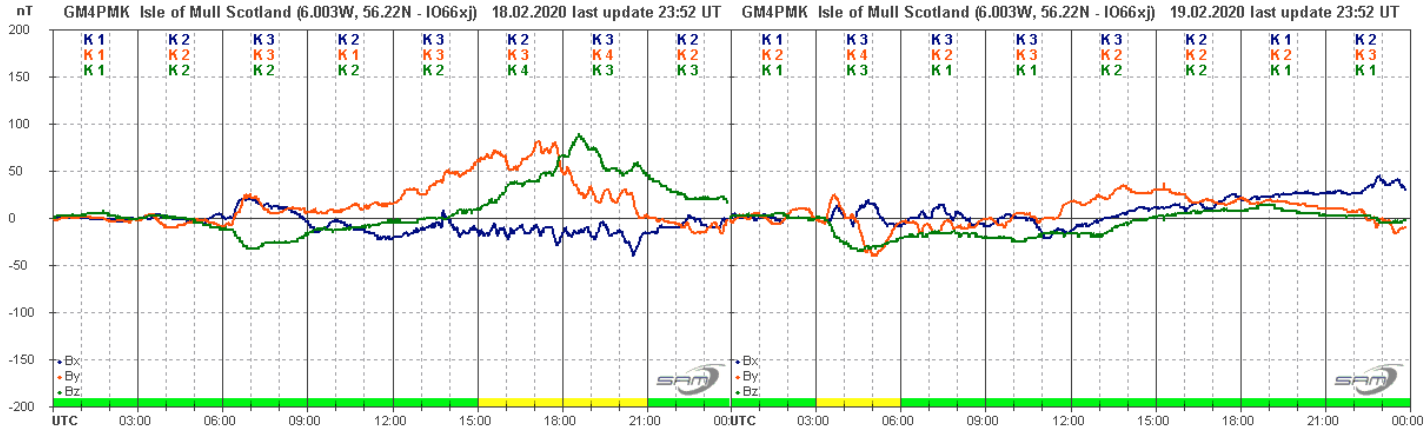
MAGNETIC OBSERVATIONS.

Stuart Green has again provided a very good summary of the month's magnetic activity:



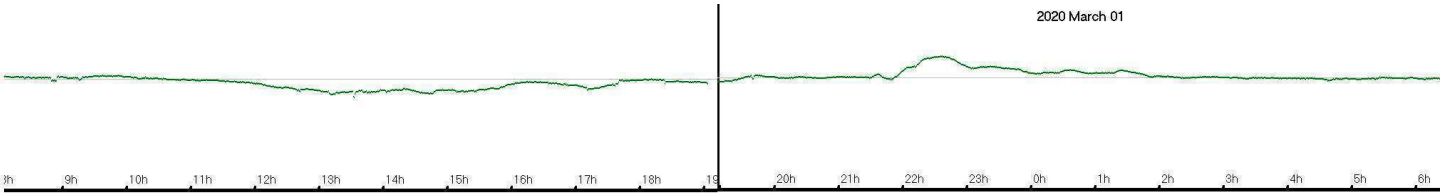
Most of this activity is from coronal holes, although satellite data reported a CME on February 18th. Its source was not given. The south-polar coronal hole produced some disturbance throughout the day on the 6th, with a short peak around 20 to 21UT as shown in the recording by Colin Clements:



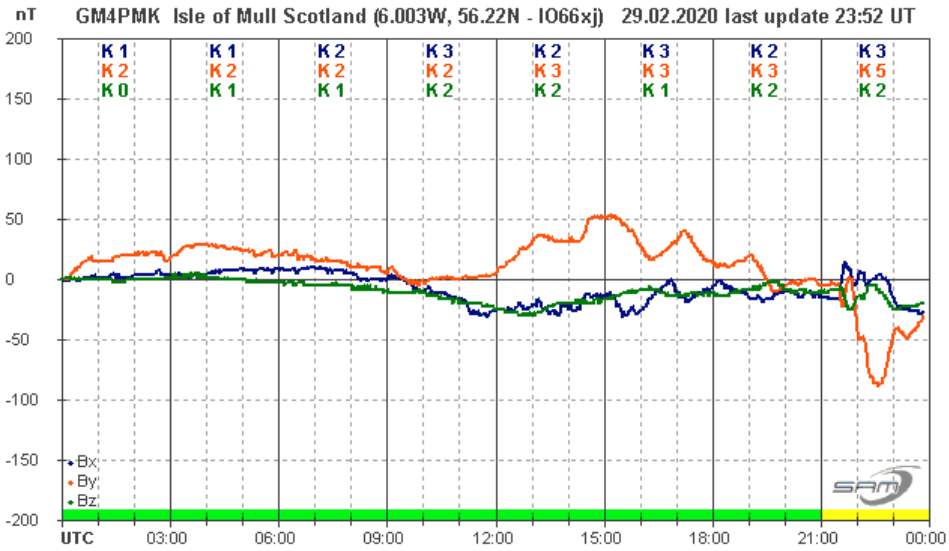


This chart from Roger Blackwell shows activity on the 18th and 19th, from further coronal holes as well as the CME recorded in satellite data. It continued over the next few days, but with much less disturbance, and faded out early on the 22nd. Stuart Green's chart shows activity over the 23rd and 24th. This seems to have been very mild, and did not show in any of the magnetometer recordings.

Activity increased again at the end of February from a coronal hole fast solar wind. This appears to be a repeat appearance of the hole seen at the beginning of the month.



My recording shows a mild disturbance starting around 11:30UT on the 29th, and continuing until about 2AM on March 1st. The peak at 22:30 is about 60nT in my single axis magnetometer.



Roger Blackwell's 3-axis sensor shows a slightly stronger disturbance, particularly in the By trace.

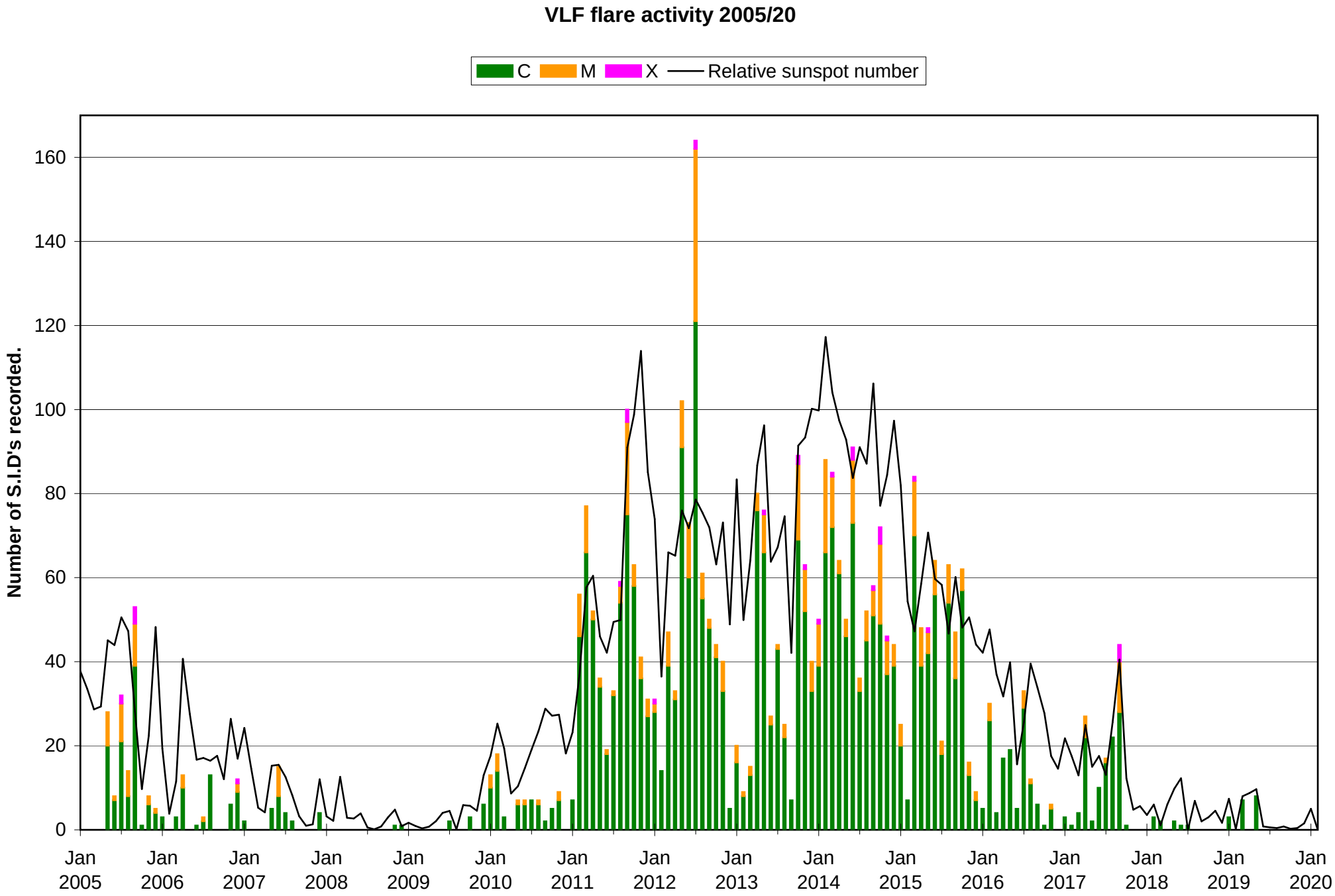
Magnetic observations received from Roger Blackwell, Colin Clements, Stuart Green, Paul Hearn and John Cook

BAA Radio Astronomy Section. **2020 FEBRUARY.**

	Xray class	Observers	John Cook (23.4kHz/*22.1kHz*)	Roberto Battaiola (20.9kHz)	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 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).

2502

F | 27 | 28 | 29 | 30 | 31 | 2017 January 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 2186 10 | 11 | 12 C | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 CC | 22

2503

F | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 2017 February 1 | 2 | 3 | 4 | 5 | 6 | 2187 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18

2504

F | 19 | 20 BB | 21 | 22 C | 23 | 24 | 25 | 26 | 27 | 28 B | 2017 March 1 | 2 | 3 | 4 | 5 | 2188 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17

2505

F | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 BCC | 28 BC | 29 | 30 | 31 C | 2017 Ap 1 BB | 2189 2 MMMM | 3 CCCM | 4 CBCC | 5 CBB | 6 CC | 7 BC | 8 C | 9 | 10 | 11 | 12 | 13

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F | 31 B | 2017 August 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 CC | 15 CB | 2194 16 | 17 | 18 BBC | 19 CCCC | 20 CCC | 21 BC | 22 CBCC | 23 CCC | 24 B | 25 C | 26

2511

F | 27 C | 28 | 29 | 30 BBC | 31 | 2017 September 1 CC | 2 BC | 3 | 4 CMMM | 5 MCCM | 6 XXMM | 7 MMXC | 8 MCCM | 9 CMC | 10 CX | 11 C | 12 | 2195 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22

2512

F | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 2017 October 1 | 2 | 3 | 4 | 5 C | 6 B | 7 | 8 | 9 | 2196 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19

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F | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 2017 November 1 | 2 | 3 | 4 | 5 | 2197 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15

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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

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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

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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

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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

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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

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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

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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

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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

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