

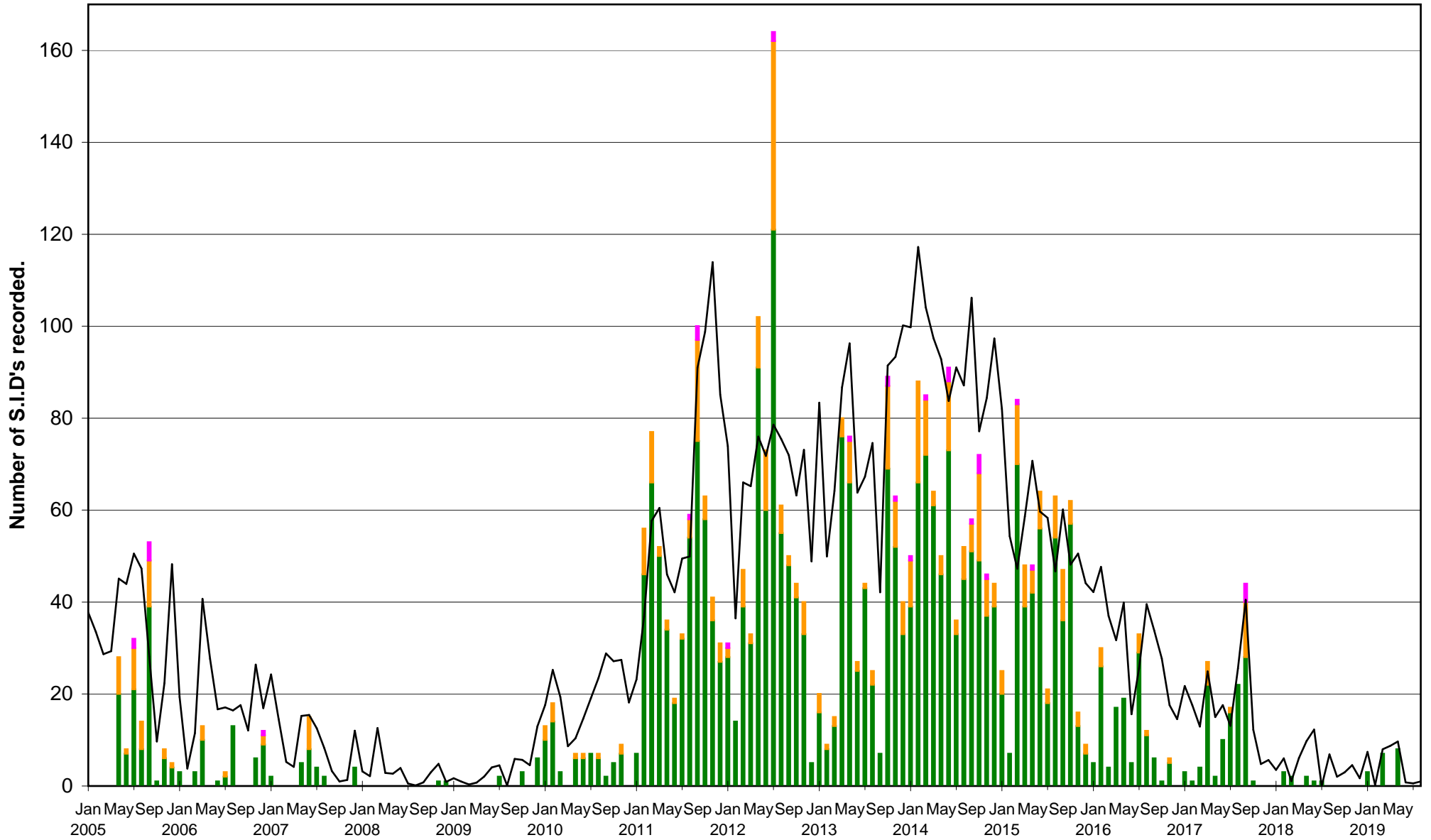
	Xray class	Observers	John Cook (23.4kHz/22.1kHz)	Roberto Battaiola (20.9kHz)	Paul Hyde (22.1kHz/24kHz)	Mark Edwards (24.0kHz)	Colin Clements (23.4kHz/18.3kHz)
			Tuned radio frequency receiver, 0.58m frame aerial.	Modified AAVSO receiver.	Spectrum Lab / PC 1.5m frame aerial.	Spectrum Lab / PC 2m loop 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 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)				
			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 2005/19.

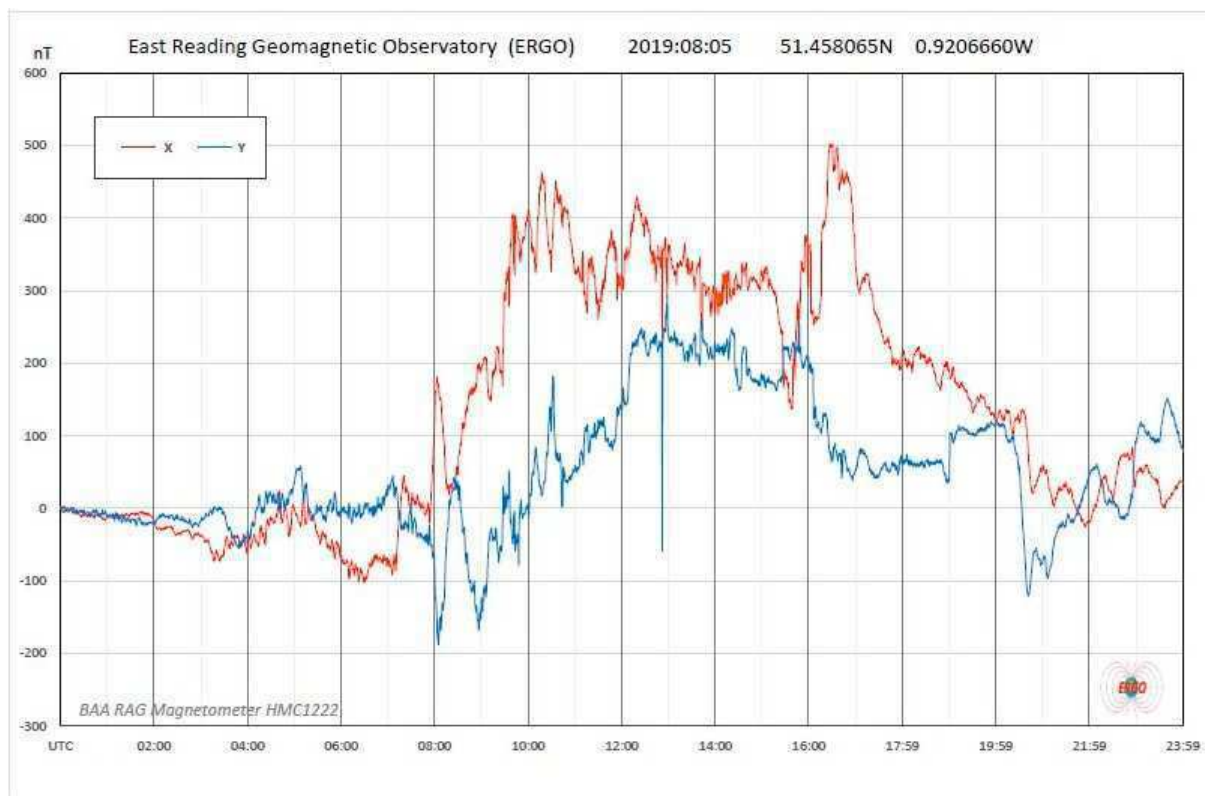
C M X — Relative sunspot number



August was another month of low activity from the sun. The few flares that appear in the GOES data were all A0 or A1.1, and therefore way below detection as SIDs. The 23.4kHz signal has been back to near-normal operation, and showed some instabilities typical of those usually seen in the winter months. Colin Clements also recorded this on 23.4kHz, while Andrew Thomas noticed it on the 19.6kHz signal. Perhaps the lower activity through solar minimum is responsible?

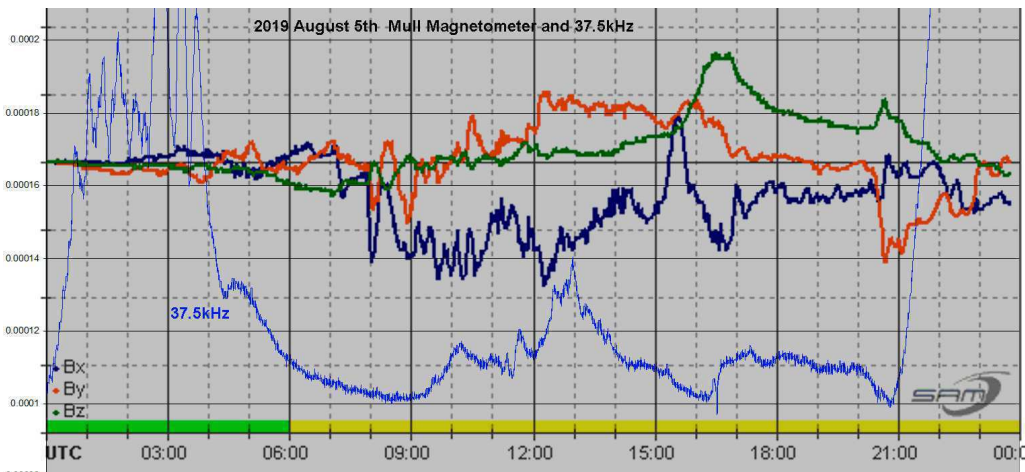
MAGNETIC OBSERVATIONS.

Magnetic activity varied from low to active during August, with the effects of a coronal hole being seen on two appearances. The first appearance in August was on the 5th, shown in this recording by Paul Hearn:

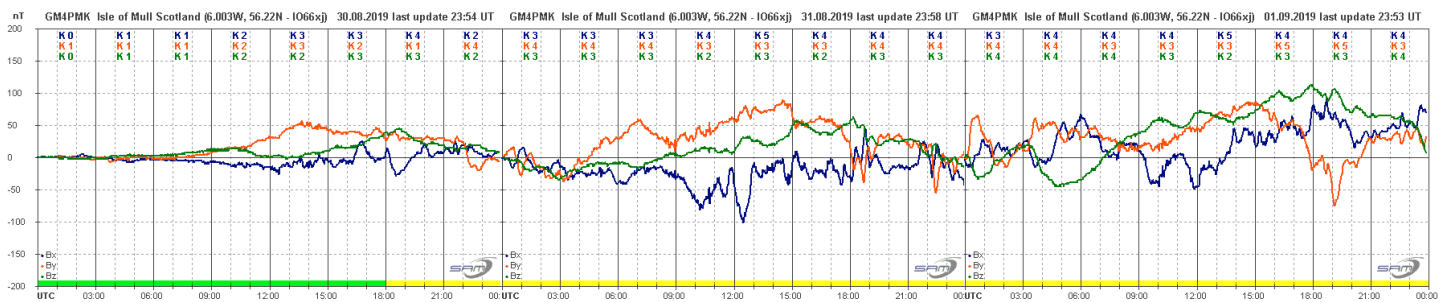
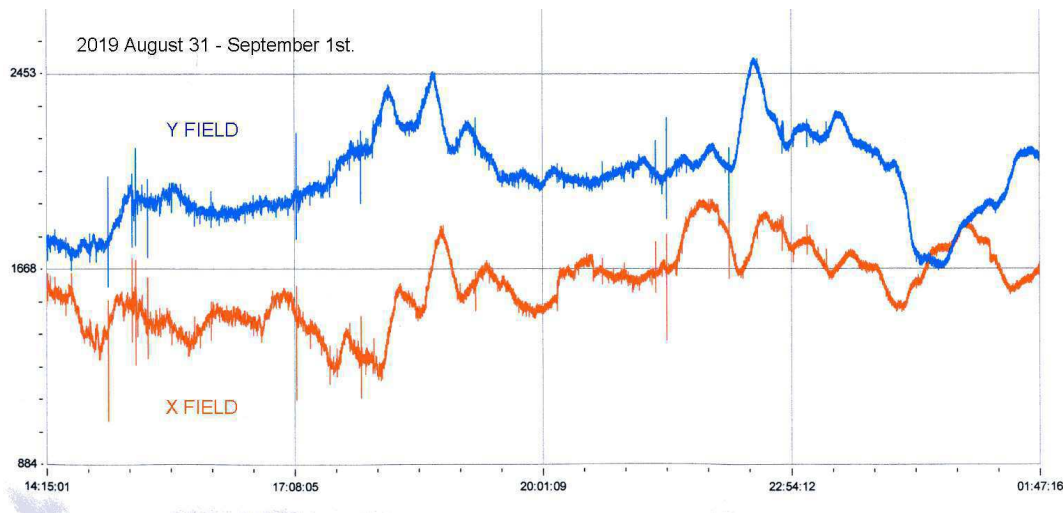


The magnetometer is uncalibrated, so ignore the values shown on the left. The peak disturbance was recorded as about ± 80 nT by Roger Blackwell's Mull magnetometer. The previous appearance of this coronal hole was on the 8th and 9th of July, with charts shown in the July summary. The peak disturbance was very similar on that occasion, although much less turbulent. The STCE bulletin reports wind speeds of 700 to 780km/s, some of highest recorded this year. The disturbance was much more subdued after midnight, with mild effects being recorded over several days as shown on the Bartels diagram.

As might be expected, effects were also recorded on the 37.5kHz signal from Grindavik, Iceland. Mark Edwards' chart with the Mull magnetometer overlaid is shown on the next page. There is a lot of detail in the magnetometer traces, which makes comparison with the VLF signal rather difficult, but there does seem to be a puzzling mismatch between the major features in the two signals. Shifting the 37.5kHz signal about 4 hours to the right does align some of them but seems unlikely to be real.



This coronal hole made a second August appearance at the end of the month with a much more active magnetic storm on the 31st and on into September 1st. The recording by Colin Clements is shown below:



This chart shows Roger Blackwell's Mull magnetometer recordings over three days, 30th and 31st August, and 1st September showing the extent of the activity. Mark Edwards recorded disturbances at 37.5kHz, matching the magnetic signal at 12:00 and 15:30UT on the 31st. More details will be in the September summary. The coronal hole was fairly large, satellite images showing it spread north and south of the solar equator.

Some more much weaker CHSS effects were recorded through the middle of the month, as a number of small coronal holes crossed the meridian.

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

BARTELS DIAGRAM

ROTATION	KEY:	DISTURBED	ACTIVE	SFE	B, C, M, X = FLARE MAGNITUDE.	Synodic rotation start (carrington's).
2498	10 11 12 13 14	15 16 17 18 19	20 21 22	23 24 25 26 27 28 29 30	2182	2016 October
2499	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	2183	2016 November
2500	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	2184	2016 December
2501	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	2185	2017 January
2502	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			2186	2017 February
2503	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			2187	2017 March
2504	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			2188	2017 April
2505	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			2189	2017 May
2506	14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29	30 1 2 3 4 5 6 7 8 9 10			2190	2017 June
2507	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			2191	2017 July
2508	7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	23 24 25 26 27 28 29 30	1 2 3	4 5 6	2192	2017 August
2509	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			2193	2017 September
2510	31 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22				2194	2017 October
2511	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			2195	2017 November
2512	23 24 25 26 27 28 29 30 31	1 2 3 4 5 6 7 8 9			2196	2017 December
2513	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			2197	2018 January
2514	16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	1 2 3 4 5 6 7 8 9 10 11 12			2198	2018 February
2515	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			2199	2018 March
2516	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		2200	2018 April
2517	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		2201	2018 May
2518	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	2018 June
2519	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	2018 July
2520	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			2204	2018 August
2521	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			2205	2018 September
2522	20 21 22 23 24 25 26 27 28 29 30	1 2 3 4 5 6 7 8 9			2206	2018 October
2523	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			2207	2018 November
2524	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			2208	2018 December
2525	9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29	30 1 2 3 4 5			2209	2019 January
2526	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		2210	2019 February
2527	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			2211	2019 March
2528	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				2212	2019 April
2529	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			2213	2019 May
2530	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			2214	2019 June
2531	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			2215	2019 July
2532	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	2019 August
2533	13 14 15 16 17 18 19 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			2217	2019 September
2534	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	2019 October
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	30 1 2			2219	2019 November
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 27 28 29				2220	2019 December
2537	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			2221	2020 January
2538	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			2222	2020 February