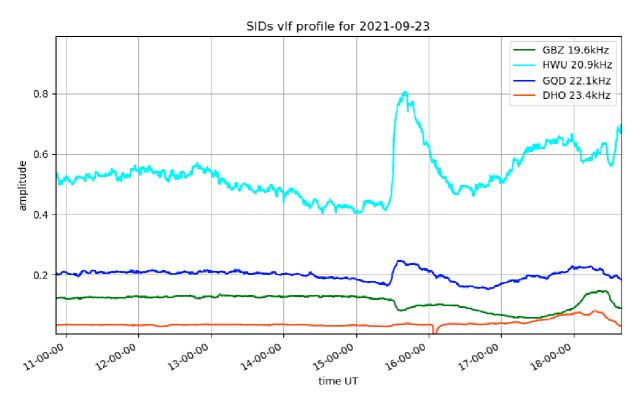


Please send all reports and observations to jacook@jacook.plus.com

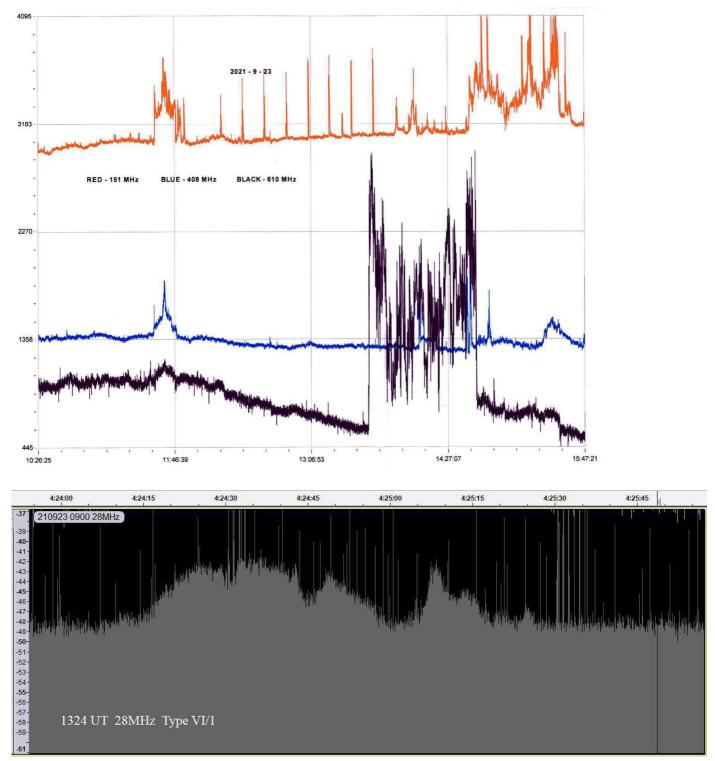
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The SID count in September was only half of that recorded in August, but it did include two M-class flares. The stronger of these, at M2.8, was rather early in the morning for northern-European observers, but it was recorded by Roberto Battaiola in Milan. The M1.8 flare was later in the afternoon and widely recorded. Mark Prescott made this recording:



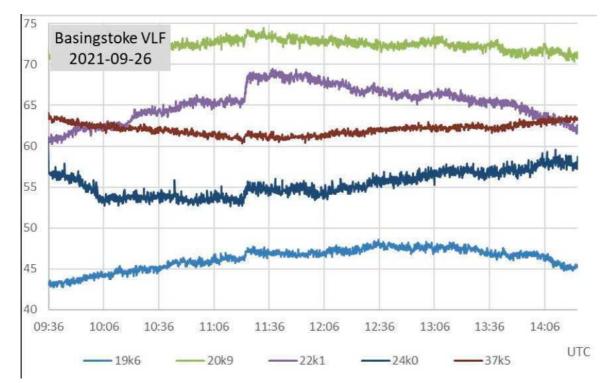
The response at 20.9kHz is very strong, with smaller SIDs at 19.6 and 22.1kHz. 23.4kHz shows a very small response, barely recognisable as a SID. It is followed by a short break in the signal just after 16:00UT. My own recordings gave a very similar response. The active region responsible for these flares was AR12871, close to the central meridian at the time. It appears to have been a reappearance of AR12860, responsible for the M4.7 flare on August 28th. These were the strongest flares of the month, among mostly small C-class and B-class events.

Some strong VHF activity was also recorded on the 23rd, some related to the M1.8 flare, and some occurring before hand. Colin Clements made recordings at 151, 408 and 610MHz, and Colin Briden made a 28MHz recording:

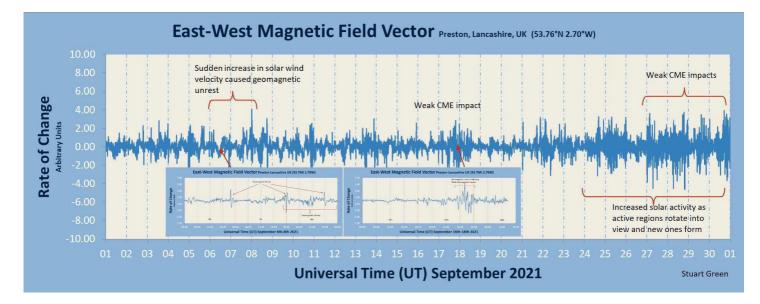


The 28MHz signal shows a type VI/1 signal, starting at 13:24UT, lasting for just over a minute. The type VI/1 designation implies multiple type III emissions in succession, of a small amplitude. The grey area in the chart is the time-averaged signal, varying over about 7dB. The black area shows the signal peaks, but they are mostly off the top of the chart, and so not visible.

Colin Clements' 151MHz signal (red) shows some local interference during the middle of the day, but has a clear burst from 14:40 to 15:50UT, covering the period of the flare. The 610MHz signal (black) lasts for a similar length of time, but starting at 13:40. The blue trace shows 408MHz, with only a very small signal overlapping that at 610MHz. All three show a small burst around 11:30 to 11:50.

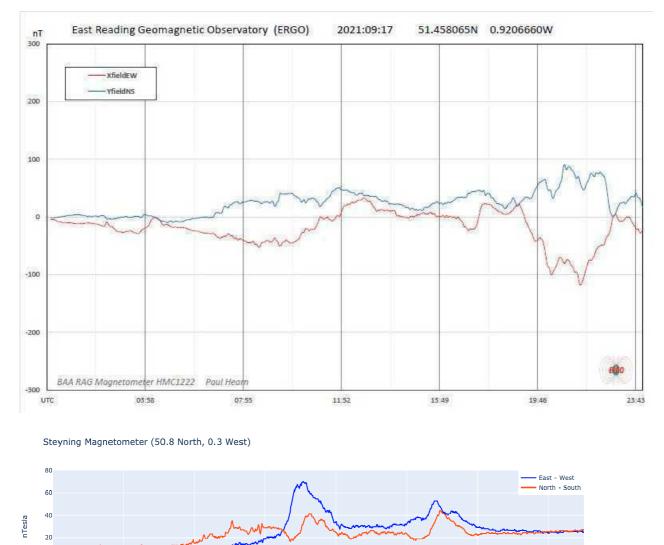


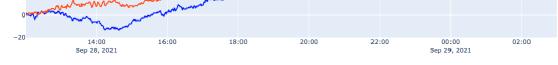
This recording from Paul Hyde shows the small C1.6 flare, peaking at 11:25UT on the 26th. 22.1kHz shows a very distinct SID, while 20.9 and 19.6kHz are much weaker. Considering that the paths at 19.6 and 22.1kHz are very close, the difference is quite surprising.



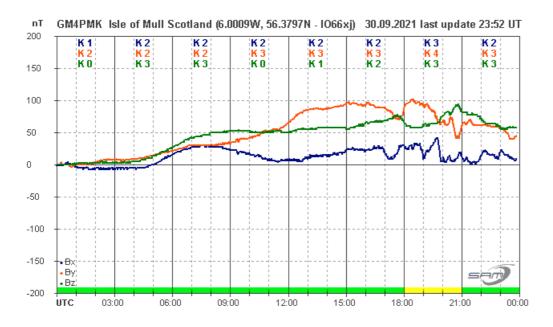
MAGNETIC OBSERVATIONS.

Stuart Green's summary of the month's activity shows a fairly quiet start, increasing in the last week. The mild disturbance over the 7th and 8th was from a coronal hole high speed wind, with some short transients shown in the inset chart on the 6th, 7th, and 8th. There were also a number of small CMEs shown in satellite images, the first of which arrived on the 17th. The chart on the next page by Paul Hearn shows the disturbance building through the day, although there is no clear sign of a CME arrival impact. Activity faded out in the early hours of the 18th.

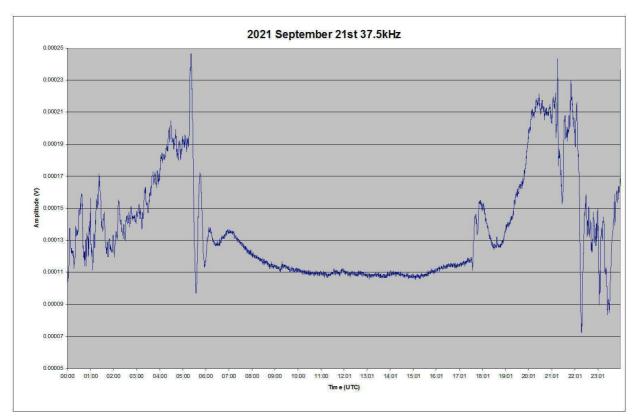




This chart from Nick Quinn shows activity from another CME on the 28th and 29th. Activity was again fairly mild, and continued into the evening of the 30th, shown in the chart from Roger Blackwell:



Mark Edwards recorded a 37.5kHz transient that appeared to be from a magnetic disturbance on the



The disturbance can be seen from 17:30 to 18:30UT, well before sunset takes over. Our own magnetic recordings do not show any significant activity at this time, although those from different parts of the world do show a strong disturbance. Those in the Americas seem to have been strongly disturbed, as well as in the Southern hemisphere.

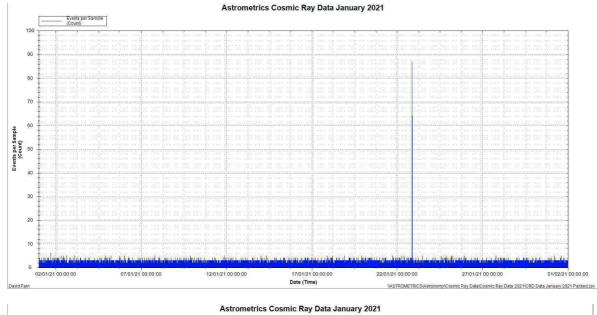
Magnetic observations received from Roger Blackwell, Colin Clements, Stuart Green, Paul Hearn, Nick Quinn and John Cook.

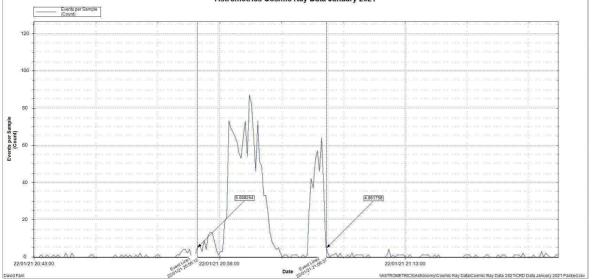
MUON DETECTION.

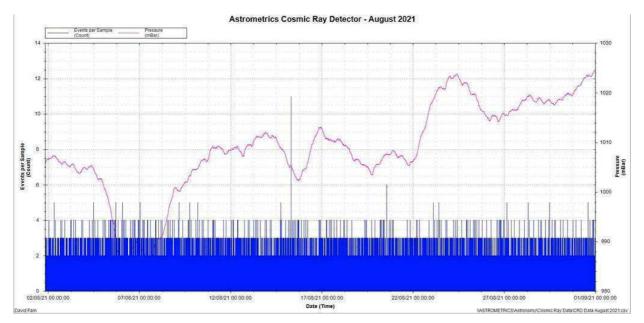
This is not a subject that we have covered previously, but David Farn has been experimenting with muon detection and has some interesting observations. His detector is based on plates of 5 STS-5 Geiger tubes, connected such that they don't cross-couple. The outputs are logged into memory so that counts can be made over time. The detector is mounted indoors, with a log of temperature and pressure being made to help avoid any local effects. It has been operating since 2020 April, and appears to be free from local interference.

The first chart shows counts in 2021 January. There is a low continuous background, with a sudden burst of activity on the 22nd. The second chart shows the detail of this activity, with two distinct peaks shown. They last for about 10 minutes, starting about 20:56UT. The cause is currently unknown, but monitoring is continuing. The third chart shows counts in August in more detail, with atmospheric pressure added. There are no 'super events' as in January, but just a small variation in background level. There appears to be no influence from atmospheric pressure.

21st:







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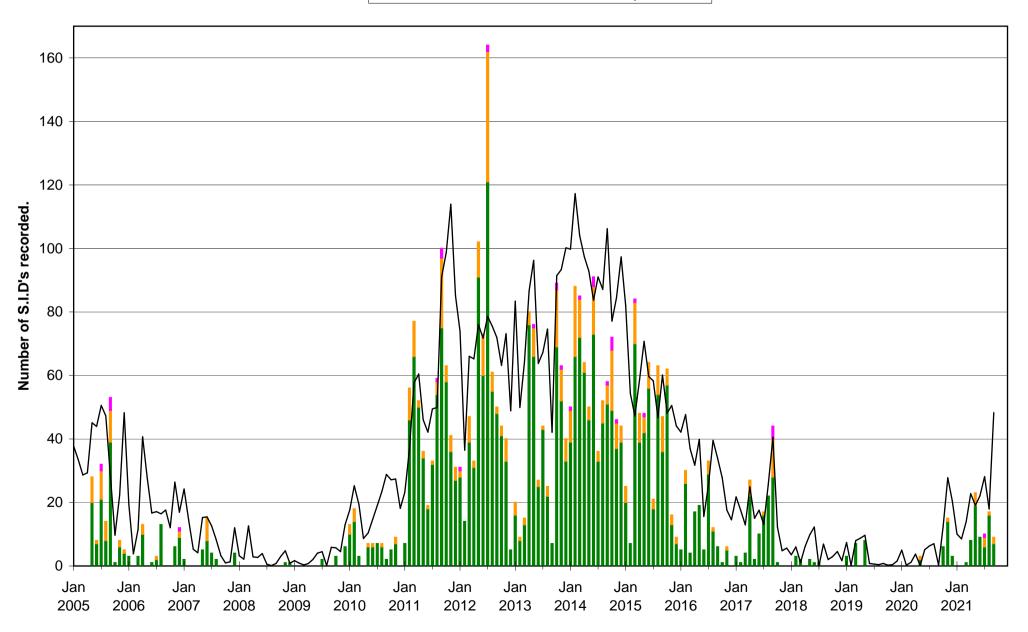
	SS	ers	John C	Cook (23.	.4kHz/22.1k	kHz)	Rob	aiola 20.3kHz	Paul I	2.1kHz/2 <i>4kH</i>	Mark E	dwards	(24.0/20.9	kHz)	Colin Clements (23.4kHz)							
	Xray class	Observe			quency rece me aerial.	eiver,	Мос	dified AA	VSO receiver.	Spectru		' PC 1.5m fra rial.	Spectrun	n Lab / F	PC 2m loop	aerial.	Tuned 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)	
			10 - 1	10 50							10 -0				10 50		10.00					
8	C2.3	4	12:54	12:59	13:14	1					12:53	13:01	13:17	1	12:52	13:00	13:29	2				
8	C8.3	4	17:23	17:27	17:42	1					17:20	17:33	17:53	2	17:23	17:39	17:45	1				
9	C3.5	4	08:19	08:33	08:52	2					08:14	08:34	09:25	2+	08:23	08:38	09:07	2	08:33	08:38	08:40	1-
21	C1.8	2									11:50	11:54	12:20	1+	11:53	11:56	12:02	1-				
23	M2.8	1					04:35	04:43	04:48	1-												
23	M1.8	8	15:24	15:28	15:55	1+					15:22	15:32	16:30	2+	15:24	15:35	17:00	3	15:29	15:35	15:51	1
26	C1.6	2									11:22	11:25	11:47	1								
28	C1.6	1					05:55	06:30	06:42	2+												
30	C1.2	1									12:45	12:50	13:02	1-								

	class	Stev	e Parkin	son (Variou	s)	And	rew Thor	nas (19.6kHz)		Ph	il Rourk	e (23.4kHz)		John	Wardle			Christop	her Bailey	
	Xray cla	Tuned radio frequency receiver, frame aerials.				Tuned rac	ency receiver, 0. e aerial.	.6m	Spectru	n Lab, ().6m frame aerial.	Spetrum		arbase, hip aerial.	Active					
DAY		START	PEAK	END (UT)		START	PEAK	END (UT)		START	PEAK	END (UT)	START	PEAK	END (U	T)	START	PEAK	END (UT)	
	C2.3 C8.3 C3.5 C1.8 M2.8 M1.8 C1.6 C1.6 C1.2	12:55 15:24	13:00 15:31	13:16 16:22	1 2+	15:25 11:24	15:35 11:25		1+ 1-								15:18	15:32	16:45	3

SS	Colin Briden (22.1kHz)	Andrew Lutley (23.4kHz)	Peter Meadows (23.4kHz)	John Elliott (18.3kHz)	Mark Prescott (20.9kHz)				
Xray class	Spectrum Lab / PC, 1.2m frame aerial.	Tuned radio frequency receiver, 0.6m frame aerial.	Tuned radio frequency receiver, 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)			
8 C2.3 8 C8.3 9 C3.5 21 C1.8 23 M2.8 23 M1.8 26 C1.6 28 C1.6 30 C1.2					12:58 13:05 15:28 15:41	14:42 3 16:22 2+			

VLF flare activity 2005/21

C M X — Relative sunspot number



BAA Radio Astronomy Section.

BARTELS DIAGRAM

BAA I	Radio Astro	nonny :	section.									BARTE	LS DIA	GRAM													
ROTATION	KEY:		DISTU	RBED.			ACTIVE			SFE		E	8, C, M,	X = FLA	RE MAG	NITUDE		S	ynodic ro (carrin	otation sta gton's).	art						
2529	26	27	28	29	30	31	2019 Jai 1	nuary 2	3	4	5	6	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 F	C ebruary 2	3	4	5	6	7	8	9	10	11	12	2214 13	14	15	16	17
2531	18	19	20	21	22	23	24	25	26	27	28	2019 Ma 1	arch 2	3	4	5	6	7	8	9	10	11	12	2215 13	14	15	16
2532	- 17 F	18	19	20 C	21 CCC	22 CCCB	23 B	24	25	26	27	28	29	30	31	2019 Ap 1	oril 2	3	4	5	6	7	8 B	2216 9	10	11	12 B
2533	13 F	14	15	16	17	18	19	20 B	21	22	23	24	25	26	27	28	29	30	2019 Ma 1	ay 2	3	4	5 BB	2217 6 CCCC	7 BCC	8	9 C
2534	10 F	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	2019 Ju 1		2218	4	5
2535	6 F	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 Ju 1	ly 2
2536	3 F	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	30 F	31	2019 Au 1	ugust 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	26 F	27	28	29	30	31	2019 Se	ptember 2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	2222 19	20	21
2539	22 F	23	24	25	26	27	28	29	30	2019 C 1	ctober 2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	2223 17	18
2540	19 F	20	21	22	23	24	25	26	27	28	29	30	31	2019 No 1	ovember 2	3	4	5	6	7	8	9	10	11	12	2224 13	14
2541	15 F	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	2019 De 1	ecember 2	3	4	5	6	7	8	9	2225 10	11
2542	12 F	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	2020 Ja 1	nuary 2	3	4	5	2226 6	7
2543	8 F	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	2020 Fe	bruary 2	2227 3 2228
2544	4 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	1
2545	2020 Ma 2 F	3	4	5 2020 Ap	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	29 F	30	31	2020 Ap 1	2	3	4 2020 Ma	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
2547	2230 25 F 2231	26	27	28	29	30	1	2	3	4	5 2020 Ji	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
2548	22 F 2032	23	24	25	26	27	28	29 MCCB	30	31	1	2	3	4 2020 Ju	5	6	7	8	9	10	11	12	13	14	15	16	17
2549	18 F 2033	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5 2020 Au	6 Jaust	7	8	9	10	11	12	13	14
2550	15 F	16 2234	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5 2020 Se	6 eptember	7	8	9	10
2551	11 F	12 2235	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4 2020 Oc	5 ctober	6
2552	7 F	8 2236	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
2553	4 F	5 2237	6 2020 No	7 ovember	8	9	10	11	12	13	14	15	16 CC	17	18	19	20	21	22	23	24	25	26	27 C	28	29 BCCC	30
2554	31 F	1 B	2 2238	3	4 B 2020 D	5 CBCC ecember	6 CBC	7 B	8	9	10 C	11 C	12	13	14	15	16	17	18	19	20	21	22 CC	23	24	25	26 C
2555	27 F	28 C	29 CM 2239	30	1	2	3		5 2021 Ja		7 C	8	9	10	11	12	13	14 C	15	16	17	18	19	20	21	22	23
2556	24 F	25	26	27 2240	28	29	30	31	1	2	3		5 2021 Fe		7	8	9	10	11	12	13	14	15	16	17	18	19
2557	20 F	21	22	23 2241	24	25	26	27	28	29	30	31		2 2021 M	3 arch	4	5	6	7	8	9	10	11	12	13	14	15
2558	16 F	17	18	19 2242	20	21	22	23	24	25	26	27	28	1	2	3	4	5 2021 Ap		7	8	9 C	10	11	12	13	14
2559	15 F B	16	17	18 2243	19	20	21	22	23	24	25 B 21	26	27	28	29	30	31	29	2	3	4 2021 Ma		6	7	8	9	10
2560 2561	11 F	12	13	14 2244 11	15	16	17 B	18	19	20 C	21	22 CCCCC 19	23	24	25	26	27	28	29	30	28	2	3	4	5 2021 Ju 1		7 M 3
2561	F CC	9 CC 5	10	11	12 C 2245 8	13	14	15	16	17	18	19 15	20	21 C	22 CCMM 18	23 CCBM 19	24	25	26 CCCCC 22	27	28 C 24	29	30	31 27	28	2	3 30
2562	4 F 2021 July 1	5	6	4	8 CCC 2246 5	9 CCB 6	10	8	9	13	14	15	16 13	17	18	19	20	21	22	23	24	25 C 22	26 23	27	28 CBC 25	29	30 CC 27
2563	1 F 28	2	3 MCXM 30		5 2021 Ai 1		3	8	GCCB	6	11	12	9	14	15	16 C 12	17	18 C 14	19	20	21	18	23	24	25	26	27
2564	28 F 24	29	30 26	27	1 2248 28	2	3	4 31		6 eptembe 2		4	5	10	7	12	9	14	15	16		18	19	20 CCC 16	21	22 C 18	23
	FC			CCCC	MCCC	CC 2249	С		1		3	4 2021 Oc	tober		Α	CC	С				13						
2566	20 F	21 C	22	23 MM	24	25	26 C	27	28 C	29	30 C		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16