BAA Radio Astronomy Group. **2012 JULY**

	Xray class	Observers	John Cook (23.4kHz/*22.1kHz*)				Roberto Battaiola (20.9kHz)				Paul Hyde (22.1kHz)				Bob Middlefell (22.1kHz)				Mark Edwards (**19.6**/24.0/*37.5kHz*)			
			Tuned radio frequency receiver, 0.58m frame aerial.				Modified AAVSO receiver.				Tuned radios frequency receiver, 0.96m frame aerial.				Tuned radio frequency receiver, 0.5m frame aerial.				Spectrum Lab / PC 2m loop aerial.			
DAY			START	PEAK	END (UT)		START	PEAK	END (UT)		START	PEAK	END (UT)		START	PEAK	END (UT)		START	PEAK	END (UT)	
1	C5.4	6									07:14	07:20	08:11	2+					**07:15**	**07:26**	**08:14**	**2+**
1	C1.3	1																	10:15	10:25	10:53	2
1	C2.4	3																	15:30	15:36	?	-
1	C8.2	9	15:44	15:48	16:48	2+	15:45	15:50	16:00	1-	15:44	15:49	16:19	2					15:42	15:50	16:51	2+
1	C2.7	3					18:11	18:13	18:17	1-	18:10	18:14	18:21	1-					18:10	18:13	18:33	1
1	**M2.8**	5									19:16	19:21	20:03	2+					19:15	19:20	20:16	2+
2	C3.5	2									05:05	05:10	05:58	2+					**05:05**	**05:28**	**05:37**	**1+**
2	C2.1	2									07:07	07:12	07:36	1+					**06:54**	**07:02**	**07:07**	**1-**
2	C2.4	4	08:54	08:58	?	-					08:53	08:58	09:23	1+					08:53	08:58	09:17	1
2	*	1																	*09:21*	*09:31*	*10:13*	*2+*
2	C2.9	5	10:36	10:41	?	-	10:35	10:41	10:45	1-	10:37	10:41	?	-					10:35	10:41	?	-
2	**M5.6**	8	10:46	10:54	12:17	3	10:45	10:53	11:09	1	10:47	10:54	12:20	3					10:45	10:53	11:54	2+
2	*	1																	**12:22**	**12:35**	**13:27**	**2+**
2	*	1																	**13:42**	**13:47**	**14:35**	**2+**
2	C1.7	1																	**14:37**	**14:47**	**15:09**	**1+**
2	C2.0	1																				
2	C3.7	4					17:45	17:50	17:59	1-	17:47	17:54	18:08	1								
2	C4.5	3					18:07	18:13	18:20	1-	18:10	18:16	18:27	1-								
2	C7.4	2	18:55	18:58	?	-																
2	**M3.8**	2									20:03	20:08	?	-					20:03	20:07	20:55	2+
3	C2.0	4									12:15	12:17	12:31	1-					12:15	12:19	12:37	1
3	C2.2	2									13:05	13:08	13:15	1-					13:05	13:08	?	-
3	*	3					13:26	13:35	13:51	1									13:22	13:33	?	-
3	C4.2	6	13:58	14:02	14:18	1	13:58	14:01	14:11	1-	13:56	14:01	14:17	1					13:58	14:02	?	-
3	?	1																	14:17	14:26	?	-
3	C8.2	5	14:39	14:43	15:16	2	14:36	14:41	14:58	1	14:38	14:42	15:21	2					14:31	14:41	?	-
3	C4.1	3																	15:21	15:23	?	-
3	*	2																	16:09	16:17	16:28	1
3	C9.0	9	17:01	17:05	?	-	16:59	17:03	17:12	1-	17:01	17:04	17:49	2+					17:00	17:06	17:52	2+
3	C9.3	1																	20:40	20:47	21:17	2
4	C5.1	1																				
4	C6.1	1																				
4	**M2.3**	4	04:32	04:41	05:15	2					04:30	04:44	05:17	2+					**04:30**	**04:47**	**05:07**	**2**
4	?	3																				
4	C6.7	9	09:02	09:08	09:41	2	08:59	09:06	09:23	1	09:01	09:07	09:37	2					09:02	09:07	09:40	2
4	**M5.3**	11	09:49	09:56	?	-	09:45	09:54	10:55	2+	09:49	09:57	?	-					09:49	09:56	11:03	2+
4	C5.8	7	11:15	11:18	?	-	11:12	11:18	11:41	1+	11:15	11:18	?	-					11:15	11:19	11:46	1+
4	**M2.3**	10	12:08	12:25	13:57	3	12:05	12:24	13:04	2+	12:08	12:29	13:57	3					12:08	12:27	13:12	2+
4	?	1																	13:20	13:25	13:41	1
4	?	1																	13:58	14:08	?	-
4	C5.6	6	14:13	14:19	?	-	14:10	14:15	14:28	1-	14:12	14:20	?	-					14:12	14:15	?	-
4	**M1.3**	9	14:39	14:50	15:49	2+	14:33	14:41	15:10	2	14:38	14:42	?	-					14:38	14:44	?	-
4	C8.2	2									14:48	14:51	?	-					**14:46**	**14:47**	**?**	**-**
4	?	1																	15:18	15:20	?	-
4	C6.4	4									15:50	15:52	16:00	1-					15:49	15:53	?	-
4	C6.9	6	16:12	16:16	16:28	1-					16:11	16:13	16:32	1					16:10	16:15	?	-
4	**M1.8**	9	16:35	16:47	17:30	2+	16:36	16:42	16:51	1-	16:36	16:43	17:30	2+					16:35	16:40	17:19	2
4	?	2																	17:23	17:33	18:02	2
4	?	1																	19:57	20:09	20:34	2
4	?	1																	20:37	20:41	20:50	1-
4	C9.5	1																	21:27	21:30	21:56	1+
4	**M4.6**	1																	22:07	22:10	22:40	2
5	**M2.4**	1																				
5	C7.0	1																				
5	**M2.2**	1																				
5	**M4.7**	1																				
5	C9.1	1																				
5	?	1																				
5	?	1					05:43	05:57	06:03	1												
5	**M1.1**	6					06:50	07:01	07:33	2									06:52	06:58	07:10	1-
5	**M1.3**	7					07:37	07:46	08:20	2	07:43	07:48	08:44	2+					07:43	07:46	07:57	1-
5	?	1																	***08:45***	***08:51***	***09:00***	***1-***
5	C5.0	6	09:07	09:10	09:18	1-	08:54	09:05	09:09	1-	09:06	09:11	?	-	09:07	09:11	10:32	2+	09:07	09:11	?	-
5	*	0																				
5	C5.8	8	09:28	09:33	10:31	2+	09:23	09:30	09:41	1-	09:18	09:22	?	-					09:17	09:32	10:08	2+
5	?	2									09:25	09:27	?	-					**09:24**	**09:27**	**?**	**-**
5	*	2									09:28	09:31	10:18	2+					**09:28**	**09:32**	**?**	**-**
5	*	2					10:08	10:10	10:14	1-									10:10	10:11	10:21	1-
5	**M1.8**	9	10:46	10:51	?	-	10:39	10:49	11:24	2	10:46	10:50	?	-					10:47	10:50	?	-
5	?	1																	**11:08**	**11:10**	**?**	**-**
5	**M6.1**	12	11:42	11:48	?	-	11:39	11:44	12:34	2+	11:42	11:49	?	-	11:51	?	?		11:38	11:48	12:32	2+
5	**M1.2**	10	13:08	13:24	14:18	2+	13:04	13:18	13:35	1+	13:08	13:21	?	-	13:34	?	?		13:09	13:13	?	-
5	C7.4	4					13:40	13:46	13:58	1-					13:55	?	?		13:42	13:48	?	-
5	C8.3	7	14:43	14:49	15:26	2	14:40	14:47	15:03	1	14:43	14:48	15:50	2+					14:43	14:46	15:29	2+
5	*	1																	15:31	15:34	15:57	1+
5	C6.2	7	15:59	16:02	16:24	1					15:58	16:01	16:39	2					15:59	16:02	?	-
5	?	1																	16:25	16:26	16:39	1-
5	?	1																	17:12	17:14	17:29	1-
5	C5.1	5					17:51	17:54	17:59	1-	17:53	17:57	18:14	1					17:53	17:57	?	-
5	?	1																	18:03	18:04	?	-
5	C6.1	4					18:14	18:21	18:27	1-									18:13	18:29	18:53	2
5	?	1									18:51	19:01	19:26	2								
5	C4.8	1																	19:42	19:48	20:04	1
5	**M1.6**	1																	20:13	20:22	21:14	2+
5	**M1.6**	1																	21:35	21:49	22:32	2+
6	**M2.9**	1																				
6	C5.0	1																				
6	**M1.0**	1																				
6	*	1																				
6	C5.8	1																				
6	C7.7	1																				
6	C7.4	6									07:06	07:09	07:25	1					**07:06**	**07:10**	**07:36**	**1+**
6	**M1.5**	10	08:20	08:26	09:05	2	08:17	08:25	08:51	2	08:19	08:26	?	-					08:17	08:27	?	-
6	C3.8	7	09:15	09:19	09:28	1-	09:13	09:20	09:32	1	09:15	09:19	09:52	2					09:15	09:19	09:53	2
6	**M1.8**	9	10:14	10:30	11:13	2+	10:13	10:30	11:00	2+	10:27	10:31	11:41	2+					10:12	10:30	11:29	2+
6	?	1																	**11:13**	**11:19**	**11:47**	**2**
6	?	1																	12:12	12:15	?	-
6	*	1																	12:23	12:33	12:57	2

6	**M1.2**	9	13:29	13:33	14:27	2+	13:27	13:31	13:53	1+	13:30	13:32	14:32	2+				13:29	13:34	14:30	2+
6	C7.8	8					14:53	15:01	15:21	1+	14:52	15:04	16:03	2+				14:52	15:03	15:35	2
6	C5.0	2																16:03	16:07	16:28	1
6	C3.4	2																17:09	17:12	17:20	1-
6	?	1																17:31	17:33	?	-
6	C7.2	4																17:41	17:44	18:21	2
6	**M1.3**	5	18:51	18:58	?	-	18:37	18:51	18:55	1-								18:51	18:57	?	-
6	**X1.1**	1																23:06	23:12	23:27	1
7	**M1.2**	1																			
7	C6.7	1																			
7	**M1.0**	8	08:20	08:36	09:35	2+	08:17	08:31	08:47	1+	08:19	08:32	09:31	2+				08:20	08:33	09:27	2+
7	*	1																**09:48**	**09:52**	**09:59**	**1-**
7	?	4	09:59	10:04	10:14	1-	09:58	10:04	10:09	1-	09:59	10:04	?	-				10:00	10:06	10:31	1+
7	?	1																**10:10**	**10:12**	**10:33**	**1**
7	C6.4	7	10:38	10:46	?	-	10:37	10:45	10:57	1	10:38	10:46	?	-				10:39	10:47	?	-
7	**M2.6**	8	11:00	11:05	?	-	10:59	11:03	11:44	2	11:00	11:05	12:56	3				10:59	11:04	11:58	2+
7	C2.4	5	12:11	12:14	12:22	1-	12:11	12:14	12:18	1-	12:12	12:14	12:23	1-				12:12	12:14	12:42	1+
7	C3.2	5	13:12	13:15	13:27	1-	13:03	13:08	13:10	1-	13:04	13:08	?	-				13:04	13:09	?	-
7	C3.9	5					13:12	13:15	13:25	1-	13:13	13:16	13:26	1-				13:13	13:16	13:40	1+
7	C3.7	6	13:47	13:50	14:22	2	13:40	13:51	14:02	1	13:47	13:51	14:26	2				13:48	13:51	14:16	1+
7	C3.6	4	14:44	14:48	15:15	1+					14:44	14:48	15:42	2+				14:44	14:48	15:17	2
7	*	1																16:02	16:14	16:31	1+
7	?	1																18:36	18:46	19:10	2
8	C3.6	1																			
8	C4.4	1																			
8	C6.6	1																			
8	C5.9	1																			
8	**M1.3**	4	05:29	05:38	05:48	1												**05:45**	**05:52**	**?**	**-**
8	C6.8	3																**06:24**	**06:26**	**06:54**	**1+**
8	?	1																**08:28**	**08:52**	**09:13**	**2**
8	?	1																**09:25**	**09:31**	**09:40**	**1-**
8	**M1.1**	9	09:49	09:56	?	-	09:47	09:55	10:13	1+	09:48	09:56	?	-				09:49	09:56	?	-
8	C6.9	7	10:23	10:31	?	-	10:20	10:33	10:39	1	10:24	10:32	?	-				10:23	10:32	?	-
8	C5.4	4					10:43	10:49	11:15	1+	10:44	10:49	11:34	2+				10:43	10:52	11:31	2+
8	?	2													11:33	11:37	12:28	2+	**11:34**	**11:39**	**?**	**-**
8	?	1																**11:49**	**11:52**	**12:02**	**1-**
8	**M1.4**	8	12:09	12:19	?	-	12:01	12:12	12:38	2	12:09	12:13	?	-				12:08	12:12	12:48	2
8	C6.1	8	12:57	13:03	13:43	2+	12:54	13:03	13:31	2	12:56	13:04	?	-	13:00	13:04	13:50	2+	12:56	13:04	13:41	2
8	*	5	13:52	13:55	14:14	1	13:50	13:55	14:04	1-	13:52	13:55	?	-				**13:43**	**13:47**	**13:49**	**1-**
8	C6.7	6	14:38	14:46	15:31	2+	14:37	14:45	15:09	1+	14:38	14:45	16:09	3				13:51	13:55	14:13	1
8	?	1																*14:17*	*14:19*	*14:28*	*1-*
8	*	1																14:38	14:46	?	-
8	*	1																15:21	15:23	15:50	1+
8	**M6.9**	10	16:26	16:44	17:40	2+	16:26	16:33	17:11	2	16:26	16:35	?	-				16:26	16:33	17:10	2
8	C8.8	4									17:32	17:41	18:28	2+				17:33	17:41	?	-
8	C9.2	1																18:03	18:06	18:35	1+
8	*	1																19:04	19:08	19:14	1-
8	C6.6	1																19:24	19:26	19:42	1-
9	?	1																			
9	?	1																***06:23***	***06:28***	***06:37***	***1-***
9	C4.5	4									07:07	07:17	07:37	1+				**07:07**	**07:22**	**?**	**-**
9	*	1																**07:35**	**07:48**	**07:59**	**1**
9	C7.9	5					08:07	08:31	08:55	2+	08:06	08:33	?	-				08:07	08:32	09:09	2+
9	C6.5	8	09:25	09:35	10:10	2	09:08	09:36	10:11	2+	09:21	09:38	10:37	2+				09:21	09:38	10:25	2+
9	?	1																**10:35**	**10:48**	**11:28**	**2+**
9	?	1																**11:43**	**11:50**	**12:07**	**1**
9	*	2	12:10	12:23	13:13	2+												**12:11**	**12:19**	**13:01**	**2+**
9	*	1																**13:16**	**13:18**	**13:32**	**1-**
9	*	4	13:24	13:57	14:40	2+					13:40	14:00	14:46	2+				**13:41**	**13:57**	**14:38**	**2+**
9	*	1																**15:35**	**15:49**	**16:30**	**2+**
9	C5.0	2																19:49	19:52	20:16	1+
10	C3.9	1																			
10	C7.0	3									04:31	04:42	?	-				***04:33***	***04:43***	***?***	***-***
10	**M1.7**	4	05:01	05:13	?	-					05:01	05:09	06:04	2+				**05:02**	**05:16**	**06:05**	**2+**
10	**M2.0**	5	06:17	06:35	?	-					06:06	06:14	07:21	2+				**06:14**	**06:31**	**07:49**	**3**
10	C4.5	4									08:19	08:26	08:48	1+				08:18	08:34	08:58	2
10	C4.1	6	09:03	09:08	09:38	2					09:02	09:07	09:28	1+				09:03	09:09	09:43	2
10	?	1																10:16	10:30	11:11	2+
10	C5.5	4	12:19	12:29	?	-					12:10	12:29	?	-				12:11	12:25	?	-
10	C4.6	3																12:38	12:45	?	-
10	?	1																**12:52**	**12:55**	**?**	**-**
10	?	1																13:09	13:10	?	-
10	C8.2	6	13:43	13:49	14:44	2+					13:42	13:48	15:14	3				13:42	13:48	14:45	2+
10	?	2									15:29	15:32	?	-				15:31	15:37	?	-
10	C5.6	5	15:43	15:50	16:38	2+					15:42	15:51	16:43	2+				15:42	15:47	16:23	2
10	C3.2	1																20:14	20:16	20:51	2
11	C3.4	1																			
11	C9.9	8	08:28	08:34	09:14	2+					08:27	08:34	09:13	2+				08:28	08:36	09:28	2+
11	*	1																09:33	09:38	09:42	1-
11	?	1																10:17	10:24	10:39	1
11	C1.7	2																14:38	14:43	15:03	1
11	C1.9	2																16:02	16:05	16:11	1-
11	?	1																16:18	16:23	16:31	1-
12	C3.1	1																			
12	**X1.4**	9	15:57	16:39	18:40	3+					15:57	16:39	18:50	3+				15:59	16:33	18:03	3
13	C2.4	1																			
13	C1.5	1																11:07	11:20	11:43	2
13	C1.5	1																12:18	12:27	12:47	1+
13	*	1																15:09	15:18	15:33	1
13	C1.3	1																19:02	19:07	19:31	1+
14	**M1.0**	5	04:54	05:01	05:25	1+					04:54	05:03	05:33	2				**04:56**	**05:04**	**05:31**	**2**
14	C2.0	1																			
14	C3.2	5	10:31	10:40	11:29	2+					10:29	10:40	11:20	2+				10:29	10:39	11:20	2+
14	*	1																			
14	?	1																			
14	C2.4	3	14:10	14:16	14:41	1+					14:10	14:17	14:41	1+				14:10	14:18	14:53	2
14	C2.5	3									15:41	15:45	16:28	2+				15:41	15:45	16:30	2+
15	?	1																09:31	09:41	10:05	2
15	C3.5	1																			
16	?	1																**09:26**	**09:58**	**10:20**	**2+**
16	C2.2	3	13:02	13:12	14:00	2+					13:02	13:13	14:01	2+				**13:04**	**13:11**	**14:09**	**2+**
16	C1.8	2																**18:08**	**18:33**	**18:59**	**2+**
16	C7.5	1																			
17	**M1.7**	3	?	17:08	?	-												**16:30**	**17:03**	**18:41**	**3+**
18	C3.0	2									05:59	06:08	06:32	2				***06:00***	***06:10***	***06:22***	***1***

19	**M7.7**	4	05:10	05:21	09:00	3+		04:29	05:21	06:09	3			**05:21**	**06:05**	**13:34**	**3+**
23	C2.0	2												11:24	11:33	12:06	2
23	B7.3	1												15:33	15:38	15:47	1-
24	C1.6	2	11:32	11:47	12:23	2+								11:32	11:48	12:48	2+
24	C1.1	2												13:49	13:57	14:25	2
24	C4.2	2												18:59	19:07	20:05	2+
26	C1.3	1												19:49	19:57	20:02	1-
27	C2.5	4	11:47	11:52	12:00	1-								11:47	11:51	12:14	1+
27	C1.0	1															
27	C1.5	1												14:00	14:07	14:51	2+
27	**M2.7**	4	17:21	17:29	?	-								16:50	17:07	?	-
27	?	2												17:18	17:23	18:15	2+
28	C1.1	2												13:15	13:21	13:39	1
28	*	1												16:41	16:43	?	-
28	*	1												16:59	17:10	17:51	2+
28	?	1												17:56	18:02	18:17	1
28	C1.7	1												18:26	18:32	18:41	1-
28	**M6.1**	1												20:49	20:56	21:48	2+
29	**M2.3**	4	06:19	06:21	06:25	1-		06:19	06:26	07:46	3			**06:17**	**06:26**	**07:35**	**2+**
29	*	1												08:32	08:39	08:45	1-
29	C3.1	4	12:00	12:08	12:30	1+						12:09	12:12	12:29	1	12:01	12:07	12:21	1
29	C2.2	1												15:07	15:10	15:35	1+
30	C4.0	1															
30	C2.4	1															
30	C2.3	1												10:30	10:37	?	-
30	C1.5	1												11:06	11:10	11:26	1
30	C8.8	6	14:02	14:04	14:48	2+		14:02	14:04	14:54	2+			**13:59**	**14:04**	**15:30**	**3**
30	**M1.1**	7	15:46	15:51	16:38	2+		15:45	15:49	16:43	2+			**15:42**	**15:50**	**16:59**	**2+**
31	C5.7	5						10:56	11:36	12:36	3			11:00	11:32	?	-
31	*	1												12:14	12:24	?	-
31	?	1												13:04	13:17	14:11	2+
31	C5.0	5	14:21	14:27	15:05	2		14:21	14:26	15:28	2+			14:22	14:29	15:10	2+
31	C1.6	1												15:14	15:22	15:40	1+
31	C1.3	1												15:59	16:04	16:12	1-
31	C4.0	2												17:25	17:32	18:29	2+

BAA Radio Astronomy Group. **2012 JULY**

			Colin Clements (24kHz)				Peter Meadows (23.4kHz)				Mike King (20.9kHz)				John Wardle (19.6/23.4kHz)				Peter King (18.3kHz)			
			AAVSO receiver, 0.76m screened loop aerial.				Tuned radio frequency receiver, 0.58m frame aerial.				AAVSO receiver. Tuned loop aerial.				PC soundcard, long wire aerial.				Own designed receiver, 1.4m loop aerial.			
DAY			START	PEAK	END (UT)		START	PEAK	END (UT)		START	PEAK	END (UT)		START	PEAK	END (UT)		START	PEAK	END (UT)	
1	C5.4														07:14	07:21	07:45	1+				
1	C1.3																					
1	C2.4																		15:25	15:33	15:38	1-
1	C8.2														15:43	15:48	16:20	2	15:40	15:45	15:53	1-
1	C2.7																					
1	**M2.8**														19:15	19:21	19:48	2				
2	C3.5																					
2	C2.1																					
2	C2.4																		08:50	08:55	09:00	1-
2	*																					
2	C2.9																		10:33	10:38	10:40	1-
2	**M5.6**														10:47	10:53	12:00	2+	10:44	10:53	10:50	1-
2	*																					
2	*																					
2	C1.7																					
2	C2.0																		16:38	16:45	16:53	1-
2	C3.7														17:43	17:54	18:01	1-	17:42	17:50	17:55	1-
2	C4.5																		18:05	18:12	18:20	1-
2	C7.4																		18:45	18:55	19:03	1-
2	**M3.8**																					
3	C2.0		12:13	12:18	12:42	1+													12:13	12:15	12:20	1-
3	C2.2																					
3	*		13:20	13:34	13:58	2																
3	C4.2		13:58	14:01	14:15	1-													13:55	14:00	14:44	2+
3	?																					
3	C8.2																					
3	C4.1		15:22	15:26	16:00	2													15:20	15:23	15:25	1-
3	*		16:07	16:15	16:58	2+																
3	C9.0		16:58	17:08	17:53	2+									17:01	17:07	17:28	1+	17:00	17:03	17:10	1-
3	C9.3																					
4	C5.1																					
4	C6.1																					
4	**M2.3**																					
4	?		07:08	07:17	07:37	1+																
4	C6.7		08:58	09:07	09:24	1+													09:00	09:06	09:10	1-
4	**M5.3**		09:47	09:54	11:15	3									09:51	09:58	10:53	2+	09:48	09:55	09:58	1-
4	C5.8		11:15	11:17	12:07	2+													11:15	11:17	11:20	1-
4	**M2.3**		12:07	12:25	13:20	2+									12:09	12:24	13:28	2+	12:08	12:25	12:33	1
4	?																					
4	?																					
4	C5.6		14:08	14:20	14:39	1+													14:10	14:14	14:27	1-
4	**M1.3**		14:39	14:41	15:18	2									14:40	14:43	15:00	1	14:35	14:40	14:44	1-
4	C8.2																					
4	?																					
4	C6.4		15:47	15:51	16:10	1													15:48	15:50	15:54	1-
4	C6.9		16:10	16:14	16:34	1									16:11	16:15	16:26	1-	16:09	16:13	16:15	1-
4	**M1.8**		16:34	16:44	17:23	2+									16:36	16:48	17:04	1+	16:35	16:40	16:50	1-
4	?		17:23	17:31	19:14	3																
4	?																					
4	?																					
4	C9.5																					
4	**M4.6**																					
5	**M2.4**																					
5	C7.0																					
5	**M2.2**																					
5	**M4.7**																					
5	C9.1																					
5	?																					
5	?																					
5	**M1.1**		06:49	07:08	07:43	2+																
5	**M1.3**		07:43	07:45	08:44	2+																
5	?																					
5	C5.0																		09:05	09:09	09:13	1-
5	*																					
5	C5.8		09:17	09:29	10:36	2+													09:18	09:21	09:25	1-
5	?																					
5	*																					
5	*																					
5	**M1.8**		10:43	10:49	11:36	2+									10:47	10:49	11:27	2	10:44	10:47	11:18	2
5	?																					
5	**M6.1**		11:41	11:47	13:07	3									11:43	11:47	12:46	2+	11:38	11:44	11:49	1-
5	**M1.2**		13:07	13:19	14:15	2+									13:11	13:17	13:38	1+	13:05	13:19	13:34	1+
5	C7.4																		13:40	13:53	14:00	1
5	C8.3		14:44	14:48	15:56	2+																
5	*																					
5	C6.2		15:56	16:00	17:12	2+													15:55	16:00	16:09	1-
5	?																					
5	?																					
5	C5.1														17:53	17:57	18:05	1-	17:50	17:55	17:58	1-
5	?																					
5	C6.1		18:13	18:26	18:53	2									18:15	18:23	18:30	1-				
5	?																					
5	C4.8																					
5	**M1.6**																					
5	**M1.6**																					
6	**M2.9**																					
6	C5.0																					
6	**M1.0**																					
6	*																					
6	C5.8																					
6	C7.7																					
6	C7.4		07:03	07:07	07:39	2																
6	**M1.5**		08:12	08:25	09:12	2+									08:16	08:22	08:48	1+	08:18	08:24	08:28	1-
6	C3.8		09:12	09:19	10:04	2+													09:14	09:19	09:30	1-
6	**M1.8**		10:07	10:29	11:46	3									10:27	10:31	11:05	2	10:25	10:30	10:33	1-
6	?																					
6	?																					
6	*																					

6	**M1.2**		13:22	13:31	14:30	2+			13:29	13:32	13:51	1	13:27	13:30	13:55	1+
6	C7.8		14:46	15:03	16:01	2+			14:58	15:01	15:12	1-	14:50	15:00	15:15	1
6	C5.0												16:00	16:05	16:10	1-
6	C3.4												17:05	17:10	17:15	1-
6	?															
6	C7.2		17:25	17:44	18:47	2+										
6	**M1.3**		18:47	18:59	19:57	2+			18:51	19:01	19:39	2+				
6	**X1.1**															
7	**M1.2**															
7	C6.7															
7	**M1.0**		08:18	08:32	09:28	2+							08:19	08:29	08:40	1
7	*															
7	?															
7	?															
7	C6.4		10:35	10:44	10:58	1							10:35	10:45	10:50	1-
7	**M2.6**		10:58	11:04	12:10	2+			11:00	11:05	11:34	2	10:58	11:04	11:05	1-
7	C2.4		12:10	12:14	12:59	2+										
7	C3.2												13:00	13:07	13:10	1-
7	C3.9		12:59	13:13	13:42	2							13:10	13:15	13:18	1-
7	C3.7		13:42	13:49	14:34	2+							13:44	13:50	13:53	1-
7	C3.6		14:44	14:48	16:07	2+										
7	*															
7	?															
8	C3.6															
8	C4.4															
8	C6.6															
8	C5.9															
8	**M1.3**															
8	C6.8								06:22	06:28	06:47	1				
8	?															
8	?															
8	**M1.1**		09:43	09:56	10:21	2			09:51	09:56	10:17	1+	09:45	09:54	09:59	1-
8	C6.9		10:21	10:33	11:33	2+			10:28	10:35	10:50	1				
8	C5.4												10:45	10:50	10:57	1-
8	?															
8	?															
8	**M1.4**		12:07	12:11	12:50	2			12:09	12:12	12:39	1+	12:07	12:10	12:15	1-
8	C6.1		12:54	13:03	13:50	2+			12:59	13:04	13:23	1				
8	*		13:50	13:56	14:36	2+										
8	C6.7		14:36	14:47	16:25	3										
8	?															
8	*															
8	*															
8	**M6.9**		16:25	16:33	17:30	2+			16:26	16:36	17:11	2	16:22	16:32	16:45	1
8	C8.8												17:30	17:35	17:48	1-
8	C9.2															
8	*															
8	C6.6															
9	?															
9	?															
9	C4.5															
9	*															
9	C7.9															
9	C6.5												09:22	09:33	10:06	2
9	?															
9	?															
9	*															
9	*															
9	*															
9	*															
9	C5.0															
10	C3.9															
10	C7.0															
10	**M1.7**															
10	**M2.0**															
10	C4.5												08:16	08:35	09:13	2+
10	C4.1												09:00	09:05	09:09	1-
10	?															
10	C5.5												12:09	12:25	12:32	1
10	C4.6												12:38	12:45	12:50	1-
10	?															
10	?															
10	C8.2												13:40	13:46	13:50	1-
10	?															
10	C5.6															
10	C3.2															
11	C3.4															
11	C9.9		08:28	08:34	09:15	2+							08:24	08:32	08:38	1-
11	*															
11	?															
11	C1.7												14:36	14:43	14:50	1-
11	C1.9															
11	?															
12	C3.1															
12	**X1.4**		15:57	16:38	20:27	3+			16:03	16:51	18:12	3+	15:38	16:50	17:30	3
13	C2.4															
13	C1.5															
13	C1.5															
13	*															
13	C1.3															
14	**M1.0**															
14	C2.0															
14	C3.2															
14	*												11:08	11:12	11:14	1-
14	?												12:16	12:20	12:23	1-
14	C2.4															
14	C2.5															
15	?															
15	C3.5								21:47	21:52	21:57	1-				
16	?															
16	C2.2															
16	C1.8								18:22	18:42	19:00	2				
16	C7.5								19:26	20:05	20:30	2+				
17	**M1.7**												12:04	17:13	19:06	3+
18	C3.0															

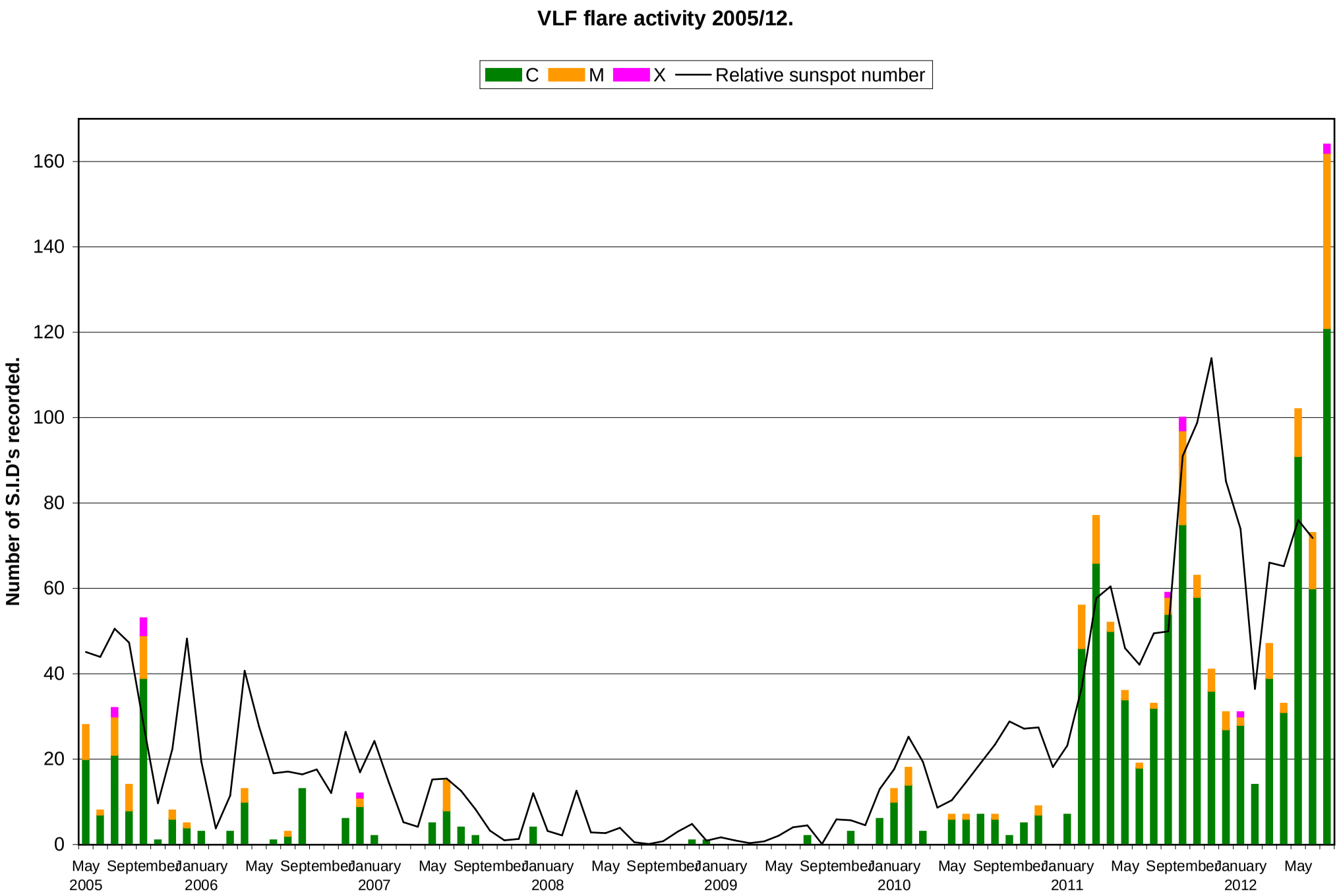
19	**M7.7**									
23	C2.0						11:20	11:28	11:50	1+
23	B7.3									
24	C1.6									
24	C1.1						13:45	13:55	14:15	1+
24	C4.2									
26	C1.3									
27	C2.5						11:45	11:50	12:20	2
27	C1.0						12:20	12:23	12:35	1-
27	C1.5									
27	**M2.7**									
27	?						17:15	17:27	17:34	1
28	C1.1						13:10	13:20	13:25	1-
28	*									
28	*									
28	?									
28	C1.7									
28	**M6.1**									
29	**M2.3**									
29	*									
29	C3.1									
29	C2.2									
30	C4.0									
30	C2.4									
30	C2.3									
30	C1.5									
30	C8.8									
30	**M1.1**						15:43	15:51	16:31	2+
31	C5.7									
31	*									
31	?									
31	C5.0									
31	C1.6									
31	C1.3									
31	C4.0									

BAA Radio Astronomy Group. **2012 JULY**

			Martyn Kinder (19.6kHz/*22.1khz*)			Gordon Fiander (19.6/22.1kHz)				John Elliott (21.7kHz)				Steve Parkinson (23.4/19.6kHz)				Tarif Rashid Santo (19.8kHz)			
			Tuned radio frequency receiver, 0.58m frame aerial.			PC sound card.				Tuned radio frequency receiver, 0.5m frame aerial.				Tuned radio frequency receivers, frame aerials.				Spectrum Lab, Half-wave dipole.			15m
DAY			START	PEAK	END (UT)	START	PEAK	END (UT)		START	PEAK	END (UT)		START	PEAK	END (UT)		START	PEAK	END (UT)	
1	C5.4					07:12	07:13	07:30	1-					07:15	07:20	07:50	2	07:15	07:20	07:56	2
1	C1.3																				
1	C2.4					15:27	15:35	?	-												
1	C8.2					15:43	15:51	16:15	1+	15:45	15:50	16:10	1	15:43	15:48	16:50	2+				
1	C2.7																				
1	**M2.8**									19:18	19:20	?	-	19:16	19:20	19:50	2				
2	C3.5																				
2	C2.1																				
2	C2.4																				
2	*																				
2	C2.9																				
2	**M5.6**					10:45	10:50	11:10	1					10:46	10:57	12:10	2+				
2	*																				
2	*																				
2	C1.7																				
2	C2.0																				
2	C3.7																				
2	C4.5																				
2	C7.4																				
2	**M3.8**																				
3	C2.0																				
3	C2.2																				
3	*																				
3	C4.2																				
3	?																				
3	C8.2					14:38	14:42	15:01	1												
3	C4.1																				
3	*																				
3	C9.0					17:00	17:07	17:42	2					17:01	17:06	17:50	2+				
3	C9.3																				
4	C5.1																	01:32	01:44	02:08	2
4	C6.1																	04:05	04:12	04:24	1
4	**M2.3**																	04:29	04:44	05:20	2+
4	?													07:13	07:19	07:37	1	07:05	07:16	08:00	2+
4	C6.7					09:06	09:10	09:20	1-					09:02	09:07	?	-	09:02	09:06	09:40	2
4	**M5.3**					09:47	09:55	10:20	2	09:55	09:56	10:37	2	09:50	09:56	?	-	09:49	10:00	10:46	2+
4	C5.8													11:16	11:18	?	-				
4	**M2.3**					12:09	12:13	12:35	1+	12:19	12:22	13:00	2	12:10	12:26	13:20	2+				
4	?																				
4	?																				
4	C5.6																				
4	**M1.3**					14:38	14:40	14:55	1-					14:39	14:42	15:20	2				
4	C8.2																				
4	?																				
4	C6.4																				
4	C6.9																				
4	**M1.8**					16:34	16:40	17:05	1+					16:36	16:42	17:10	2				
4	?																				
4	?																				
4	?																				
4	C9.5																				
4	**M4.6**																				
5	**M2.4**																	01:08	01:16	01:30	1
5	C7.0																	02:03	02:12	02:20	1-
5	**M2.2**																	02:37	02:46	03:26	2+
5	**M4.7**																	03:28	03:36	04:28	2+
5	C9.1																	04:43	04:48	04:56	1-
5	?																	04:58	05:05	05:20	1
5	?																				
5	**M1.1**					06:50	07:01	07:35	2					06:51	07:05	?	-	06:52	07:00	07:32	2
5	**M1.3**					07:40	07:49	08:20	2					07:43	07:46	?	-	07:44	07:48	08:04	1
5	?																				
5	C5.0																				
5	*																				
5	C5.8					09:20	09:31	10:20	2+									09:17	09:30	09:42	1
5	?																				
5	*																				
5	*																				
5	**M1.8**					10:46	10:53	?	-					10:46	10:50	?	-				
5	?																				
5	**M6.1**					11:43	11:50	12:10	1+	11:45	11:48	12:16	1+	11:42	11:48	?	-	11:42	11:46	12:06	1
5	**M1.2**					13:07	13:11	14:05	2+					13:09	13:18	?	-				
5	C7.4																				
5	C8.3					14:46	14:50	15:01	1-					14:44	14:48	?	-				
5	*																				
5	C6.2					15:58	16:02	16:20	1					15:58	16:03	?	-				
5	?																				
5	?																				
5	C5.1																				
5	?																				
5	C6.1																				
5	?																				
5	C4.8																				
5	**M1.6**																				
5	**M1.6**																				
6	**M2.9**																	01:39	01:42	02:21	2
6	C5.0																	02:30	02:32	02:40	1-
6	**M1.0**																	02:44	02:52	03:32	2+
6	*																	04:02	04:10	04:20	1-
6	C5.8																	04:32	04:36	04:50	1-
6	C7.7																	04:54	05:00	05:12	1-
6	C7.4					07:03	07:07	07:21	1-					07:05	07:10	07:30	1	07:06	07:10	07:24	1-
6	**M1.5**					08:25	08:33	09:00	2					08:20	08:25	?	-	08:20	08:26	08:48	1+
6	C3.8													09:15	09:22	?	-				
6	**M1.8**					10:15	10:30	11:05	2+					10:11	10:31	11:20	2+				
6	?																				
6	?																				
6	*																				

6	**M1.2**								13:35	13:42	14:17	2					13:29	13:33	?	-				
6	C7.8								14:55	15:01	16:40	3					14:53	15:02	?	-				
6	C5.0																							
6	C3.4																							
6	?																							
6	C7.2								17:33	17:55	?	-					17:30	17:46	18:13	2				
6	**M1.3**																							
6	**X1.1**																							
7	**M1.2**																				03:12	03:20	03:56	2
7	C6.7																				04:16	04:24	04:50	2
7	**M1.0**																08:21	08:34	09:30	2+	08:20	08:32	08:48	1+
7	*																							
7	?																							
7	?																							
7	C6.4																10:39	10:46	?	-				
7	**M2.6**																11:01	11:07	12:00	2+				
7	C2.4																							
7	C3.2																							
7	C3.9																							
7	C3.7																							
7	C3.6																							
7	*																							
7	?																							
8	C3.6																				02:04	02:06	02:08	1-
8	C4.4																				03:30	03:34	03:50	1
8	C6.6																				04:16	04:20	04:22	1-
8	C5.9																				05:30	05:34	05:42	1-
8	**M1.3**																05:44	05:51	?	-	05:44	05:48	06:23	2
8	C6.8																				06:23	06:28	06:48	1
8	?																							
8	?																							
8	**M1.1**																09:50	09:56	?	-	09:48	09:56	10:22	2
8	C6.9																10:25	10:33	?	-				
8	C5.4																							
8	?																							
8	?																							
8	**M1.4**																12:09	12:13	?	-				
8	C6.1																12:57	13:05	?	-				
8	*																							
8	C6.7																14:39	14:45	?	-				
8	?																							
8	*																							
8	*																							
8	**M6.9**			16:25	16:33	16:55	1+						16:30	16:36	17:09	2	16:26	16:33	?	-				
8	C8.8			17:31	17:34	17:49	1-																	
8	C9.2																							
8	*																							
8	C6.6																							
9	?																				03:40	03:48	04:08	1+
9	?																							
9	C4.5			07:16	07:17	07:30	1-										07:08	07:18	?	-				
9	*																							
9	C7.9			08:06	08:26	09:04	2+										08:08	08:30	?	-				
9	C6.5			09:21	09:33	10:05	2										09:22	09:36	?	-	09:24	09:34	10:18	2+
9	?																							
9	?																							
9	*																							
9	*																							
9	*																13:41	13:59	14:40	2+				
9	*																							
9	C5.0			19:46	19:50	19:59	1-																	
10	C3.9																				03:40	03:44	03:54	1-
10	C7.0																				04:33	04:42	05:00	1+
10	**M1.7**																				05:02	05:10	05:56	2+
10	**M2.0**			06:06	06:29	06:49	2														06:06	06:27	07:12	2+
10	C4.5																				08:17	08:24	08:56	2
10	C4.1			09:03	09:07	09:19	1-														09:04	09:10	09:21	1-
10	?																							
10	C5.5																							
10	C4.6																12:13	12:33	?	-				
10	?																							
10	?																							
10	C8.2			13:42	13:45	13:49	1-										13:41	13:50	14:33	2+				
10	?																							
10	C5.6			15:30	15:48	16:00	1+										15:43	15:50	16:30	2+				
10	C3.2																							
11	C3.4																				05:32	05:36	05:52	1
11	C9.9			08:27	08:32	09:06	2										08:28	08:36	09:20	2+	08:28	08:36	09:04	2
11	*																							
11	?																							
11	C1.7																							
11	C1.9			15:59	16:05	16:11	1-																	
11	?																							
12	C3.1			07:46	08:05	08:18	1+																	
12	**X1.4**			15:42	16:40	17:58	3+						16:14	16:46	17:54	3	16:05	16:46	18:30	3+				
13	C2.4			06:24	06:40	06:46	1																	
13	C1.5																							
13	C1.5																							
13	*																							
13	C1.3																							
14	**M1.0**			04:51	04:58	05:10	1														04:53	05:00	05:30	2
14	C2.0			07:33	07:37	07:44	1-																	
14	C3.2			10:30	10:37	10:52	1										10:31	10:38	11:30	2+				
14	*																							
14	?																							
14	C2.4																							
14	C2.5			15:41	15:46	15:56	1-																	
15	?																							
15	C3.5																							
16	?																							
16	C2.2																							
16	C1.8																							
16	C7.5																							
17	**M1.7**																							
18	C3.0																							

19	**M7.7**															04:28	05:53	?	-
23	C2.0																		
23	B7.3																		
24	C1.6																		
24	C1.1																		
24	C4.2		18:57	19:04	19:26	1+													
26	C1.3																		
27	C2.5		11:46	11:51	11:58	1-													
27	C1.0																		
27	C1.5																		
27	**M2.7**		17:20	17:25	17:36	1-						17:19	17:31	18:30	2+				
27	?																		
28	C1.1																		
28	*																		
28	*																		
28	?																		
28	C1.7																		
28	**M6.1**																		
29	**M2.3**		06:19	06:25	06:39	1													
29	*																		
29	C3.1		11:58	12:02	12:13	1-													
29	C2.2																		
30	C4.0															06:04	06:23	07:04	2+
30	C2.4		07:09	07:12	07:16	1-													
30	C2.3																		
30	C1.5																		
30	C8.8		13:56	14:04	14:19	1	13:55	14:04	14:30	2		14:01	14:06	15:00	2+				
30	**M1.1**		15:41	15:48	16:00	1	15:39	15:53	16:26	2+		15:43	15:53	17:00	2+				
31	C5.7		10:52	11:19	12:12	2+	11:05	11:30	?	-						10:46	?	?	-
31	*																		
31	?																		
31	C5.0		14:19	14:27	14:36	1-	14:19	14:25	14:47	1+									
31	C1.6																		
31	C1.3																		
31	C4.0		17:21	17:31	17:37	1-													

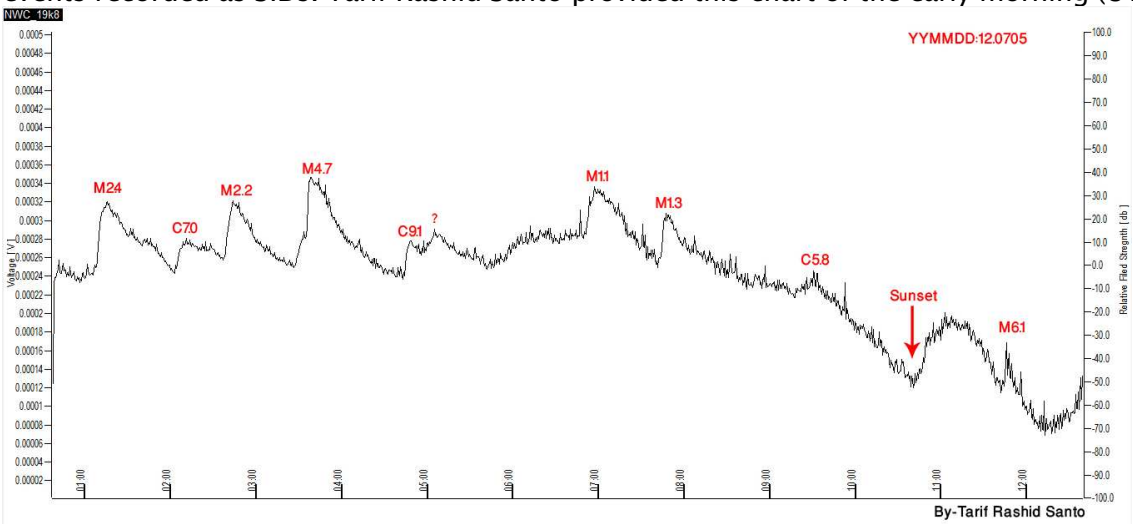

VLF flare activity 2005/12.
C
M
X
Relative sunspot number
Number of S.I.D's recorded.
0
20
40
60
80
100
120
140
160
May 2005
September
January 2006
May
September
January 2007
May
September
January 2008
May
September
January 2009
May
September
January 2010
May
September
January 2011
May
September
January 2012
May

2012 JULY

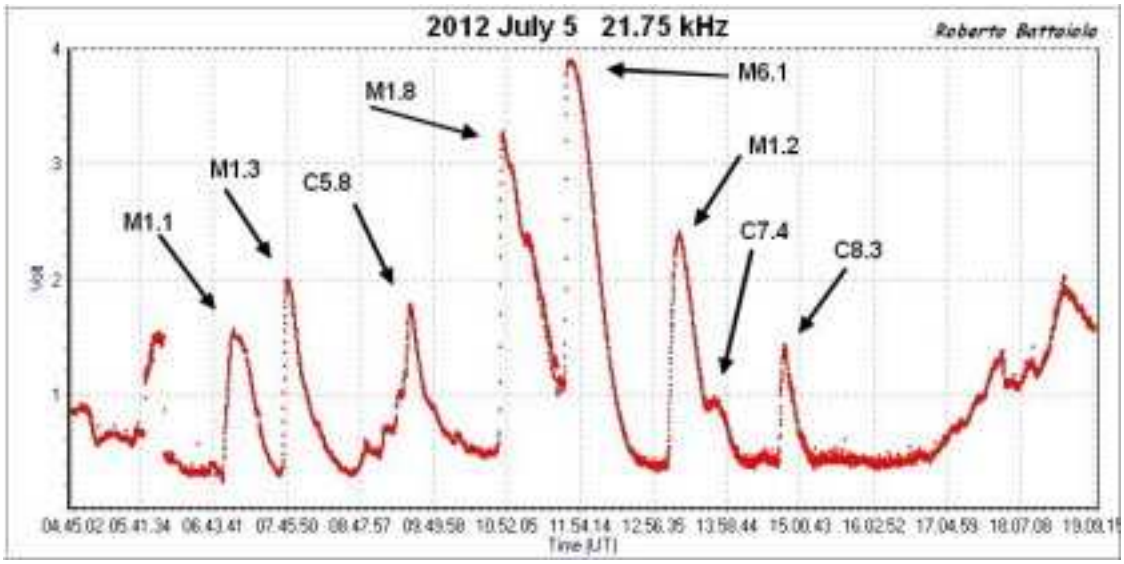
July has provided a bumper crop of solar events, generating a new peak in our activity chart. Nearly 25% of the SWPC-classified flares were of M-class, with two X-class flares recorded. In addition, there are numerous SIDs recorded from flares that are either not classified ('*' in the tables), or not listed at all ('?' in the tables). All of these can be seen in the X-ray data from GOES 15. In order to better cope with the large number of entries I have re-ordered the table a little. It will also take less paper to print!

Many flares overlapped so that a new SID started before the previous one was fully complete. As far as possible I have tried to attribute SID timings to the correct flares, but there may be errors; my apologies if I have made any mistakes. Some flares were very slow, leaving very ambiguous SID traces. In particular, the M1.7 flare on the 17th caused some difficulties. SWPC lists the flare as follows: start 12:03, peak 17:15, end 19:04UT. My recording looked very odd, only the peak time being measurable with any degree of certainty.

Most of the activity occurred during the first two weeks of July, the record being set on the 5th with 33 events recorded as SIDs. Tarif Rashid Santo provided this chart of the early morning (UT) activity:

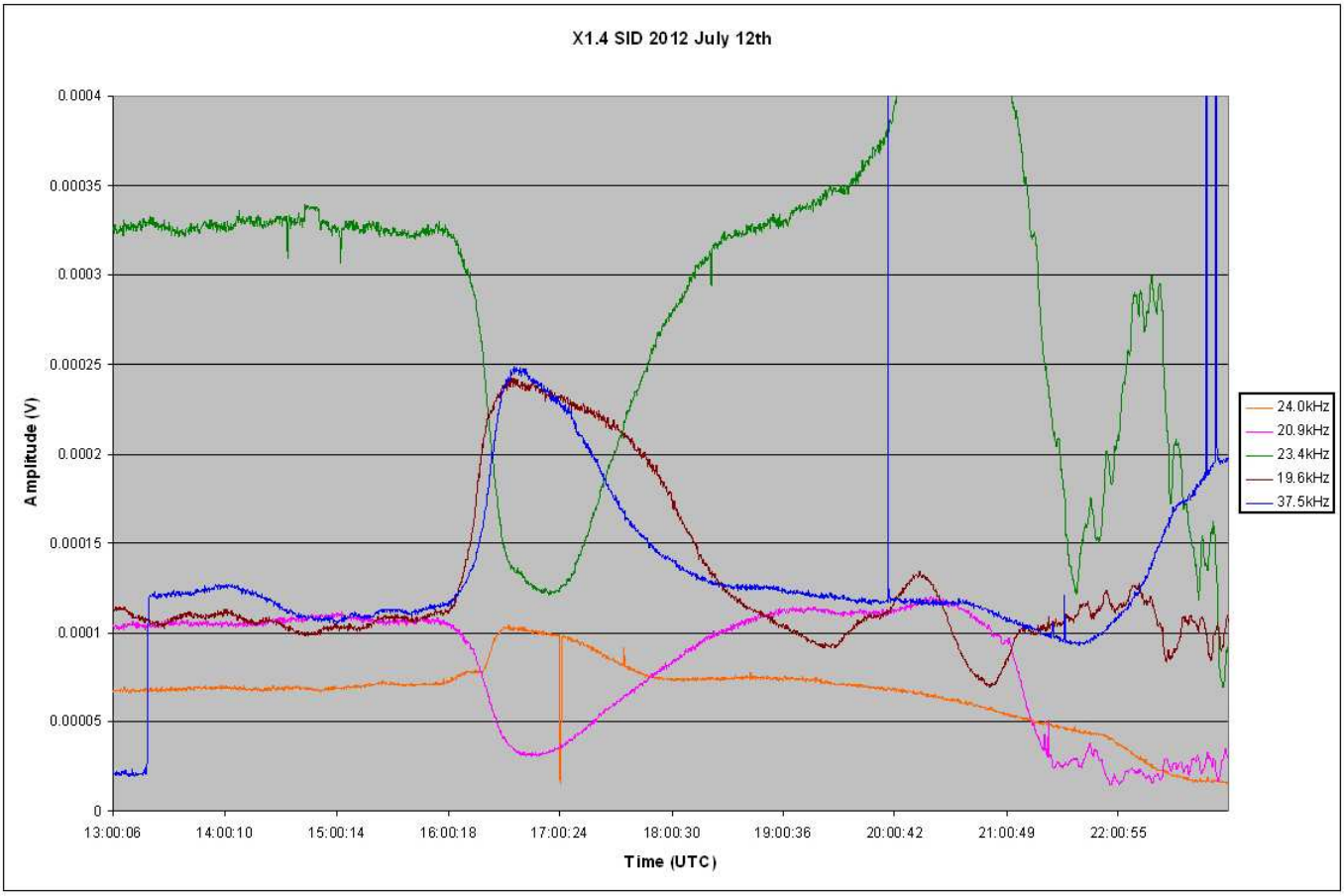


Roberto Battiaola provides the chart below, completing the day's activity:

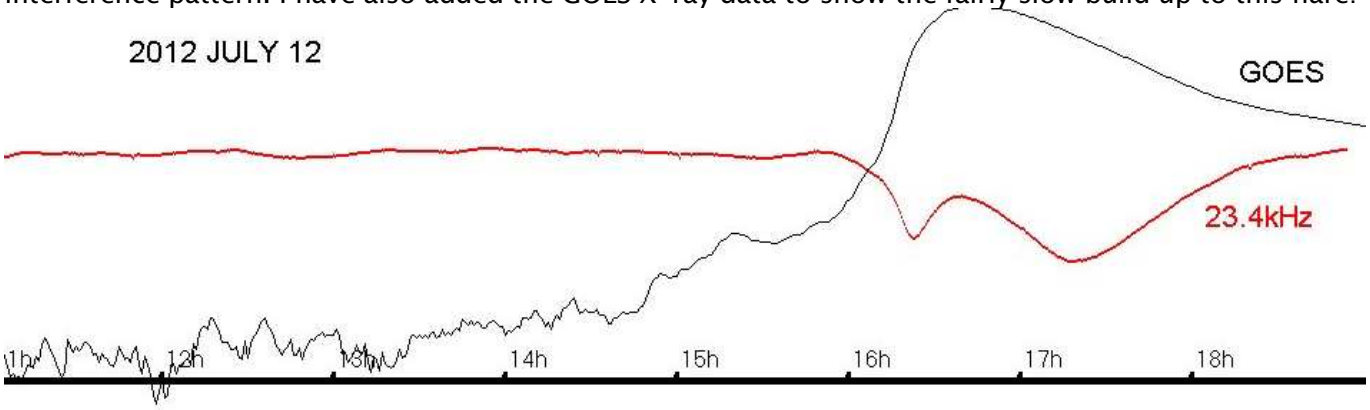


The late-evening SIDs were only recorded on the Atlantic path of NAA (Maine) at 24kHz, and so do not show in these recordings.

The major event of the month was the X1.4 flare peaking around 16:40UT on the 12th. Mark Edwards has provided a nice composite of this at various frequencies:

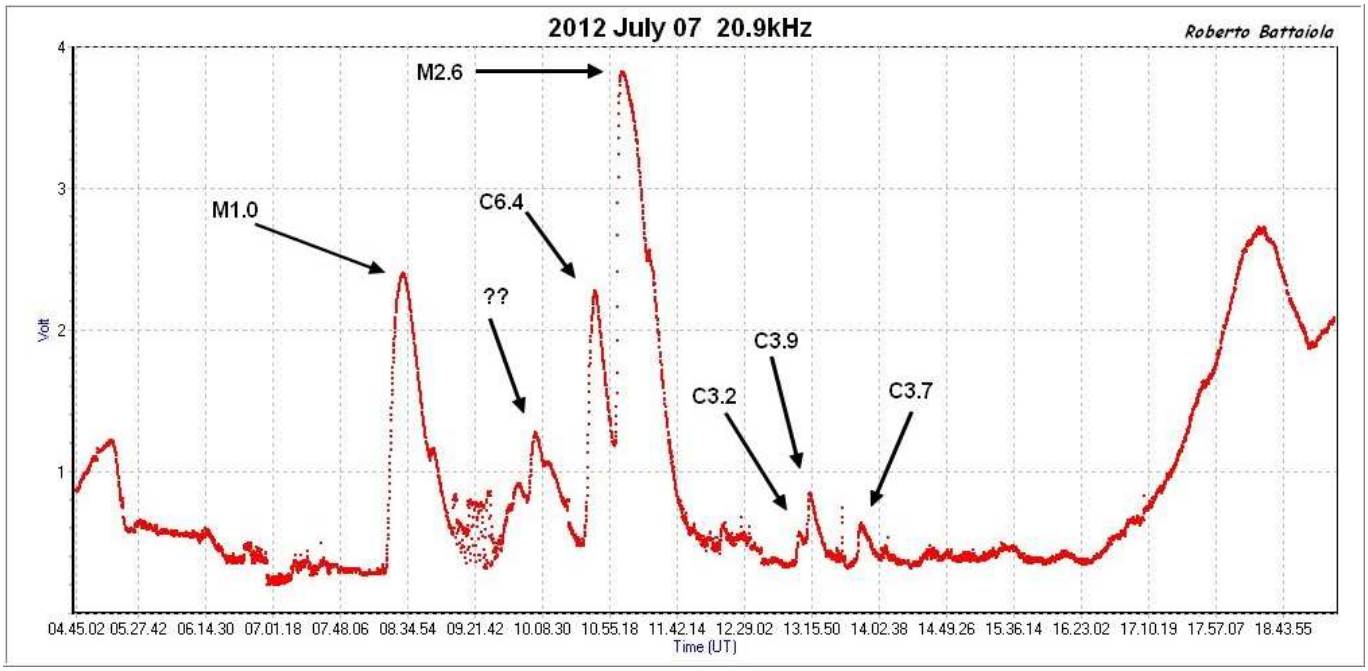


It shows well at all of the frequencies monitored, and is particularly strong at 23.4kHz. My own recording at 23.4kHz is rather different, showing the spike and wave response from the shifting interference pattern. I have also added the GOES X-ray data to show the fairly slow build up to this flare:

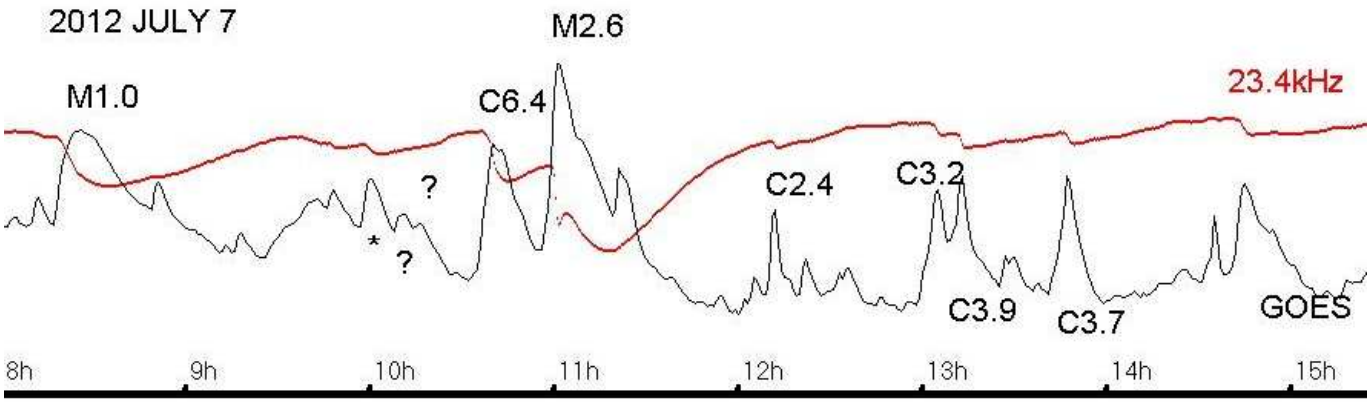


Associated with the flare was a CME that produced an extended magnetic disturbance, see later.

With the high density of flares early in the month, many of the SIDs that we have recorded have not been given separate classification by the SWPC. Where the table shows '*', a flare is listed by the SWPC but without a magnitude. Where the table shows '?', nothing is listed but a definite peak can be seen in the GOES X-ray data. These are illustrated on the chart by Roberto Battaiola from the 7th:



A combination of three peaks can be seen marked '??'. The GOES data reveals the cause, superimposed on my own recording:

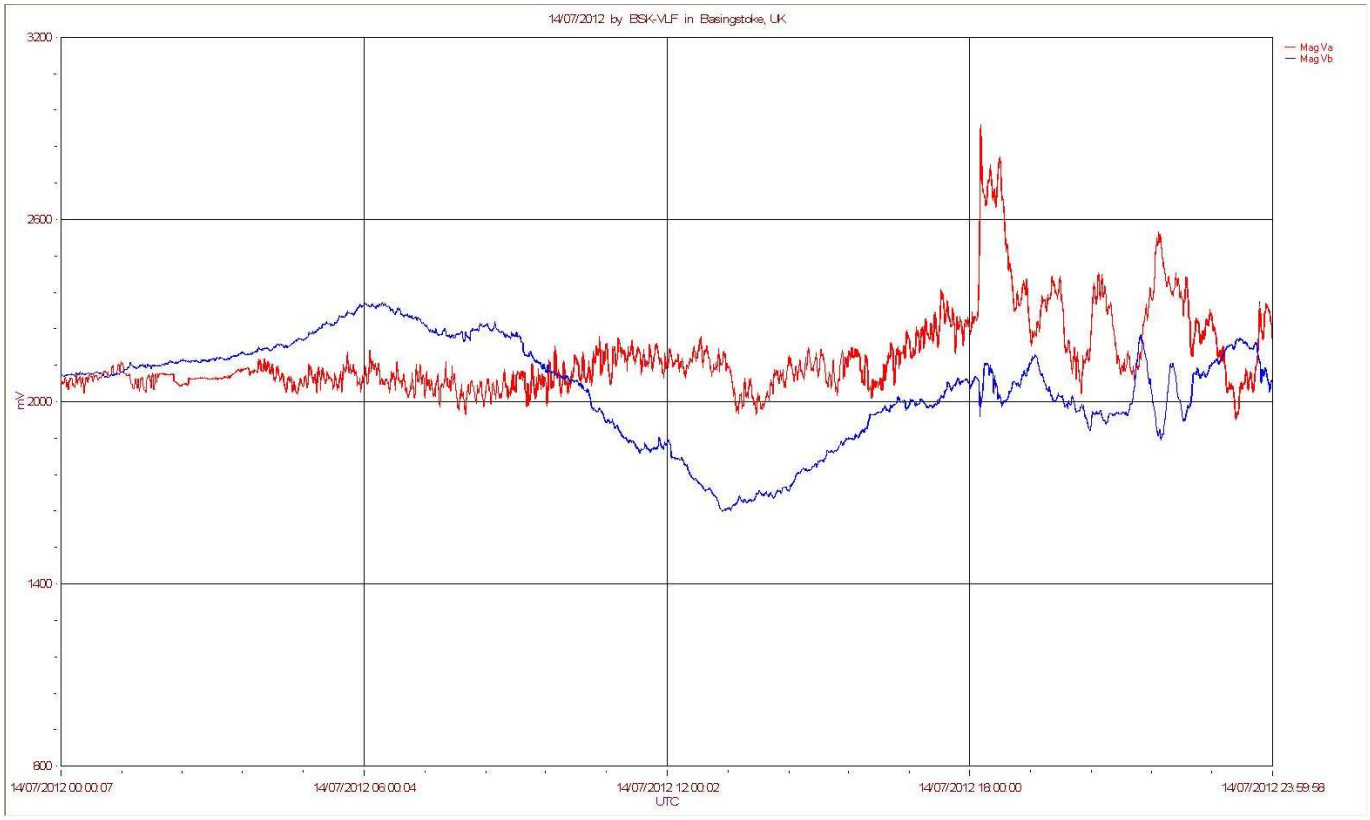


I have labeled the X-ray data as best I can from the observations received and the SWPC list.

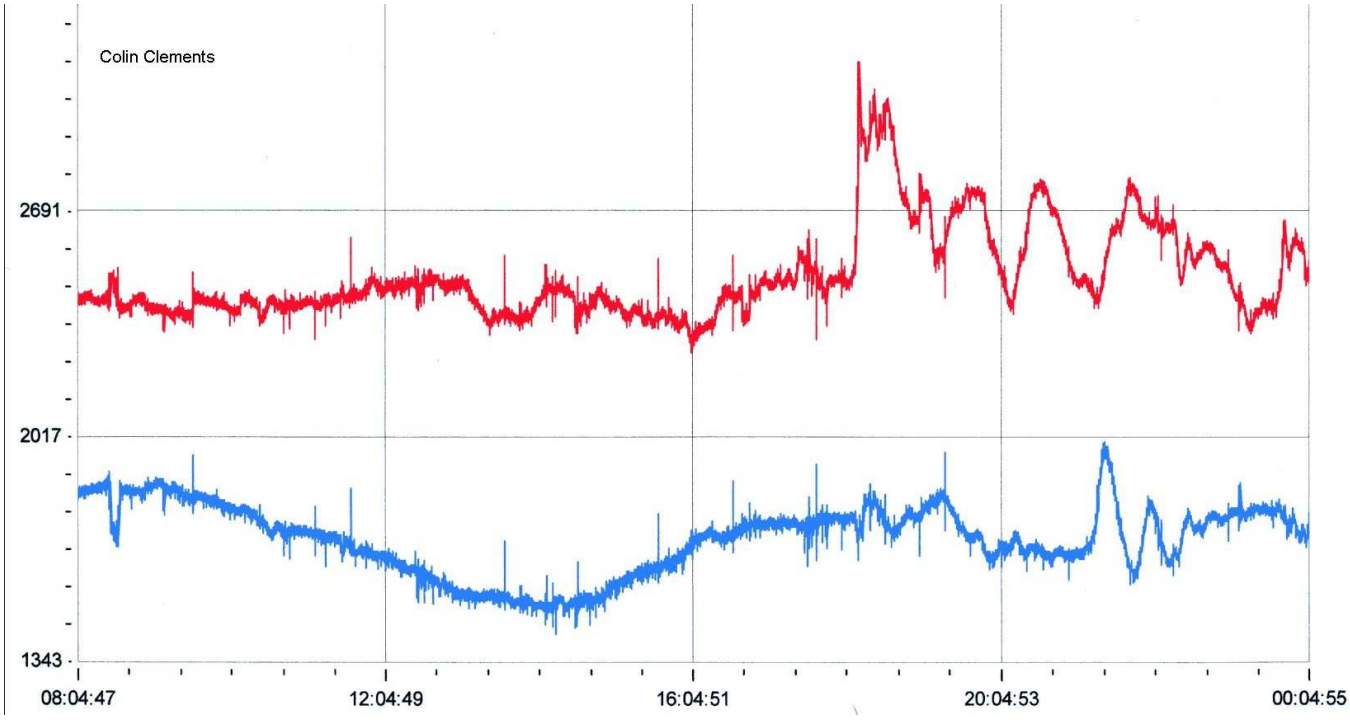
Activity was much lower through the middle of the month, with fewer SIDs recorded and less energetic flares. The quieter conditions allowed a B7.3 flare to be recorded as a SID on the 23rd. Activity then started to increase again through the last week of the month.

MAGNETIC DATA

As expected from the high level of flare activity, there were numerous CMEs in the first half of July. Many of these either missed Earth, or produced only minor magnetic disturbances. The X1.4 flare already illustrated was from active region 1520, which was close to the solar central meridian at the time of the flare. Mark's VLF chart shows considerable variation in peak time over the frequency range, from 16:33 to 16:54UT. The GOES X-ray flux also shows a very slow build-up to this flare before a faster rise to the peak. The CME arrival was however quite dramatic with a sudden change in the North-South component of the magnetic field, followed by a period of slow but large variations. Charts provided by Paul Hyde and Colin Clements show the start at 18:09UT on the 14th. Assuming a CME at the peak time of our SID recordings, the transit time to Earth is between 49h 36m and 49h 57m, about 838m/s. All of the following charts show the N/S component in red, and E/W in blue.

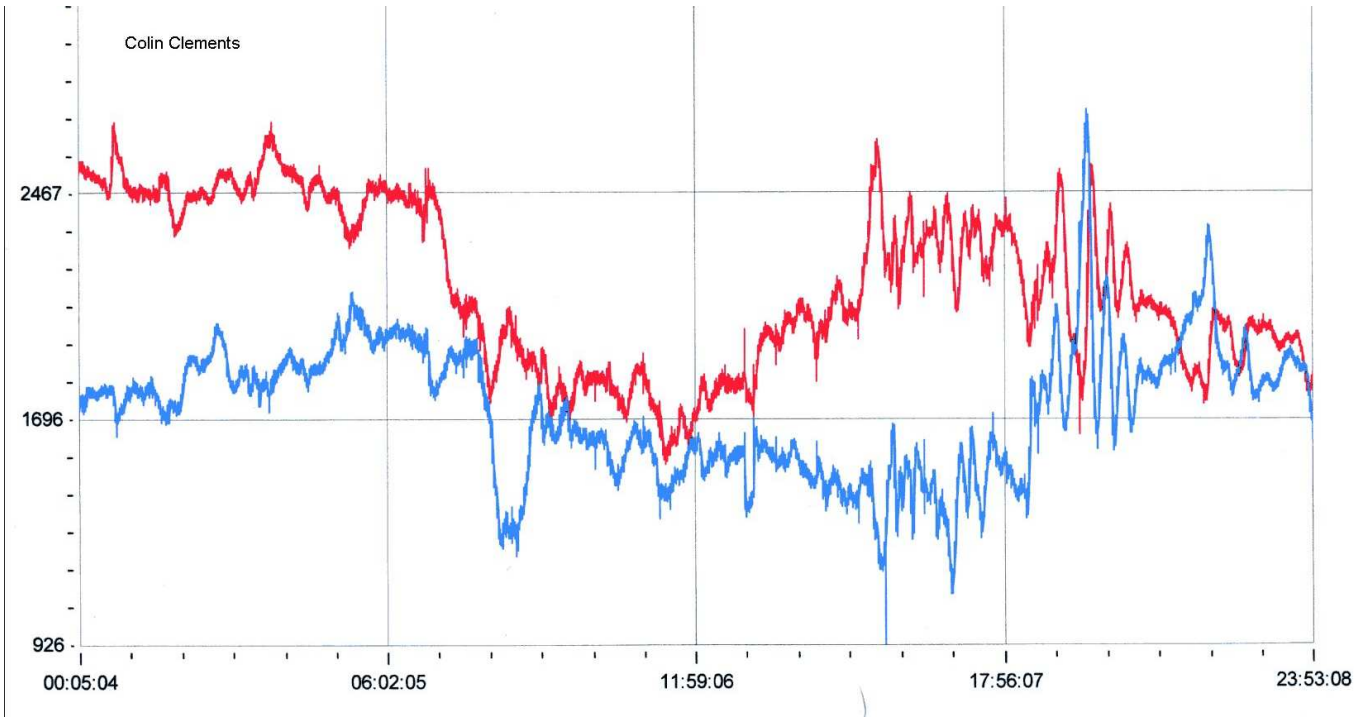


Paul Hyde.

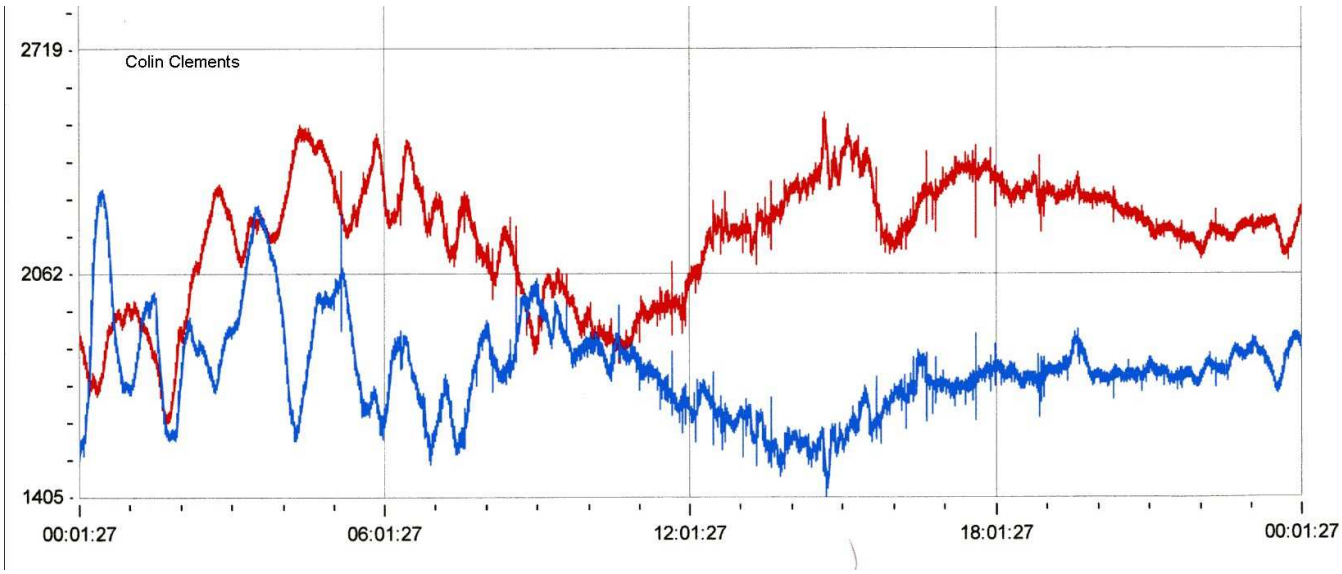


Colin Clements.

The similarity in these recordings is quite striking, especially as Paul and Colin are about 450km apart. The CME arrival is much less distinct in the E/W component, showing a fairly gentle dip and rise before the larger variations nearly 4 hours later. As the magnetic disturbance continued into the 15th, this difference disappeared. In the afternoon of the 15th the magnetic field variations in both components became much more rapid, continuing through the night and well into the 16th.



July 15th.



July 16th.

My own recordings of this show about 100..150nT disturbance in the E/W component over the 15th and 16th.

A much slower CME was recorded from the M1.8 flare peaking at 16:39 on the 4th. This arrived at Earth late on the 8th, with a magnetic disturbance starting at 22:15 on my recording. This gives a transit time of just over 100 hours, or half of the speed of the larger event. I measured about 50nT peak disturbance from this event.

Gonzalo Vargas reported an active period on the 29th, 18:15 to 23:30UT from Bolivia.

Magnetic data provided by Paul Hyde, Colin Clements, Gonzalo Vargas and John Cook.

KEY: DISTURBED. ACTIVE SFE B, C, M, X = FLARE MAGNITUDE. Synodic rotation start (carrington's).

ROTATION																											
2407	18	19	20	21	22	23	24	25	26	27	28	29	30	31	2010 January 1	2	3	2092 4	5	6	7	8	9	10	11	12	13
	F															C							*				
2408	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	2093 31	2010 February 1	2	3	4	5	6	7	8	9
	F					CCMC	MCMCC	C																CC		MCCMMC	C
2409	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	2094 28	2010 March 1	2	3	4	5	6	7	8
	F	CC		CBM	CC	C	BB										B						C				
2410	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	2095 27	28	29	30	31	2010 April 1	2	3	4
	F					B											BB		CC								
2411	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	2096 23	24	25	26	27	28	29	30	May 1
	F																										
2412	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	2097 21	22	23	24	25	26	27	28
	F		C	CCM		C	CC																				
2413	29	30	31	2010 June 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	2098 17	18	19	20	21	22	23	24
	F														C	MCCC											
2414	25	26	27	28	29	30	2010 July 1	2	3	4	5	6	7	8	9	10	11	12	13	2099 14	15	16	17	18	19	20	21
	F														C				C	CC			C			C	
2415	22	23	24	25	26	27	28	29	30	2010 August 1	2	3	4	5	6	7	8	9	2100 10	11	12	13	14	15	16	17	18
	F		BC							C						M							CC	C	C		C
2416	19	20	21	22	23	24	25	26	27	28	29	30	31	2010 September 1	2	3	4	5	2101 6	7	8	9	10	11	12	13	14
	F																		C								
2417	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	2010 October 1	2	3	2102 4	5	6	7	8	9	10	11
	F													C		B		B		C							
2418	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	2103 31	2010 November 1	2	3	4	5	6	7
	F					C	CC																CC		M	CM	
2419	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	2104 27	28	29	30	2010 December 1	2	3	4
	F			C	CC	C																					
2420	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	2105 25	26	27	28	29	30	31
	F																										
2421	2011 January 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	2106 20	21	22	23	24	25	26	27
	F													C	C						CCC	C					
2422	28	29	30	31	2011 February 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	2107 16	17	18	19	20	21	22	23
	F							B						CC		C	BCM	CM	CC	MCM	CCC	MMCC	CCC		CCC		C
2423	24	25	26	27	28	2011 March 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	2108 16	17	18	19	20	21	22
	F	MCC	C	C		MC	CCC	C	CC	C	CCCC	CCCC	CMMM	CMM	CMMM	CCCC	CCC	BCCC	CC	CBCM	CCCC	CC				CC	C
2424	23	24	25	26	27	28	29	30	31	2011 April 1	2	3	4	5	6	7	8	9	10	11	2109 12	13	14	15	16	17	18
	F	BC	MCB	C			C	C							CC	C		C		BC	C	CCCC	CCCC	CCCM	CBCC	CB	B
2425	19	20	21	22	23	24	25	26	27	28	29	30	2011 May 1	2	3	4	5	6	7	8	2110 9	10	11	12	13	14	15
	F	B	BBC	CCC	CCMCC	CC		B		CCCC		CCCC	CB	C	C						C			C			C
2426	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	2011 June 1	2	3	4	5	2111 6	7	8	9	10	11
	F		CCC									BCCC	CCCM	CBCM	CCC												
2427	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	2011 July 1	2	2112 3	4	5	6	7	8
	F																					C					CCCC
2428	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	2113 30	31	2011 August 1	2	3	4
	F		C	C						C									CCCM	CCBCC	CCCB	CCCC	CBCC	CCCC	MCCB	MCCM	CCCC
2429	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	2114 27	28	29	30	31
	F	CCCB	CCCC	CCC	CMC	CMXC	CCCC	CC					CC	BC		BB	BC	C		C	BC	C			CCC	CBC	C
2430	2011 September 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	2115 23	24	25	26	27
	F	CCC	C	CCCC	CMCC	M		X	CMC	C	MC	CCB	C	C	CCCC	CCC	CCCC	CC	CCC	CC	CCCC	CMCC	CMXC	CCCC	CXMM	MMCM	CCMC	CCCC
2431	28	29	30	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	2116 20	21	22	23	24
	F	CCM	CC	M	MC	CCMC		C	CCCB	C		C	CCC		CCCC	CCC	CCC	CCCC	CCCC	CC		CC	C	CMC	MC	C	
2432	25	26	27	28	29	30	31	2011 November 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	2117 17	18	19	20
	F			C	CCCC	CCC	M	C	CCCC	CCM	C	CMCC	CC			M		C	C	CC	CCC	MM	C	CCC			CCCC
2433	21	22	23	24	25	26	27	28	29	30	2011 December 1	2	3	4	5	6	7	8	9	10	11	12	13	2118 14	15	16	17
	F		C	C			C	C	C		C				C				C			B	C	CCC			
2434	18	19	20	21	22	23	24	25	26	27	28	29	30	31	2012 January 1	2	3	4	5	6	7	8	9	2119 10	11	12	13
	F	B		C	CCCC			CCM	CC	C	CCC	M	CCC	MBM		C		CC	C	C		CC	CC		C	CC	
2435	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	2012 February 1	2	3	4	5	6	2120 7	8	9
	F	CMC	C	CC		CC	CM	C	CC		C		C	CCX	C										C		C
2436	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	2012 March 1	2	3	4	2121 5	6	7
	F	CC	CCCC	C						C	C	C					C				C	M		MC	CCCC	MCMC	
2437	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	2012 April 1	2	3
	F	C	CC	CCM		C	M	M	MC	CC		C		BCCC	CCC	C	C					CCCC					
2438	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	2123 28	29	30
	F	C	BC		C	C	B						M		CCBCC	C	CCC	CB	CC	C	CC	C		MCC	C	CC	CCCC
2439	2012 May 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	2124 26	27
	F		CBCC	CC	CC	CCMCC	MCMC	CCMC	CCMC	CBMM	MCCC	CCCC	CCCC	CC	CCCC	CBC	M	CCCC	C					CBBC	CC	CC	
2440	28	29	30	31	2012 June 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	2125 22	23
	F	BB		C	CCCC	C		C	M	CC	CCM	CCCC	CCMCM	CMCMC	M	CCCC	CCCC	CMCC	CCCM	CC	C	CC		CC	CC		
2441	24	25	26	27	28	29	30	2012 July 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	2126 19	20
	F		C	CCCC	CMC	CCMC	CCMCM	CCCM	CMCM	CCCC	MMMM	MMMM	MMMX	MMMC	MMMM	CCCC	MMCC	CCCC	CX	CCCC	MCCC	C	CCC	M	C	M	
2442	21	22	23	24	25	26	27	28	29	30	31	2012 August 1	2	3	4	5	6	7	8	9	10	11	12	13	14	2127 15	16
	F		CB	CCCC		C	CCCM	CCM	MCC	CCCM	CCCC																