

**Space Weather Highlights  
23 February -01 March 1998**

Solar activity was very low to low. A weak Type IV radio sweep was detected at 23/0017UT and was probably related to activity within old Region 8156 (S25, L = 033, class/area Eki/520 on 16 February), a day behind the west limb at the time. A 19-degree filament disappeared from location N22W06 during 23/2058-2155UT. A mostly west-directed coronal mass ejection was associated with the filament disappearance. Flare activity rose to low levels on 01 March as Region 8171 displayed dramatic growth in spot count and, to a lesser extent, magnetic complexity. A faint, partial-halo CME was detected by the SOHO/LASCO instrument around midday 28 February.

Solar wind data were received from the WIND spacecraft a few hours per day (no data were received during 28 February). Velocities ranged 300-410 km/sec during most of the period. Densities generally ranged 05-12 p/cc. Bz varied from plus to minus 05 nT (GSM). Solar sector orientation was mostly away (phi angle near 135 degrees) through 26 February, shifting to toward (phi angle near 315 degrees) conditions on 27 February and 01 March.

There were no significant proton enhancements observed at geosynchronous altitude.

The greater than 2 MeV electron flux at geosynchronous altitude was at moderate to high levels during 23 February. Otherwise, fluxes were normal to moderate.

The geomagnetic field was at mostly quiet levels through 27 February. An increase to mostly unsettled levels occurred during 28 February with isolated periods of active to minor storm levels detected at all latitudes.

**Space Weather Forecast  
04 March 1998 - 30 March 1998**

Solar activity is expected to be very low to moderate. Moderate activity is possible from Region 8171 until it crosses the west limb early on 07 March. Thereafter, activity is expected to drop to very low to low levels.

No significant proton enhancements are expected at geosynchronous altitude.

The greater than 2 MeV electron flux at geosynchronous altitude is expected to be at moderate to high levels through 06-08 March. The flux is expected to decline to normal to moderate levels for the remainder of the period.

The geomagnetic field is expected to be at mostly quiet to unsettled levels. However, active conditions are possible during 04 - 05 March in response to the 28 February CME described above.



### Daily Solar Data

Date	Radio Flux	Sun spot	Sunspot Area	X-ray Background	X-ray Flux			Flares				
	10.7 cm	No. (10 <sup>6</sup> hemi.)	(10 <sup>6</sup> hemi.)		C	M	X	S	1	2	3	4
23 February	99	59	140	B2.4	2	0	0	2	0	0	0	0
24 February	99	78	110	B3.0	1	0	0	6	0	0	0	0
25 February	95	69	200	B1.8	0	0	0	0	0	0	0	0
26 February	93	69	200	A8.0	0	0	0	1	0	0	0	0
27 February	90	78	140	A5.6	0	0	0	0	0	0	0	0
28 February	94	60	100	A7.5	0	0	0	2	0	0	0	0
01 March	98	93	280	B1.3	3	0	0	4	0	0	0	0

### Daily Particle Data

Date	Proton Fluence (protons/cm <sup>2</sup> -day-sr)			Electron Fluence (electrons/cm <sup>2</sup> -day-sr)		
	>1MeV	>10MeV	>100MeV	>6MeV	>2MeV	>4MeV
23 February	7.1E+5	1.7E+4	4.1E+3		3.6E+7	
24 February	3.9E+5	1.9E+4	4.2E+3		1.2E+7	
25 February	4.9E+5	1.8E+4	4.3E+3		2.0E+7	
26 February	4.9E+5	1.7E+4	4.2E+3		2.2E+7	
27 February	5.0E+5	1.8E+4	4.3E+3		1.7E+7	
28 February	2.2E+5	1.7E+4	4.3E+3		9.7E+5	
01 March	1.1E+6	1.7E+4	4.0E+3		1.3E+6	

### Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
23 February	6	1-2-2-2-2-2-1-1	*	1-1-3-3-5-4-*-2	11	1-2-3-2-3-3-3-3
24 February	2	1-0-1-1-0-0-0-1	2	2-0-1-2-0-1-0-0	3	1-0-1-2-0-1-1-1
25 February	1	0-1-1-0-0-0-1-0	4	0-0-2-3-1-1-1-0	4	0-0-2-1-1-2-2-1
26 February	0	1-0-0-0-0-1-0-0	0	0-0-0-0-0-0-1-0	3	1-0-0-0-1-1-1-1
27 February	2	1-0-2-1-1-0-0-1	*	*-*-*-*-*-*-*	4	0-1-2-1-1-1-2-1
28 February	12	1-2-2-1-3-1-2-5	15	1-1-3-3-4-4-2-3	12	2-2-2-3-3-3-2-4
01 March	9	3-2-1-1-3-2-2-3	16	3-1-1-4-5-3-2-2	12	3-3-1-2-3-3-2-3



*Alerts and Warnings Issued*

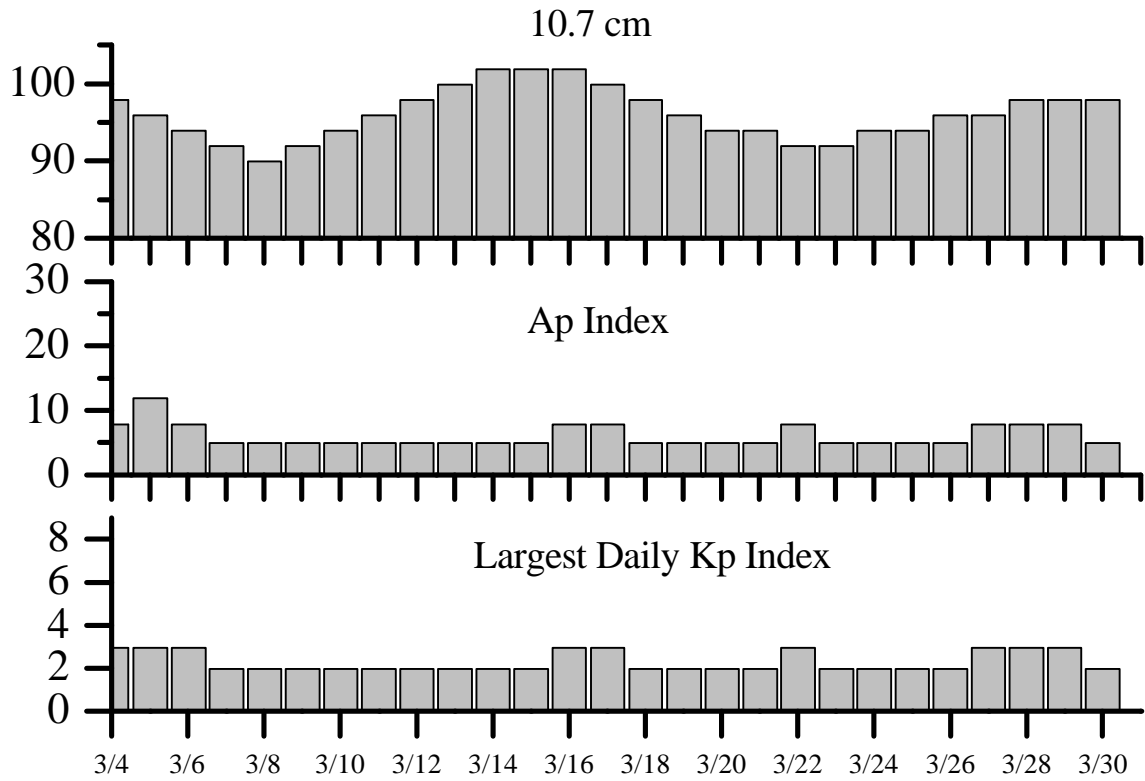
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Date and Time of Issue (UT)	Type of Alert or Warning	Date and Time of Event (UT)
23 Feb 000	>2MeV Electron Event in Progress $\geq$ 1000pfu	22 Feb
23 Feb 052	Type IV Radio Emission	23 Feb 0017
23 Feb 1315	Stratwarm Alert Exists Monday	
24 Feb 000	>2 MeV Electron Event in Progress $\geq$ 1000pfu	23 Feb
24 Feb 1359	Stratwarm Alert Exists Tuesday	
25 Feb 1329	Stratwarm Alert exists Wednesday	
26 Feb 1329	Stratwarm Alert Exists Thursday	
28 Feb 2348	K= 4 observed	28 Feb 21-24

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Twenty-seven Day Outlook



Date	Radio Flux 10.7 cm	Planetary A Index	Largest Kp Index	Date	Radio Flux 10.7 cm	Planetary A Index	Largest Kp Index
04 Mar	98	8	3	18	98	5	2
05	96	12	3	19	96	5	2
06	94	8	3	20	94	5	2
07	92	5	2	21	94	5	2
08	90	5	2	22	92	8	3
09	92	5	2	23	92	5	2
10	94	5	2	24	94	5	2
11	96	5	2	25	94	5	2
12	98	5	2	26	96	5	2
13	100	5	2	27	96	8	3
14	102	5	2	28	98	8	3
15	102	5	2	29	98	8	3
16	102	8	3	30	98	5	2
17	100	8	3				



***Energetic Events***

Date	Time (UT)		X-ray		Optical Information			Peak		Sweep Freq		
	Begin	Max	½ Max	Integ Class	Imp Flux	Location		Rgn #	Radio Flux		Intensity	
						Lat	CMD		245	2695	II	IV

**No Events Observed**

***Flare List***

Date	Time			X-ray Class.	Optical		Rgn #
	Begin	Max	End		Imp / Brtns	Location Lat CMD	
23 February	0304	0310	0315	B9.1			
	0455	0501	0505	B9.0			
	0639	0646	0651	C1.1			
	0701	0707	0711	C1.8			
	1333	1333	1338		SF	S18W79	8158
	1357	1401	1404	B4.6			
	1545	1547	1552		SF	S19W80	8158
	2112	2116	2118	B6.0			
24 February	0927	U0931	A0953	B5.4	SF	N15E08	8164
	1009	U1010	A1023		SF	N15E09	8164
	B1043	U1045	A1123	B5.9	SF	N15E10	8164
	1144	1151	1200	B4.2	SF	N16E10	8164
	1238	1239	1246	B4.9	SF	N17E08	8164
	1338	1339	1346	C1.0	SF	N15E07	8164
	1438	1442	1446	B5.5			
25 February	0049	0059	0121	B3.7			
	0200	0204	0212	B8.6			
	1411	1415	1417	B2.3			
	2149	2155	2204	B1.6			
	2238	2242	2246	B1.5			
26 February	0131	0135	0137	B1.8			
	0318	0322	0330	B1.3			
	0430	0435	0445	B1.7			
	B1554	1600	1616	B7.6	SF	S26W05	8167
27 February	1812	1820	1828	B2.3			
	1912	1917	1921	B1.5			
	2248	2255	2300	B4.3			
28 February	0854	0901	0913	B1.2			
	0926	0926	0933		SF	S24W02	8171
	1138	1143	1149	B1.1			
	2339	U2341	2354		SF	N16W54	8164



*Flare List – continued.*

Date	Time			X-ray Class.	Imp / Brtns	Optical		Rgn #
	Begin	Max	End			Location Lat CMD		
01 March	0026	0030	0032	B3.5				
	0117	0121	0128	B2.0				
	0208	0208	0216	B7.8	SF	S21W56	8169	
	0809	0816	0822	B6.5				
	0836	0839	0841	B6.5				
01 March	0926	0933	0938	B3.1				
	1107	1107	1112	C1.0	SF	S17W66	8169	
	1302	1306	1316	C1.2	SF	S18W67	8169	
	1734	1746	1755	C1.1				
	B2011	U2011	A2100		SF	S24W23	8171	
	2139	2144	2154	B6.4				

*Region Summary*

Date	Location		Sunspot Characteristics				Flares				
	Helio		Area (10 <sup>6</sup> hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray		Optical	
	(° Lat ° CMD)	Lon						C	M X	S	1

*Region 8157*

11 Feb	N27E66	024	0010	03	BXO	003	B										
12 Feb	N27E54	023	0000	00	AXX	001	A										
13 Feb	N26E41	023	0000	00	AXX	001	A										
14 Feb	N28E28	022	0000	00	AXX	001	A										
15 Feb	N28E15	022	0000	00		000											
16 Feb	N28E02	022	0000	00		000											
17 Feb	N22E11	000	0020	06	CRO	003	B										
18 Feb	N22W02	000															
19 Feb	N28W37	022															
20 Feb	N28W50	022															
21 Feb	N28W63	022															
22 Feb	N28W76	022															
23 Feb	N28W89	022															

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 022



**Region Summary- continued.**

Date	Location		Sunspot Characteristics				Flares															
	( ° Lat ° CMD)	Helio	Area (10 <sup>6</sup> hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical											
		Lon						C	M	X	S	1	2	3	4							
<i>Region 8158</i>																						
11 Feb	S19E77	013	0010	03	BXO	002	B															
12 Feb	S19E62	015	0010	03	BXO	003	B															
13 Feb	S19E50	014	0010	04	BXO	004	B															
14 Feb	S20E36	014	0020	04	CSO	004	B															
15 Feb	S21E23	014	0010	05	BXO	004	B															
16 Feb	S21E10	014	0020	05	CRO	005	B															
17 Feb	S21W03	014	0010	06	BXO	003	B															
18 Feb	S22W14	012	0010	03	CSO	003	B														1	
19 Feb	S21W29	013	0020	05	BXO	004	B															
20 Feb	S21W42	013	0000	00		000																
21 Feb	S21W55	013	0000	00		000																
22 Feb	S20W69	014	0010	04	BXO	002	B															
23 Feb	S19W82	014	0070	05	CSO	005	B														2	
																					0 0 0 3 0 0 0 0	

Crossed West Limb.

Absolute heliographic longitude: 014

*Region 8159*

14 Feb	N33E41	009	0010	03	BXO	003	B														
15 Feb	N30E29	008	0010	06	BXO	003	B														
16 Feb	N32E13	011	0010	03	BXO	002	B														
17 Feb	N32E00	011																			
18 Feb	N32W13	011																			
19 Feb	N32W26	011																			
20 Feb	N32W39	011																			
21 Feb	N32W52	011																			
22 Feb	N32W65	011																			
																					0 0 0 0 0 0 0 0

Died on Disk.

Absolute heliographic longitude: 011



*Region Summary- continued.*

Date	Location		Sunspot Characteristics				Flares														
	( ° Lat ° CMD)	Helio	Area (10 <sup>6</sup> hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical										
		Lon						C	M	X	S	1	2	3	4						
<i>Region 8160</i>																					
15 Feb	N23E36	001	0010	03	BXO	002	B														
16 Feb	N23E23	001	0020	05	CRO	005	B														
17 Feb	N22E11	000	0020	06	CRO	004	B														
18 Feb	N23W02	360	0010	06	BXO	003	B														
19 Feb	N23W13	357	0010	04	BXO	002	B														
20 Feb	N23W26	357																			
21 Feb	N23W39	357																			
22 Feb	N23W52	357																			
23 Feb	N23W65	357																			
24 Feb	N23W78	357																			

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 360

*Region 8161*

16 Feb	N25E54	330	0010	03	BXO	002	B													
17 Feb	N25E40	331	0010	00	AXX	001	A													
18 Feb	N26E27	331	0010	03	BXO	003	B													
19 Feb	N16E19	325	0010	00	AXX	001	A													
20 Feb	N25E04	327	0000	00	AXX	001	A													
21 Feb	N25W09	327																		
22 Feb	N25W22	327																		
23 Feb	N25W35	327																		
24 Feb	N25W48	327																		
25 Feb	N25W61	327																		

0 0 0 0 0 0 0 0

Died on Disk.

Absolute heliographic longitude: 327





**Region Summary- continued.**

Date	Location		Sunspot Characteristics				Flares													
	( ° Lat ° CMD)	Helio	Area (10 <sup>6</sup> hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical									
		Lon						C	M	X	S	1	2	3	4					
<i>Region 8162</i>																				
21 Feb	S32E46	272	0010	03	BXO	003	B													
22 Feb	S32E33	272											1							
23 Feb	S32E20	272																		
24 Feb	S32E07	272																		
													0	0	0	1	0	0	0	0
Died on Disk.																				
Absolute heliographic longitude: 272																				
<i>Region 8163</i>																				
22 Feb	S22W28	333	0020	03	BXO	004	B													
23 Feb	S23W42	334	0040	05	CRO	007	B													
24 Feb	S23W56	335	0020	07	BXO	004	B													
25 Feb	S21W71	336	0010	01	AXX	002	A													
26 Feb	S21W84	336	0010	02	AXX	001	A													
27 Feb	S21W97	336	0000	00		000														
													0	0	0	0	0	0	0	0
Crossed West Limb.																				
Absolute heliographic longitude: 333																				
<i>Region 8164</i>																				
23 Feb	N17E14	278	0020	04	BXO	004	B													
24 Feb	N16E01	278	0070	07	DAI	016	B	1					6							
25 Feb	N17W12	277	0130	08	DAO	019	B													
26 Feb	N16W25	277	0120	08	DAI	018	B													
27 Feb	N17W37	276	0090	08	DAO	013	B													
28 Feb	N16W51	277	0030	07	CRO	005	B						1							
01 Mar	N15W66	279	0060	06	CSO	004	B													
													1	0	0	7	0	0	0	0
Still on Disk.																				
Absolute heliographic longitude: 278																				



**Region Summary- continued.**

Date	Location		Sunspot Characteristics				Flares						
	Helio		Area (10 <sup>-6</sup> )	Extent hemi)	Spot (helio)	Spot Class	Mag Count	X-ray			Optical		
	(° Lat ° CMD)	Lon						C	M	X	S	1	2

*Region 8165*

23 Feb	N29E53	239	0010	03	BXO	003	B										
24 Feb	N28E39	240	0010	04	BXO	002	B										
25 Feb	N28E26	240															
26 Feb	N28E13	240															
27 Feb	N28E00	240															
28 Feb	N28W13	240															
01 Mar	N28W26	240															
										0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 240

*Region 8166*

24 Feb	N22W25	304	0000	00	AXX	001	A										
25 Feb	N22W38	304															
26 Feb	N22W51	304															
27 Feb	N22W64	304															
										0	0	0	0	0	0	0	0

Died on Disk.

Absolute heliographic longitude: 304

*Region 8167*

24 Feb	S27E17	262	0010	04	BXO	005	B										
25 Feb	S26E04	261	0060	06	DAO	007	B										
26 Feb	S26W09	261	0070	07	DAO	008	B			1							
27 Feb	S26W22	261	0030	07	CRO	008	B										
28 Feb	S26W33	260	0020	04	BXO	003	B										
01 Mar	S26W45	258	0020	05	BXO	005	B										
										0	0	0	1	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 261



**Region Summary- continued.**

Date	Location		Sunspot Characteristics				Flares						
	( ° Lat ° CMD)	Helio	Area (10 <sup>6</sup> hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical		
		Lon						C	M	X	S	1	2

*Region 8168*

25 Feb	N17W48	313	0000	00	AXX	001	A												
26 Feb	N16W62	314	0000	00	AXX	002	A												
27 Feb	N16W75	314																	
												0	0	0	0	0	0	0	0

Died on Disk.

Absolute heliographic longitude: 313

*Region 8169*

27 Feb	S20W44	283	0010	04	BXO	003	B												
28 Feb	S21W60	286	0020	06	BXO	004	B												
01 Mar	S20W72	285	0070	07	CSO	005	B	2			3								
												2	0	0	3	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 283

*Region 8170*

27 Feb	N00E02	237	0000	00	AXX	001	A												
28 Feb	N00W11	237																	
01 Mar	N00W24	237																	
												0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 237

*Region 8171*

27 Feb	S24E05	234	0010	02	BXO	003	B												
28 Feb	S24W10	236	0030	05	DRO	008	B				1								
01 Mar	S23W23	236	0110	08	DSO	014	B				1								
												0	0	0	2	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 234



***Region Summary- continued.***

Date	Location		Sunspot Characteristics				Flares							
	( ° Lat ° CMD)	Helio Lon	Area (10 <sup>6</sup> hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical			
							C	M	X	S	1	2	3	4
<i>Region 8172</i>														
01 Mar	N22E06	207	0020	04	BXO	004	B							
								0	0	0	0	0	0	0
Still on Disk.														
Absolute heliographic longitude: 207														
<i>Region 8173</i>														
01 Mar	S17E71	142	0000	00	AXX	001	A							
								0	0	0	0	0	0	0
Still on Disk.														
Absolute heliographic longitude: 142														



**Recent Solar Indices (preliminary)  
of the observed monthly mean values**

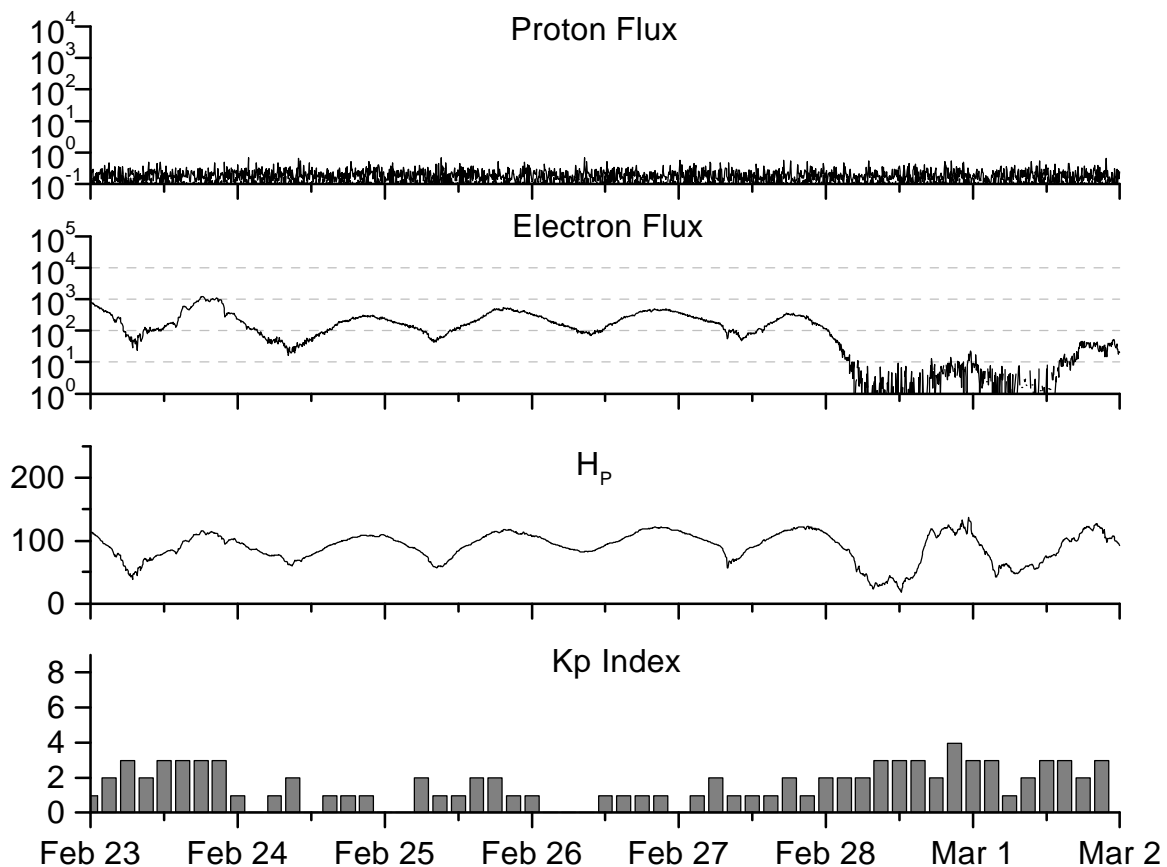
Month	Sunspot Numbers				Radio Flux		Geomagnetic		
	Observed SWO	values RI	Ratio RI/SWO	Smooth SWO	values RI	**Penticton 10.7 cm	Smooth Value	Planetary Ap	Smooth Value
<b>1996</b>									
March	12.1	09.2	0.76	15.4	09.7	72.7	72.1	11	09.9
April	08.5	04.8	0.56	13.6	08.5	69.3	71.6	11	09.7
May	11.8	05.5	0.47	12.9	08.0	72.1	71.4	07	09.5
June	18.8	11.8	0.63	13.5	08.5	69.6	71.8	05	09.4
July	13.2	08.2	0.62	13.4	08.4	71.2	72.0	07	09.3
August	20.5	14.4	0.70	13.1	08.3	72.4	72.1	09	09.4
September	02.9	01.6	0.55	13.3	08.4	69.4	72.3	15	09.3
October	02.3	00.9	0.39	14.0	08.8	69.2	72.6	13	09.1
November	26.7	17.9	0.67	15.4	09.8	78.7	73.0	08	09.1
December	21.1	13.3	0.63	16.2	10.4	77.8	73.3	07	09.3
<b>1997</b>									
January	09.0	05.7	0.63	16.5	10.5*	74.0	73.4	09	09.3*
February	11.3	07.6	0.67	17.4	11.0*	73.8	73.7	11	09.2*
March	14.4	08.7	0.60	20.4	13.5*	73.5	75.1*	08	09.0*
April	24.5	15.5	0.63	24.0	16.5*	74.5	76.8*	10	08.6*
May	28.6	18.5	0.65	26.4	18.4*	74.6	78.4*	08	08.6*
June	22.1	12.7	0.57	29.0	20.4*	71.7	80.1*	07	08.6*
July	17.0	10.5*	0.62*	32.4	22.7*	71.1	81.8*	06*	08.4*
August	36.7	24.7*	0.67*	35.9	25.2*	79.0	83.4*	08*	08.2*
September	52.8	51.3*	0.88*			96.2*		10*	
October	33.6	23.3*	0.69*			85.0*		10*	
November	53.5	39.3*	0.73*			99.5*		10*	
December	57.9	41.5*	0.72*			98.8*		05*	
<b>1998</b>									
January	51.8	32.3*	0.62*			93.5*		07*	
February	54.4	40.7*	0.75*			93.6*		07*	

\*Preliminary estimates.

The lowest smoothed sunspot indices number for Cycle 22, RI = 8.0, occurred in May 1996. The highest smoothed sunspot number for Cycle 22, RI=158.5, occurred July 1989.

\*\* From June 1991 onward, the 10.7 cm radio flux data source is Penticton, B.C. Canada. Prior to that, it was Ottawa.





*Weekly Geosynchronous Satellite Environment Summary*  
*Week Beginning 23 February 1998*

*Protons* plot contains the five-minute averaged integral proton flux (protons/ cm<sup>2</sup>-sec-sr) as measured by GOES-9 (W135) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

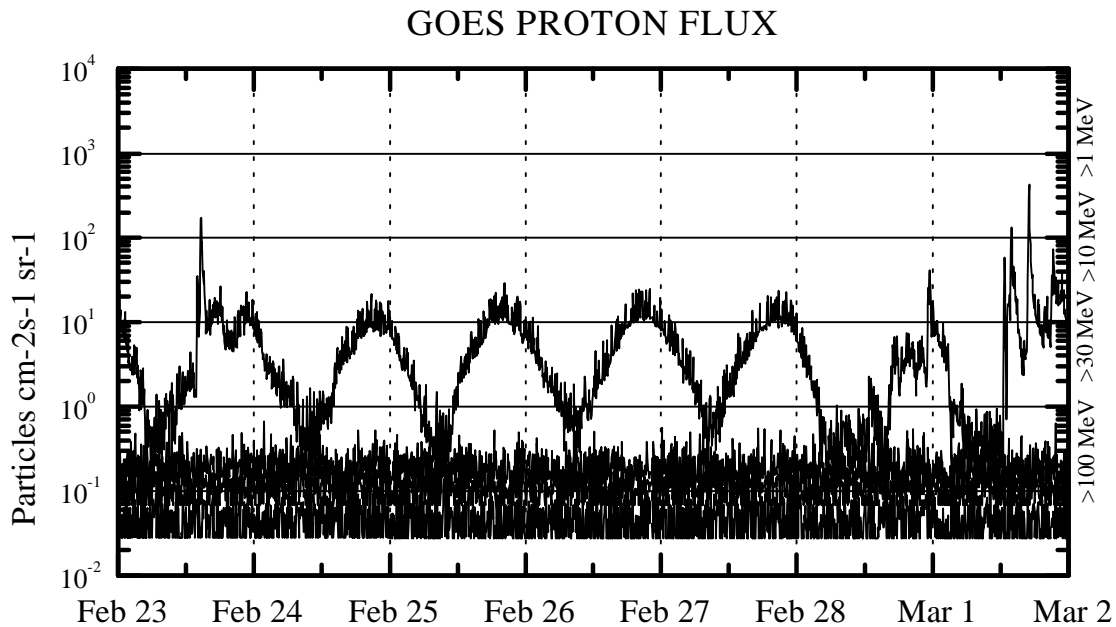
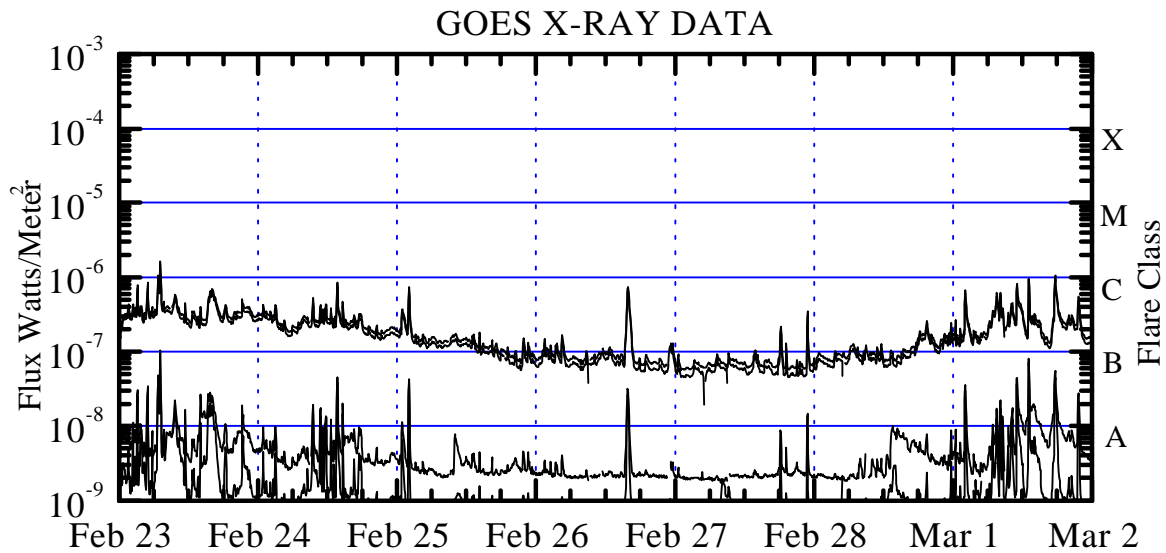
*Electrons* plot contains the five-minute averaged integral electron flux (electrons/ cm<sup>2</sup>-sec-sr) with energies greater than 2 MeV at GOES-9.

*H<sub>p</sub>* plot contains the five minute averaged magnetic field H component in nanoteslas (nT) as measured by GOES-9. The H component is parallel to the spin axis of the satellite, which is nearly parallel to the Earth's rotation axis.

*K<sub>p</sub>* plot contains the estimated planetary 3-hour K-index (derived by the USAF 55<sup>th</sup> Space Weather Squadron) in real time from magnetometers at Meanook, Canada; Sitka, AK; Glenlea, Canada; St. Johns, Canada; Ottawa, Canada; Newport, WA; Fredericksburg, VA; Boulder, CO; Fresno, CA and Heartland, UK. These data are made available through cooperation from the Geological Survey of Canada (GSC) and the US Geological Survey. These may differ from the final K<sub>p</sub> values derived from a more extensive network of magnetometers.

The data included here are those now available in real time at the SWO and are incomplete in that they do not include the full set of parameters and energy ranges known to cause satellite operating anomalies. The proton and electron fluxes and K<sub>p</sub> are "global" parameters that are applicable to a first order approximation over large areas. H<sub>parallel</sub> is subject to a more localized phenomena and the measurements generally are applicable to within a few degrees of longitude of the measuring satellite.



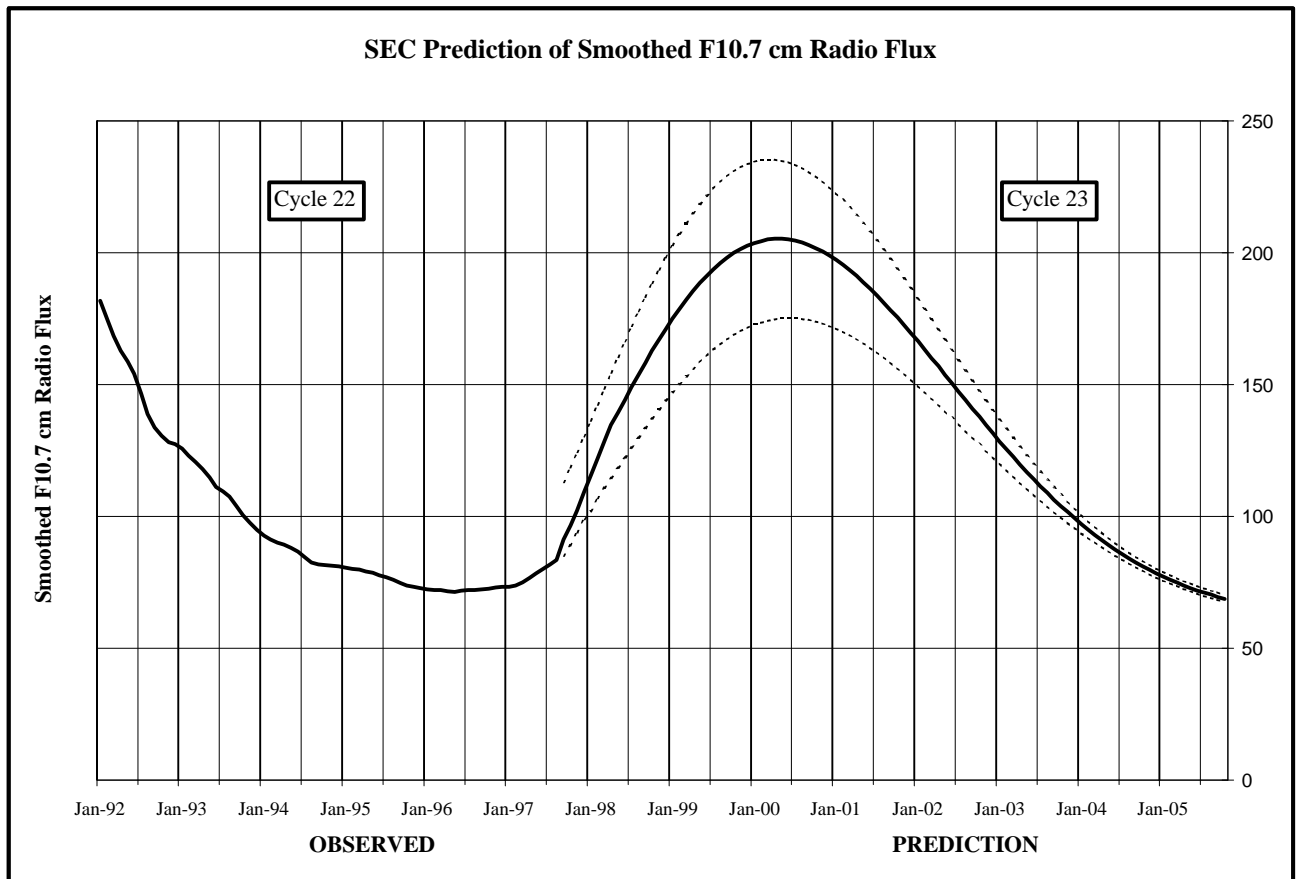


*Weekly GOES Satellite X-ray and Proton Plots*

Proton plot contains the five minute averaged integral proton flux (protons/cm<sup>2</sup>-sec-sr) as measured by GOES-9 (W135) for each of the energy thresholds: >1, >10, >30 and >100 MeV. P10 event threshold is 10 pfu (protons/cm<sup>2</sup>-sec-sr) at greater than 10 MeV.

X-ray plot contains five minute averaged x-ray flux (watts/m<sup>2</sup>) as measured by GOES 8 and 9 in two wavelength bands, .05 -.4 and .1 - .8 nm. The letters A, B, C, M and X refer to x-ray event levels for the .1 - .8 nm band.





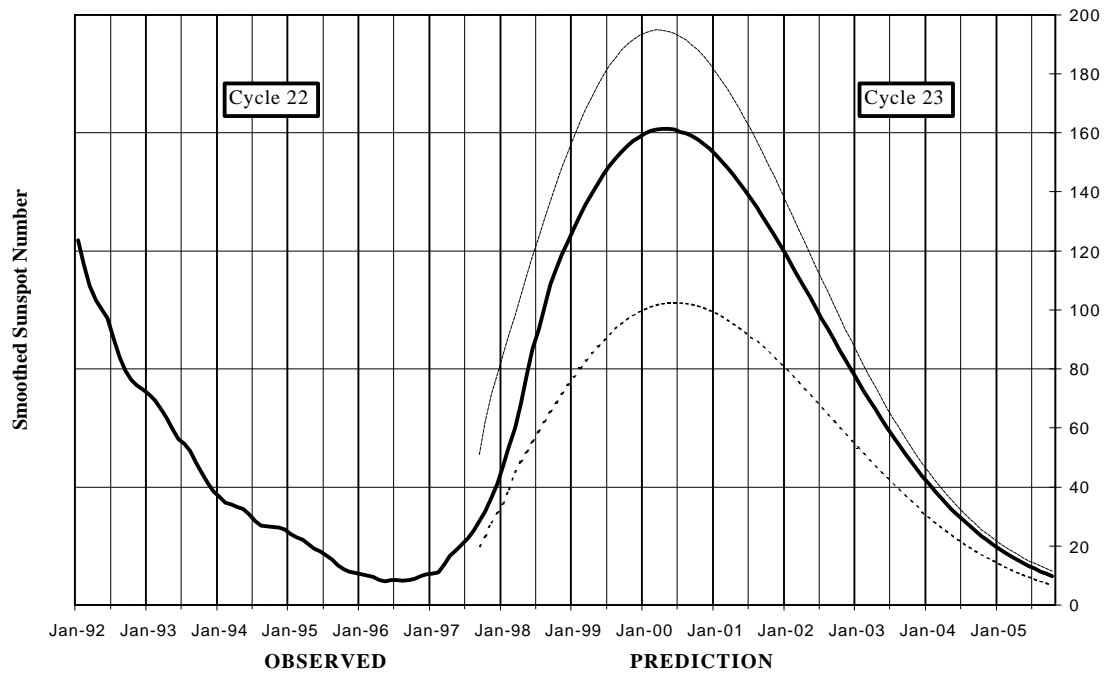
**SEC Prediction of Smoothed F10.7cm Radio Flux**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1996	72 (***)	72 (***)	72 (***)	72 (***)	71 (***)	72 (***)	72 (***)	72 (***)	72 (***)	73 (***)	73 (***)	73 (***)
1997	73 (***)	74 (***)	75 (***)	77 (***)	78 (***)	80 (***)	82 (***)	83 (***)	<b>91</b> (15)	<b>97</b> (16)	<b>102</b> (17)	<b>109</b> (18)
1998	<b>116</b> (18)	<b>122</b> (19)	<b>129</b> (20)	<b>135</b> (20)	<b>139</b> (21)	<b>144</b> (21)	<b>149</b> (22)	<b>154</b> (22)	<b>158</b> (23)	<b>163</b> (23)	<b>167</b> (23)	<b>171</b> (24)
1999	<b>175</b> (24)	<b>179</b> (25)	<b>182</b> (25)	<b>186</b> (25)	<b>189</b> (25)	<b>191</b> (26)	<b>194</b> (26)	<b>196</b> (26)	<b>198</b> (27)	<b>200</b> (27)	<b>202</b> (28)	<b>203</b> (28)
2000	<b>204</b> (30)	<b>205</b> (30)	<b>205</b> (30)	<b>205</b> (30)	<b>205</b> (30)	<b>205</b> (28)	<b>205</b> (27)	<b>204</b> (27)	<b>203</b> (26)	<b>202</b> (26)	<b>201</b> (26)	<b>199</b> (26)
2001	<b>197</b> (25)	<b>195</b> (25)	<b>193</b> (25)	<b>191</b> (25)	<b>189</b> (24)	<b>186</b> (24)	<b>184</b> (24)	<b>181</b> (24)	<b>178</b> (23)	<b>175</b> (23)	<b>173</b> (23)	<b>170</b> (22)
2002	<b>166</b> (22)	<b>163</b> (22)	<b>160</b> (21)	<b>157</b> (21)	<b>154</b> (21)	<b>151</b> (21)	<b>147</b> (20)	<b>144</b> (20)	<b>141</b> (19)	<b>138</b> (19)	<b>135</b> (18)	<b>132</b> (18)
2003	<b>129</b> (17)	<b>126</b> (17)	<b>123</b> (17)	<b>120</b> (16)	<b>117</b> (16)	<b>114</b> (15)	<b>112</b> (15)	<b>109</b> (15)	<b>106</b> (14)	<b>104</b> (14)	<b>102</b> (14)	<b>99</b> (13)
2004	<b>97</b> (13)	<b>95</b> (13)	<b>93</b> (12)	<b>91</b> (12)	<b>89</b> (11)	<b>87</b> (10)	<b>86</b> (9)	<b>84</b> (9)	<b>83</b> (8)	<b>81</b> (7)	<b>80</b> (9)	<b>78</b> (9)
2005	<b>77</b> (8)	<b>76</b> (8)	<b>75</b> (8)	<b>74</b> (7)	<b>73</b> (7)	<b>72</b> (7)	<b>71</b> (7)	<b>70</b> (6)	<b>70</b> (6)	<b>69</b> (2)	<b>68</b> (2)	<b>68</b> (2)





### SEC Prediction of Smoothed Sunspot Number



### SEC Prediction of Smoothed Sunspot Number

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1996	10 (***)	10 (***)	10 (***)	9 (***)	8 (***)	9 (***)	9 (***)	8 (***)	9 (***)	9 (***)	10 (***)	11 (***)
1997	11 (***)	11 (***)	14 (***)	17 (***)	18 (***)	20 (***)	23 (***)	25 (***)	<b>29</b> (18)	<b>32</b> (19)	<b>37</b> (20)	<b>41</b> (20)
1998	<b>47</b> (21)	<b>54</b> (22)	<b>60</b> (22)	<b>68</b> (23)	<b>78</b> (24)	<b>87</b> (24)	<b>94</b> (25)	<b>101</b> (25)	<b>109</b> (26)	<b>114</b> (26)	<b>119</b> (27)	<b>124</b> (27)
1999	<b>128</b> (27)	<b>132</b> (28)	<b>136</b> (28)	<b>139</b> (29)	<b>143</b> (29)	<b>146</b> (29)	<b>149</b> (29)	<b>151</b> (29)	<b>154</b> (29)	<b>156</b> (29)	<b>157</b> (29)	<b>159</b> (29)
2000	<b>160</b> (30)	<b>161</b> (30)	<b>161</b> (30)	<b>161</b> (30)	<b>161</b> (29)	<b>161</b> (29)	<b>160</b> (29)	<b>160</b> (29)	<b>159</b> (29)	<b>158</b> (29)	<b>156</b> (29)	<b>155</b> (28)
2001	<b>153</b> (28)	<b>151</b> (28)	<b>148</b> (28)	<b>146</b> (27)	<b>143</b> (27)	<b>141</b> (27)	<b>138</b> (27)	<b>135</b> (26)	<b>132</b> (26)	<b>128</b> (26)	<b>125</b> (25)	<b>122</b> (25)
2002	<b>119</b> (24)	<b>115</b> (24)	<b>111</b> (24)	<b>108</b> (23)	<b>104</b> (23)	<b>101</b> (22)	<b>97</b> (22)	<b>94</b> (21)	<b>90</b> (21)	<b>86</b> (21)	<b>83</b> (20)	<b>80</b> (20)
2003	<b>76</b> (19)	<b>73</b> (19)	<b>70</b> (18)	<b>66</b> (18)	<b>63</b> (17)	<b>60</b> (17)	<b>57</b> (17)	<b>54</b> (16)	<b>52</b> (16)	<b>49</b> (15)	<b>46</b> (15)	<b>44</b> (14)
2004	<b>41</b> (14)	<b>39</b> (14)	<b>37</b> (13)	<b>35</b> (13)	<b>32</b> (12)	<b>31</b> (12)	<b>29</b> (11)	<b>27</b> (11)	<b>25</b> (11)	<b>23</b> (10)	<b>22</b> (10)	<b>20</b> (9)
2005	<b>19</b> (9)	<b>18</b> (9)	<b>17</b> (8)	<b>15</b> (8)	<b>14</b> (8)	<b>13</b> (8)	<b>12</b> (7)	<b>11</b> (7)	<b>11</b> (7)	<b>10</b> (6)	<b>9</b> (5)	<b>8</b> (4)

