

## **Space Weather Highlights**

### **01 - 07 April 2002**

**SWO PRF 1388**  
**09 April 2002**

Solar activity ranged from low to high levels. Activity was low during most of the period, but increased to high levels on 04 April by virtue of an impulsive M6 X-ray flare at 04/1532 UTC. The source for this flare was beyond the southeast limb, possibly from old Region 9866 (S09, L = 191), which had a history of energetic flare production (see PRF #1385 – 1386). This region rotated into view on 05 April and was (re) numbered as Region 9896 (S11, L = 194, class/area Hsx/110 on 06 April). However, Region 9896 appeared to be a simply structured H-type spot group and produced no flares during the rest of the period. C-class flares occurred during the rest of the period from a number of active regions including Regions 9885, 9887, 9893 and 9899. Region 9885 (N13, L = 320, class/area Eki/710 on 01 April) was moderate in size and complexity. It was in a gradual growth phase until 05 April, then began to slowly decay. Region 9887 (N02, L = 296, class/area Eki/720 on 04 April) was in a growth phase until 06 April, which included the development of a short-lived delta magnetic configuration on 02 April. This region appeared to stabilize on 07 April as a large, moderately complex spot group. Region 9893 (N18, L = 215, class/area Eki/370 on 06 April) began to develop on 07 April with increased spots and magnetic complexity. Region 9899 (N18, L = 183, class/area Hsx/180 on 07 April) showed gradual spot growth late in the period.

Solar wind data were available from NASA Advanced Composition Explorer (ACE) spacecraft for most of the summary period. A recurrent high-speed stream was in progress as the period began, then subsided early on 04 April. The source for this high-speed stream was a recurrent coronal hole. Solar wind velocities were elevated during 30 March – (early) 04 April. The highest velocities occurred during 31 March – 01 April with “gusts” in the 750 to 830 km/sec range. Another (weak) high-speed stream, also due to a coronal hole, commenced on 07 April associated with a relatively minor increase in velocities (peaks to 470 km/sec).

There were no proton events at geo-synchronous orbit.

Greater than 2 MeV electron fluxes were at moderate to high levels during 04 – 05 April. Normal to moderate flux levels occurred during the rest of the period.

The geomagnetic field was disturbed during 01 – 03 April with unsettled to active periods due to recurrent coronal hole effects. Quiet to unsettled conditions occurred during the rest of the period.

## **Space Weather Outlook**

### **10 April - 06 May 2002**

Solar activity is expected to be low to moderate. Isolated, low-level M-class flares are likely during the period. There will also be a chance for an isolated major flare during the period.

There will be a slight chance for a proton event through 15 April. No proton events are expected for the rest of the period

Greater than 2 MeV fluxes may reach high levels around 30 April – 02 May. Normal to moderate flux levels are expected during the rest of the period.

Active geomagnetic field conditions are possible during 25 – 27 April due to recurrent coronal hole effects. Quiet to unsettled conditions are expected during the remainder of the period.



### Daily Solar Data

Date	Radio Flux 10.7 cm	Sun spot No.	Sunspot Area (10 <sup>-6</sup> hemi.)	X-ray Background	Flares							
					X-ray Flux			Optical				
					C	M	X	S	1	2	3	4
01 April	207	189	1880	C1.0	5	0	0	9	0	0	0	0
02 April	206	262	1890	C1.4	17	0	0	9	0	0	0	0
03 April	209	162	1690	B8.1	5	0	0	2	0	0	0	0
04 April	216	176	1820	C1.0	7	2	0	8	0	0	0	0
05 April	217	200	2030	C1.3	11	0	0	10	0	0	0	0
06 April	206	234	2010	C1.1	7	0	0	7	1	0	0	0
07 April	208	227	1970	C1.5	13	0	0	6	1	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				
01 April	207	189	1880	C1.0	5	0.....0	9	0	0	0	0
02 April	206	262	1890	C1.4	17	0	0	9	0	0	0
03 April	209	162	1690	B8.1	5	0	0	2	0	0	0
04 April	216	176	1820	C1.0	8	2	0	8	0	0	0
05 April	217	200	2030	C1.3	11	0	0	10	0	0	0
06 April	206	234	2010	C1.1	7	0	0	7	1	0	0
07 April	208	227	1970	C1.5	13	0	0	6	1	0	0

### Daily Geomagnetic Data

Date	Middle Latitude		High Latitude		Estimated	
	Fredericksburg		College		Planetary	
	A	K-indices	A	K-indices	A	K-indices
01 April	11	2-4-3-2-3-2-2-1	*	*_*_*_*_*_*_*_*_*_*	16	3-4-4-3-3-3-3-2
02 April	10	2-4-3-2-2-2-2-1	*	*_*_*_*_*_*_*_*_*_*	15	2-4-4-4-2-2-3-2
03 April	12	3-4-2-2-3-2-2-2	*	*_*_*_*_*_*_*_*_*_*	13	3-4-3-3-3-3-3-3
04 April	6	2-1-2-2-3-2-0-1	*	*_*_*_*_*_*_*_*_*_*	8	2-1-2-3-3-3-2-2
05 April	3	1-2-0-0-2-2-1-1	*	*_*_*_*_*_*_*_*_*_*	6	1-2-1-1-2-2-3-2
06 April	4	2-1-0-1-2-2-1-2	*	*_*_*_*_*_*_*_*_*_*	5	2-1-0-2-2-2-2-2
07 April	8	2-1-2-3-3-2-1-1	*	*_*_*_*_*_*_*_*_*_*	7	2-1-2-2-3-3-2-2



### *Alerts and Warnings Issued*

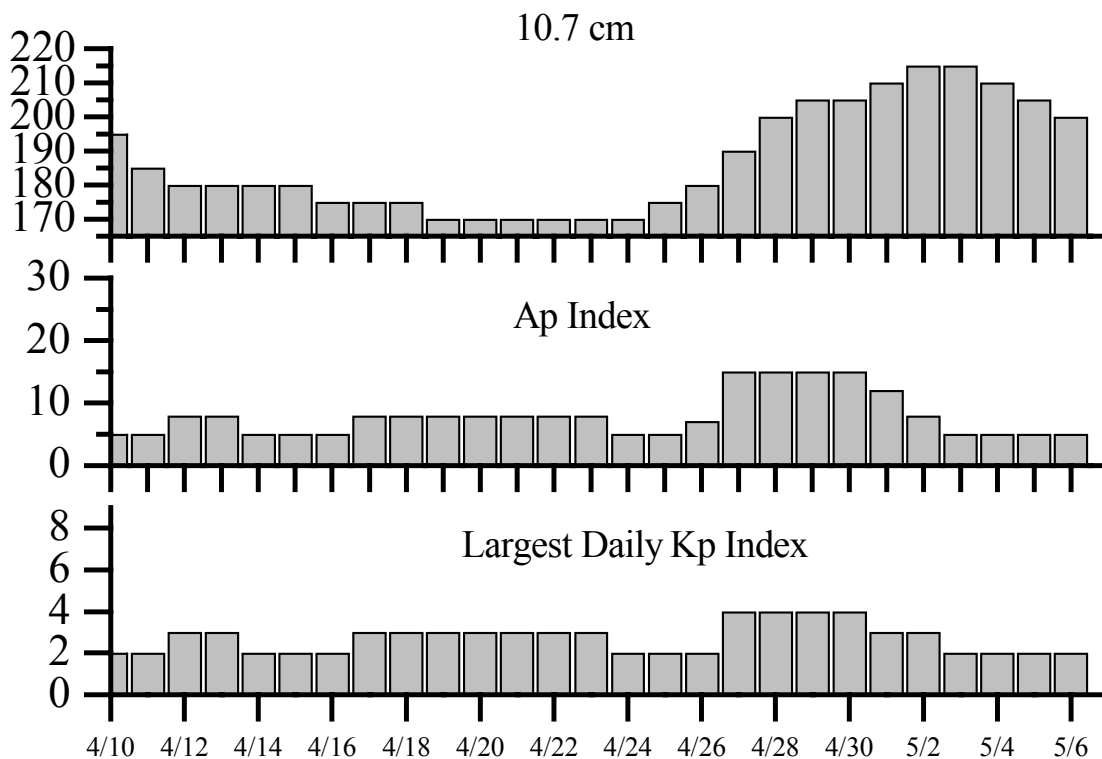
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<u>Date &amp; Time of Issue</u>	<u>Type of Alert or Warning</u>	<u>Date &amp; Time of Event UT</u>
03 Apr 0058	1 - 245 MHz Radio Burst	02 Apr
04 Apr 0043	8 - 245 MHz Radio Bursts	03 Apr
04 Apr 0043	1 - 245 MHz Radio Noise Storm	03 Apr
04 Apr 0456	ALERT: Type II Radio Emission	04 Apr 0439
04 Apr 1352	ALERT: Electron 2MeV Integral Flux exceeded 1000pfu	04 Apr 1335
04 Apr 1532	ALERT: X-Ray Flux exceeded M5	04 Apr 1531
04 Apr 1546	SUMMARY: X-ray Event exceeded M5	04 Apr 1532
05 Apr 0059	10 - 245 MHz Radio Bursts	04 Apr
05 Apr 0859	ALERT: Electron 2MeV Integral Flux exceeded 1000pfu	05 Apr 0830
06 Apr 0042	3 - 245 MHz Radio Bursts	05 Apr
06 Apr 0232	ALERT: Type II Radio Emission	06 Apr 0143
07 Apr 0021	2 - 245 MHz Radio Bursts	06 Apr
07 Apr 0034	ALERT: Type II Radio Emission	07 Apr 0012

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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
10 Apr	195	5	2	24 Apr	170	5	2
11	185	5	2	25	175	5	2
12	180	8	3	26	180	7	2
13	180	8	3	27	190	15	4
14	180	5	2	28	200	15	4
15	180	5	2	29	205	15	4
16	175	5	2	30	205	15	4
17	175	8	3	01 May	210	12	3
18	175	8	3	02	215	8	3
19	170	8	3	03	215	5	2
20	170	8	3	04	210	5	2
21	170	8	3	05	205	5	2
22	170	8	3	06	200	5	2
23	170	8	3				



### *Energetic Events*

Date	Time		X-ray		Optical Information			Peak		Sweep Freq		
	Begin	Max	½ Max	Class	Integ Flux	Imp/Location		Rgn #	Radio Flux		Intensity	
						Brtns	Lat CMD		245	2695	II	IV
04 Apr	1524	1532	1538	M6.1	.027				310	58		
04 Apr	1041	1048	1054	M1.4	.007							

### *Flare List*

Date	Time			X-ray Class.	Imp / Brtns	Optical		Rgn
	Begin	Max	End			Location Lat CMD		
01 April	0237	0239	0242		Sf	N14E16		9885
	0810	0810	0814		Sf	N00E32		9887
	1300	1303	1307	C1.3				
	1313	1314	1317		Sf	N01E29		9887
	1359	1408	1413		Sf	N01E29		9887
	1420	1424	1433		Sf	S01E28		9887
	1444	1445	1454	C1.9	Sf	N11E08		9885
	1532	1534	1547	C3.0	Sf	N10E21		9886
	1713	1713	1718		Sf	S01E28		9887
	1720	1722	1730		Sf	S01E28		9887
	1905	1912	1920	C1.9				
	2119	2130	2143	C3.3				
	02 April	0030	0050	0057	C9.4			
0224		0232	0242	C5.3				
0352		0355	0358		Sf	N03E20		9887
0402		0406	0413		Sf	N03E21		9887
0431		0434	0439	C6.0				
0742		0746	0751	C2.4				
1032		1036	1049	C2.2	Sf	N01E19		9887
1317		1321	1345	C4.0	Sf	S01E19		9887
1407		1407	1428	C3.3	Sf	N02E17		9887
1444		1444	1450	C2.6	Sf	N02E17		9887
1544		1545	1552	C2.5	Sf	N01E16		9887
1629		1630	1632	C1.1	Sf	N01E16		9887
1659		1701	1710	C2.8	Sf	N01E15		9887
1734		1738	1743	C1.3				
1844		1847	1850	C1.7				
1900		1904	1907	C2.2				
1955		2007	2018	C3.1				
2059		2102	2104	C1.4				
2237		2243	2252	C2.3				
03 April	0531	0533	0542	C1.8	Sf	N01E10		9887
	1133	1134	1137	C1.3	Sf	S11E10		9888
	1418	1424	1429	C2.8				
	1955	2000	2011	C3.2				
	2147	2152	2201	C2.4				



*Flare List - continued.*

Date	Time			X-ray Class.	Optical		Rgn
	Begin	Max	End		Imp / Brtns	Location Lat CMD	
04 April	0336	0337	0344	C2.8	Sf	N18E77	9893
	0345	0350	0353		Sf	N18E77	9893
	0423	0441	0457	C9.8			
	0427	0430	0442		Sf	N18E77	9893
	0652	0655	0702	C3.0	Sf	S10W02	9888
	1041	1048	1054	M1.4			
	1413	1418	1423	C3.0			
	1413	1418	1422	C2.9			
	1435	1437	1447	C3.0	Sf	N14W25	9885
	1524	1532	1538	M6.1			
	2156	2158	2200	C2.0	Sf	N18E69	9893
	2252	2255	2303		Sf	N08E75	
	2304	2305	2308	C4.0	Sf	N08E73	
	05 April	0414	0418	0425	C1.6	Sf	N14W40
0453		0457	0458	C1.9			
1307		1313	1329	C3.0			
1443		1447	1454	C2.5	Sf	N00W24	9887
1447		1451	1455		Sf	N14W36	9885
1518		1518	1543	C3.4	Sf	N18E60	9893
1718		1720	1723	C3.0	Sf	N15W36	9886
1755		1800	1807		Sf	S14W17	9888
1949		1951	2012	C2.9	Sf	N13W38	9885
1953		1953	2005		Sf	N18E58	9893
2017		2018	2021		Sf	N13W38	9885
2124		2133	2139	C2.9			
2242		2242	2249	C3.0	Sf	N13W39	9885
2251		2253	2257	C2.8			
2341		2350	2358	C4.9			
06 April	B0139	U0139	0146	C2.1	Sf	S17E48	
	0312	0318	0329		Sf	N18E55	9893
	0341	0344	0346	C1.6			
	0603	0610	0642		Sf	N18E52	9893
	0612	0616	0652	C9.5	1f	S20E85	9893
	0957	1000	1006	C1.3			
	1406	1406	1410	C2.6	Sf	N01W36	9887
	1614	1616	1624	C1.2	Sf	N18E46	9893
	1947	1947	A2004	C2.0	Sf	N17E45	9893
	1955	1956	1959		Sf	N15W64	9885



*Flare List - continued.*

Date	Time			X-ray Class.	Optical		Rgn
	Begin	Max	End		Imp / Brtns	Location Lat CMD	
07 April	0032	0121	0153	C2.0			
	0225	0228	0244	C9.6	1f	N19E79	9893
	0444	0444	0455	C1.7	Sf	N18E41	9893
	0521	0522	0527	C2.7	Sf	N18E37	9893
	0818	0821	0833	C6.0	Sf	N17E34	9893
	1242	1245	1247	C1.7			
	1428	1429	1440	C4.4	Sf	S18E54	9898
	1509	1511	1528	C2.8	Sf	N20E41	9901
	1522	1522	1528		Sf	N18E42	9901
	1653	1659	1705	C1.8			
	1813	1817	1820	C1.5			
	1917	1923	1947	C1.7			
	2151	2210	2219	C2.7			
	2238	2243	2247	C3.3			



### Region Summary

Location		Sunspot Characteristics					Flares										
Date	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	2	3	4			
<i>Region 9876</i>																	
20 Mar	S16E65	054	0050	04	Cao	003	B										
21 Mar	S15E54	052	0050	06	Cao	003	B										
22 Mar	S16E44	048	0080	10	Dso	007	B	1				1					
23 Mar	S16E30	049	0160	12	Eao	018	B	4				7					
24 Mar	S15E18	048	0140	13	Eai	023	B	1				1					
25 Mar	S15E05	048	0130	14	Eai	022	Bg										
26 Mar	S15W08	048	0140	14	Eai	023	B										
27 Mar	S15W22	048	0140	14	Eai	020	B										
28 Mar	S14W35	048	0130	13	Eai	026	B										
29 Mar	S15W47	047	0090	12	Eso	021	B										
30 Mar	S14W61	048	0030	09	Dso	005	B										
31 Mar	S14W82	056	0000	00	Axx	001	A										
01 Apr	S18W92	053	0010	02	Hrx	003	A										
								6	0	0	9	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 048

<i>Region 9878</i>																	
20 Mar	N08E75	044	0060	03	Hsx	001	A										
21 Mar	N09E64	042	0110	11	Cao	005	B					2					
22 Mar	N08E53	039	0150	10	Dao	009	B	1									
23 Mar	N10E43	036	0150	16	Fao	015	B	1				1					
24 Mar	N09E28	038	0100	13	Esi	016	Bg										
25 Mar	N08E15	038	0150	14	Esi	018	Bg	3				2					
26 Mar	N08E00	040	0170	11	Esi	023	Bg	1				1					
27 Mar	N10W13	039	0150	11	Eai	020	Bgd										
28 Mar	N09W26	039	0080	11	Eao	009	Bg										
29 Mar	N09W40	040	0080	09	Dso	009	B										
30 Mar	N09W55	042	0060	07	Dso	005	B										
31 Mar	N08W68	042	0020	06	Bxo	002	B										
01 Apr	N08W82	043	0020	01	Hrx	002	A										
								6	0	0	6	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 040





**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 9882</i>																							
22 Mar	N14E72	020	0040	04	Bxo	002	B																
23 Mar	N14E54	025	0130	06	Dao	006	B																
24 Mar	N16E41	025	0090	06	Dao	006	B																
25 Mar	N16E28	025	0050	07	Cao	005	B																
26 Mar	N16E14	026	0020	08	Dso	004	B																
27 Mar	N16E01	025	0050	08	Dro	007	B																
28 Mar	N16W12	025						1					1										
29 Mar	N16W25	025																					
30 Mar	N16W38	025																					
31 Mar	N16W51	025																					
01 Apr	N16W64	025																					
									1	0	0	1	0	0	0	0	0						

Crossed West Limb.

Absolute heliographic longitude: 025

<i>Region 9883</i>																							
23 Mar	N06E67	012	0030	02	Hsx	001	A																
24 Mar	N06E58	008	0050	02	Hsx	001	A																
25 Mar	N06E44	009	0040	02	Hsx	001	A																
26 Mar	N06E30	010	0040	01	Hsx	001	A																
27 Mar	N06E17	009	0040	01	Hsx	002	A																
28 Mar	N06E04	009	0020	01	Hsx	001	A																
29 Mar	N07W10	010	0020	02	Hsx	003	A																
30 Mar	N07W23	010	0000	00	Axx	001	A																
31 Mar	N07W36	010																					
01 Apr	N07W49	010																					
02 Apr	N07W62	010																					
03 Apr	N07W75	010																					
04 Apr	N07W88	010																					
									0	0	0	0	0	0	0	0	0						

Crossed West Limb.

Absolute heliographic longitude: 009





**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 9886</i>																		
29 Mar	N11E59	301	0090	06	Dso	007	B											
30 Mar	N12E42	305	0080	08	Dao	008	B											
31 Mar	N11E30	304	0100	09	Dso	008	B	1			1							
01 Apr	N11E16	305	0180	09	Dao	021	B	1			1							
02 Apr	N12E02	305	0110	11	Dai	032	B											
03 Apr	N12W10	304	0110	09	Dso	009	B											
04 Apr	N13W24	305	0100	08	Dso	016	B											
05 Apr	N14W38	306	0110	08	Dai	017	B	1			1							
06 Apr	N14W51	306	0120	10	Dao	016	B											
07 Apr	N14W67	308	0090	07	Dso	006	B											
								3	0	0	3	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 305

<i>Region 9887</i>																		
29 Mar	N01E66	294	0010	04	Bxo	003	B	1			1							
30 Mar	N01E51	296	0170	08	Dao	010	B				2							
31 Mar	N01E37	297	0240	11	Eai	011	Bg											
01 Apr	N01E24	297	0490	10	Dki	025	Bg				6							
02 Apr	N02E11	296	0700	12	Eki	048	Bg	7			9							
03 Apr	N02W02	296	0710	12	Eki	022	Bg	1			1							
04 Apr	N02W16	297	0720	12	Eki	026	Bg											
05 Apr	N03W29	297	0690	14	Eki	023	Bg	1			1							
06 Apr	N03W42	297	0630	14	Eki	028	Bg	1			1							
07 Apr	N02W56	297	0560	14	Eko	015	Bg											
								11	0	0	21	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 296



**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 9888</i>																		
29 Mar	S11E70	290	0150	04	Cao	004	B											
30 Mar	S12E58	289	0110	05	Cao	005	B											1
31 Mar	S13E46	288	0190	07	Dso	005	B											
01 Apr	S13E32	289	0330	07	Dao	014	B											
02 Apr	S12E19	288	0250	09	Dai	024	B											
03 Apr	S13E07	287	0250	09	Dho	013	B	1					1					
04 Apr	S12W06	287	0180	07	Dao	011	B	1					1					
05 Apr	S12W19	287	0180	06	Dao	009	B											1
06 Apr	S12W32	287	0140	04	Cko	005	B											
07 Apr	S11W45	287	0160	03	Hkx	005	A											
								2	0	0	0	4	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 287

<i>Region 9889</i>																		
31 Mar	S20E48	286	0020	05	Cso	002	B											
01 Apr	S20E30	291	0020	02	Hsx	002	A											
02 Apr	S19E18	289	0020	04	Cao	007	B											
03 Apr	S19E05	289	0000	00	Bxo	002	B											
04 Apr	S20W06	287	0000	02	Bxo	002	B											
05 Apr	S12W18	286																
06 Apr	S12W31	286																
07 Apr	S12W44	286																
								0	0	0	0	0	0	0	0	0	0	

Still on Disk.

Absolute heliographic longitude: 289

<i>Region 9890</i>																		
02 Apr	S15W49	356	0000	00	Axx	001	A											
03 Apr	S15W62	356																
04 Apr	S15W75	356																
05 Apr	S15W88	356																
								0	0	0	0	0	0	0	0	0	0	

Crossed West Limb.

Absolute heliographic longitude: 356



**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

*Region 9891*

02 Apr	S08W08	315	0000	00	Axx	001	A										
03 Apr	S08W22	316	0010	03	Bxo	003	B										
04 Apr	S08W36	317															
05 Apr	S08W49	317															
06 Apr	S08W62	317															
07 Apr	S08W75	317															
								0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 315

*Region 9892*

02 Apr	N05E63	244	0090	06	Cro	005	B										
03 Apr	N04E49	245	0040	08	Cso	004	B										
04 Apr	N09E34	247	0030	03	Cso	005	B										
05 Apr	N05E20	248	0010	01	Hrx	002	A										
06 Apr	N05E07	248	0010	01	Axx	002	A										
07 Apr	N05W06	247	0010	04	Bxo	003	B										
								0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 247

*Region 9893*

03 Apr	N18E78	216	0030	05	Hsx	001	A										
04 Apr	N18E64	217	0250	11	Eho	008	B	2			4						
05 Apr	N19E53	215	0320	14	Eai	015	Bg	1			2						
06 Apr	N19E40	215	0370	15	Eki	021	Bg	3			4	1					
07 Apr	N18E27	215	0360	16	Fki	026	Bg	4			3	1					
								10	0	0	13	2	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 215

*Region 9894*

05 Apr	N14W09	277	0020	06	Cro	006	B										
06 Apr	N14W22	277	0010	01	Hrx	002	A										
07 Apr	N16W35	277															
								0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 277



**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

*Region 9895*

05 Apr	N06E58	210	0020	07	Bxo	003	B										
06 Apr	N06E45	210	0020	04	Bxo	003	B										
07 Apr	N07E37	205															

Still on Disk.  
Absolute heliographic longitude: 205

*Region 9896*

05 Apr	S11E74	194	0100	02	Hsx	001	A										
06 Apr	S11E61	194	0110	02	Hsx	001	A										
07 Apr	S11E47	194	0080	02	Hsx	001	A										

Still on Disk.  
Absolute heliographic longitude: 194

*Region 9897*

06 Apr	S01W02	257	0050	04	Dao	005	B										
07 Apr	S02W17	258	0070	05	Dso	009	B										

Still on Disk.  
Absolute heliographic longitude: 257

*Region 9898*

06 Apr	S19E66	189	0040	03	Dao	002	B										
07 Apr	S18E53	188	0030	03	Bxo	004	B	1			1						

Still on Disk.  
Absolute heliographic longitude: 188

*Region 9899*

06 Apr	N18E72	183	0160	02	Hax	001	A										
07 Apr	N18E59	183	0180	02	Hsx	001	A										

Still on Disk.  
Absolute heliographic longitude: 183

*Region 9900*

07 Apr	S29E07	234	0080	08	Dso	014	B										
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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

*Region 9901*

07 Apr	N20E37	204	0060	06	Bxo	008	B				2				
								0	0	0	2	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 204

*Region 9902*

07 Apr	N11E75	166	0120	02	Hax	001	A								
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 166



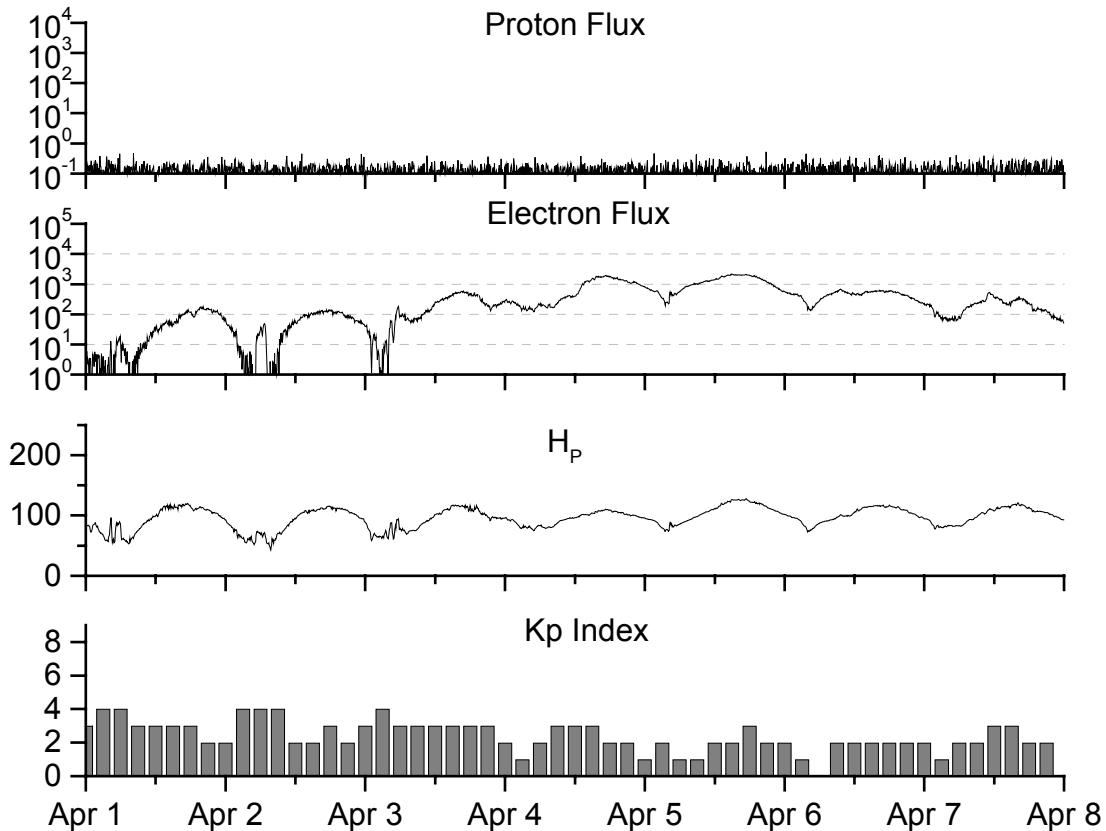
**Recent Solar Indices (preliminary)  
of the observed monthly mean values**

Month	Sunspot Numbers			Radio Flux		Geomagnetic			
	Observed values SWO	Ratio RI	Ratio RI/SWO	Smooth values SWO	Smooth values RI	*Penticton 10.7 cm	Smooth Value	Planetary Ap	Smooth Value
<b>2000</b>									
April	193.4	125.5	0.65	176.3	120.8	184.2	180.5	15	15.0
May	188.8	121.6	0.64	173.1	119.0	184.5	180.0	15	15.0
June	190.3	124.9	0.66	172.0	118.7	179.8	179.7	15	15.1
July	236.7	169.1	0.71	173.0	119.7	204.7	180.2	21	14.8
August	166.6	130.5	0.78	171.8	118.6	163.1	179.5	16	14.2
September	157.9	109.9	0.70	169.0	116.2	182.1	177.1	18	14.2
October	138.9	100.1	0.72	166.2	114.4	167.7	175.6	18	14.6
November	149.9	106.5	0.71	162.7	112.7	178.8	173.6	17	14.6
December	146.4	104.5	0.71	160.8	112.1	173.6	172.0	08	14.4
<b>2001</b>									
January	142.7	95.1	0.67	156.3	108.8	166.7	168.8	08	13.8
February	131.0	80.1	0.61	151.4	104.2	147.3	165.8	06	13.3
March	166.7	114.2	0.69	154.0	104.9	177.7	167.9	17	12.9
April	163.6	108.2	0.66	159.4	107.7	178.3	171.7	18	12.7
May	135.1	97.3	0.72	163.1	108.8	148.7	174.8	12	12.5
June	196.7	134.0	0.68	167.2	109.9	173.7	178.8	12	12.4
July	124.6	82.2	0.66	172.1	111.8	131.3	183.9	11	12.4
August	159.4	106.8	0.67	176.7	113.8	163.2	188.8	13	12.5
September	229.1	150.7	0.66	178.8	114.3	233.3	191.3	12	12.3
October	197.4	125.6	0.64			208.2		18	
November	178.6	106.5	0.60			212.5		14	
December	217.5	131.8	0.61			236.6		08	
<b>2002</b>									
January	189.0	113.9	0.60			226.4		07	
February	194.5	108.0	0.56			205.1		09	
March	153.1	98.1	0.64			179.5		10	

**NOTE:** All smoothed values after June 1999 and monthly values after December 2000 are preliminary estimates. The lowest smoothed sunspot index 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. \*After June 1991, 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 01 April 2002*

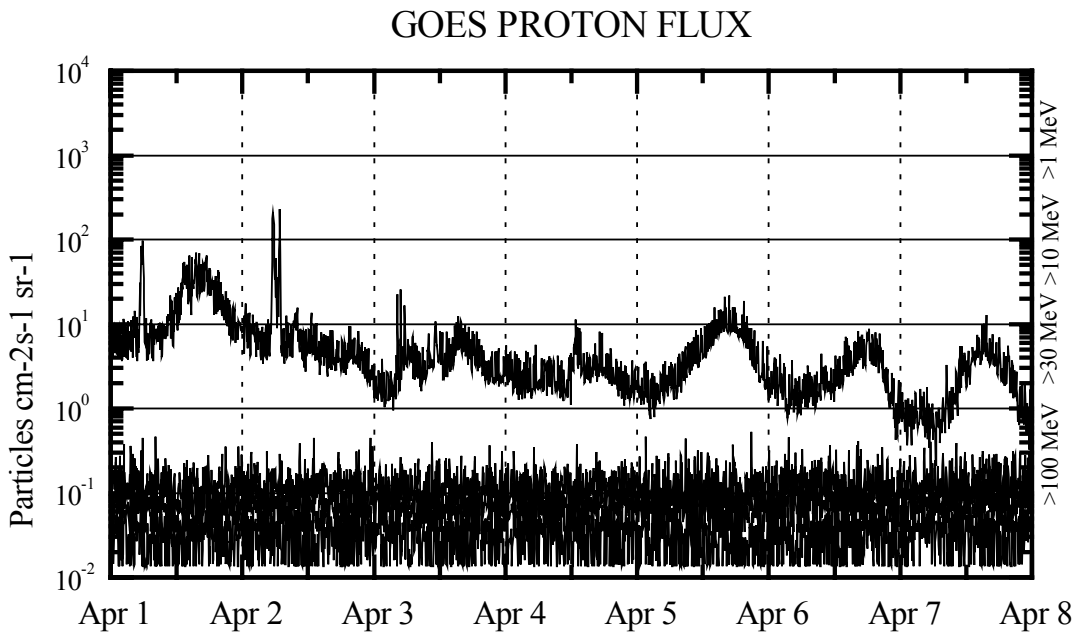
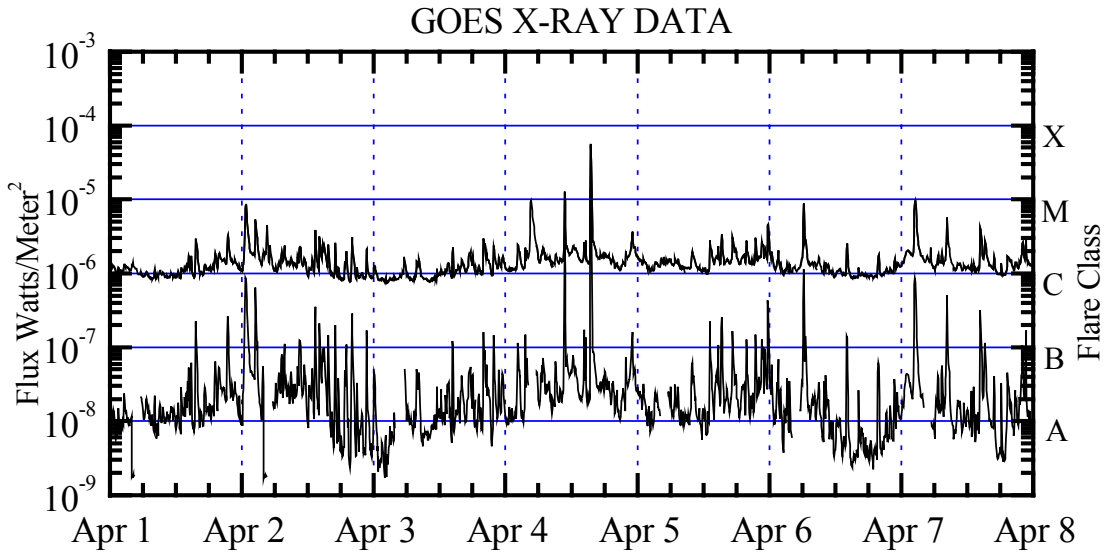
*Protons* plot contains the five-minute averaged integral proton flux (protons/cm<sup>2</sup>-sec -sr) as measured by GOES-8 (W75) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

*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-8.

*H<sub>p</sub>* plot contains the five minute averaged magnetic field H - component in nanoteslas (nT) as measured by GOES-8. 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 Air Force Weather Agency) 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 more localized phenomena and the measurements generally are applicable to within a few degrees of longitude of the measuring satellite.



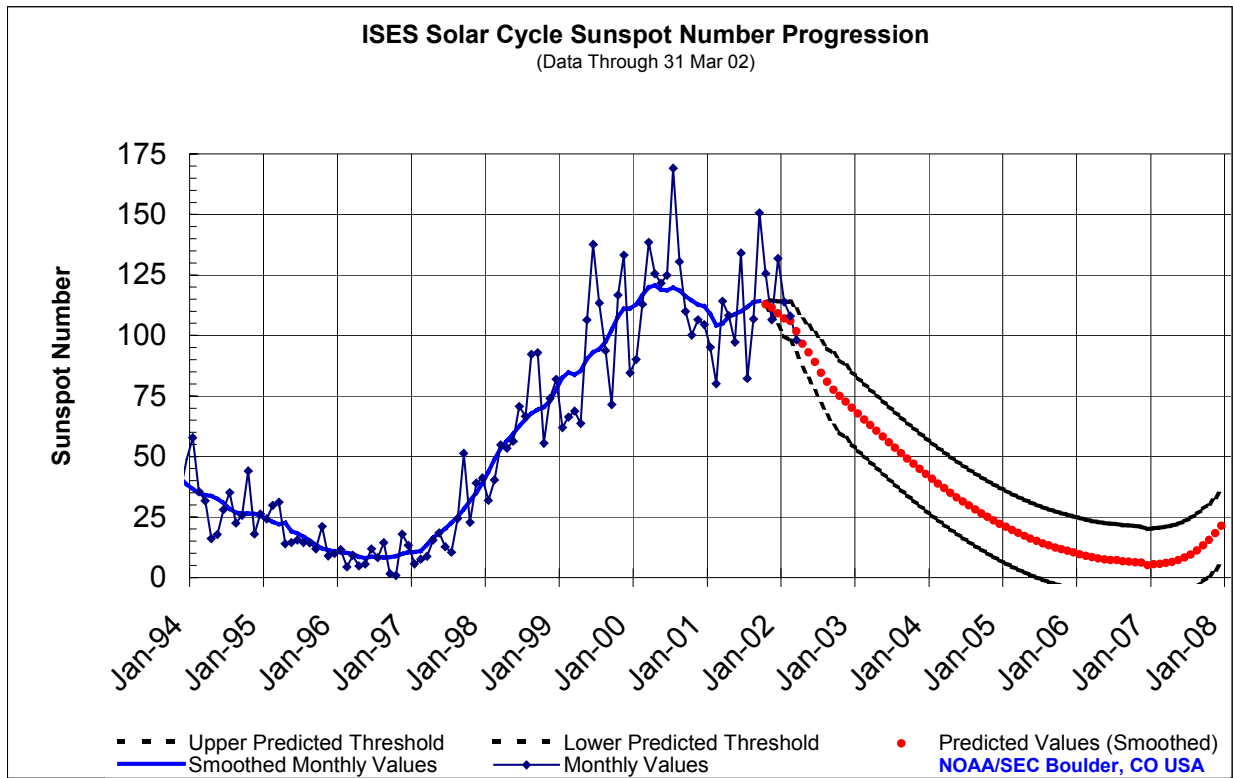


*Weekly GOES Satellite X-ray and Proton Plots*

X-ray plot contains five-minute averaged x-ray flux (watts/m<sup>2</sup>) as measured by GOES 8 and 10 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.

Proton plot contains the five-minute averaged integral proton flux (protons/cm<sup>2</sup>-sec-sr) as measured by GOES-8 (W75) 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.

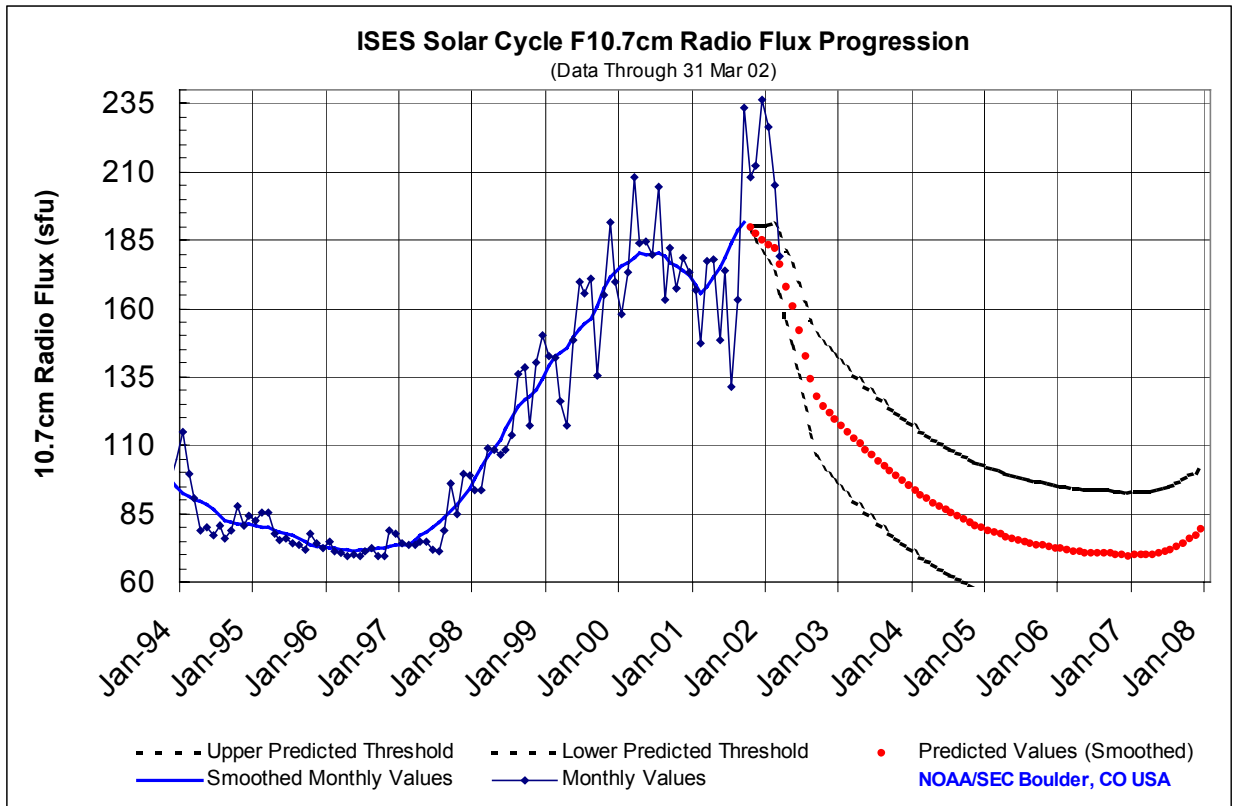




### SEC Prediction of Smoothed Sunspot Number

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1998	44	49	53	57	59	63	66	68	70	71	73	78
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)
1999	83	85	84	86	91	93	94	97	102	108	111	111
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)
2000	113	117	120	121	119	119	120	119	116	114	113	112
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)
2001	109	104	105	108	109	110	112	114	114	<b>113</b>	<b>112</b>	<b>109</b>
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(1)	(3)	(5)
2002	<b>107</b>	<b>106</b>	<b>102</b>	<b>97</b>	<b>93</b>	<b>89</b>	<b>85</b>	<b>81</b>	<b>78</b>	<b>75</b>	<b>73</b>	<b>70</b>
	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(15)	(15)	(15)
2003	<b>68</b>	<b>65</b>	<b>63</b>	<b>61</b>	<b>58</b>	<b>56</b>	<b>54</b>	<b>51</b>	<b>49</b>	<b>47</b>	<b>45</b>	<b>43</b>
	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)
2004	<b>41</b>	<b>39</b>	<b>37</b>	<b>35</b>	<b>33</b>	<b>31</b>	<b>30</b>	<b>28</b>	<b>27</b>	<b>25</b>	<b>24</b>	<b>22</b>
	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)
2005	<b>21</b>	<b>20</b>	<b>18</b>	<b>17</b>	<b>16</b>	<b>15</b>	<b>14</b>	<b>13</b>	<b>12</b>	<b>12</b>	<b>11</b>	<b>10</b>
	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)
2006	<b>10</b>	<b>9</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>6</b>	<b>6</b>	<b>5</b>
	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)
2007	<b>5</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>10</b>	<b>11</b>	<b>13</b>	<b>16</b>	<b>18</b>	<b>21</b>
	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)





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

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1998	98 (***)	102 (***)	106 (***)	109 (***)	112 (***)	116 (***)	120 (***)	124 (***)	127 (***)	128 (***)	130 (***)	134 (***)
1999	139 (***)	143 (***)	144 (***)	146 (***)	150 (***)	153 (***)	154 (***)	156 (***)	161 (***)	167 (***)	172 (***)	173 (***)
2000	175 (***)	176 (***)	178 (***)	181 (***)	180 (***)	180 (***)	180 (***)	180 (***)	177 (***)	176 (***)	174 (***)	172 (***)
2001	169 (***)	166 (***)	168 (***)	172 (***)	175 (***)	179 (***)	184 (***)	189 (***)	<b>191</b> (***)	<b>190</b> (1)	<b>188</b> (3)	<b>185</b> (5)
2002	<b>184</b> (7)	<b>182</b> (9)	<b>176</b> (11)	<b>168</b> (13)	<b>161</b> (15)	<b>152</b> (17)	<b>143</b> (19)	<b>135</b> (21)	<b>128</b> (22)	<b>124</b> (23)	<b>122</b> (23)	<b>120</b> (23)
2003	<b>117</b> (23)	<b>115</b> (23)	<b>113</b> (23)	<b>111</b> (23)	<b>109</b> (23)	<b>107</b> (23)	<b>104</b> (23)	<b>103</b> (23)	<b>101</b> (23)	<b>99</b> (23)	<b>97</b> (23)	<b>95</b> (23)
2004	<b>94</b> (23)	<b>92</b> (23)	<b>91</b> (23)	<b>89</b> (23)	<b>88</b> (23)	<b>87</b> (23)	<b>85</b> (23)	<b>84</b> (23)	<b>83</b> (23)	<b>82</b> (23)	<b>81</b> (23)	<b>80</b> (23)
2005	<b>79</b> (23)	<b>78</b> (23)	<b>78</b> (23)	<b>77</b> (23)	<b>76</b> (23)	<b>75</b> (23)	<b>75</b> (23)	<b>74</b> (23)	<b>74</b> (23)	<b>73</b> (23)	<b>73</b> (23)	<b>73</b> (23)
2006	<b>72</b> (23)	<b>72</b> (23)	<b>71</b> (23)	<b>71</b> (23)	<b>71</b> (23)	<b>71</b> (23)	<b>71</b> (23)	<b>71</b> (23)	<b>70</b> (23)	<b>70</b> (23)	<b>70</b> (23)	<b>70</b> (23)
2007	<b>70</b> (23)	<b>70</b> (23)	<b>70</b> (23)	<b>70</b> (23)	<b>71</b> (23)	<b>71</b> (23)	<b>72</b> (23)	<b>73</b> (23)	<b>74</b> (23)	<b>76</b> (23)	<b>77</b> (23)	<b>79</b> (23)



