

**Space Weather Highlights**  
**29 April - 05 May 2002**

**SWO PRF 1392**  
**07 May 2002**

Solar activity was at low levels during most of the period. However, activity increased to moderate levels on 30 April due to a low-level M-class flare, apparently from a source beyond the southeast limb (for flare specifics, please refer to the Energetic Events or Optical Flares lists). A large CME was observed early on 01 May from a source beyond the southwest limb and was associated with a greater than 10 MeV proton flux enhancement (see the discussion below). The main sunspot group of interest during the period was Region 9934 (S18, L = 211, class/area Eki/580 on 03 May), which rotated into view on 01 May and produced C-class flares during the rest of the period. It showed little change in terms of size and structure, but possessed a delta magnetic configuration within its southern-most cluster of spots. Another event of interest was a long-duration C6/Sf flare at 02/2133 UTC from Region 9926 (N14, L = 312, class/area Dao/080 on 02 May) associated with a Type II radio sweep.

Solar wind data were available from the NASA Advanced Composition Explorer (ACE) spacecraft for most of the summary period. Solar wind velocities were elevated during 02 May with peak “gusts” in the 500 to 520 km/sec range, possibly due to weak coronal hole effects. There were no significant disturbances during the rest of the period.

There was a greater than 10 MeV proton flux enhancement (peak about 9.0 pfu) on 01 May following a large CME from beyond the southwest limb. The enhancement ended early on 02 May.

Greater than 2 MeV electron fluxes at geo-synchronous orbit were at normal to moderate levels.

Geomagnetic field activity was at quiet to unsettled levels.

**Space Weather Outlook**  
**08 May - 03 June 2002**

Solar activity is expected to be at low to moderate levels during the period. Isolated low-level M-class flares are likely during the period.

No proton events are expected.

Greater than 2 MeV flux levels are expected to be at normal to moderate levels during the period.

Geomagnetic field activity is expected to be at quiet to unsettled levels during most of the period. However, active conditions will be possible during 9-10 May due to a CME passage (a halo-CME occurred early on 07 May).



### 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
29 April	153	124	790	B7.1	6	0	0	3	0	0	0	0
30 April	153	113	550	B9.4	5	1	0	3	0	1	0	0
01 May	162	166	960	B6.1	6	0	0	6	0	0	0	0
02 May	169	187	1080	B6.0	6	0	0	3	0	0	0	0
03 May	179	242	1490	C1.1	6	0	0	10	1	0	0	0
04 May	190	271	1480	B8.9	9	0	0	6	0	0	0	0
05 May	180	317	1680	B6.7	6	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
	29 April	3.5E+5	6.3E+4	2.9E+3		5.8E+6
30 April	8.1E+5	4.7E+4	2.9E+3		8.4E+6	
01 May	2.4E+6	1.2E+5	2.9E+3		9.9E+6	
02 May	8.0E+5	3.1E+4	2.9E+3		1.4E+7	
03 May	4.5E+5	2.3E+4	2.9E+3		1.3E+7	
04 May	4.6E+5	2.2E+4	3.1E+3		1.0E+7	
05 May	5.4E+5	1.9E+4	2.8E+3		6.9E+6	

### Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	29 April	6	2-1-1-2-2-1-2-2	21	2-2-2-5-5-4-2-3	9
30 April	5	2-1-1-2-2-1-2-0	*	2-2-1-3-* -3-2-*	8	2-2-2-2-3-3-3-1
01 May	3	1-1-1-1-1-0-1-1	5	1-2-1-2-3-1-1-0	5	2-1-1-2-2-2-2-2
02 May	4	2-1-0-1-2-2-1-1	8	2-0-0-5-2-1-1-1	7	2-2-0-2-3-3-2-2
03 May	4	1-2-1-1-2-1-1-1	6	2-4-1-0-1-1-2-1	7	2-2-1-2-2-3-3-2
04 May	4	0-1-2-1-1-1-2-2	4	1-2-3-0-0-1-1-1	8	1-2-3-2-3-3-3-2
05 May	2	1-1-0-1-1-0-0-2	2	0-1-1-1-0-0-1-1	8	1-1-1-2-3-3-3-2



*Alerts and Warnings Issued*

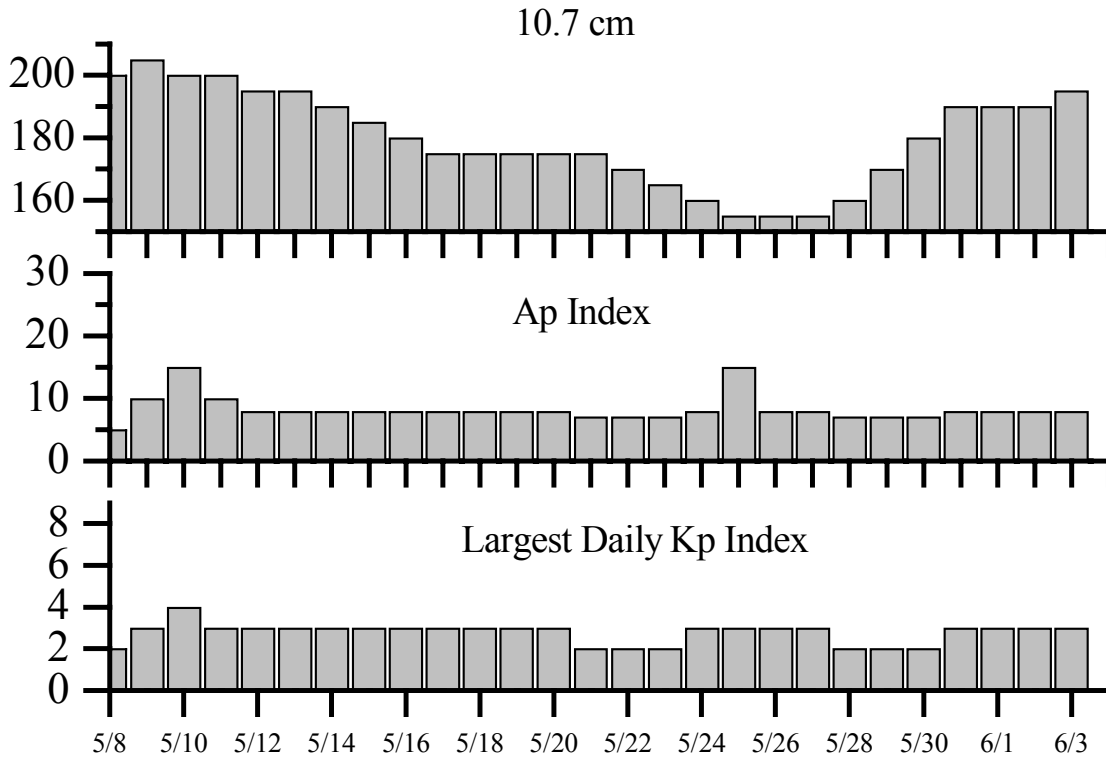
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<u>Date &amp; Time of Issue</u>	<u>Type of Alert or Warning</u>	<u>Date &amp; Time of Event UT</u>
29 Apr 0021	2 - 245 MHz Bursts	28 Apr
29 Apr 0021	1 - 245 MHz Radio Noise Storms	28 Apr
29 Apr 1226	ALERT: Type II Radio Emission	29 Apr 1201
30 Apr 0030	5 - 245 MHz Bursts	29 Apr
30 Apr 0030	1 - 245 MHz Radio Noise Storms	29 Apr
01 May 0005	5 - 245 MHz Bursts	30 Apr
02 May 2133	ALERT: Type II Radio Emission	02 May 2112
04 May 0021	1 - 245 MHz Burst	03 May
04 May 0021	1 - 245 MHz Radio Noise Storms	03 May
05 May 0018	3 - 245 MHz Bursts	04 May

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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
08 May	200	5	2	22 May	170	7	2
09	205	10	3	23	165	7	2
10	200	15	4	24	160	8	3
11	200	10	3	25	155	15	3
12	195	8	3	26	155	8	3
13	195	8	3	27	155	8	3
14	190	8	3	28	160	7	2
15	185	8	3	29	170	7	2
16	180	8	3	30	180	7	2
17	175	8	3	31	190	8	3
18	175	8	3	01 Jun	190	8	3
19	175	8	3	02	190	8	3
20	175	8	3	03	195	8	3
21	175	7	2				



### *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
30 Apr	0817	0822	0827	M1.3	.005							

### *Flare List*

Date	Time			X-ray Class.	Imp / Brtns	Optical		Rgn
	Begin	Max	End			Location	Lat CMD	
29 April	0311	0311	0316		Sf	N14W03		9919
	0339	0339	0342		Sf	N10W43		9915
	0530	0537	0602	C2.2				
	0922	0928	0931	C3.4				
	0935	0940	0944	C4.8				
	1032	1058	1101	C4.1				
	1257	1303	1315	C2.2				
30 April	2010	2012	2013	C2.7	Sf	N10W49		9915
	0026	0036	0042	C7.8				
	0049	0104	0128		2f	N14W11		9919
	0342	0350	0401	C3.1				
	0650	0653	0703	C3.2	Sf	N15W19		9919
	0817	0822	0827	M1.3				
	1112	1118	1135	C3.2	Sf	N11W71		9914
	1410	1418	1427	C3.7				
01 May	1951	1951	2001		Sf	N15W51		9921
	0348	0351	0355	C2.3	Sf	N14W56		9921
	0407	0408	0411	C2.1	Sf	S28E67		9932
	0547	0553	0600	C1.4				
	0856	0856	0859	C1.4	Sf	S26E63		9932
	1001	1001	1009	C2.4	Sf	S31E65		9932
	1355	1355	1411		Sf	S28E64		9932
	1412	1445	1508		Sf	S27E64		9932
02 May	1918	1926	1937	C1.8				
	0257	0300	0316	C1.1	Sf	N14W40		9919
	0326	0332	0351	C1.6				
	0902	0927	0934	C1.9				
	1121	1126	1129	C3.0				
	1444	1450	1455	C2.3				
03 May	2111	2117	2303	C6.3	Sf	N14W37		9926
	2317	2319	2324		Sf	S18E62		9934
	0336	0359	0428		Sf	S18E60		9934
	0400	0401	0405	C2.0	Sf	S30E39		9932
	0644	0647	0655	C3.3	Sf	N16W48		9926
	0927	0927	0932		Sf	S22E53		9934



*Flare List - continued.*

Date	Time			X-ray Class.	Optical		Rgn
	Begin	Max	End		Imp / Brtns	Location Lat CMD	
03 May	1353	1353	1358		Sf	S17E54	9934
	1403	1404	1412		Sf	S17E53	9934
	1713	1715	1723		Sf	S17E49	9934
	1803	1807	1840	C3.9	1f	S17E50	9934
	2012	2020	2029	C5.4			
	2045	2052	2100		Sf	S17E48	9934
	2114	2121	2127	C2.8			
	2147	2150	2154		Sf	S16E48	9934
	2203	2211	2218		Sf	S17E49	9934
	2331	2335	2339	C3.2			
04 May	0250	0251	0308	C7.8	Sn	S16E46	9934
	0341	0342	0353	C2.5	Sf	S17E44	9934
	1019	1022	1029	C1.3			
	1110	1110	1117	C1.9	Sf	N16E20	9928
	1322	1325	1345	C9.3	Sf	S12E63	9937
	1322	1324	1330		Sf	N21W37	9929
	B1859	U1900	A1908	C2.0	Sf	S10E63	9937
	2124	2129	2132	C1.4			
	2143	2148	2153	C2.7			
	2154	2158	2202	C3.6			
05 May	0507	0513	0519	C1.7			
	0723	0723	0732		Sf	N19E09	9928
	0808	0808	0813	C4.8	Sf	S20E28	9934
	1226	1227	1236	C3.0	Sf	S17E28	9934
	1441	1445	1501	C1.9	Sf	S10E51	9937
	1657	1657	1704		Sf	N22W51	9929
	1809	1810	1816	C1.6	Sf	S17E22	9934
	B1912	U1914	A1922	C2.6	1f	S12E66	9943



### Region Summary

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 9914</i>																		
19 Apr	N04E72	011	0010	01	Axx	001	A											
20 Apr	N05E59	011	0040	05	Cao	004	B											
21 Apr	N04E44	013	0070	06	Cao	005	B											
22 Apr	N04E31	013	0150	07	Dso	009	B	3				2						
23 Apr	N04E18	012	0140	09	Dao	015	B					1						
24 Apr	N04E04	013	0230	10	Dao	023	B											
25 Apr	N04W10	014	0180	09	Dao	010	B											
26 Apr	N04W25	016	0260	09	Dso	008	B					1						
27 Apr	N05W38	016	0220	09	Dso	009	B											
28 Apr	N05W51	016	0170	09	Dso	005	B											
29 Apr	N06W64	015	0160	08	Dao	003	B											
30 Apr	N05W80	018	0110	09	Cso	003	B	1				1						
01 May	N05W92	017	0050	02	Hsx	001	A											
								4	0	0	5	0	0	0	0	0		

Crossed West Limb.

Absolute heliographic longitude: 013

<i>Region 9915</i>																		
21 Apr	N11E54	003	0030	01	Hrx	001	A											
22 Apr	N12E42	002	0120	06	Dao	009	B	1				1						
23 Apr	N11E28	002	0180	07	Dao	013	B	1				1						
24 Apr	N12E14	003	0180	06	Cao	011	B					1						
25 Apr	N12E01	003	0130	05	Cao	010	B											
26 Apr	N11W12	003	0190	07	Dao	012	B											
27 Apr	N11W26	004	0280	07	Dko	015	B											
28 Apr	N12W40	005	0240	09	Dai	018	B	1				1						
29 Apr	N12W53	004	0200	08	Dai	009	B	1				2						
30 Apr	N12W69	007	0150	10	Dso	006	B											
01 May	N12W80	005	0150	09	Cao	004	B											
								4	0	0	6	0	0	0	0	0		

Crossed West Limb.

Absolute heliographic longitude: 003



**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 9916</i>														
21 Apr	S17E71	346	0150	06	Dao	004	B							
22 Apr	S17E60	344	0150	10	Dso	008	B	1		1				
23 Apr	S18E47	343	0150	09	Dao	009	B			1				
24 Apr	S18E32	345	0100	12	Eao	019	B	1		1				
25 Apr	S17E20	344	0050	08	Dao	009	B							
26 Apr	S18E07	344	0020	08	Cro	005	B							
27 Apr	S18W06	344	0020	06	Cso	006	B							
28 Apr	S18W19	344	0030	06	Cro	007	B							
29 Apr	S15W30	341	0030	05	Cso	004	B							
30 Apr	S15W43	341												
01 May	S15W56	341												
02 May	S15W69	341												

2 0 0 3 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 344

*Region 9917*

22 Apr	S30E45	359	0020	03	Cro	002	B							
23 Apr	S30E32	359												
24 Apr	S30E19	359												
25 Apr	S30E06	359												
26 Apr	S30W07	359												
27 Apr	S30W20	359												
28 Apr	S30W33	359												
29 Apr	S30W46	359												

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 359

*Region 9918*

22 Apr	N06E00	044	0010	03	Bxo	003	B							
23 Apr	N06W13	044												
24 Apr	N06W26	044												
25 Apr	N06W39	044												
26 Apr	N06W52	044												
27 Apr	N06W65	044												
28 Apr	N06W78	044												
29 Apr	N06W91	044												

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 044











**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 9929*

30 Apr	N22E16	282	0010	03	Bxo	003	B											
01 May	N22E03	282	0000	00		000												
02 May	N21W11	283	0000	00	Axx	001	A											
03 May	N22W26	285	0080	05	Dso	012	B											
04 May	N21W41	286	0140	07	Dso	014	B											1
05 May	N22W53	285	0210	08	Dao	013	B											1
								0	0	0	0	2	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 282

*Region 9930*

01 May	N12W17	302	0030	05	Cso	010	B											
02 May	N12W30	302	0050	05	Dro	009	B											
03 May	N12W44	303	0020	06	Cro	003	B											
04 May	N12W57	303																
05 May	N12W70	303																
								0	0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 302

*Region 9931*

01 May	N15E19	266	0030	05	Cao	008	B											
02 May	N16E06	266	0060	07	Dao	009	B											
03 May	N16W09	268	0120	08	Dso	013	B											
04 May	N15W23	268	0090	11	Eso	014	B											
05 May	N16W37	269	0070	09	Cao	010	B											
								0	0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 266

*Region 9932*

01 May	S28E56	229	0040	03	Cao	003	B	3				5						
02 May	S28E44	228	0110	07	Dao	004	B											
03 May	S28E31	228	0160	09	Dao	010	B	1				1						
04 May	S28E19	226	0120	09	Dao	016	B											
05 May	S28E05	227	0100	11	Eai	016	B											
								4	0	0	0	6	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 227



**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 9933*

01 May	N16E64	221	0090	02	Hsx	001	A								
02 May	N17E52	220	0090	02	Hsx	001	A								
03 May	N18E37	222	0100	04	Cso	004	B								
04 May	N17E25	220	0070	03	Cso	002	B								
05 May	N18E12	220	0100	04	Hsx	003	A								
										0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 220

*Region 9934*

01 May	S18E73	212	0240	10	Dao	006	B								
02 May	S18E62	210	0420	13	Eao	011	Bg				1				
03 May	S17E48	211	0580	14	Eki	021	Bgd	1			8	1			
04 May	S17E35	210	0520	12	Eki	027	Bgd	2			2				
05 May	S17E21	211	0540	15	Eki	036	Bgd	3			3				
								6	0	0	14	1	0	0	0

Still on Disk.

Absolute heliographic longitude: 211

*Region 9935*

02 May	S18E33	239	0030	04	Cao	006	B								
03 May	S19E16	243	0050	04	Dso	006	B								
04 May	S19E04	241	0040	05	Dso	007	B								
05 May	S19W11	243	0020	05	Bxo	007	B								
										0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 241

*Region 9936*

02 May	S15E42	230	0050	05	Dso	006	B								
03 May	S16E27	232	0030	05	Cro	005	B								
04 May	S17E15	230	0040	07	Cso	008	B								
05 May	S17E01	231	0040	07	Cao	010	B								
										0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 231

*Region 9937*

03 May	S09E68	191	0070	03	Cso	003	B								
04 May	S10E56	189	0100	04	Dao	003	B	2			2				
05 May	S09E42	190	0210	07	Dai	010	B	1			1				
								3	0	0	3	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 190



**Region Summary - continued.**

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	2	3	4				
<i>Region 9938</i>																			
03 May	S04E72	187	0030	01	Hsx	001	A												
04 May	S05E59	186	0040	01	Hsx	001	A												
05 May	S05E46	186	0030	01	Hsx	001	A												
Still on Disk.																			
Absolute heliographic longitude: 186																			
<i>Region 9939</i>																			
04 May	N16E67	178	0050	02	Hax	001	A												
05 May	N17E52	180	0050	02	Hsx	001	A												
Still on Disk.																			
Absolute heliographic longitude: 180																			
<i>Region 9940</i>																			
04 May	N14E72	173	0070	02	Hax	001	A												
05 May	N13E55	177	0040	02	Hsx	002	A												
Still on Disk.																			
Absolute heliographic longitude: 177																			
<i>Region 9941</i>																			
05 May	S22E09	223	0050	05	Dao	010	B												
Still on Disk.																			
Absolute heliographic longitude: 223																			
<i>Region 9942</i>																			
05 May	N22E34	198	0020	04	Cso	004	B												
Still on Disk.																			
Absolute heliographic longitude: 198																			
<i>Region 9943</i>																			
05 May	S11E63	169	0050	07	Cao	004	B	1						1					
								1	0	0	0	1	0	0	0				
Still on Disk.																			
Absolute heliographic longitude: 169																			

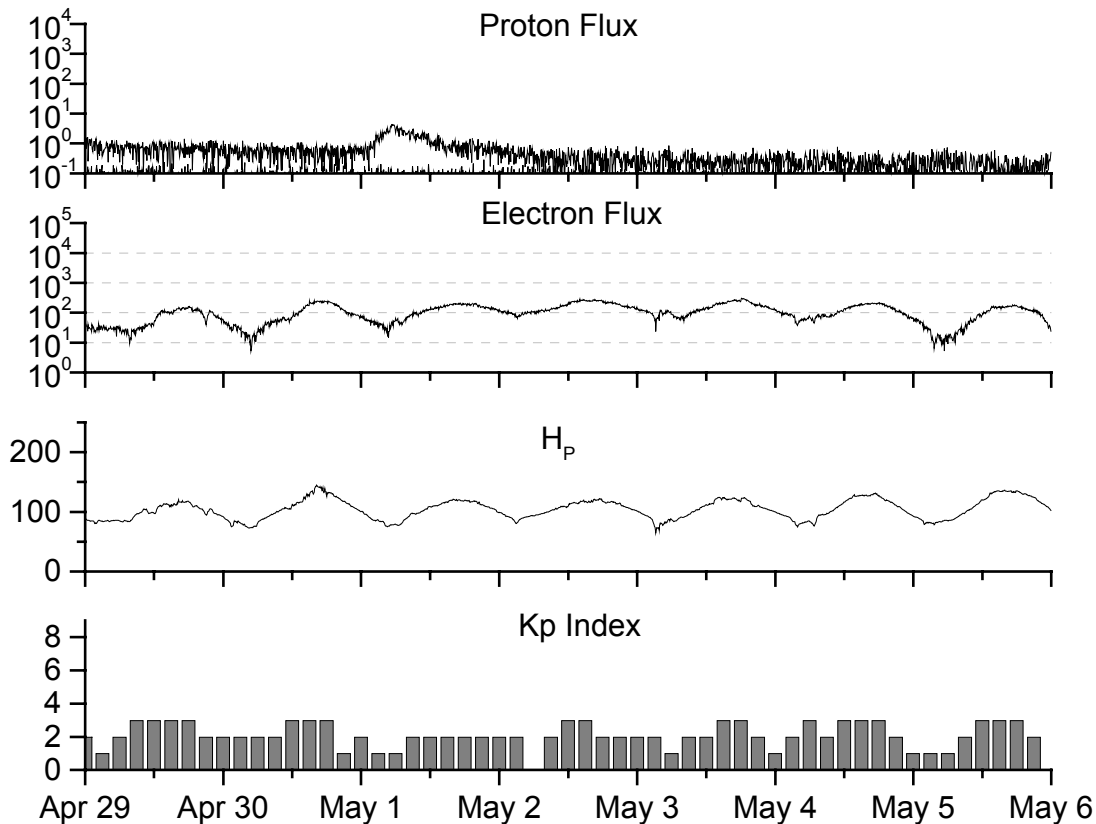


**Recent Solar Indices (preliminary)  
of the observed monthly mean values**

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>									
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	179.5	114.1	208.2	191.9	18	11.9
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	
April	194.9	120.4	0.62			189.7		15	

**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 29 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.

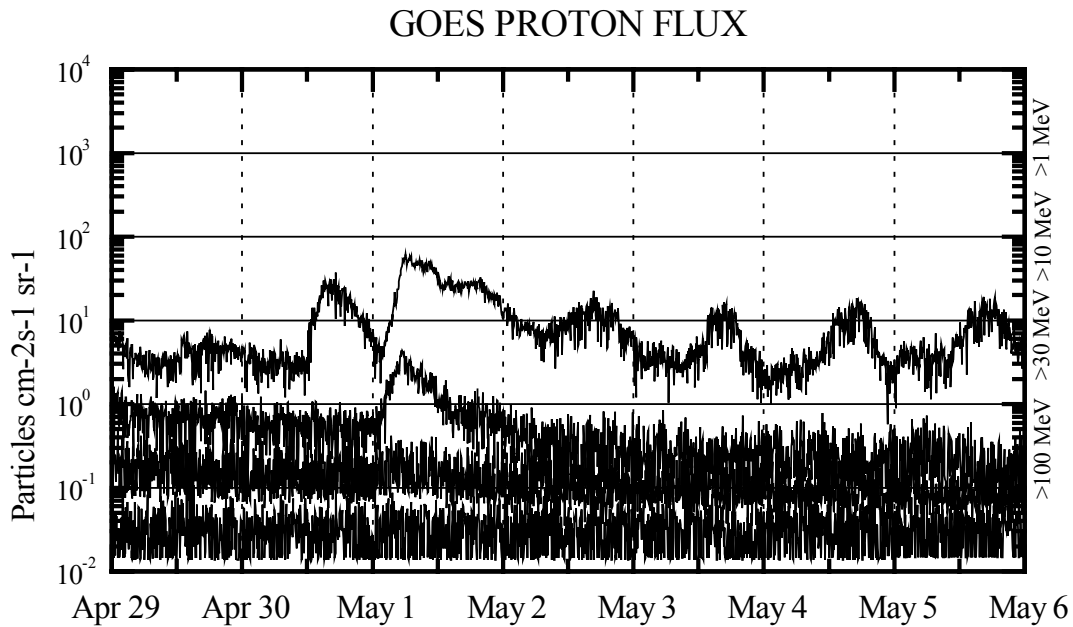
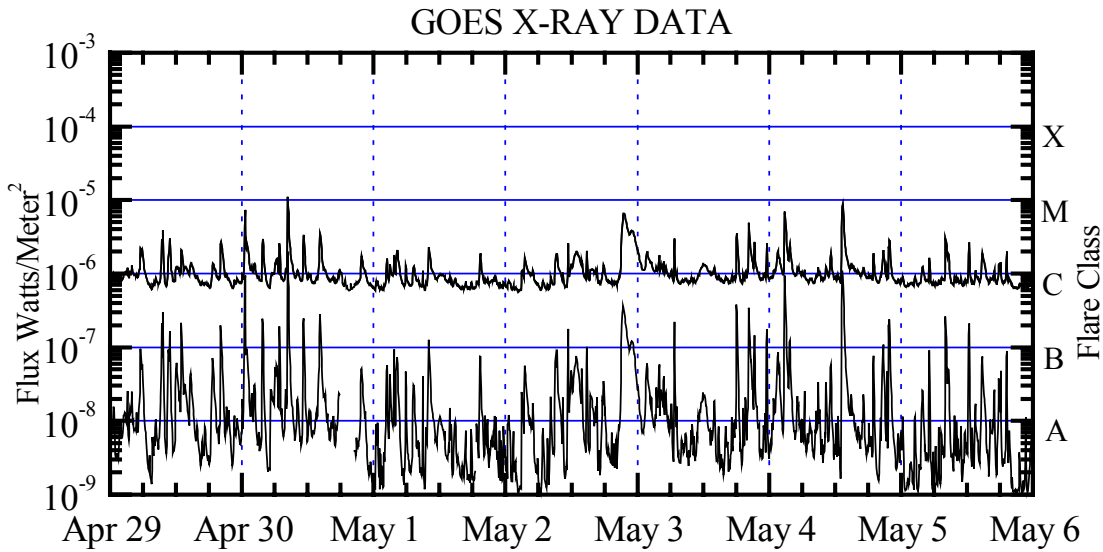
*Electrons* plot contains the five-minute averaged integral electron flux (electrons/cm<sup>2</sup>-sec -sr) with energies greater than 2 MeV at GOES-8.

*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.





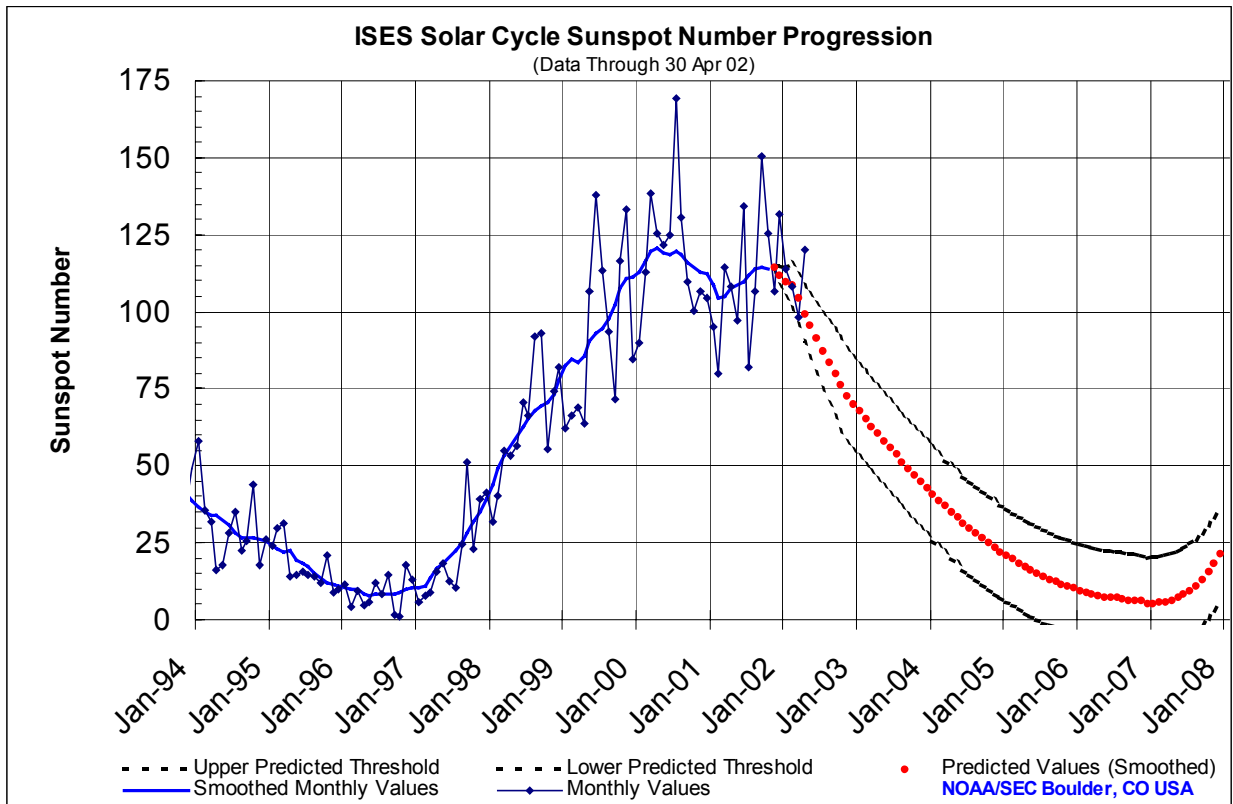


*Weekly GOES Satellite X-ray and Proton Plots*

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.

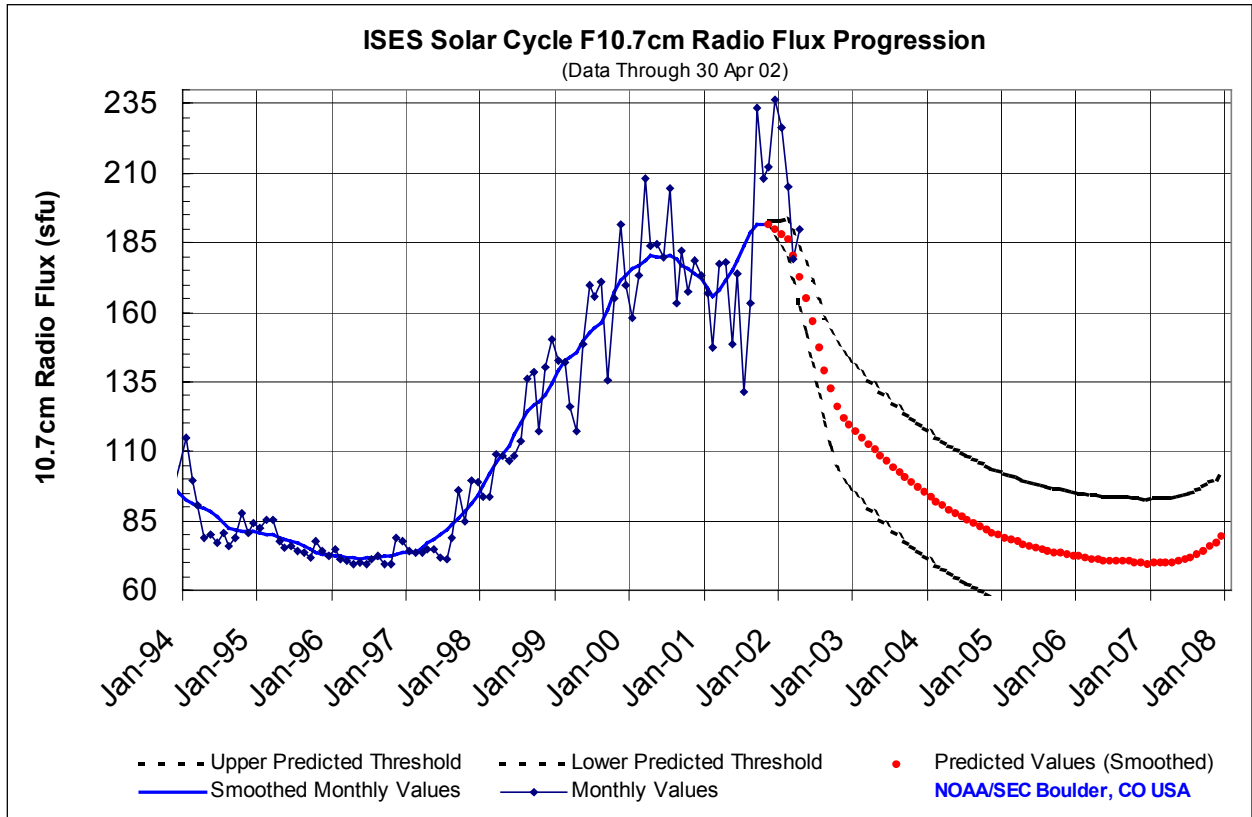




### SEC Prediction of Smoothed Sunspot Number

	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	114	114	112
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(1)	(3)
2002	<b>110</b>	<b>109</b>	<b>104</b>	<b>99</b>	<b>96</b>	<b>92</b>	<b>87</b>	<b>83</b>	<b>80</b>	<b>76</b>	<b>73</b>	<b>70</b>
	(5)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(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 (***)	191 (***)	192 (***)	192 (1)	190 (3)
2002	<b>188</b> (5)	<b>186</b> (7)	<b>181</b> (9)	<b>173</b> (11)	<b>165</b> (13)	<b>157</b> (15)	<b>147</b> (17)	<b>139</b> (19)	<b>132</b> (21)	<b>126</b> (22)	<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)



### ISES Solar Cycle Ap Progression

(Data Through 30 Apr 02)

