

Space Weather Highlights
29 September - 05 October 2003

SWO PRF 1466
07 October 2003

Solar activity ranged from low to moderate levels. The period began with low level activity on 29 - 30 September with most of the activity originating from Region 464 (N04, L=356, class/area Fki/610 on 26 September). Region 464 maintained a beta-gamma magnetic configuration until it rotated around the west limb. Activity reached moderate levels on 01 October with an M1/1f flare from Region 464 at 0451 UTC. Activity returned to low levels on 02 - 03 October with Region 464 producing a C7/1f flare at 0656 UTC on 02 October and Region 471 (S08, L=222, class/area Eac/210 on 04 October) produced minor C-class flares on 03 October. Region 471 rotated onto the visible disk on 30 September and by 03 October had shown two distinct bipolar magnetic configurations, suggesting two regions. Thus, on 03 October this spot group was split into two distinct regions. Region 473 (S09, L=237, class/area Cso/140 on 04 October) was assigned to the leading spots and Region 471 was assigned the trailing spots. Region 471 developed a beta-gamma configuration on 02 October and maintained this moderate complexity for the remainder of the period. After Region 464 rotated beyond the west limb on 03 October, Region 471 became the source of the majority of flare activity. Moderate level activity was observed on 04 October with an M1/Sf from Region 471 at 1547 UTC. The period ended with numerous B and C-class flares from Region 471 on 05 October.

Solar wind data were available from the NASA Advanced Composition Explorer (ACE) spacecraft for most of the summary period. The most significant feature in the solar wind during the period was a two day period of elevated solar wind speed. Wind speed increased on 02 October and reached a steady value near 500 km/s on 03 - 04 October. The source of this increased solar wind appeared to be a weak coronal hole. Late on 05 October solar wind began to increase again as a more well defined coronal hole rotated into a geoeffective position.

There were no greater than 10 MeV proton events at geosynchronous orbit during the period.

The greater than 2 MeV electron flux at geosynchronous orbit reached high levels on 29 September and again on 02 - 05 October.

Geomagnetic activity ranged from quiet to minor storm levels. Activity early in the period, 29 September - 02 October was at quiet to unsettled levels. One period of isolated minor storm conditions was observed on 03 October in connection with the elevated solar wind speed. One period of isolated active conditions were observed on 04 - 05 October.

Space Weather Outlook
08 October - 03 November 2003

Solar activity is expected to range from very low to low levels with a chance of isolated M-class events. Region 471 may keep activity levels somewhat enhanced with isolated M-class events possible. Region 464 is due to return to visible disk on 15 October and may have the potential for isolated M-class activity.

No greater than 10 MeV proton events at geosynchronous orbit are expected during the period.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to reach high levels 07 - 09 October and again on 17 - 26 October.

The geomagnetic field is expected to range from quiet to major storm levels during the period. Residual coronal hole effects are expected on 08 October and could produce active to isolated minor storm levels. A large coronal hole is due to return on 14 - 22 October and is expected to produce major storm levels.



Daily Solar Data

Date	Radio Flux 10.7 cm	Sun spot No.	Sunspot Area (10 ⁻⁶ hemi.)	X-ray Background	Flares							
					X-ray Flux			Optical				
					C	M	X	S	1	2	3	4
29 September	135	108	650	B4.8	7	0	0	2	1	0	0	0
30 September	133	116	850	B6.6	10	0	0	5	1	0	0	0
01 October	137	126	960	B5.0	4	1	0	3	1	0	0	0
02 October	125	75	830	B4.4	4	0	0	3	1	0	0	0
03 October	120	104	520	B4.0	6	0	0	2	0	0	0	0
04 October	119	89	390	B3.5	6	1	0	1	0	0	0	0
05 October	110	101	330	B2.2	6	0	0	3	0	0	0	0

Daily Particle Data

Date	Proton Fluence (protons/cm ² -day-sr)			Electron Fluence (electrons/cm ² -day-sr)		
	>1MeV	>10MeV	>100MeV	>.6MeV	>2MeV	>4MeV
	29 September	1.6E+6	1.3E+4	2.8E+3		7.0E+8
30 September	1.1E+6	1.3E+4	2.7E+3		1.6E+8	
01 October	6.2E+5	1.2E+4	2.7E+3		6.7E+6	
02 October	1.5E+5	1.3E+4	2.9E+3		1.6E+6	
03 October	3.1E+5	1.2E+4	2.7E+3		6.9E+6	
04 October	3.4E+5	1.2E+4	2.6E+3		8.2E+6	
05 October	8.0E+5	1.3E+4	2.8E+3		1.4E+7	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	29 September	4	2-2-0-1-1-1-1-2	4	0-0-1-3-2-1-0-0	7
30 September	3	0-1-2-1-1-1-1-1	8	0-0-2-3-4-3-0-1	7	2-2-2-3-3-2-2-2
01 October	7	3-2-2-1-1-1-1-3	11	1-1-4-4-2-1-1-3	10	3-2-2-3-2-2-3-3
02 October	4	2-1-1-0-1-1-2-2	6	2-2-1-1-2-1-2-2	9	2-3-2-2-2-3-3-3
03 October	11	2-4-2-2-3-2-2-2	14	3-4-3-2-3-3-3-1	16	3-5-3-3-3-3-3-2
04 October	5	1-1-3-2-2-1-0-0	8	1-1-3-3-4-0-0-0	9	1-2-4-2-3-2-2-2
05 October	4	0-1-0-0-0-1-2-3	2	0-0-0-0-0-1-2-2	9	2-2-1-2-2-3-3-4

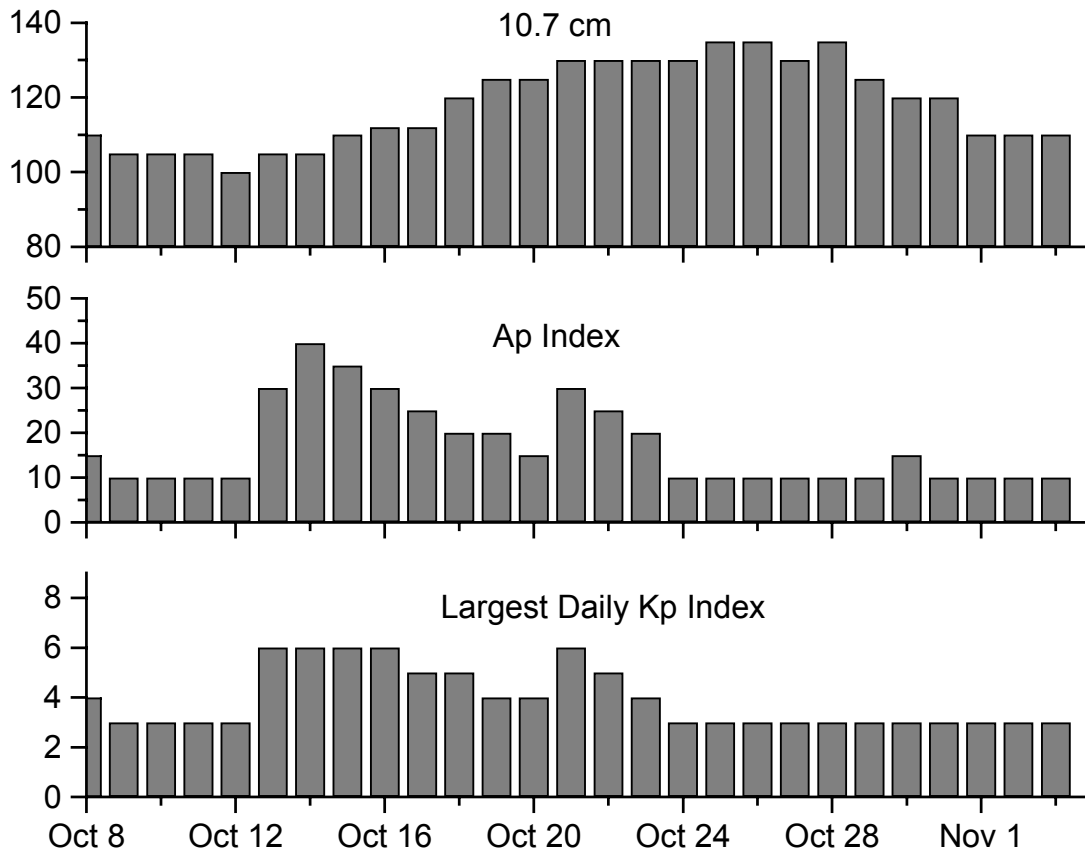


Alerts and Warnings Issued

<u>Date & Time of Issue</u>	<u>Type of Alert or Warning</u>	<u>Date & Time of Event UT</u>
29 Sep 0513	ALERT: Electron 2MeV Integral Flux > 1000pfu	29 Sep 0500
30 Sep 0800	ALERT: Electron 2MeV Integral Flux > 1000pfu	30 Sep 0740
01 Oct 0004	1 - 245 MHz Radio Burst	30 Sep
02 Oct 0011	4 - 245 MHz Radio Bursts	01 Oct
02 Oct 0002	ALERT: Geomagnetic K= 4	02 Oct 0002
03 Oct 0028	1 - 245 MHz Radio Bursts	02 Oct
03 Oct 0431	WARNING: Geomagnetic K= 4	03 Oct 0433 - 1500
03 Oct 0433	ALERT: Geomagnetic K= 4	03 Oct 0435
03 Oct 0435	ALERT: Geomagnetic K= 5	03 Oct 0436
03 Oct 1739	ALERT: Geomagnetic K= 4	03 Oct 1739
04 Oct 0019	1 - 245 MHz Radio Bursts	03 Oct
04 Oct 0629	WARNING: Geomagnetic K= 4	04 Oct 0631 - 1500
04 Oct 0638	ALERT: Geomagnetic K= 4	04 Oct 0638
05 Oct 2307	WARNING: Geomagnetic K= 4	05 Oct 2307 - 06 Oct 1500
05 Oct 2311	ALERT: Geomagnetic K= 4	05 Oct 2310



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 Oct	110	15	4	22 Oct	130	25	5
09	105	10	3	23	130	20	4
10	105	10	3	24	130	10	3
11	105	10	3	25	135	10	3
12	100	10	3	26	135	10	3
13	105	30	6	27	130	10	3
14	105	40	6	28	135	10	3
15	110	35	6	29	125	10	3
16	112	30	6	30	120	15	3
17	112	25	5	31	120	10	3
18	120	20	5	01 Nov	110	10	3
19	125	20	4	02	110	10	3
20	125	15	4	03	110	10	3
21	130	30	6				



Energetic Events

Date	Time		X-ray		Optical Information			Peak		Sweep Freq		
	Begin	Max	½ Max	Class	Integ Flux	Imp/ Brtns	Location		Radio Flux		Intensity	
							Lat	CMD	245	2695	II	IV
01 Oct	0444	0451	0459	M1.4	.009	1f	N05W57					
04 Oct	1542	1547	1549	M1.0	.002	Sf	S10E29		471		22	

Flare List

Date	Time			X-ray Class.	Optical Imp / Brtns	Location Lat CMD	Rgn	
	Begin	Max	End					
29 September	0343	0359	0442	C1.8				
	0500	0511	0523	C3.9				
	1320	1339	1402	C3.3				
	1605	1610	1616	C5.1			464	
	1731	1737	1742		Sf	N03W37	464	
	2007	2015	2021	C3.8	Sf	N04W45	464	
	2107	2111	2118	C1.7				
30 September	2144	2145	2223	C5.4	1f	N03W39	464	
	0029	0032	0049		Sf	N09W40	464	
	0107	0110	0112	C2.4			464	
	0258	0302	0306	C1.6			464	
	0314	0340	0401	C5.1			464	
	0512	0512	0525	C3.3	Sf	N04W43	464	
	0757	0801	0808	C2.8	Sf	N06W52	464	
	0837	0840	0842	C1.8				
	0849	0853	0905	C3.2	1f	N09W45	464	
	1247	1250	1253	C3.0			464	
	2017	2019	2023	C4.9	Sf	S02E75	471	
	2320	2321	2349	C3.9	Sf	N05W61	464	
	01 October	0416	0424	0437	C3.3	Sf	N06W63	464
		0440	0451	0509	M1.4	1f	N05W57	464
		0909	0915	0920	C1.2			
1119		1124	1140	B9.8				
1615		1618	1623	B9.7				
1749		1751	1756	C1.6	Sf	N04W63	464	
02 October	1945	1945	1958	C1.6	Sf	S16E03	470	
	0357	0357	0402	C2.4	Sf	N08W69	464	
	0403	0405	0410		Sf	N09W69	464	
	0426	0426	0431	B9.0	Sf	N05W72	464	
	0600	0606	0613	B8.6				
	0655	0658	0712	C7.8	1f	N05W79	464	
	1149	1153	1157	B8.6				
	1346	1356	1428	C2.2				
	1602	1611	1621	C4.2			471	
2129	2132	2135	B6.9					



Flare List

Date	Time			X-ray Class.	Optical		Rgn
	Begin	Max	End		Imp / Brtns	Location Lat CMD	
03 October	0058	0106	0147	B9.4			
	0338	0338	0352	C2.0	Sf	S06E32	471
	0610	0619	0637	C1.0			
	0640	0644	0647	C1.4			
	0756	0759	0803	C1.7	Sf	S10E42	471
	1119	1218	1244	C2.1			
	1919	1922	1932	B6.8			
04 October	2301	2314	2328	C2.7			
	0409	0415	0419	B7.4			
	0454	0501	0507	C1.7			
	1309	1317	1341	C2.5			
	1515	1523	1530	C1.7			471
	1546	1548	1555	M1.0	Sf	S10E29	471
	1753	1757	1803	C1.6			471
	1822	1826	1829	C1.3			471
	1908	1917	1922	C1.7			
	1946	1949	1952	B5.9			
05 October	0034	0034	0039	C1.0	Sf	S08E20	471
	0129	0130	0148	C1.5	Sf	S07E21	471
	0259	0300	0311	C1.2	Sf	S06E05	473
	0916	0920	0925	C2.6			
	1030	1034	1038	B7.2			471
	1051	1106	1116	C1.0			
	1234	1240	1247	B5.2			471
	1319	1328	1330	C4.2			
	1415	1422	1426	B3.9			471
	1648	1654	1711	B8.7			
2209	2215	2227	B4.4				



Region Summary

Date	Location		Sunspot Characteristics				Flares							
	(° Lat ° CMD)	Helio	Area (10 ⁻⁶ hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical			
		Lon						C	M	X	S	1	2	3

Region 463

17 Sep	N09E74	035	0090	02	Hax	001	A											
18 Sep	N09E59	036	0080	02	Hsx	001	A											
19 Sep	N09E46	036	0070	02	Hsx	001	A											
20 Sep	N08E33	035	0070	02	Hsx	001	A											
21 Sep	N09E18	037	0070	02	Hsx	001	A											
22 Sep	N09E06	036	0050	02	Hax	001	A											
23 Sep	N09W09	038	0060	02	Hsx	001	A											
24 Sep	N09W22	038	0040	02	Hsx	001	A											
25 Sep	N09W35	038	0050	03	Cso	002	B											
26 Sep	N08W50	039	0030	01	Hsx	001	A											
27 Sep	N09W63	039	0020	01	Hsx	001	A											
28 Sep	N09W77	040	0010	01	Axx	001	A											
29 Sep	N09W90	040																
								0	0	0	0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 036

Region 464

20 Sep	N05E77	351	0360	12	Eko	006	B	1											
21 Sep	N03E62	353	0460	12	Eko	010	B	3											
22 Sep	N06E49	353	0560	14	Eko	017	Bg												
23 Sep	N04E35	354	0600	14	Eki	030	Bg												
24 Sep	N04E22	354	0570	16	Fki	037	Bg	10			12	1							
25 Sep	N04E09	354	0580	18	Fkc	050	Bg	2											
26 Sep	N04W07	356	0610	18	Fki	057	Bg	2			2								
27 Sep	N05W20	356	0580	20	Fsi	054	Bg	2			3								
28 Sep	N03W34	357	0540	19	Fkc	055	Bg	3			2								
29 Sep	N03W48	358	0530	19	Fkc	043	Bg	3			2	1							
30 Sep	N04W62	359	0510	19	Fkc	034	Bg	8			4	1							
01 Oct	N05W73	356	0480	21	Fki	016	Bg	2	1		2	1							
02 Oct	N05W81	351	0230	05	Hhx	001	A	2			3	1							
03 Oct	N06W91	348	0170	02	Hsx	001	A												
								38	1	0	30	5	0	0	0	0			

Crossed West Limb.

Absolute heliographic longitude: 356



Region Summary - continued.

Date	Location		Sunspot Characteristics				Flares							
	(° Lat ° CMD)	Helio	Area (10 ⁻⁶ hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical			
		Lon						C	M	X	S	1	2	3

Region 465

22 Sep	S02E50	352	0060	04	Cao	007	B										
23 Sep	N00E36	353	0040	05	Cso	008	B										
24 Sep	N00E23	353	0030	04	Cso	005	B										
25 Sep	N00E10	353	0020	04	Dro	009	B										
26 Sep	S01W03	352	0010	02	Bxo	007	B										
27 Sep	S01W19	355	0010	03	Cro	003	B										
28 Sep	S02W32	355	0010	05	Bxo	003	B										
29 Sep	S02W45	355															
30 Sep	S02W58	355															
01 Oct	S02W71	355															
02 Oct	S02W84	355															

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 352

Region 466

22 Sep	S04E72	330	0030	01	Hsx	001	A										
23 Sep	S05E60	329	0110	06	Dao	007	B										
24 Sep	S05E47	329	0090	06	Dso	010	B	1									
25 Sep	S05E34	329	0100	06	Dso	007	B										
26 Sep	S07E19	330	0060	05	Cso	005	B										
27 Sep	S05E05	331	0070	05	Cso	007	B										
28 Sep	S05W09	332	0080	06	Dso	009	B										
29 Sep	S05W23	333	0050	04	Dso	005	B										
30 Sep	S05W36	333	0040	05	Cso	006	B										
01 Oct	S04W50	333	0030	04	Cso	004	B										
02 Oct	S05W64	334	0020	01	Hsx	001	A										
03 Oct	S06W78	335	0010	01	Axx	001	A										
04 Oct	S06W91	335															

1 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 331



Region Summary - continued.

Date	Location		Sunspot Characteristics				Flares							
	(° Lat ° CMD)	Helio Lon	Area (10 ⁻⁶ hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical			
								C	M	X	S	1	2	3

Region 467

23 Sep	S10E46	343	0010	00	Hrx	001	A												
24 Sep	S10E33	343	0020	06	Cso	007	B												
25 Sep	S10E20	343	0030	06	Cso	004	B												
26 Sep	S10E06	343	0020	05	Cso	007	B												
27 Sep	S10W06	342	0030	06	Dso	006	B												
28 Sep	S11W20	343	0020	05	Cso	003	B												
29 Sep	S11W32	342	0010	01	Hsx	001	A												
30 Sep	S05W37	334																	
01 Oct	S05W51	334	0030	03	Dso	003	B												
02 Oct	S05W64	334																	
03 Oct	S05W77	334																	
04 Oct	S05W90	334																	

0 0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 343

Region 469

27 Sep	S09W24	360	0020	03	Bxo	006	B												
28 Sep	S09W38	001	0050	04	Dso	008	B												
29 Sep	S10W52	002	0030	02	Hsx	003	A												
30 Sep	S08W66	003	0070	06	Dso	004	B												
01 Oct	S09W82	005	0040	02	Hsx	001	A												

0 0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 360

Region 470

29 Sep	S13E32	278	0030	03	Dso	006	B												
30 Sep	S12E18	279	0040	06	Dso	007	B												
01 Oct	S13E04	279	0030	07	Dso	007	B	1			1								
02 Oct	S14W08	278	0020	01	Hsx	002	A												
03 Oct	S17W26	283	0020	08	Cso	005	B												
04 Oct	S17W39	283																	
05 Oct	S17W52	283	0020	03	Cso	002	B												

1 0 0 1 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 279



Region Summary - continued.

Date	Location		Sunspot Characteristics				Flares							
	(° Lat ° CMD)	Helio	Area (10 ⁻⁶ hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical			
		Lon						C	M	X	S	1	2	3

Region 471

30 Sep	S07E63	234	0190	09	Dsi	015	B	1			1						
01 Oct	S08E53	230	0330	23	Fsi	020	B										
02 Oct	S08E42	228	0520	22	Fko	016	Bg	1									
03 Oct	S08E35	222	0200	12	Eai	031	Bg	2			2						
04 Oct	S08E22	222	0210	13	Eac	034	Bg	3	1		1						
05 Oct	S08E09	222	0150	14	Ekc	038	Bg	2			2						
								9	1	0	6	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 222

Region 472

01 Oct	S23W02	285	0020	03	Dso	005	B										
02 Oct	S22W16	286	0040	06	Dso	005	B										
03 Oct	S22W31	288	0020	08	Cao	005	B										
04 Oct	S22W47	291	0020	01	Cso	002	B										
05 Oct	S22W60	291															
								0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 285

Region 473

03 Oct	S07E20	237	0100	02	Hsx	001	A										
04 Oct	S09E07	237	0140	04	Cso	009	B										
05 Oct	S09W06	237	0130	04	Cho	007	B	1			1						
								1	0	0	1	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 237

Region 474

04 Oct	S14W49	293	0020	06	Cso	004	B										
05 Oct	S14W62	293	0010	01	Axx	001	A										
								0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 293

Region 475

05 Oct	S22E47	184	0020	03	Cso	003	B										
								0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 184

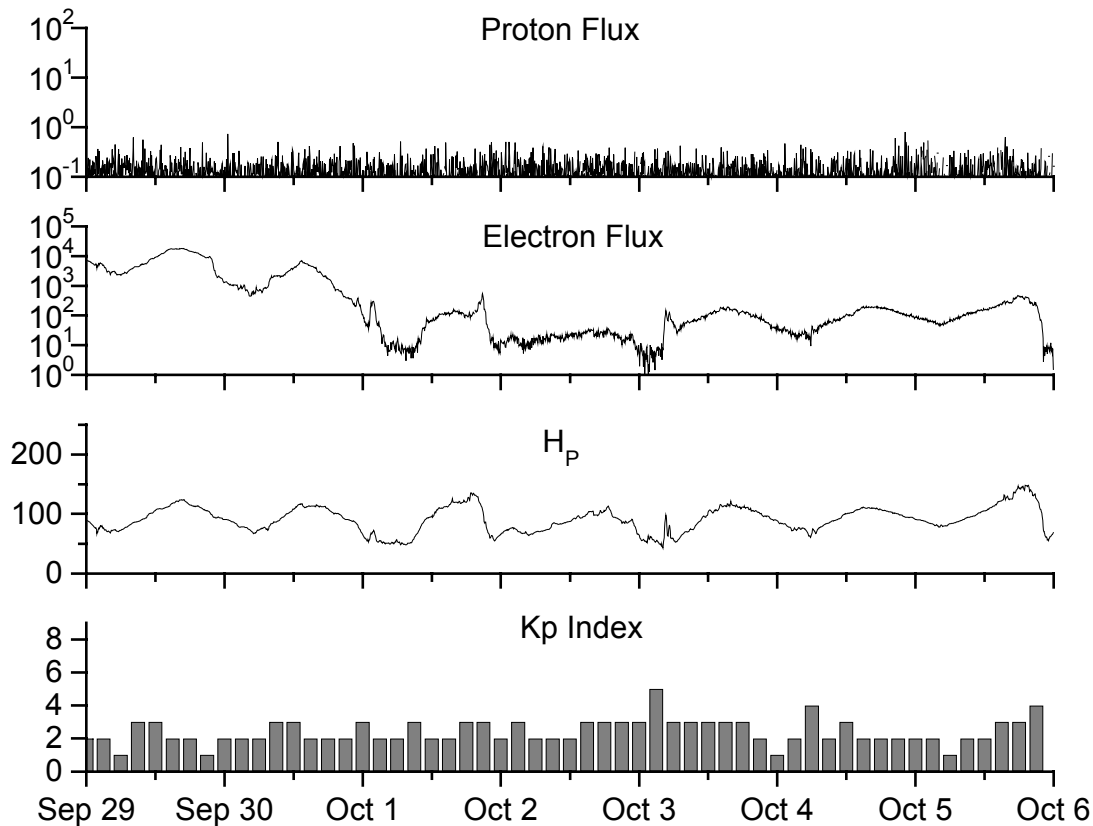


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

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
2001									
October	197.3	125.5	0.64	179.5	114.0	208.1	191.9	20	12.0
November	178.6	106.5	0.60	183.7	115.5	212.7	193.7	16	12.0
December	217.5	132.2	0.61	184.5	114.6	235.6	193.9	09	12.2
2002									
January	189.0	114.1	0.60	184.8	113.5	227.3	194.6	08	12.3
February	194.5	107.4	0.55	188.6	114.7	205.0	197.2	10	12.8
March	153.1	98.4	0.64	188.9	113.3	180.3	195.7	10	12.9
April	194.9	120.7	0.62	186.2	110.5	189.8	191.5	15	13.2
May	204.1	120.8	0.59	183.6	108.9	178.4	188.0	15	13.3
June	146.0	88.3	0.60	179.9	106.3	148.7	183.0	11	13.5
July	183.5	99.6	0.54	175.4	102.7	173.5	176.3	11	13.7
August	191.0	116.4	0.61	169.2	98.7	183.9	169.5	16	14.2
September	206.4	109.6	0.53	163.4	94.6	175.8	164.1	14	15.0
October	153.9	97.5	0.63	158.8	90.5	167.0	159.4	23	15.6
November	159.8	95.5	0.60	150.9	85.2	168.7	154.8	16	16.3
December	147.9	80.8	0.55	144.6	82.1	158.6	150.9	13	17.0
2003									
January	149.3	79.7	0.53	141.7	81.0	144.0	149.2	13	18.2
February	87.0	46.0	0.53	136.4	78.5	124.5	144.7	17	18.9
March	119.7	61.1	0.51	128.1	74.2	132.2	139.5	21	19.4
April	119.7	60.0	0.50			126.3		20	
May	89.6	55.2	0.62			129.3		26	
June	118.4	77.4	0.65			129.4		24	
July	132.8	85.0	0.64			127.8		20	
August	114.3	72.7	0.64			122.1		23	
September	82.6	48.8	0.59			112.3		19	

NOTE: All smoothed values after September 2002 and monthly values after March 2003 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 23, RI= 120.8, occurred April 2000. *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 September 2003

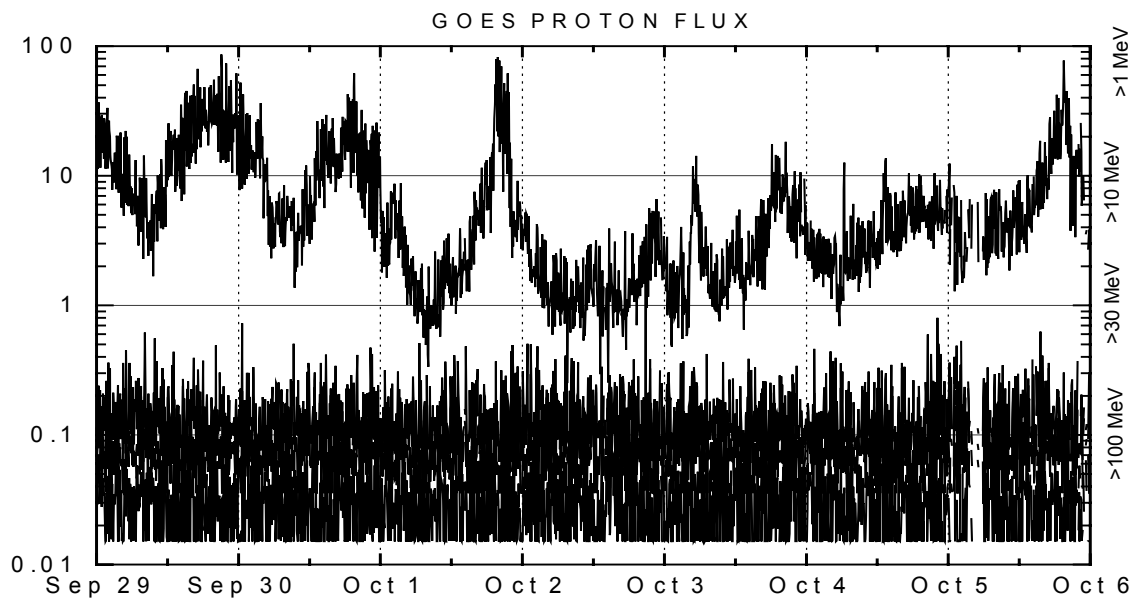
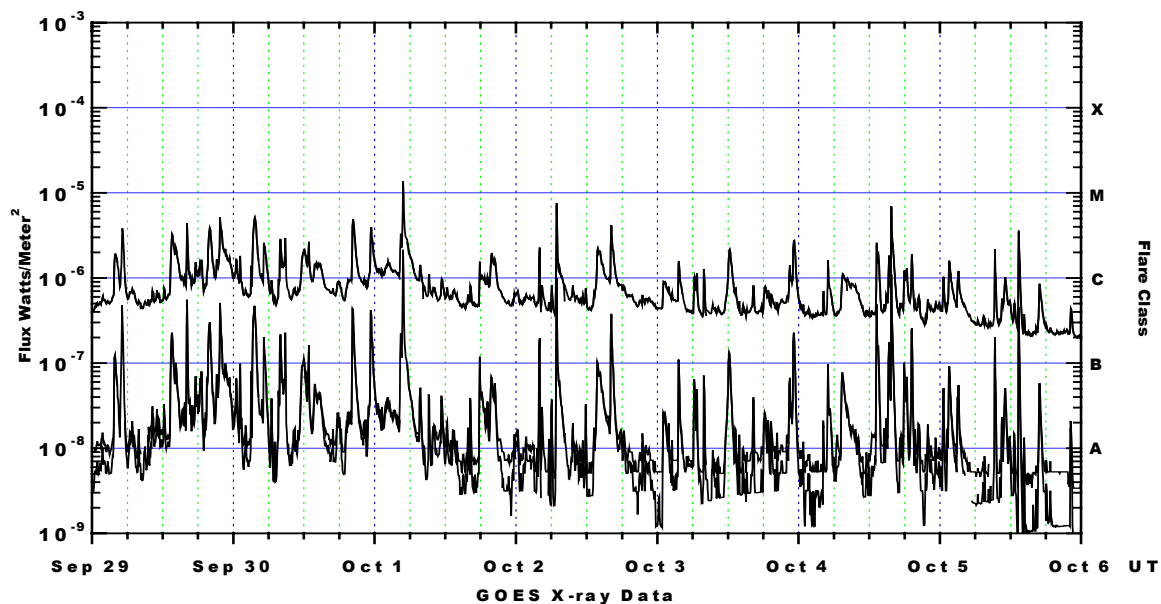
Protons plot contains the five-minute averaged integral proton flux (protons/cm²-sec-sr) as measured by GOES-11 (W113) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec-sr) with energies greater than 2 MeV at GOES-12.

H_p plot contains the five minute averaged magnetic field H - component in nanoteslas (nT) as measured by GOES-12. The H component is parallel to the spin axis of the satellite, which is nearly parallel to the Earth's rotation axis.

K_p 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_p 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_p are " global " parameters that are applicable to a first order approximation over large areas. H_p 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

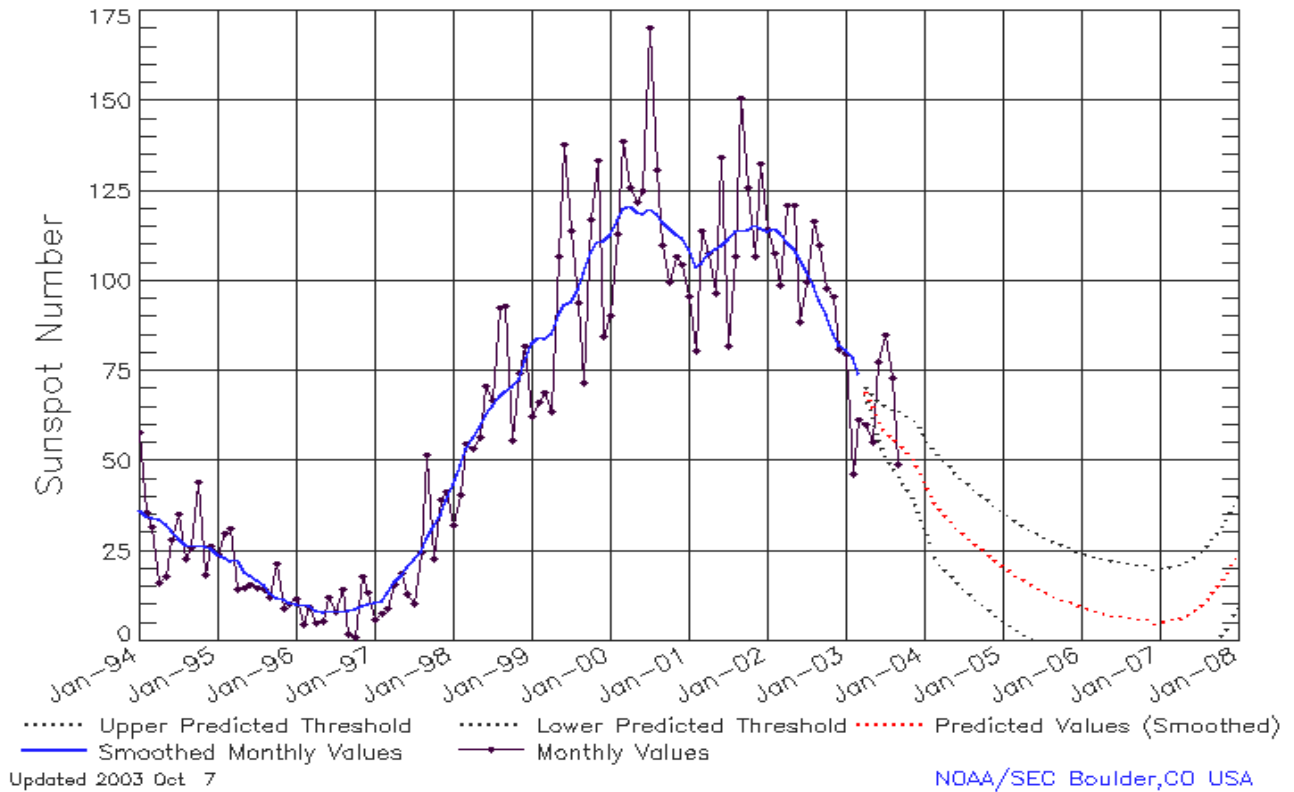
X-ray plot contains five-minute averaged x-ray flux (watts/m²) as measured by GOES 12 and 10 in two wavelength bands, .05 - .4 and .1 - .8 nm. The letters A, B, C, M and X refer to x-ray event levels for the .1 - .8 nm band.

Proton plot contains the five-minute averaged integral proton flux (protons/cm²-sec-sr) as measured by GOES-11 (W113) for each of the energy thresholds: >1, >10, >30 and >100 MeV. P10 event threshold is 10 pfu (protons/cm²-sec-sr) at greater than 10 MeV.



ISES Solar Cycle Sunspot Number Progression

Data Through 30 Sep 03



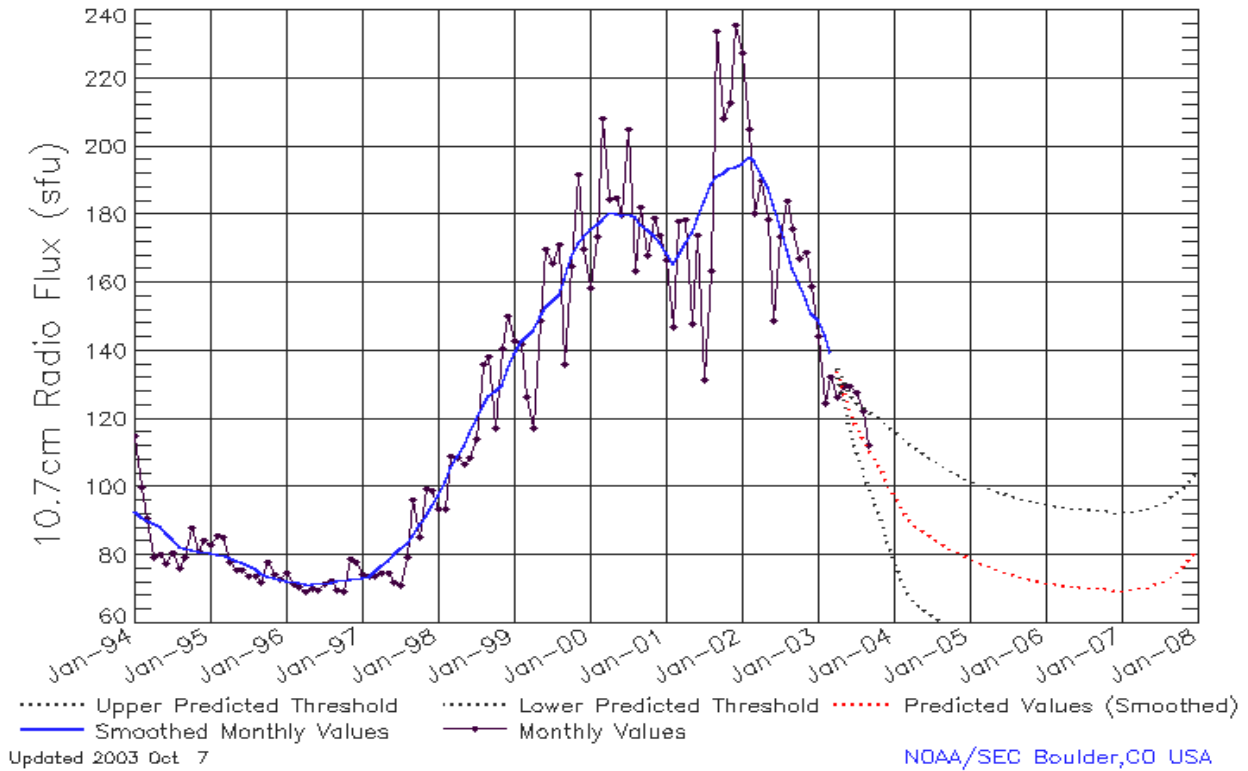
SEC Prediction of Smoothed Sunspot Number

	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	116	115
	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)
2002	114	115	113	110	109	106	103	99	95	91	85	82
	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)
2003	81	79	74	70	65	62	58	57	55	53	51	48
	(**)	(**)	(**)	(1)	(3)	(5)	(7)	(8)	(9)	(10)	(11)	(12)
2004	44	40	37	35	33	31	30	28	27	25	24	22
	(13)	(14)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)
2005	21	20	18	17	16	15	14	13	12	12	11	10
	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)
2006	10	9	8	8	8	7	7	7	7	6	6	5
	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)
2007	5	6	6	6	7	8	10	11	13	16	18	21
	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)



ISES Solar Cycle F10.7cm Radio Flux Progression

Data Through 30 Sep 03



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 (***)	194 (***)	194 (***)
2002	195 (***)	197 (***)	196 (***)	192 (***)	188 (***)	183 (***)	176 (***)	170 (***)	164 (***)	159 (***)	155 (***)	151 (***)
2003	149 (***)	145 (***)	140 (***)	134 (1)	128 (3)	123 (5)	118 (7)	114 (9)	111 (11)	108 (13)	105 (15)	101 (17)
2004	98 (19)	94 (21)	92 (22)	89 (23)	88 (23)	87 (23)	85 (23)	84 (23)	83 (23)	82 (23)	81 (23)	80 (23)
2005	79 (23)	78 (23)	78 (23)	77 (23)	76 (23)	75 (23)	75 (23)	74 (23)	74 (23)	73 (23)	73 (23)	73 (23)
2006	72 (23)	72 (23)	71 (23)	71 (23)	71 (23)	71 (23)	71 (23)	71 (23)	70 (23)	70 (23)	70 (23)	70 (23)
2007	70 (23)	70 (23)	70 (23)	70 (23)	71 (23)	71 (23)	72 (23)	73 (23)	74 (23)	76 (23)	77 (23)	79 (23)



ISES Solar Cycle Ap Progression

Data Through 30 Sep 03

