Space Weather Highlights **SWO PRF 1313**
30 October – 05 November 2000 **07 November 2000**

Solar activity was low. Isolated C-class subflares occurred from a number of largely unremarkable sunspot groups. Events of interest included an optically uncorrelated, long-duration C2 X-ray flare at 01/1610 UTC associated with a full-halo CME, and a long-duration C3/Sf flare at 03/1902 UTC from Region 9213 (N02, L = 270, class/area Hax/250 on 04 November), also associated with a halo CME.

Data were available from the Advanced Composition Explorer (ACE) spacecraft for most of the period. Two CME passages were observed during the period. The first passed the ACE spacecraft at approximately 31/1600 UTC followed by increased velocities (peaks to 480 km/sec) and densities, and a period of sustained southward IMF Bz with deflections to minus 13 nT (GSM). The second CME passed the spacecraft at approximately 04/0130 UTC accompanied by a southward turning of IMF Bz with deflections to minus 15 nT, increased densities, and increased velocities that eventually reached a peak of 650 km/sec on 05 November.

The greater than 10 MeV proton flux at geosynchronous orbit was enhanced during 30 October - 02 November, but did not reach event levels. The enhancement was due to an M4/2B flare on 29 October.

The greater than 2 MeV electron flux at geosynchronous orbit briefly reached high levels on 31 October. Fluxes were at normal to moderate levels for the rest of the period.

The geomagnetic field was disturbed during 30 - 31 October with isolated active to minor storm periods. Activity declined to mostly quiet levels during 01 - 03 November. Active to minor storm levels were observed on 04 November following a sudden impulse of 12 nT at 04/0222 UTC. Activity declined to quiet to unsettled levels on 05 November.

Space Weather Outlook
08 November - 04 December 2000

Solar activity is expected to be at low to moderate levels. Isolated M-class flares may occur sometime during the period.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit may reach moderate to high levels during 12 - 13 and 19 - 20 November. Otherwise, normal to moderate fluxes are expected.

Geomagnetic field activity is expected to be at unsettled to active levels during 08, 11 - 12, and 18 - 19 November. Otherwise, quiet to unsettled levels are expected, barring an Earth-directed CME.

Daily Solar Data

Date	Radio Flux 10.7 cm	Sun spot No.	Sunspot Area (10^{-6} hemi.)	X-ray Background	Flares: X-ray Flux C	M	X	Flares: Optical S	1	2	3	4
30 October	194	158	870	B9.4	2	0	0	1	1	0	0	0
31 October	193	135	680	C1.0	4	0	0	4	1	0	0	0
01 November	204	206	940	B8.0	5	0	0	6	0	0	0	0
02 November	196	213	1070	B8.4	2	0	0	4	0	0	0	0
03 November	199	196	1090	B8.0	5	0	0	9	0	0	0	0
04 November	195	159	1110	C2.0	5	0	0	2	0	0	0	0
05 November	186	173	980	C1.2	4	0	0	2	1	0	0	0

Daily Particle Data

Date	Proton Fluence (protons/cm^2-day-sr) >1MeV	>10MeV	>100MeV	Electron Fluence (electrons/cm^2-day-sr) >.6MeV	>2MeV	>4MeV
30 October	5.9E+5	3.0E+4	1.8E+3		1.0E+7	
31 October	3.1E+6	1.4E+5	2.1E+3		1.5E+7	
01 November	1.2E+7	1.6E+5	2.3E+3		3.5E+6	
02 November	3.0E+6	3.9E+4	2.2E+3		3.7E+6	
03 November	4.5E+6	2.3E+4	2.1E+3		1.0E+7	
04 November	6.0E+6	1.9E+4	2.2E+3		8.3E+5	
05 November	2.9E+5	1.1E+4	2.5E+3		3.3E+5	

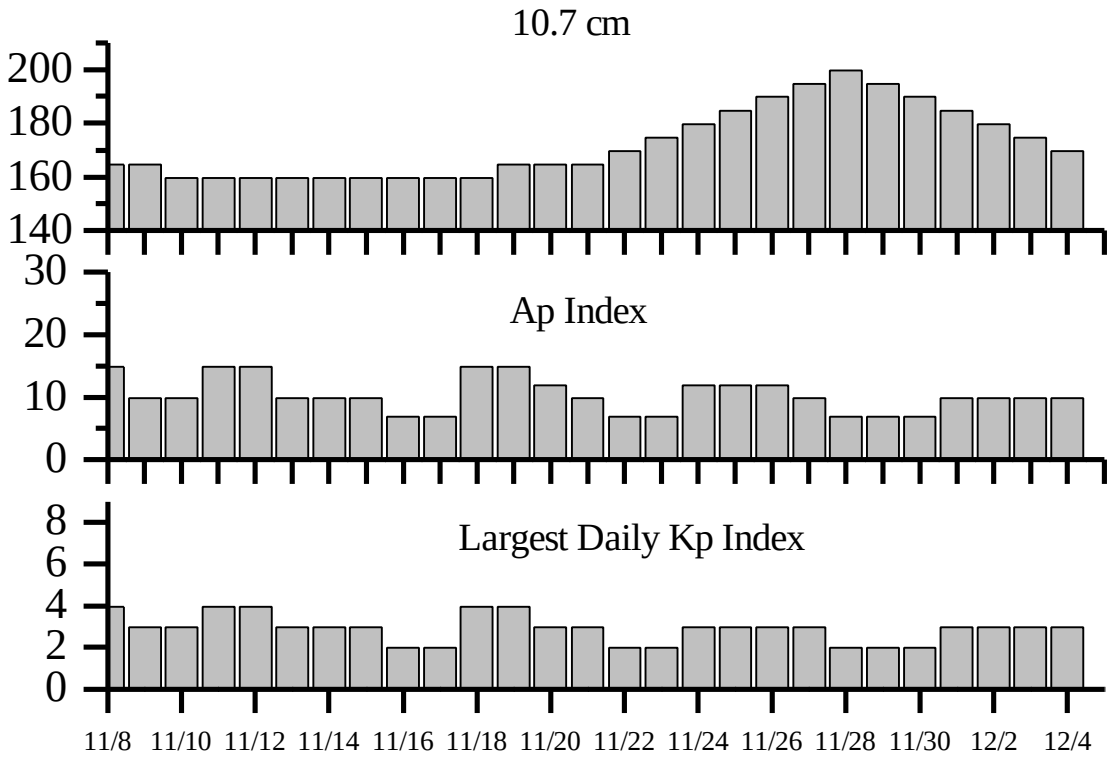
Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg A	K-indices	High Latitude College A	K-indices	Estimated Planetary A	K-indices
30 October	*	5-2-3-3-2-1-*-0	*	3-3-1-5-3-3-*-0	13	5-3-2-4-1-3-2-1
31 October	8	3-2-2-1-1-3-2-2	15	1-1-3-5-2-3-3-3	11	3-2-2-3-2-4-3-3
01 November	4	2-2-1-0-0-1-1-2	7	3-2-3-0-2-2-1-1	6	2-2-2-1-2-2-2-2
02 November	1	1-0-0-0-1-0-1-0	*	2-0-0-0-*-0-0-0	4	2-1-0-1-1-2-2-1
03 November	5	0-0-0-2-3-2-2-2	8	0-0-0-0-4-2-4-1	5	0-0-1-2-2-2-2-2
04 November	17	3-4-3-3-3-3-4-2	30	1-5-4-6-4-3-4-3	23	2-5-4-4-4-4-4-3
05 November	8	3-2-1-0-3-2-2-2	20	3-3-1-4-4-5-3-2	10	3-3-1-1-3-3-3-3

Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UT
30 Oct 0000	ENDED A ≥ 30 Observed	29 Oct 1200
30 Oct 0229	K= 4 Warning	30 Oct 0300 to 1200
30 Oct 0300	K= 5 Observed	30 Oct 00 - 03
30 Oct 0901	ENDED A ≥ 20 Observed	29 Oct 0300
31 Oct 0019	2 - 245 MHz Bursts	30 Oct
31 Oct 1643	K= 5 Warning	31 Oct 1645 - 01 Nov 0000
31 Oct 1730	Electron Event >2MeV ≥1000pfu	31 Oct 1715
31 Oct 1738	Sudden Impulse observed at Boulder	31 Oct 1715
31 Oct 2027	CANCELLED K= 5 Warning	31 Oct 1645 - 01 Nov 0000
31 Oct 2221	K= 4 Observed	31 Oct 15 - 18
01 Nov 0031	1 - 245 MHz Bursts	31 Oct
02 Nov 1846	A ≥ 20 Watch for	04 Nov
04 Nov 0317	Sudden Impulse observed at Boulder	04 Nov 0222
04 Nov 0530	K= 5 Warning	04/0529 – 05/1500 Nov
04 Nov 0602	K= 5 Observed	04 Nov 0300 to 0600
05 Nov 0300	A ≥ 20 Observed	05 Nov 0300
05 Nov 0601	ENDED A ≥ 20 Observed	05 Nov 0300

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 Nov	165	15	4	22 Nov	170	7	2
09	165	10	3	23	175	7	2
10	160	10	3	24	180	12	3
11	160	15	4	25	185	12	3
12	160	15	4	26	190	12	3
13	160	10	3	27	195	10	3
14	160	10	3	28	200	7	2
15	160	10	3	29	195	7	2
16	160	7	2	30	190	7	2
17	160	7	2	01 Dec	185	10	3
18	160	15	4	02	180	10	3
19	165	15	4	03	175	10	3
20	165	12	3	04	170	10	3
21	165	10	3				

Energetic Events

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

No Events Observed

Flare List

Date	Time Begin	Time Max	Time End	X-ray Class.	Optical Imp / Brtns	Optical Location Lat CMD	Optical Rgn
30 October	0724	0728	0733	C1.5			
	1350	1350	1412	C4.3	1F	S23E08	9209
	1420	1420	1425		SF	S25E21	9210
31 October	0006	0010	0031	C2.1	SF	S21E08	9209
	0253	0300	0322	C6.0	1F	S18E07	9209
	0857	0858	0907	C1.6	SF	S17W26	9207
	1750	1751	1800		SF	S02E35	9213
	2020	2026	2029	C2.0	SF	S20W02	9209
01November	0926	0931	0935	C2.5			
	1040	1042	1049		SF	N20E44	9218
	1302	1308	1320	C3.2	SF	N17E44	9218
	1536	1537	1540		SF	N06E24	9212
	1551	1610	1721	C2.2			
	1840	1844	1854	C3.8	SF	N20E42	9218
	2130	2133	2147		SF	N19E42	9218
	2301	2303	2311	C2.5	SF	N19E39	9218
02 November	0721	0725	0729	C2.9	SF	N20E34	9218
	0821	0823	0828		SF	S11E07	9214
	1836	1838	1843	C2.5	SF	N13E14	9212
	1856	1858	1907		SF	N01E13	9213
03 November	0423	0425	0428		SF	N01E02	9213
	0444	0512	0532	C3.8	SF	N07W02	9212
	0459	0511	0523		SF	N07E05	9213
	1323	1326	1334	C1.2	SF	S28W25	9210
	1449	1451	A1513		SF	S10W08	9214
	1532	1552	1559	C1.9			
	1851	1852	1920	C3.2	SF	N02W02	9213
	2015	2017	2023		SF	S21W41	9209
	2059	2102	2122	C5.3	SF	S20W42	9209
	2258	2259	2311		SF	N10W07	9212

Flare List – continued.

Date	Time Begin	Time Max	Time End	X-ray	Optical Imp / Class.	Optical Location Brtns	Rgn Lat CMD
04 November	0440	0441	0445		SF	S23W75	9217
	0719	0726	0734	C3.9			
	0738	0741	0744	C5.0	SF	N10W14	9212
	0925	0929	0931	C2.9			
	1026	1032	1036	C3.4			
	2039	2043	2045	C1.6			
05 November	0115	0148	0232	C5.4	1F	N14W06	9218
	0432	0436	0440	C1.9			
	0523	0526	0529	C1.5			
	1549	1549	1556		SF	N03W26	9213
	1559	1602	1612	C2.9	SF	S18W63	9209

Region Summary

Date	Location (° Lat ° CMD)	Location Helio Lon	Sunspot Characteristics Area (10^{-6} hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	Flares X-ray C	X-ray M	X-ray X	Optical S	Optical 1	Optical 2	Optical 3	Optical 4
		Region 9206													
23 Oct	N21E53	353	0020	03	CRO	004	B								
24 Oct	N21E40	353	0020	01	HSX	001	A								
25 Oct	N22E29	351	0010	07	BXO	004	B								
26 Oct	N21E14	353	0010	07	BXO	005	B								
27 Oct	N22E03	351	0020	08	CSO	007	B								
28 Oct	N22W11	351	0010	06	BXO	007	B								
29 Oct	N22W22	349	0030	06	CAO	004	B								
30 Oct	N23W31	345	0040	04	DAO	009	B								
31 Oct	N23W45	346	0030	04	CSO	005	B								
01 Nov	N23W58	346	0040	06	CRO	008	B								
02 Nov	N23W72	346	0010	08	BXO	005	B								
03 Nov	N23W85	346	0010	05	BXO	002	B								
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 351

Region Summary-continued

Date	Location (° Lat ° CMD)	Helio Lon	Sunspot Characteristics Area (10^{-6} hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	Flares X-ray C	M	X	Optical S	1	2	3	4
			Region 9207												
23 Oct	S20E65	341	0010	01	HRX	001	A								
24 Oct	S18E51	342	0030	06	CAO	005	B								
25 Oct	S18E42	338	0110	06	CAO	004	B				1				
26 Oct	S19E27	340	0090	05	DSO	007	B								
27 Oct	S19E14	340	0040	05	CSO	009	B								
28 Oct	S19E01	339	0010	06	BXO	005	B								
29 Oct	S17W12	339	0010	03	BXO	003	B								
30 Oct	S17W25	339													
31 Oct	S17W38	339						1			1				
01 Nov	S17W51	339													
02 Nov	S17W64	339													
03 Nov	S17W77	339													
								1	0	0	2	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 339

Date	Location (° Lat ° CMD)	Helio Lon	Sunspot Characteristics Area (10^{-6} hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	Flares X-ray C	M	X	Optical S	1	2	3	4
			Region 9208												
23 Oct	S10E77	329	0020	02	HSX	001	A								
24 Oct	S09E63	330	0020	01	HSX	001	A								
25 Oct	S08E51	329	0080	03	CSO	006	B								
26 Oct	S08E39	328	0050	04	CSO	003	B								
27 Oct	S10E24	330	0040	01	HSX	001	A								
28 Oct	S10E10	330	0020	01	HSX	002	A								
29 Oct	S09W03	330	0010	04	CSO	002	B								
30 Oct	S09W16	330	0010	04	CSO	002	B								
31 Oct	S08W30	331	0000	01	AXX	001	A								
01 Nov	S08W43	331	0000	01	AXX	001	A								
02 Nov	S10W56	330	0010	03	BXO	002	B								
03 Nov	S08W69	330	0000	00	AXX	001	A								
04 Nov	S08W82	330													
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 330

Region Summary-continued

Date	Location (° Lat ° CMD)	Helio Lon	Sunspot Characteristics Area (10^{-6} hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	Flares X-ray C	X-ray M	X-ray X	Optical S	Optical 1	Optical 2	Optical 3	Optical 4
	Region 9209														
25 Oct	S25E71	309	0130	03	DAO	003	B	1			3				
26 Oct	S24E59	308	0180	07	DSO	007	B	2			2	1			
27 Oct	S24E48	306	0240	08	DAI	016	B								
28 Oct	S24E34	306	0200	09	DSI	020	B								
29 Oct	S24E21	306	0270	09	DAI	023	BG		1		1		1		
30 Oct	S23E07	307	0200	07	DAI	030	B	1				1			
31 Oct	S22W06	307	0200	08	DAI	016	B	3			2	1			
01 Nov	S23W19	307	0160	07	DAO	015	B								
02 Nov	S23W31	305	0140	07	DSO	013	B								
03 Nov	S22W43	304	0150	09	DAO	015	B	1			2				
04 Nov	S22W55	303	0200	10	DSO	017	B								
05 Nov	S22W69	304	0150	10	CAO	010	B	1			1				
								9	1	0	11	3	1	0	0

Still on Disk.
Absolute heliographic longitude: 307

Date	Location (° Lat ° CMD)	Helio Lon	Sunspot Characteristics Area (10^{-6} hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	Flares X-ray C	X-ray M	X-ray X	Optical S	Optical 1	Optical 2	Optical 3	Optical 4
	Region 9210														
26 Oct	S30E74	293	0070	02	HSX	001	A								
27 Oct	S30E59	295	0110	06	DSO	006	B								
28 Oct	S30E49	291	0100	07	DSI	004	B								
29 Oct	S29E35	292	0090	05	CAO	008	B				2				
30 Oct	S29E21	293	0040	06	DSO	010	B				1				
31 Oct	S28E08	293	0040	05	CSO	011	B								
01 Nov	S28W05	293	0020	04	CRO	008	B								
02 Nov	S27W17	291	0030	07	CSO	009	B								
03 Nov	S27W30	291	0020	04	CSO	012	B	1			1				
04 Nov	S28W41	289	0040	03	DSO	007	B								
05 Nov	S26W54	289	0030	01	CSO	003	B								
								1	0	0	4	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 293

Date	Location (° Lat ° CMD)	Helio Lon	Sunspot Characteristics Area (10^{-6} hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	Flares X-ray C	X-ray M	X-ray X	Optical S	Optical 1	Optical 2	Optical 3	Optical 4
	Region 9211														
27 Oct	N30W43	037	0000	01	AXX	002	A								
28 Oct	N33W53	033	0010	03	BXO	003	B								
29 Oct	N33W66	033													
30 Oct	N33W79	033													
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 37

Region Summary-continued

Date	Location (° Lat ° CMD)	Helio Lon	Sunspot Characteristics Area (10^{-6} hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	Flares X-ray C	M	X	Optical S	1	2	3	4
			Region 9212												
28 Oct	N06E76	264	0200	07	DAO	003	B	1			1				
29 Oct	N08E61	266	0270	06	DAO	007	B	2			2				
30 Oct	N07E46	268	0180	08	DAI	016	B								
31 Oct	N10E34	267	0110	06	DAO	011	B								
01 Nov	N10E22	266	0120	11	EAO	018	B				1				
02 Nov	N09E06	268	0090	11	CAO	026	B	1			1				
03 Nov	N09W08	269	0170	13	ESO	020	B	1			2				
04 Nov	N09W20	268	0040	06	DSO	016	B	1			1				
05 Nov	N10W34	269	0020	06	BXO	009	B								
								6	0	0	8	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 268

			Region 9213												
28 Oct	N00E71	269	0190	03	HSX	002	A	1			1				
29 Oct	N02E57	270	0210	03	HSX	004	A								
30 Oct	N00E43	271	0230	03	DAO	011	B								
31 Oct	N02E30	271	0200	03	CAO	007	B				1				
01 Nov	N02E17	271	0210	05	CAO	011	B								
02 Nov	N03E04	270	0220	07	CAO	009	B				1				
03 Nov	N03W09	270	0190	04	HAX	007	A	1			3				
04 Nov	N03W24	272	0250	03	HAX	003	A								
05 Nov	N03W37	272	0110	03	HAX	004	A				1				
								2	0	0	7	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 270

			Region 9214												
28 Oct	S13E70	270	0050	06	CSO	005	B				3				
29 Oct	S11E55	272	0190	09	DSO	006	B	1			1	1			
30 Oct	S13E40	274	0170	10	DSO	010	B								
31 Oct	S11E27	274	0100	11	EAO	014	B								
01 Nov	S09E14	274	0170	12	EAO	015	B								
02 Nov	S12E01	273	0160	13	ESO	017	B				1				
03 Nov	S12W12	273	0120	14	ESO	014	B				1				
04 Nov	S11W25	273	0090	13	CSO	006	B								
05 Nov	S09W45	280	0070	03	CSO	003	B								
								1	0	0	6	1	0	0	0

Still on Disk.
Absolute heliographic longitude: 273

Region Summary-continued

Date	Location (° Lat ° CMD)	Helio Lon	Sunspot Characteristics Area (10^{-6} hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	Flares X-ray C	X-ray M	X-ray X	Optical S	Optical 1	Optical 2	Optical 3	Optical 4
	Region 9215														
29 Oct	N20W57	024	0010	05	BXO	004	B								
30 Oct	N20W70	024													
31 Oct	N20W83	024													
								0	0	0	0	0	0	0	0
Crossed West Limb.															
Absolute heliographic longitude:		024													
	Region 9216														
29 Oct	N17W07	334	0000	01	AXX	002	A								
30 Oct	N17W20	334													
31 Oct	N17W33	334													
								0	0	0	0	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		334													
	Region 9217														
01 Nov	S23W45	333	0030	04	CSO	006	B								
02 Nov	S22W58	332	0030	04	CRO	003	B								
03 Nov	S22W74	335	0020	00	HSX	001	A								
								0	0	0	0	0	0	0	0
Crossed West Limb.															
Absolute heliographic longitude:		333													
	Region 9218														
01 Nov	N18E39	249	0070	06	DSO	012	B	3			5				
02 Nov	N19E26	248	0250	10	DAI	016	B	1			1				
03 Nov	N19E12	249	0270	10	DAO	012	B								
04 Nov	N20E00	248	0270	13	EAO	010	B								
05 Nov	N20W14	249	0250	14	ESO	016	B	1				1			
								5	0	0	6	1	0	0	0
Still on Disk.															
Absolute heliographic longitude:		248													
	Region 9219														
01 Nov	N06E66	222	0110	02	HSX	001	A								
02 Nov	N06E53	221	0120	02	HSX	001	A								
03 Nov	N06E39	222	0140	03	HSX	001	A								
04 Nov	N06E26	222	0130	02	HSX	001	A								
05 Nov	N06E12	223	0110	02	HSX	001	A								
								0	0	0	0	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		223													

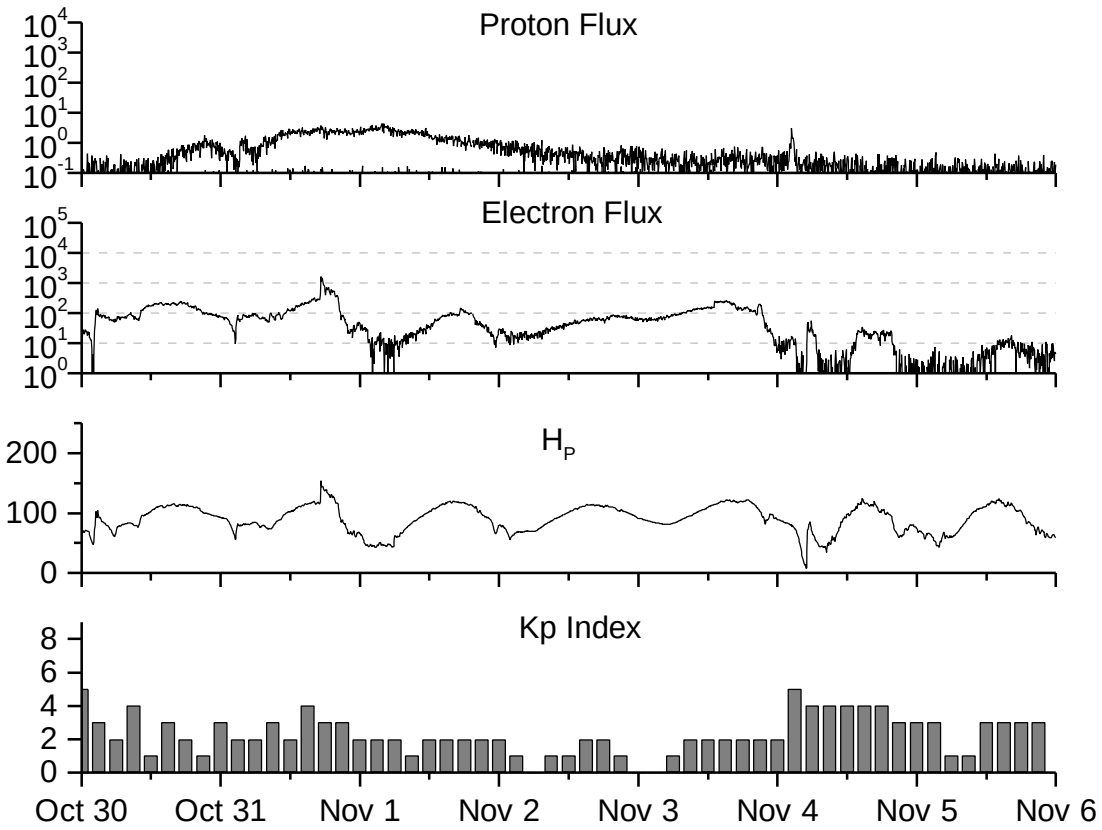
Region Summary-continued

Date	Location (° Lat ° CMD)	Helio Lon	Area (10^{-6} hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	Flares X-ray C	M	X	Optical S	1	2	3	4
			Region 9220												
01 Nov	N08E75	213	0010	01	AXX	001	A								
02 Nov	N09E62	212	0010	01	AXX	002	A								
03 Nov	N09E46	215	0000	00	AXX	001	A								
04 Nov	N06E37	211	0030	08	CRO	007	B								
05 Nov	N07E23	212	0020	08	CRO	006	B								
								0	0	0	0	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		212													
			Region 9221												
04 Nov	S16E75	173	0060	09	DSO	002	B								
05 Nov	S15E58	177	0120	05	DSO	003	B								
								0	0	0	0	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		177													
			Region 9222												
05 Nov	N17W35	270	0060	06	DAO	007	B								
								0	0	0	0	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		270													
			Region 9223												
05 Nov	S19E71	164	0040	01	HSX	001	A								
								0	0	0	0	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		164													

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

	Sunspot Numbers					Radio Flux		Geomagnetic	
	Observed values		Ratio	Smooth values		*Penticton	Smooth	Planetary	Smooth
Month	SWO	RI	RI/SWO	SWO	RI	10.7 cm	Value	Ap	Value
					1998				
November	99.5	74.0	0.74	101.3	73.0	140.2	130.0	16	12.4
December	120.8	81.9	0.68	108.8	77.9	150.1	134.3	08	11.9
					1999				
January	94.3	62.0	0.66	116.5	82.6	142.6	139.0	10	11.7
February	93.4	66.3	0.71	120.2	84.6	142.0	142.6	12	11.6
March	100.5	68.8	0.68	120.5	83.8	126.3	144.0	14	11.7
April	92.9	63.7	0.69	123.8	85.5	117.2	145.8	12	12.2
May	140.5	106.4	0.76	131.7	90.5	148.6	149.9	08	12.4
June	208.3	137.7	0.66	136.0	93.1	169.8	152.9	07	12.4
July	169.2	113.5	0.67	138.0	94.3	165.6	154.4	10	12.6
August	136.1	93.7	0.69	142.8	97.5	170.8	156.3	15	12.9
September	107.4	71.5	0.67	150.0	102.3	135.7	161.0	19	12.8
October	167.7	116.7	0.70	158.5	107.8	164.8	167.2	19	12.7
November	199.3	133.2	0.67	164.7	110.9	191.5	171.5	14	13.1
December	123.5	86.4	0.69	165.9	111.0	169.8	173.4	10	13.8
					2000				
January	140.8	90.1	0.64	168.0	112.8	158.1	175.5	13	14.5
February	161.9	112.9	0.70	172.1	116.6	173.2	176.8	15	15.1
March	203.6	138.5	0.68	175.4	119.8	208.2	178.4	09	15.1
April	193.4	125.3	0.65	176.3	120.7	184.2	180.5	15	14.9
May	188.8	120.8	0.64			184.5		15	
June	190.3	124.9	0.66			179.8		15	
July	236.7	169.1	0.71			204.7		21	
August	166.6	130.5	0.78			163.1		18	
September	157.9	109.9	0.70			182.1		16	
October	138.9	100.1	0.72			167.8		16	

NOTE: All smoothed values after September 1999 and monthly values after March 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 30 October 2000

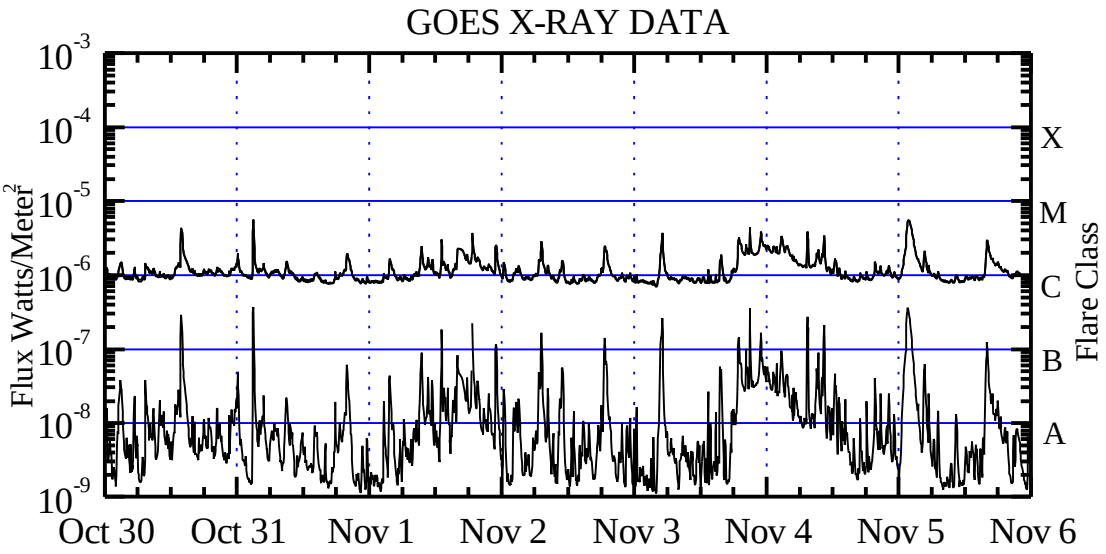
Protons plot contains the five-minute averaged integral proton flux (protons/cm^2 –sec –sr) as measured by GOES-8 (W75) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

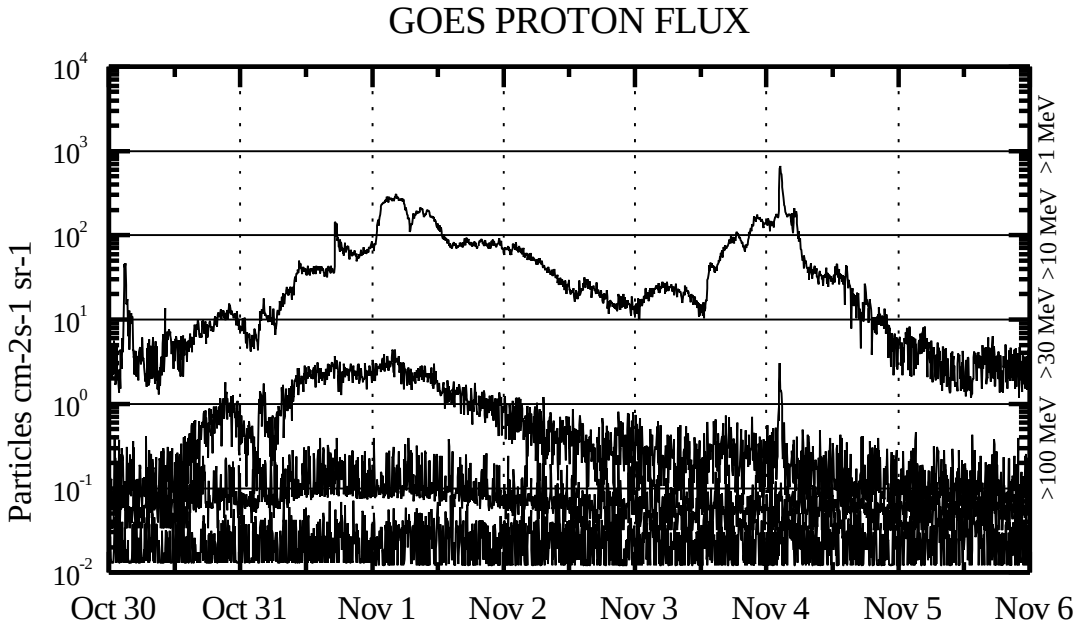
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm^2 –sec –sr) with energies greater than 2 MeV at GOES-8.

Hp 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.

Kp plot contains the estimated planetary 3-hour K-index (derived by the USAF 55th 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 Kp 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 Kp are " global " parameters that are applicable to a first order approximation over large areas. Hparallel is subject to more localized phenomena and the measurements generally are applicable to within a few degrees of longitude of the measuring satellite.

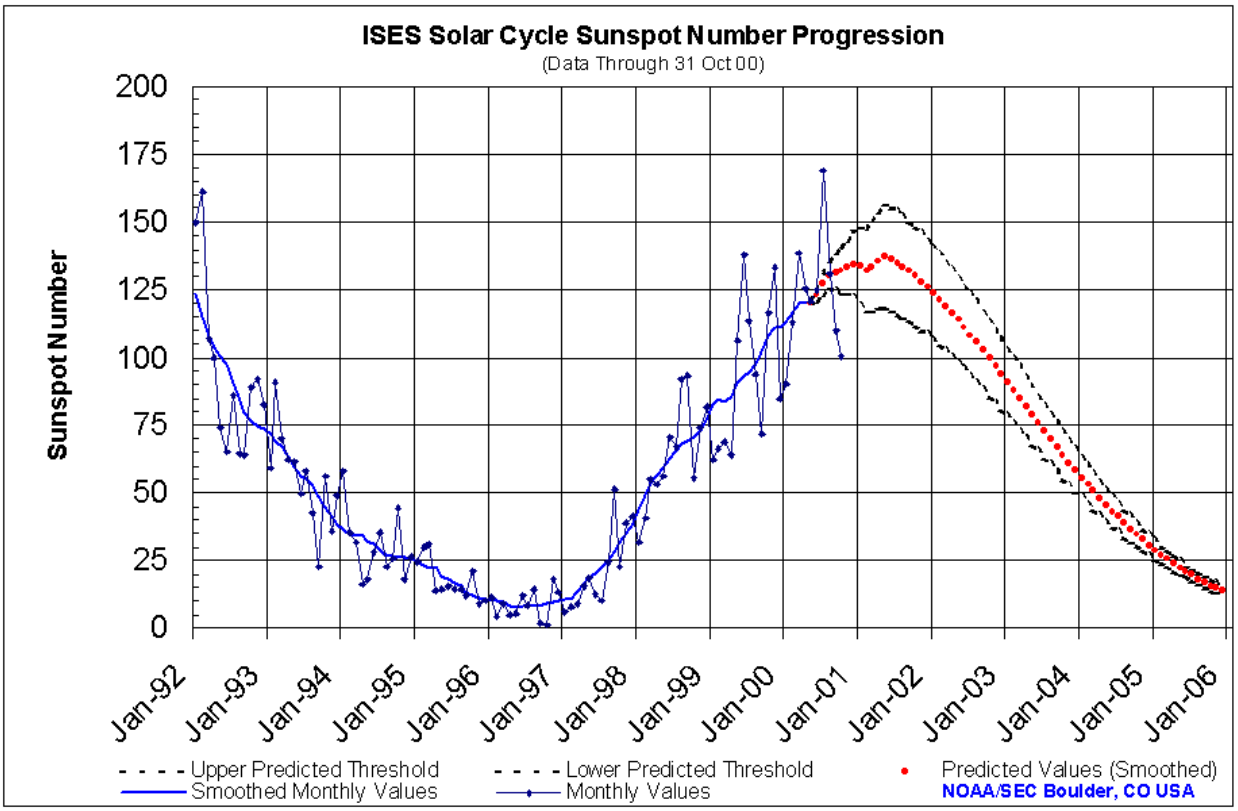




W*eekly GOES Satellite X-ray and Proton Plots*

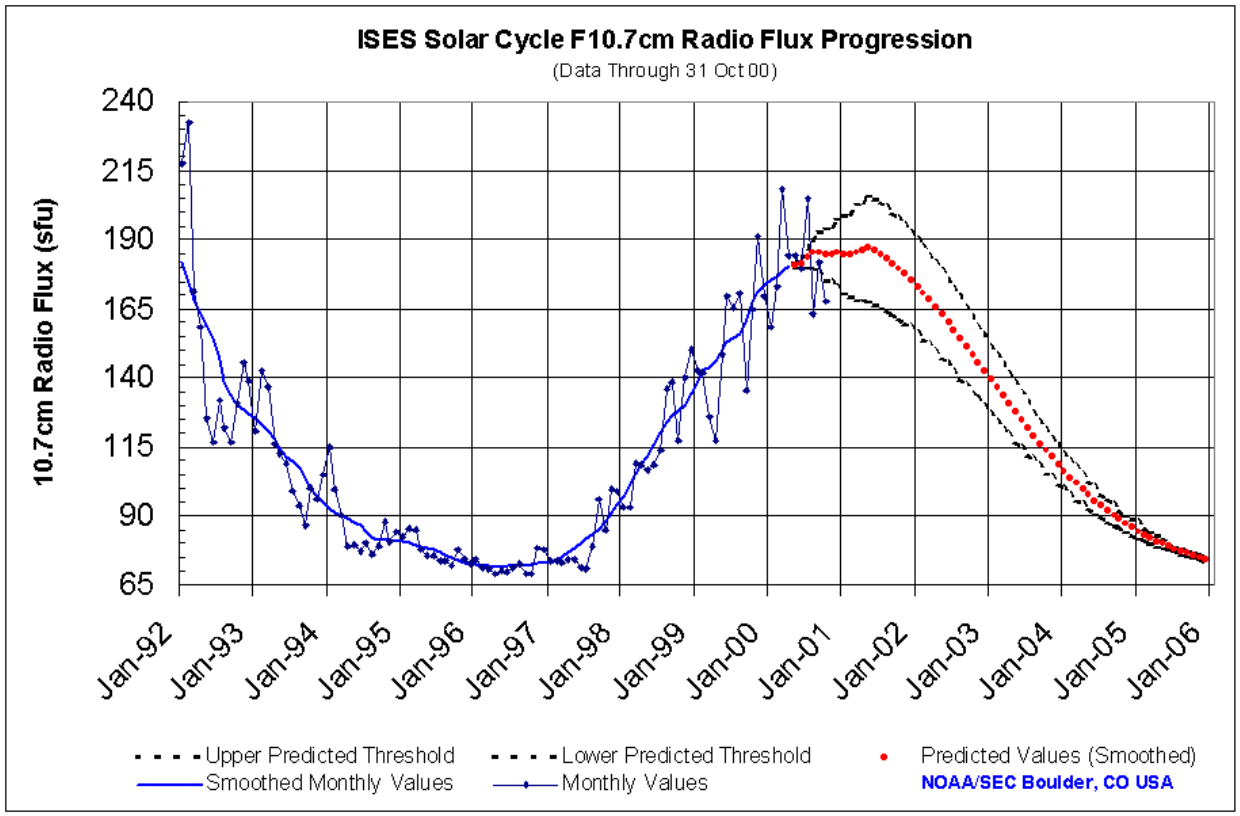
X-ray plot contains five-minute averaged x-ray flux (watts/m$^{2)}$ as measured by GOES 8 and 10 in two wavelength bands, .05 -. 4 and .1 - .8 nm. The letters A, B, C, M and X refer to x-ray event levels for the .1 - .8 nm band.

Proton plot contains the five-minute averaged integral proton flux (protons/cm^2 –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^2-sec-sr) at greater than 10 MeV.



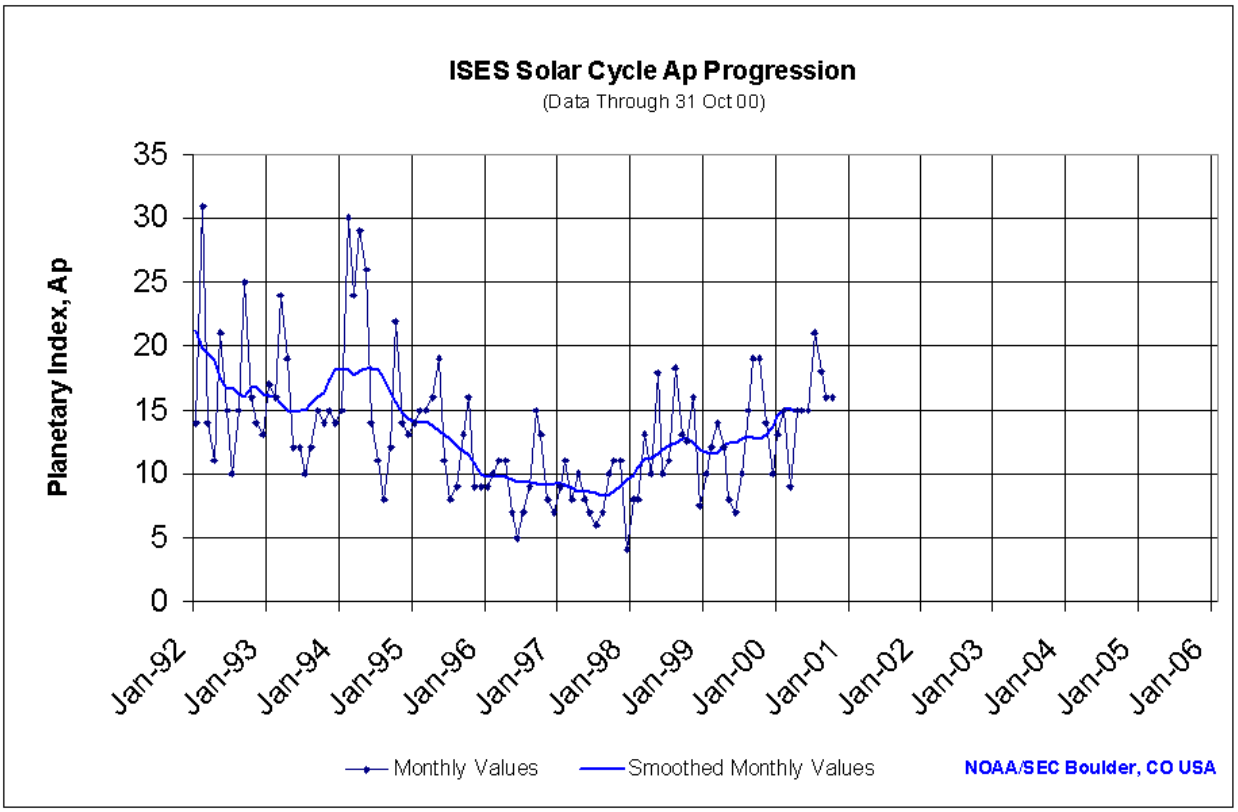
SEC Prediction of Smoothed Sunspot Number

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1996	10	10	10	9	8	9	8	8	8	9	10	10
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)
1997	11	11	14	17	18	20	23	25	28	32	35	39
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)
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	**120**	**123**	**127**	**130**	**132**	**132**	**133**	**135**
	(***)	(***)	(***)	(***)	(1)	(2)	(4)	(5)	(7)	(9)	(10)	(12)
2001	**134**	**132**	**133**	**135**	**137**	**136**	**135**	**133**	**132**	**130**	**128**	**126**
	(14)	(15)	(17)	(18)	(19)	(19)	(19)	(19)	(18)	(18)	(18)	(17)
2002	**124**	**121**	**119**	**116**	**114**	**111**	**108**	**106**	**103**	**100**	**97**	**94**
	(17)	(17)	(16)	(16)	(16)	(15)	(15)	(15)	(14)	(14)	(13)	(13)
2003	**91**	**88**	**85**	**82**	**79**	**76**	**73**	**70**	**67**	**64**	**61**	**58**
	(12)	(12)	(12)	(11)	(11)	(10)	(10)	(9)	(9)	(9)	(8)	(8)
2004	**56**	**53**	**51**	**48**	**46**	**43**	**41**	**39**	**37**	**35**	**33**	**31**
	(7)	(7)	(7)	(6)	(6)	(6)	(5)	(5)	(5)	(4)	(4)	(4)
2005	**29**	**27**	**25**	**24**	**22**	**21**	**20**	**18**	**17**	**16**	**15**	**14**
	(4)	(3)	(3)	(3)	(3)	(2)	(2)	(2)	(2)	(2)	(2)	(1)



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	86	89	91	94
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)
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	**181**	**181**	**183**	**185**	**185**	**185**	**185**	**185**
	(***)	(***)	(***)	(***)	(1)	(2)	(4)	(5)	(7)	(9)	(10)	(12)
2001	**185**	**185**	**185**	**186**	**187**	**186**	**185**	**183**	**181**	**180**	**178**	**175**
	(14)	(15)	(17)	(18)	(19)	(19)	(19)	(19)	(18)	(18)	(18)	(17)
2002	**173**	**171**	**168**	**166**	**163**	**160**	**157**	**155**	**152**	**149**	**146**	**143**
	(17)	(17)	(16)	(16)	(16)	(15)	(15)	(15)	(14)	(14)	(13)	(13)
2003	**139**	**136**	**133**	**131**	**128**	**125**	**122**	**119**	**116**	**114**	**111**	**109**
	(12)	(12)	(12)	(11)	(11)	(10)	(10)	(8)	(8)	(8)	(7)	(7)
2004	**106**	**104**	**102**	**100**	**98**	**96**	**94**	**92**	**90**	**89**	**87**	**86**
	(6)	(6)	(6)	(5)	(5)	(5)	(4)	(4)	(4)	(3)	(3)	(3)
2005	**85**	**83**	**82**	**81**	**80**	**79**	**78**	**77**	**77**	**76**	**75**	**75**
	(3)	(2)	(2)	(2)	(2)	(1)	(1)	(1)	(1)	(1)	(1)	(1)


ISES Solar Cycle Ap Progression
(Data Through 31 Oct 00)
Planetary Index, Ap
35
30
25
20
15
10
5
0
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Monthly Values
Smoothed Monthly Values
NOAA/SEC Boulder, CO USA

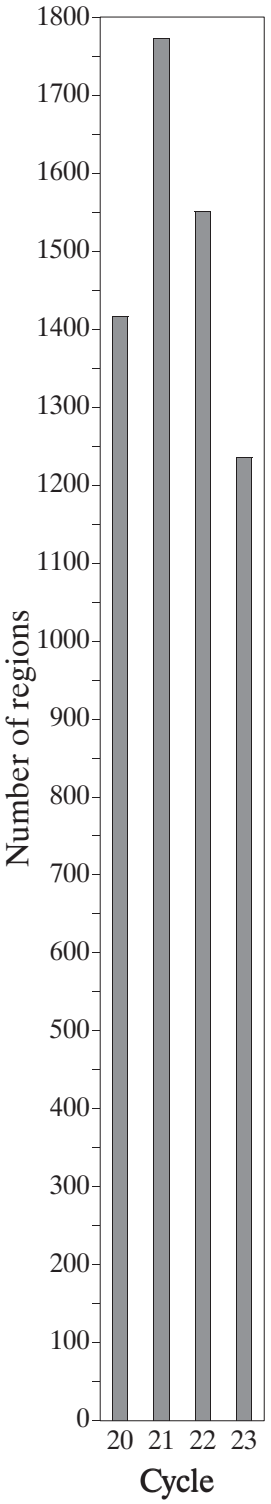
Active Regions

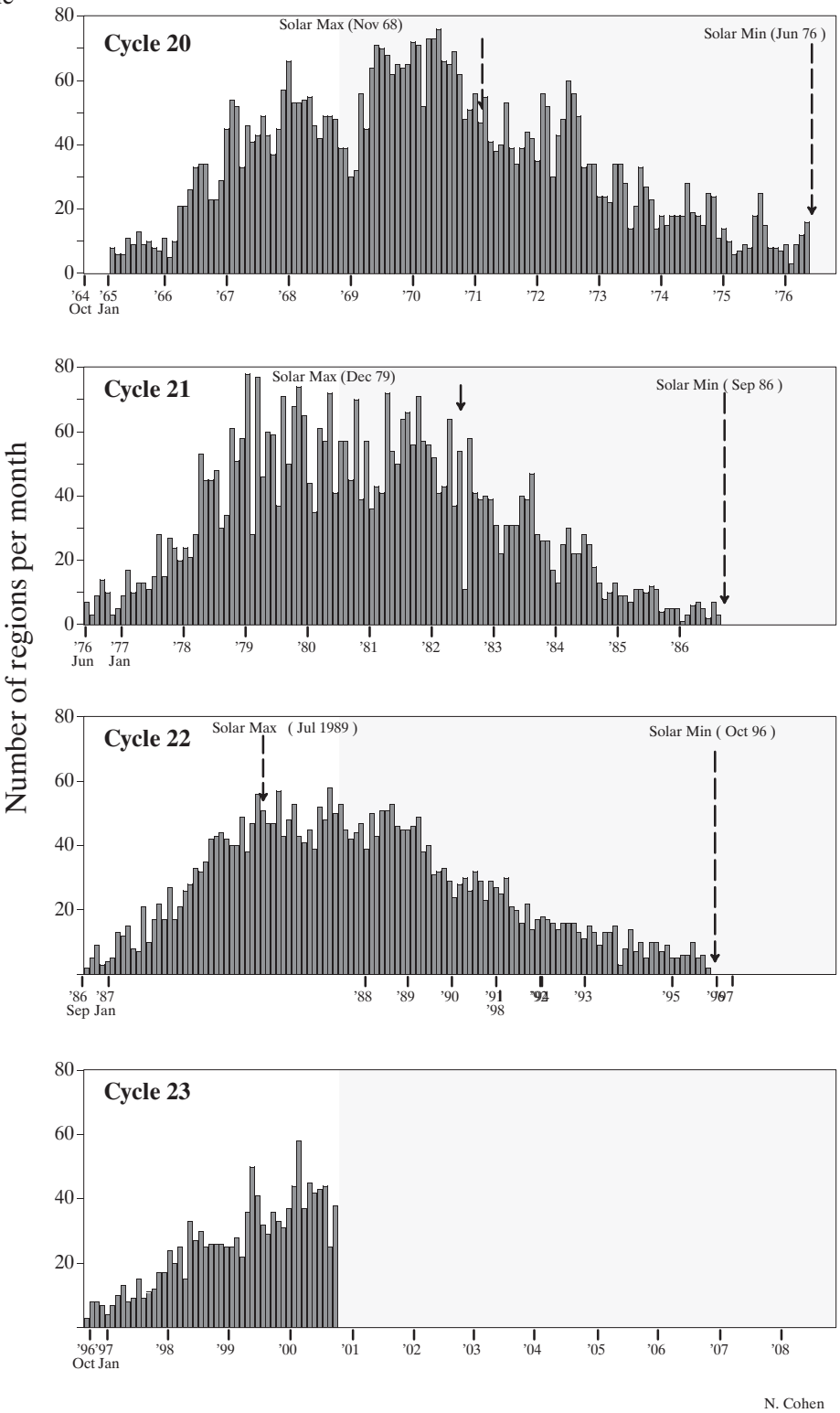
Space Environment Center

October 2000
(Month 49)

Preliminary data

Comparison of Cycles
at current month in cycle





N. Cohen