

Space Weather Highlights
27 – November – 03 December 2000

SWO PRF 1318
28 November 2000

Solar activity was at low to moderate levels. Activity was at low levels during 27 - 29 November due to C-class flares from a few regions of moderate size and complexity. Flare producing regions of note included Region 9236 (N20, L = 352, class/area Eko/630 on 27 November), which was responsible for last week's major flare activity, and Region 9246 (S12, L = 248, class/area Eai/220 on 30 November). Region 9236 was large and magnetically complex, but slowly decayed before making an uneventful west limb passage on 30 November. Region 9246 was moderate in size and magnetic complexity and in a development phase until 01 December, then stabilized. It produced a C9/Sf flare at 29/0629 UTC with an associated Type II radio sweep. Activity rose to moderate levels on 30 November as Region 9246 produced an M1/Sf flare at 30/2038 UTC. It may have also been responsible for an optically uncorrelated M1 X-ray flare at 30/0925 UTC. Activity was low during the rest of the period due to isolated C-class X-ray flares, most of which were optically uncorrelated.

Data were available from the Advanced Composition Explorer (ACE) spacecraft for most of the period. CMEs associated with last week's major flare activity passed the spacecraft during the first two days of the period with increased velocities (peaks to 670 km/sec) and densities along with variable IMF Bz and solar sector. Maximum southerly deflections during this period reached minus 15 nT (GSM). A period of prolonged southward IMF Bz occurred during 03 December with deflections to minus 10 nT. Positive polarity (away) sector conditions began on 01 December.

The greater than 10 MeV proton event that began at 24/1520 UTC ended at 29/0200 UTC. The greater than 100 MeV proton flux was enhanced at the beginning of the period, then declined to background levels by 28 November.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal to moderate levels during 27 - 28 November, then decreased to normal levels for the balance of the period.

The geomagnetic field was disturbed during 27 - 29 November due to CME passages associated with major flares from Region 9236. Active to severe storm levels were detected during the disturbance. Activity decreased to mostly quiet levels during 30 November - 02 December. Unsettled to briefly active levels occurred on 03 December due to prolonged periods of southward IMF Bz.

Space Weather Outlook
06 December - 01 January 2001

Solar activity is expected to be at mostly low levels through 12 December. Low to moderate activity is expected during the rest of the period due to the return of previously active longitudes.

Chances for a proton event are expected to increase beginning around 13 December due to the return of previously active longitudes.

The greater than 2 MeV electron flux at geosynchronous orbit may reach moderate to high levels during 10 - 11 December. Otherwise, normal to moderate fluxes are expected.

Active levels will be possible around 09 December due to coronal hole effects. Quiet to unsettled levels are expected during the rest of the period, 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			Optical				
					C	M	X	S	1	2	3	4
27 November	192	121	1120	B8.9	7	0	0	7	1	0	0	0
28 November	196	154	1280	B8.9	2	0	0	11	0	0	0	0
29 November	188	160	1300	B8.7	12	0	0	11	0	0	0	0
30 November	192	191	1130	B7.3	5	2	0	11	0	0	0	0
01 December	185	157	700	B7.9	6	0	0	4	0	0	0	0
02 December	167	141	560	B6.5	2	0	0	1	0	0	0	0
03 December	164	186	630	B5.0	3	0	0	1	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
27 November	1.3E+8	1.3E+7	1.0E+4		1.7E+7	
28 November	5.4E+7	3.4E+6	1.8E+3		7.0E+6	
29 November	1.9E+7	5.1E+5	1.5E+3		2.2E+6	
30 November	6.9E+6	3.7E+5	1.6E+3		1.2E+6	
01 December	3.3E+6	2.5E+5	2.1E+3		1.1E+6	
02 December	1.9E+6	1.6E+5	2.1E+3		3.1E+6	
03 December	2.6E+6	9.1E+4	2.2E+3		3.5E+6	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	27 November	27	5-5-5-4-3-2-3-2	51	5-5-7-6-4-4-4-2	38
28 November	18	3-3-4-4-4-2-2-3	65	2-5-7-6-7-5-4-4	37	3-3-6-5-6-6-4-4
29 November	32	5-6-5-3-4-3-2-3	62	5-6-7-5-6-5-4-4	52	5-7-6-5-6-4-2-3
30 November	4	0-1-1-2-2-1-1-1	8	1-1-2-3-2-3-2-1	6	1-1-2-2-2-3-2-2
01 December	3	2-1-0-2-1-1-0-0	12	1-1-0-3-5-4-1-0	6	2-2-0-2-2-3-2-2
02 December	3	0-0-1-1-2-2-1-1	6	0-0-1-1-3-4-1-0	4	1-0-1-2-2-2-2-2
03 December	7	0-1-3-1-3-1-3-0	22	0-0-4-4-5-5-4-0	12	1-1-3-3-4-4-3-1

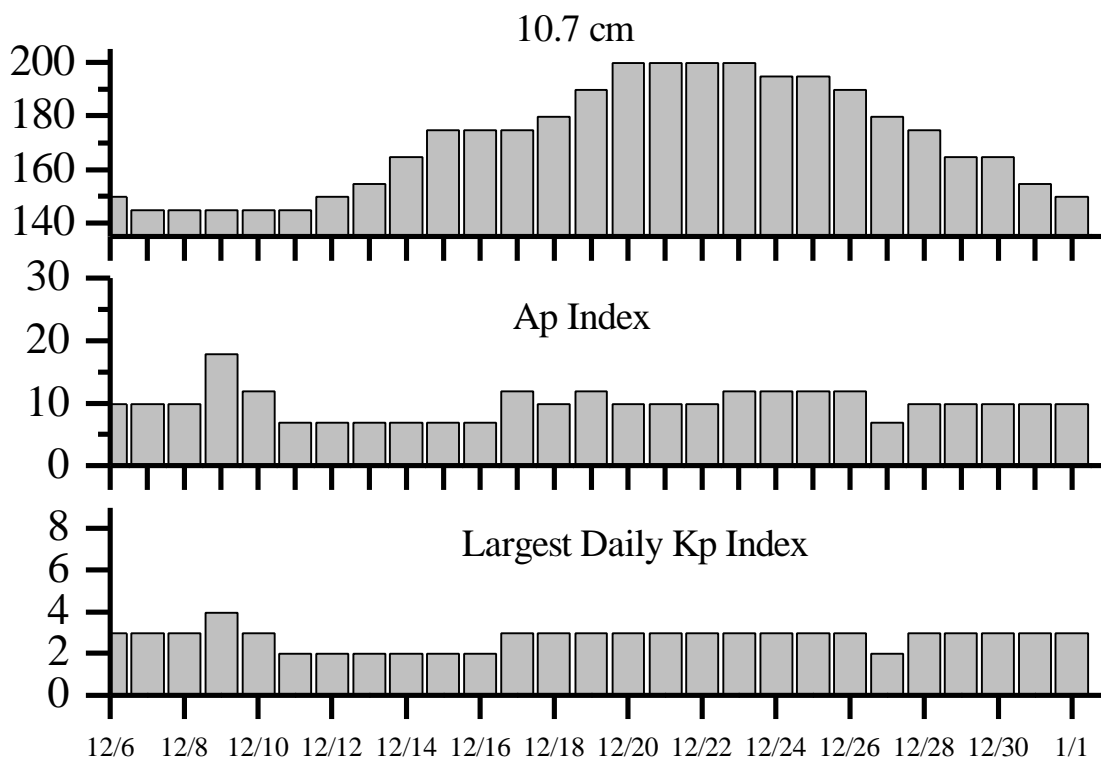


Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UT
27 Nov 0000	A \geq 20 Observed	27 Nov 0000
27 Nov 0053	K \geq 6 Warning	27 Nov 0100 - 1500
27 Nov 0115	7 – 245 MHz Bursts	26 Nov
27 Nov 0115	1 – 245 MHz Noise Storm	26 Nov
27 Nov 0527	A \geq 30 Warning valid from	27/0535 - 29/1500 Nov
27 Nov 0600	K = 6 Observed	27 Nov 0300 - 0600
27 Nov 0602	A \geq 30 Observed	27 Nov 0600
27 Nov 0652	A \geq 20 Watch for	29 Nov
27 Nov 0655	CANCELLED Proton >100 MeV >1 pfu Warning	26/1415 - 27/0000 Nov
27 Nov 2016	A \geq 30 Watch	29 Nov
27 Nov 2017	A \geq 20 Watch	30 Nov
27 Nov 2103	K= 4 Observed	27 Nov 1800 - 2100
27 Nov 2315	CONTINUED Proton >10 MeV ≥ 10 pfu Warning	25/0650 - 30/1500 Nov
28 Nov 0029	4 – 245 MHz Bursts	27 Nov
28 Nov 0600	ENDED A ≥ 30	27 Nov 0600
28 Nov 0859	K= 5 Warning	28 Nov 0900 -2359
28 Nov 0900	K= 5 Observed	28 Nov 0600 - 0900
28 Nov 1741	CONTINUED Protons Event >10 MeV ≥ 10 pfu	24 Nov 1520
28 Nov 1903	CANCELLED A ≥ 30 Watch	29 Nov
28 Nov 1904	CANCELLED A ≥ 20 Watch	30 Nov
28 Nov 2358	EXTENDED K= 5 Warning	28/0900 – 29/1500 Nov
29 Nov 0036	CONTINUED Protons Event >10 MeV ≥ 10 pfu	24 Nov 1520
29 Nov 0300	A ≥ 30 Observed	29 Nov 0300
29 Nov 0521	K \geq 6 Warning	29 Nov 0525 - 1500
29 Nov 0601	K \geq 7 Observed	29 Nov 0300 - 0600
29 Nov 0731	Type II Radio Emission	29 Nov 0629
29 Nov 2051	ENDED Protons Event >10 MeV ≥ 10 pfu	29 Nov 0200
30 Nov 0023	8 – 245 MHz Bursts	29 Nov
30 Nov 0023	245 MHz Noise Storm	29 Nov
30 Nov 0603	ENDED A ≥ 30 Observed	29 Nov 0300
30 Nov 0910	ENDED A ≥ 20 Observed	27 Nov 0000
01 Dec 0104	4 – 245 MHz Bursts	30 Nov
01 Dec 0104	245 MHz Noise Storm	30 Nov
02 Dec 0051	3 – 245 MHz Bursts	01 Dec
02 Dec 0051	245 MHz Noise Storm	01 Dec
03 Dec 0003	1 – 245 MHz Burst	02 Dec
03 Dec 0003	245 MHz Noise Storm	02 Dec
03 Dec 0727	K= 4 Warning valid	03 Dec 0730 - 1500
03 Dec 0858	K= 4 Observed	03 Dec 0600 - 0900
03 Dec 1802	K= 4 Observed	03 Dec 1500 - 1800



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
06 Dec	150	10	3	20 Dec	200	10	3
07	145	10	3	21	200	10	3
08	145	10	3	22	200	10	3
09	145	18	4	23	200	10	3
10	145	12	3	24	195	12	3
11	145	7	2	25	195	12	3
12	150	7	2	26	190	12	3
13	155	7	2	27	180	7	2
14	165	7	2	28	175	10	3
15	175	7	2	29	165	10	3
16	175	7	2	30	165	10	3
17	175	12	3	31	155	10	3
18	180	10	3	01 Jan	150	10	3
19	190	12	3				



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
30 Nov	0900	0925	0944	M1.0	.020							
30 Nov	2027	2038	2044	M1.3	.007	SF	S14E23	9246				

Flare List

Date	Time			X-ray Class.	Imp / Brtns	Optical Location Lat CMD	Rgn
	Begin	Max	End				
27 November	0003	0007	0011	C2.0			
	0017	0020	0026	C1.9	1F	N20W43	9236
	0334	0337	0346	C2.2	SF	N20E39	9242
	0449	0452	0456	C1.4			
	1717	1720	1727	C1.3	SF	N15W29	9244
	2046	2051	2104	C4.4	SF	N20E27	9242
	2108	2110	2119		SF	N20E27	9242
	2303	2305	2310		SF	N20W55	9236
	2320	2323	2331		SF	N18E26	9242
	2352	2352	2359	C4.0	SN	N19E27	9242
28 November	0316	0317	0320		SF	N20W53	9236
	0526	0526	0528		SF	N18W58	9236
	1427	1428	1433		SF	N20E17	9242
	1633	1637	1643		SF	S12E51	9246
	1646	1647	1657		SF	S12E51	9246
	1750	1756	1803		SF	N21E14	9242
	1804	1811	1818		SF	N21E15	9242
	B1910	U1910	1925	C1.3	SF	N19E21	9242
	1959	2001	2005		SF	S12E48	9246
	2151	2151	2200	C1.4	SF	N19E14	9242
29 November	2215	2215	2219		SF	N20E14	9242
	0057	0058	0112	C2.0	SF	N20E11	9242
	0315	0326	0343	C2.2	SF	S13E44	9246
	0542	0543	0552	C1.5	SF	S13E42	9246
	0619	0624	0646	C9.1	SF	S13E43	9246
	0745	0749	0754	C1.1			
	0818	0818	0822	C1.8	SF	N22E09	9242
	0849	0854	0908	C2.2	SF	S13E41	9246
	1136	1138	1145		SF	S12E40	9246
	1209	1210	1223	C6.4	SF	S12E39	9246
1505	1506	1513	C1.7	SF	S12E37	9246	
1547	1551	1554	C1.5				



Flare List – continued.

Date	Time			X-ray Class.	Optical		Rgn	
	Begin	Max	End		Imp / Brtns	Location Lat CMD		
29 November	1910	1911	1917	C2.3	SF	S13E39	9246	
	2201	2202	2206	C1.5	SF	S12E34	9246	
	0218	0221	0223		SF	S13E31	9246	
	0255	0256	0302		SF	N20W77	9236	
	0259	0300	0305	C3.6	SF	N13E18	9247	
30 November	0310	0310	0318		SF	N13E18	9247	
	0645	0647	0650		SF	S13E29	9246	
	0710	0713	0718		SF	S13E29	9246	
	0721	0721	0726		SF	S13E29	9246	
	0845	0845	0854		SF	S13E27	9246	
	0900	0925	0944	M1.0				
	0948	0950	0956		SF	S12E29	9246	
	1326	1333	1342	C2.4				
	1402	1414	1422	C3.7				
	1644	1652	1700	C3.7				
	1946	1950	1955	C1.4				
	2032	2038	2102	M1.3	SF	S14E23	9246	
	2150	2151	2153		SF	N17W68	9244	
	01 December	0042	0042	0050	C2.3	SF	N08W36	9240
		0156	0158	0222	C3.1	SF	S13E18	9246
0311		0314	0322	C1.3	SF	S12E15	9246	
0349		0353	0359	C1.1				
B0902		U0909	0914	C3.1	SF	N19W20	9242	
02 December	2208	2212	2215	C1.3				
	0018	0019	0023	C1.0	SF	S13E06	9246	
03 December	1026	1030	1035	C1.2				
	0212	0217	0238		SF	N19W41	9242	
	0604	0758	0900	C1.4				
	1048	1055	1112	C1.0				
	1127	1129	1136	C1.1				



Region Summary

Date	Location		Sunspot Characteristics				Flares											
	° Lat	° CMD	Area (10 ⁶ hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical							
								C	M	X	S	1	2	3	4			
<i>Region 9236</i>																		
18 Nov	N19E71	352	0120	05	DSO	004	B											
19 Nov	N19E57	353	0310	13	EAO	006	B											
20 Nov	N19E45	352	0410	14	EHO	008	B											
21 Nov	N20E32	352	0440	14	EHO	007	B											
22 Nov	N20E19	352	0430	14	EKO	014	BG	8				6	2					
23 Nov	N21E06	352	0390	15	EKO	017	B	2	1			5	1					
24 Nov	N21W08	352	0440	17	FKC	029	BG	4			3	5		2	1			
25 Nov	N22W21	352	0580	16	FKC	029	BG	3	1	1	5			2				
26 Nov	N24W38	356	0600	14	EKI	022	BG	3	1	1	7	1	1					
27 Nov	N19W50	355	0630	14	EKO	012	BG	1				1	1					
28 Nov	N19W64	356	0530	07	DKO	009	BG						2					
29 Nov	N19W79	358	0400	06	HKX	004	A											
30 Nov	N20W89	354	0150	03	HAX	001	A						1					
								21	3	5	32	5	5	1	0			

Crossed West Limb.

Absolute heliographic longitude: 352

<i>Region 9239</i>																		
21 Nov	S23E73	311	0100	03	HSX	001	A											
22 Nov	S21E63	308	0110	02	HAX	001	A											
23 Nov	S21E49	309	0140	02	HSX	001	A	1										
24 Nov	S20E36	308	0120	02	HSX	001	A					1						
25 Nov	S21E24	307	0140	03	HSX	001	A											
26 Nov	S21E10	308	0150	04	CSO	003	B											
27 Nov	S21W01	306	0140	02	HSX	001	A											
28 Nov	S21W14	306	0120	02	HSX	001	A											
29 Nov	S21W28	307	0120	02	HSX	001	A											
30 Nov	S21W41	306	0100	02	HAX	004	A											
01 Dec	S20W53	305	0090	04	DAO	008	B											
02 Dec	S21W67	306	0050	04	DSO	004	B											
03 Dec	S21W82	308	0020	01	HSX	002	A											
								1	0	0	1	0	0	0	0	0		

Still on Disk.

Absolute heliographic longitude: 306



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 9240

22 Nov N09E72	299	0120	08	CAO	004	B	1			2							
23 Nov N09E58	300	0250	07	DSO	005	B				1							
24 Nov N09E46	298	0180	06	CAO	004	B				1							
25 Nov N09E34	297	0220	06	CHO	004	B		1					1				
26 Nov N08E22	296	0300	10	DHO	015	B											
27 Nov N08E09	296	0210	12	CAO	017	B											
28 Nov N09W02	294	0280	10	DAC	023	B											
29 Nov N09W17	296	0300	09	DAO	024	B											
30 Nov N09W31	296	0230	09	DSO	017	B											
01 Dec N09W43	295	0130	09	DSO	011	B	1				1						
02 Dec N10W60	299	0130	02	HSX	001	A											
03 Dec N09W74	300	0140	02	HSX	001	A											
								2	1	0	5	0	1	0	0		

Still on Disk.

Absolute heliographic longitude: 294

Region 9241

23 Nov N21W19	017	0020	03	DRO	002	B											
24 Nov N21W33	017	0010	02	BXO	002	B											
25 Nov N16W46	017																
26 Nov N16W59	017																
27 Nov N16W72	017																
								0	0	0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 017

Region 9242

24 Nov N22E68	276	0040	06	BXO	002	B											
25 Nov N21E57	274	0020	00	AXX	001	A											
26 Nov N19E39	279	0020	06	BXO	004	B											
27 Nov N19E23	282	0050	04	CAO	007	B	3				5						
28 Nov N19E11	281	0140	06	DAO	012	B	2				6						
29 Nov N20W02	281	0160	08	DAO	009	B	2				2						
30 Nov N21W15	280	0200	09	DSO	011	B											
01 Dec N21W28	280	0170	10	DAI	011	B	1				1						
02 Dec N21W41	280	0180	10	DSO	012	B											
03 Dec N20W54	280	0180	09	DSO	010	B						1					
								8	0	0	15	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 281



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 9243

27 Nov S12E30	275	0020	03	BXO	007	B											
28 Nov S12E16	276	0050	06	DAO	008	B											
29 Nov S11E01	278	0050	06	DAO	007	B											
30 Nov S11W12	277	0060	08	DAO	016	B											
01 Dec S10W27	279	0030	06	DSO	007	B											
02 Dec S11W40	279	0030	08	DSO	008	B											
03 Dec S10W53	279	0030	08	DSO	006	B											
										0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 278

Region 9244

27 Nov N15W30	335	0070	07	DAO	017	B	1			1							
28 Nov N15W42	334	0100	09	DAO	014	B											
29 Nov N15W56	335	0110	10	CAO	008	B											
30 Nov N15W70	335	0120	09	DAO	012	B				1							
01 Dec N16W81	333	0070	02	HSX	001	A											
							1	0	0	2	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 335

Region 9245

28 Nov N04E65	227	0030	01	HSX	001	A											
29 Nov N04E53	226	0040	01	HSX	001	A											
30 Nov N04E40	225	0030	01	HSX	001	A											
01 Dec N04E26	226	0020	01	HSX	001	A											
02 Dec N04E14	225	0020	01	HSX	001	A											
03 Dec N04E00	226	0020	01	HSX	001	A											
							0	0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 226

Region 9246

28 Nov S12E47	245	0030	06	BXO	006	B						3					
29 Nov S12E33	246	0120	09	DSO	015	B	8					9					
30 Nov S12E19	246	0220	11	EAI	024	B		1				7					
01 Dec S12E04	248	0190	12	EAI	025	BG	2					2					
02 Dec S12W08	247	0150	12	ESI	019	B	1					1					
03 Dec S12W21	247	0130	12	EAO	017	B											
							11	1	0	22	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 248



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	4		
<i>Region 9247</i>																	
29 Nov	N13E20	259	0000	00	AXX	001	A										
30 Nov	N13E07	259						1			2						
01 Dec	N13W06	259															
02 Dec	N14W20	259		00	AXX	001	A										
03 Dec	N14W33	259															
								1	0	0	2	0	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 259																	
<i>Region 9248</i>																	
30 Nov	N04W17	282	0010	02	AXX	003	A										
01 Dec	N04W28	280	0000	01	AXX	002	A										
02 Dec	N05W42	281	0000	03	BXO	003	B										
03 Dec	N05W54	280	0020	04	DAO	005	B										
								0	0	0	0	0	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 282																	
<i>Region 9249</i>																	
30 Nov	N11E45	220	0010	02	BXO	002	B										
01 Dec	N11E31	221	0000	00	AXX	001	A										
02 Dec	N12E17	222	0000	01	AXX	002	A										
03 Dec	N12E04	222															
								0	0	0	0	0	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 222																	
<i>Region 9250</i>																	
03 Dec	S11W80	306	0000	00	AXX	001	A										
								0	0	0	0	0	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 306																	
<i>Region 9251</i>																	
03 Dec	S22W34	260	0030	04	CSO	005	B										
								0	0	0	0	0	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 260																	
<i>Region 9252</i>																	
03 Dec	S02W36	262	0020	04	CAO	004	B										
								0	0	0	0	0	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 262																	



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	4
<i>Region 9253</i>														
03 Dec	S14E11	215	0020	02	CSO	002	B							
								0	0	0	0	0	0	0
Still on Disk.														
Absolute heliographic longitude: 215														
<i>Region 9254</i>														
03 Dec	N10E59	167	0010	01	HSX	001	A							
								0	0	0	0	0	0	0
Still on Disk.														
Absolute heliographic longitude: 167														
<i>Region 9255</i>														
03 Dec	N21E64	162	0010	01	HSX	001	A							
								0	0	0	0	0	0	0
Still on Disk.														
Absolute heliographic longitude: 162														

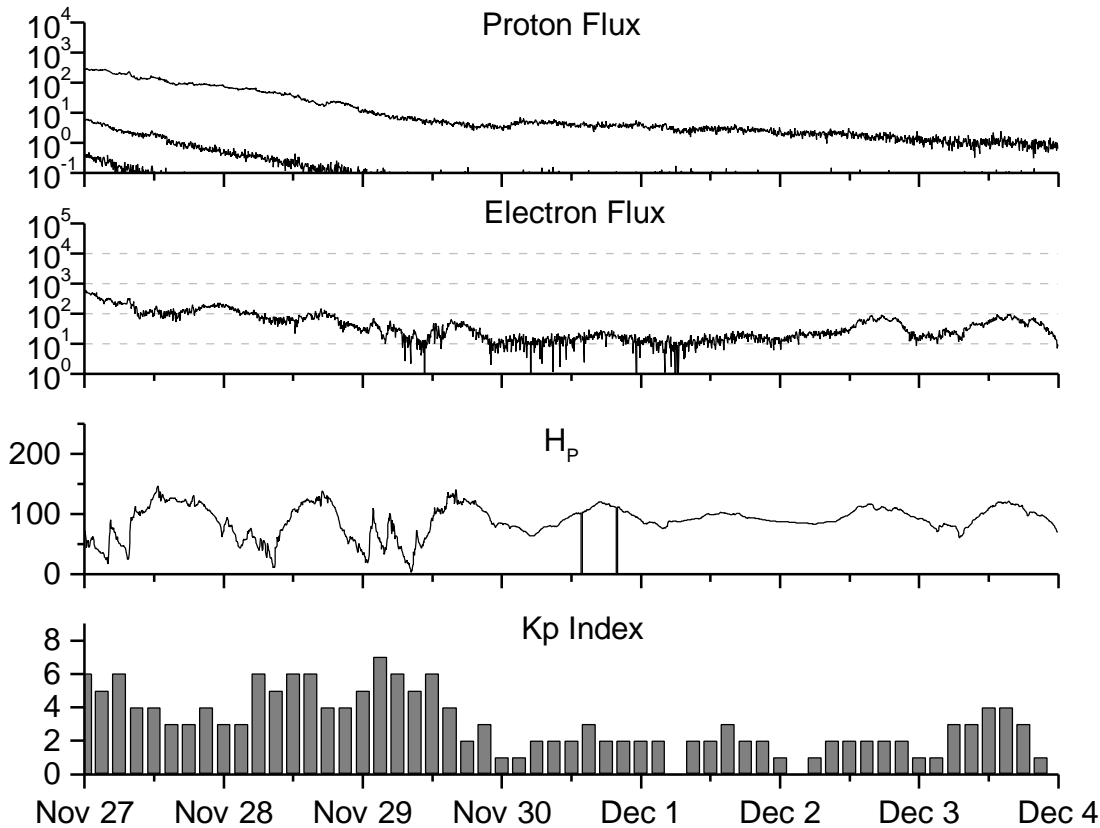


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

Month	Sunspot Numbers				Radio Flux		Geomagnetic		
	Observed values		Ratio	Smooth values		*Penticton	Smooth	Planetary	Smooth
	SWO	RI	RI/SWO	SWO	RI	10.7 cm	Value	Ap	Value
1998									
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	173.1	118.9	184.5	180.1	15	14.8
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	
November	149.9	106.5	0.71			178.8		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 27 November 2000*

Protons plot contains the five-minute averaged integral proton flux (protons/cm²-sec -sr) as measured by GOES-8 (W75) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

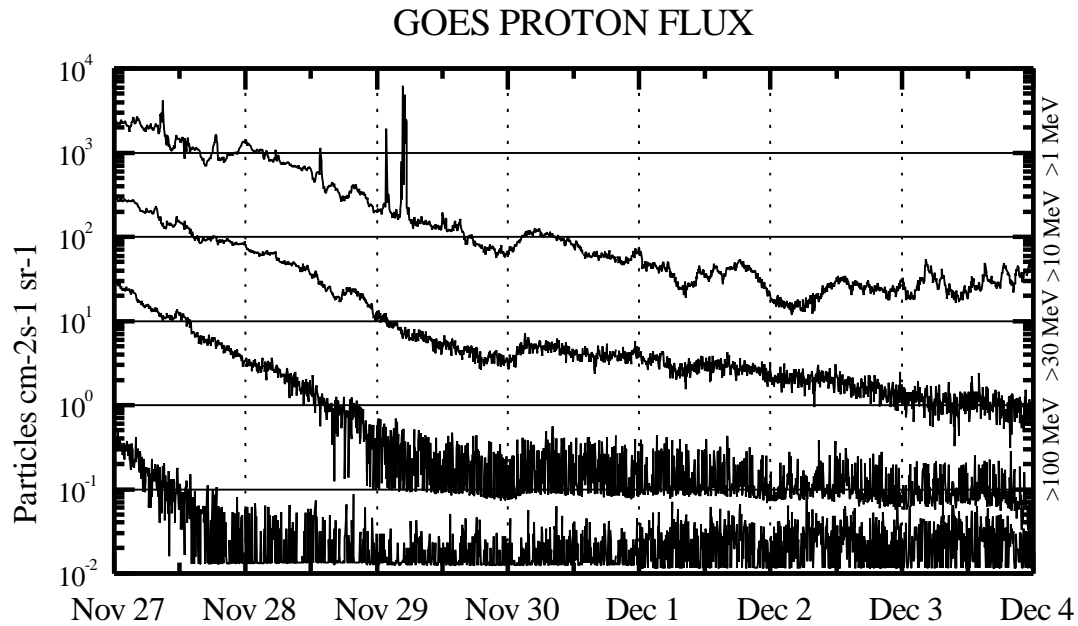
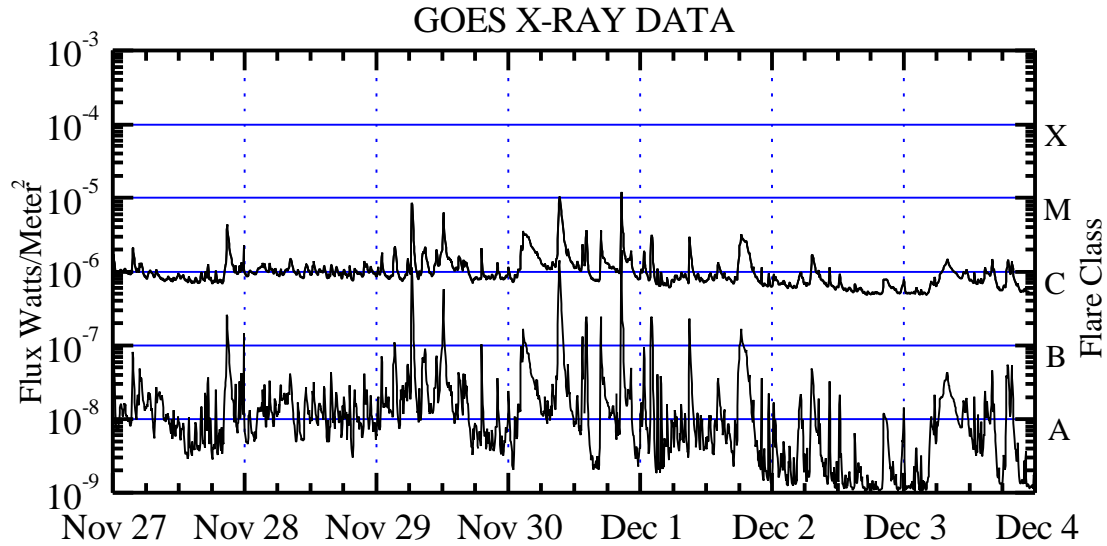
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm² -sec -sr) with energies greater than 2 MeV at GOES-8.

H_p 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_p 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 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.



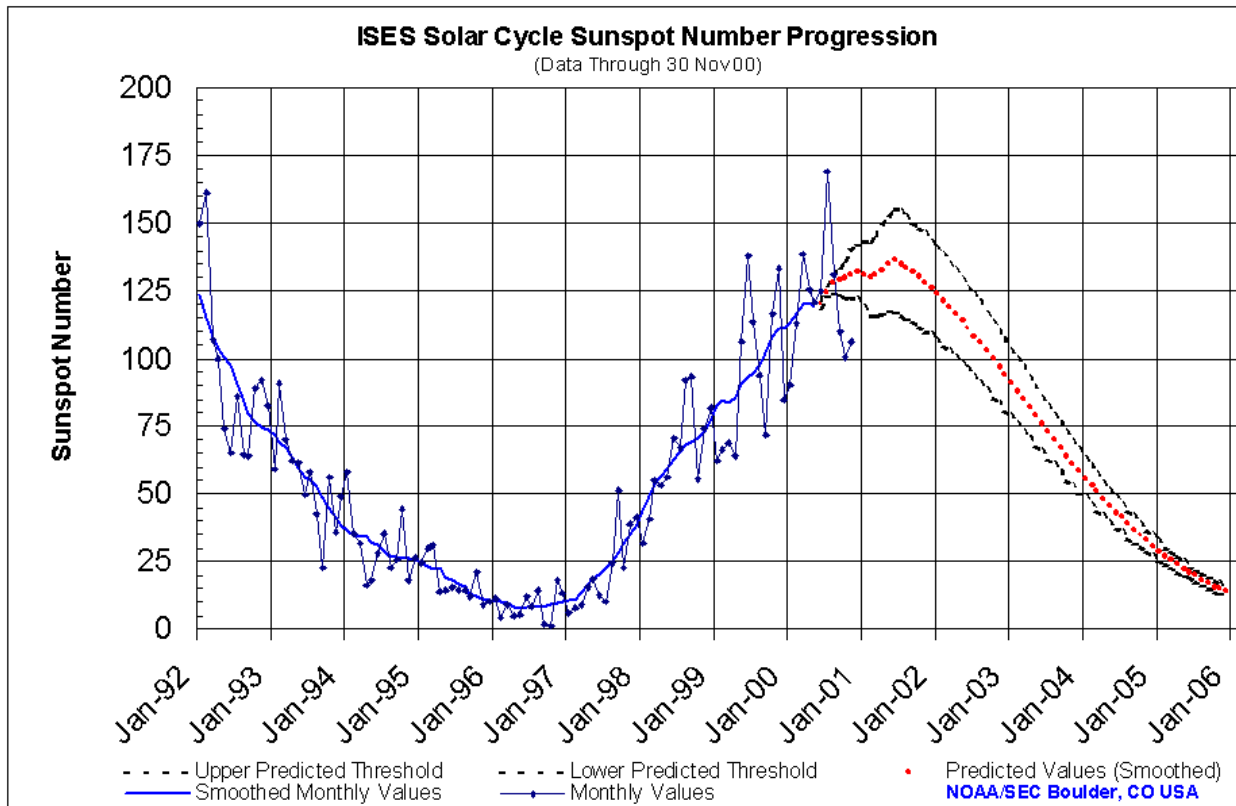


Weekly GOES Satellite X-ray and Proton Plots

X-ray plot contains five-minute averaged x-ray flux (watts/m²) as measured by GOES 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/cm²-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/cm²-sec-sr) at greater than 10 MeV.

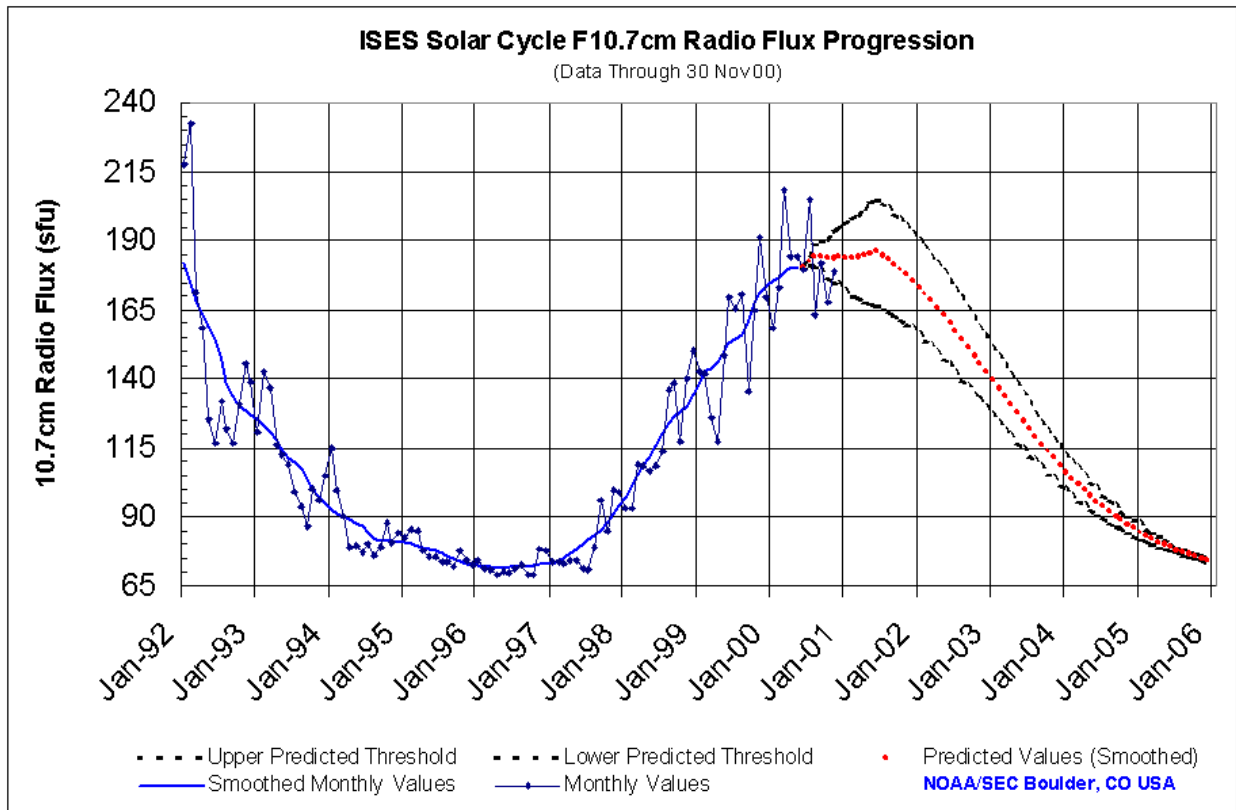




SEC Prediction of Smoothed Sunspot Number

	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 (***)	119 (***)	120 (1)	124 (2)	128 (4)	129 (5)	129 (7)	131 (9)	132 (10)
2001	131 (12)	129 (14)	131 (15)	133 (17)	135 (18)	136 (19)	135 (19)	133 (19)	132 (18)	130 (18)	128 (18)	126 (17)
2002	124 (17)	121 (17)	119 (16)	116 (16)	114 (16)	111 (15)	108 (15)	106 (15)	103 (14)	100 (14)	97 (13)	94 (13)
2003	91 (12)	88 (12)	85 (12)	82 (11)	79 (11)	76 (10)	73 (10)	70 (9)	67 (9)	64 (9)	61 (8)	58 (8)
2004	56 (7)	53 (7)	51 (7)	48 (6)	46 (6)	43 (6)	41 (5)	39 (5)	37 (5)	35 (4)	33 (4)	31 (4)
2005	29 (4)	27 (3)	25 (3)	24 (3)	22 (3)	21 (2)	20 (2)	18 (2)	17 (2)	16 (2)	15 (2)	14 (1)





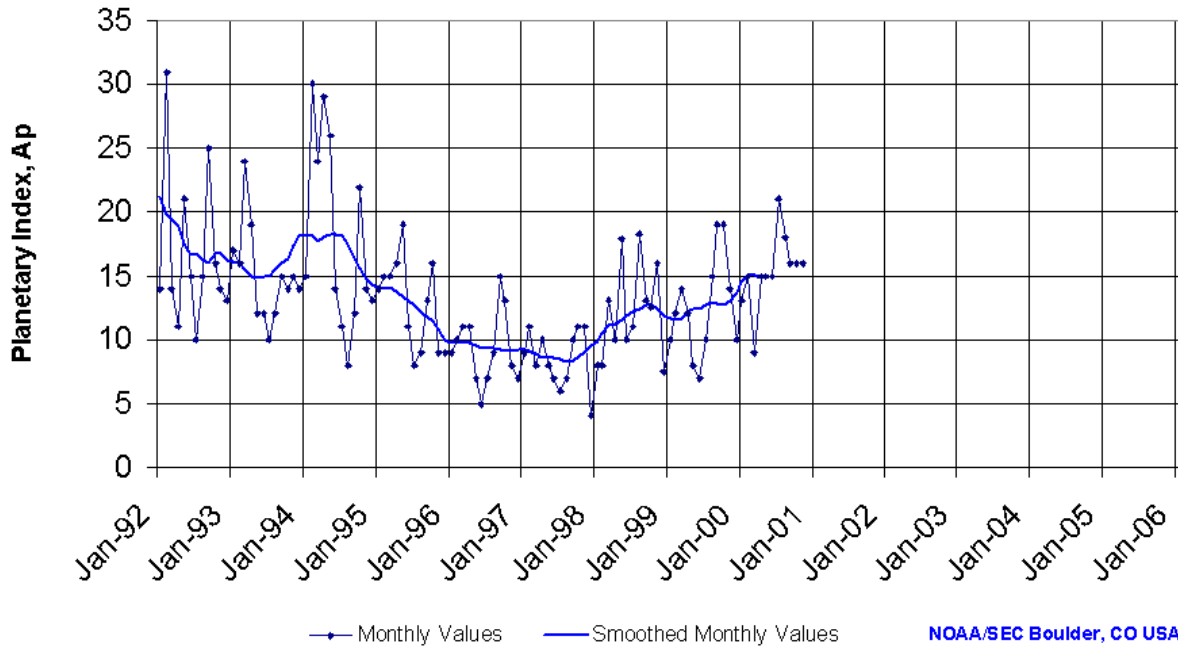
SEC Prediction of Smoothed F10.7cm Radio Flux

	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 (***)	180 (***)	180 (1)	183 (2)	185 (4)	184 (5)	184 (7)	184 (9)	184 (10)
2001	184 (12)	184 (14)	185 (15)	185 (17)	185 (18)	186 (19)	185 (19)	183 (19)	181 (18)	180 (18)	178 (18)	175 (17)
2002	173 (17)	171 (17)	168 (16)	166 (16)	163 (16)	160 (15)	157 (15)	155 (15)	152 (14)	149 (14)	146 (13)	143 (13)
2003	139 (12)	136 (12)	133 (12)	131 (11)	128 (11)	125 (10)	122 (10)	119 (8)	116 (8)	114 (8)	111 (7)	109 (7)
2004	106 (6)	104 (6)	102 (6)	100 (5)	98 (5)	96 (5)	94 (4)	92 (4)	90 (4)	89 (3)	87 (3)	86 (3)
2005	85 (3)	83 (2)	82 (2)	81 (2)	80 (2)	79 (1)	78 (1)	77 (1)	77 (1)	76 (1)	75 (1)	75 (1)



ISES Solar Cycle Ap Progression

(Data Through 30 Nov 00)

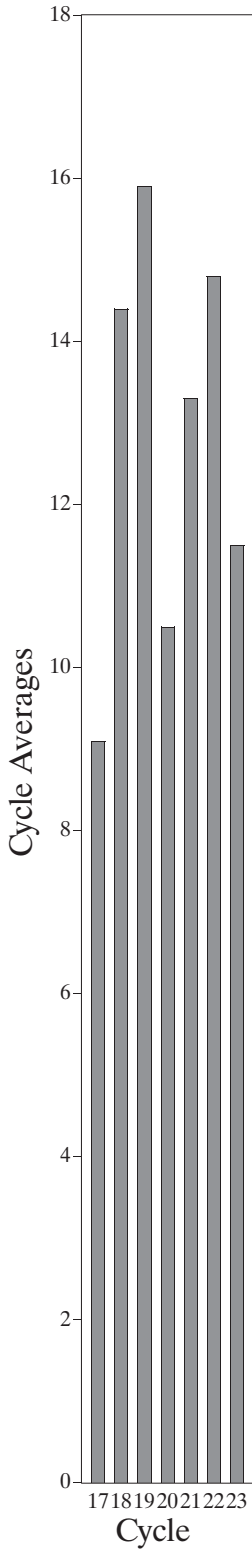


Geomagnetic Activity (A_p)



Space Environment Center

Comparison of Cycles at current month in cycle



October 2000
(Month 49)

Preliminary data

