

Solar activity ranged from low to high levels. Region 9684 (N06, L=136, class/area, Ekc/550 on 04 November) produced a major flare, an X1/3b on 04/1620 UTC. A full-halo coronal mass ejection (CME), a Type II radio sweep (1329 km/sec), and a Type IV radio sweep were associated with this event. Region 9684 decayed slightly on the first day of the period then remained relatively unchanged until the last day when it, grew in area coverage, increased its spot count, and produced the major flare mentioned above. This region also developed a magnetic configuration of beta-gamma-delta, as the leader and trailer spots merged on 04 November. Region 9672 (S18, L=268, class/area Dki/590 on 26 October) produced a minor M-class flare on 29 October then rotated beyond the west limb on 30 October (for flare times and magnitudes, please refer to the Energetic Events and Optical Flares lists). Region 9678 (N07, L=221, area/class 680/Ekc on 26 October) produced an isolated minor M-class flare on 01 November and was in gradual decay from the beginning of the period until it rotated beyond the west limb on 02 November. Region 9682 (N12, L = 172, class/area Ekc/1210 on 31 October) showed continued growth from 29-31 October and produced numerous C-class and M-class flares throughout the period. This region started a slow decay from 03-04 November and is due to rotate beyond the west limb on 06 November. New Region 9687 (S19, L=75, class/area Fac/390 on 04 November) rotated onto the disc on 01 November and was very active, producing three M-class flares on 01 November. This region continued to grow at the close of the period, attaining a magnetic beta-gamma configuration.

Solar Wind data were available from the NASA Advanced Composition Explorer (ACE) spacecraft for most of the period. A weak shock passed the ACE spacecraft at 31/1253 UTC. Passage of this shock was marked by an increase in proton density, temperature and an 85 km/s jump in velocity (peak of 415 km/s). Total IMF field intensity rose to only 14 nT and a southward Bz was observed with a peak deflection to -9 nT (GSM). The source of this weak shock was most likely the result of an M class flare out of Region 9682 at 29/1113 UTC.

A greater than 10 MeV proton flux event occurred at geosynchronous orbit on 04 November in the wake of major flare activity from Region 9684. The event began at 04/1705 UTC and at the close of this period was at a maximum flux of 1850 PFU. A greater than 100 MeV proton flux event also occurred at geosynchronous orbit, associated with the flare activity from Region 9684. This event commenced at 04/1650 UTC and reached a maximum level of 56 PFU at 04/2035 UTC. However, the greater than 10 MeV protons and greater than 100 MeV protons are expected to continue to rise into the next period.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal levels through 03 November. Data late on 04 November and beyond were unreliable due to the effects associated with the solar energetic particle event mentioned above.

The geomagnetic field was at quiet to minor storm levels during the period. Most of the period was at quiet to active levels. On 01 November levels reached minor storm levels due to the effects of the weak shock that passed the ACE spacecraft on 31/1253 UTC. A 6 nT sudden impulse was observed at Boulder magnetometer at 31/1352 UTC. A major geomagnetic storm is expected to arrive on early 06 November due to the X1/3b flare on 04/1620 UTC. Detailed information on this event will appear in the next weekly summary.



Space Weather Outlook

07 November - 03 December 2001

Solar activity is expected to range from moderate to high levels throughout the period. Continued low-level M-class flares are expected throughout the period. There will be a chance for isolated major flare activity during the period from Region 9684 and Region 9687. Region 9684 is due to rotate out of view around 07 November. X-ray imagery indicates the possible appearance of a large energetic region on the southeast limb in the first few days of the forecast period. Old Region 9672 is due to return to the visible disc on about 12 November and old Region 9678 is due to return on about 16 November.

Greater than 10 MeV and greater than 100 MeV proton events are still in progress at the end of the summary period due to the X1/3b flare on 04/1620 UTC. The greater than 100 MeV event is expected to drop below event threshold on 07 November and the greater than 10 MeV event is expected to drop below threshold by 08-09 November. Proton levels are expected to be at normal levels throughout the rest of the period barring a major proton producing flare.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at normal to moderate levels during most of the period.

Unsettled to minor storm geomagnetic field conditions are expected to occur on 07 November due to trailing effects of a CME passage on 06/0150 UTC. Barring an Earth-directed CME quiet to unsettled conditions are expected throughout the remainder of the period.



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 October	216	224	2440	C1.5	10	5	0	11	5	0	0	0
30 October	226	205	2300	C1.8	12	1	0	11	3	0	0	0
31 October	221	212	2250	C1.9	3	3	0	6	1	0	0	0
01 November	236	157	2030	C1.5	5	5	0	18	1	0	0	0
02 November	214	164	2330	C7.5	8	1	0	10	0	0	0	0
03 November	216	162	1680	C1.2	11	0	0	15	0	0	0	0
04 November	227	186	1820	C1.7	5	0	1	12	1	0	1	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 October	2.1E+6	1.4E+4	2.4E+3	3.6E+5	
30 October	3.8E+5	1.2E+4	2.5E+3	2.1E+6		
31 October	2.2E+5	1.2E+4	2.5E+3	7.1E+6		
01 November	1.4E+5	1.1E+4	2.8E+3	4.8E+5		
02 November	1.2E+5	1.2E+4	2.9E+3	2.1E+5		
03 November	1.0E+5	1.2E+4	2.9E+3	4.8E+5		
04 November	2.7E+7	2.0E+7	1.1E+6	1.1E+6		

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	29 October	18	3-3-4-3-4-3-3-3	*	*-*-*-*-*2-3-3	16
30 October	6	2-3-3-1-1-0-0-1	10	2-2-4-3-2-2-1-1	8	2-3-3-2-2-2-2-2
31 October	8	2-1-1-0-3-2-3-3	9	0-0-1-1-4-3-3-2	9	1-1-2-0-3-3-3-3
01 November	15	4-4-4-2-3-2-2-1	32	3-5-5-4-6-4-2-1	25	4-4-5-4-5-4-3-2
02 November	6	1-1-2-0-4-1-0-1	8	1-1-1-0-5-1-0-0	6	1-1-1-0-3-2-2-2
03 November	1	1-1-0-0-1-0-0-0	0	0-0-0-0-0-0-0-0	3	0-0-0-0-1-2-2-1
04 November	4	0-0-2-3-1-2-1-0	17	0-0-3-5-5-3-2-0	7	0-0-2-3-3-3-2-1

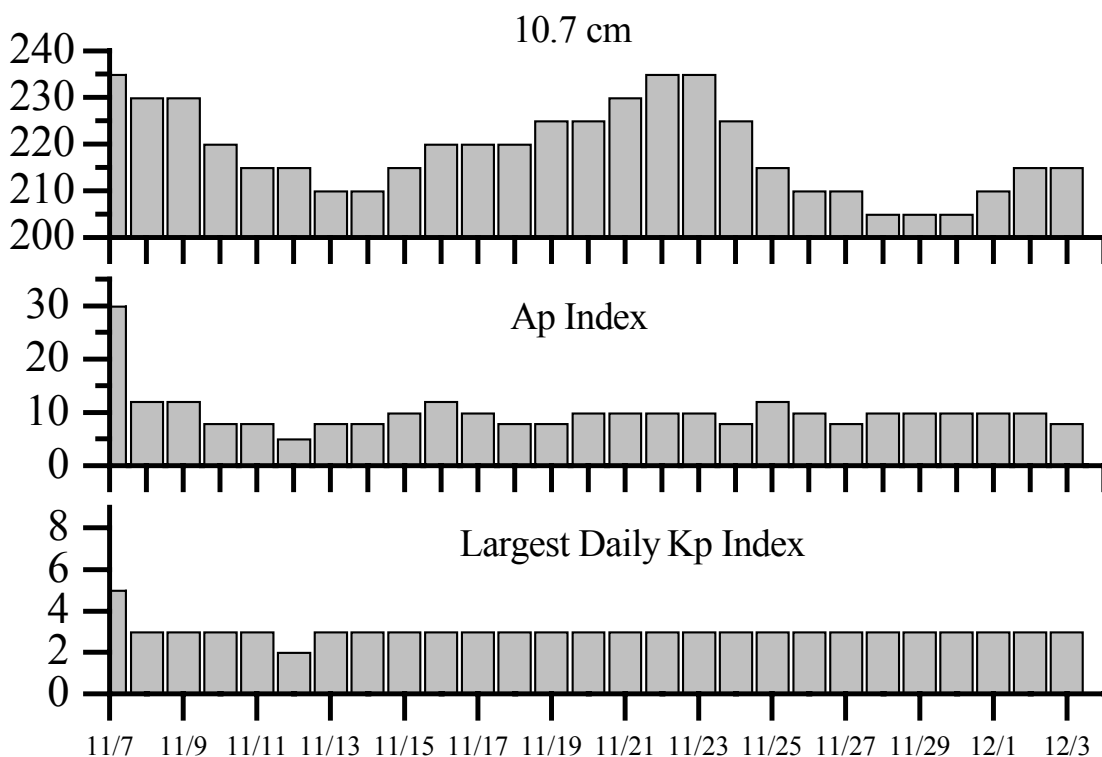


Alerts and Warnings Issued

<u>Date & Time of Issue</u>	<u>Type of Alert or Warning</u>	<u>Date & Time of Event UT</u>
29 Oct 0010	8 - 245 MHz Bursts	28 Oct
29 Oct 0010	1 - 245 MHz Radio Noise Storm	28 Oct
29 Oct 0911	K= 4 Observed	29 Oct 0600 - 0900
29 Oct 0913	ENDED A \geq 30 Observed	29 Oct 0900
29 Oct 0914	Type II Radio Emission	29 Oct 0826
29 Oct 1149	Type II Radio Emission	29 Oct 1113
29 Oct 1453	K= 4 Observed	29 Oct 1200 - 1500
29 Oct 1626	K= 4 Warning	29 Oct 1630 - 2359
29 Oct 1814	ENDED A \geq 20 Observed	29 Oct 1800
29 Oct 1900	CANCELLED K= 4 Warning	29 Oct 1630 - 2359
30 Oct 0026	9 - 245 MHz Bursts	29 Oct
30 Oct 0026	1 - 245 MHz Radio Noise Storm	29 Oct
30 Oct 1753	Type IV Radio Emission	30 Oct 1350
31 Oct 0025	4 - 245 MHz Bursts	30 Oct
31 Oct 0025	1 - 245 MHz Radio Noise Storm	30 Oct
31 Oct 1400	Sudden Impulse observed at Boulder	31 Oct 1352
31 Oct 2322	K= 4 Warning	31 Oct 2325 - 01 Nov 1500
01 Nov 0011	3 - 245 MHz Bursts	31 Oct
01 Nov 0011	1 - 245 MHz Radio Noise Storm	31 Oct
01 Nov 0300	K= 4 Observed	01 Nov 0000 - 0300
01 Nov 0830	K= 5 Warning	01 Nov 0830 - 1500
01 Nov 0856	K= 5 Observed	01 Nov 0600 - 0900
01 Nov 1200	A \geq 20 Observed	01 Nov 1200
01 Nov 1442	EXTENDED K=4 Warning	31 Oct 2325 - 01 Nov 2359
01 Nov 1606	10cm Radio Burst 480 F.U.	01 Nov 1426
02 Nov 0106	5 - 245 MHz Bursts	01 Nov
02 Nov 0106	1 - 245 MHz Radio Noise Storm	01 Nov
02 Nov 0300	ENDED A \geq 20 Observed	01 Nov 1200
03 Nov 0106	1 - 245 MHz Burst	02 Nov
03 Nov 0106	1 - 245 MHz Radio Noise Storm	02 Nov
04 Nov 0059	5 - 245 MHz Bursts	03 Nov
04 Nov 1642	Type II Radio Emission	04 Nov 1610
04 Nov 1701	Proton Event $>10\text{MeV} \geq 10\text{pfu}$ Warning	04 Nov 1700 - 5 Nov 1700
04 Nov 1707	Proton event $>100\text{ MeV} >1\text{pfu}$	04 Nov 1650
04 Nov 1710	X-Ray event X1.0/3B N02W23	04 Nov 1620
04 Nov 1721	Protons Event $>10\text{ MeV} \geq 10\text{pfu}$	04 Nov 1705
04 Nov 1841	A-Index ≥ 50 Watch	06 Nov
04 Nov 1842	A ≥ 20 Watch for	07 Nov
04 Nov 2114	Type IV Radio Emission	04 Nov 1612
04 Nov 2128	Proton event $>100\text{ MeV} >1\text{pfu}$ Warning	04 Nov 2126 - 5 Nov 1700



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
07 Nov	235	30	5	21 Nov	230	10	3
08	230	15	3	22	235	10	3
09	230	10	3	23	235	10	3
10	220	8	3	24	225	8	3
11	215	8	3	25	215	12	3
12	215	5	2	26	210	10	3
13	210	8	3	27	210	8	3
14	210	8	3	28	205	10	3
15	215	10	3	29	205	10	3
16	220	12	3	30	205	10	3
17	220	10	3	01 Dec	210	10	3
18	220	8	3	02	215	10	3
19	225	8	3	03	215	8	3
20	225	10	3				



Energetic Events

Date	Time		½ Max	X-ray		Optical Information			Peak		Sweep Freq	
	Begin	Max		Class	Integ Flux	Imp/Location		Rgn #	Radio Flux		Intensity	
			Brtns			Lat	CMD		245	2695	II	IV
29 Oct	0152	0159	0207	M1.3	.007							
29 Oct	0807	0814	0817	M1.0	.004	1F	S18W82	9672	380	12		
29 Oct	1056	1113	1119	M3.6	.016	1F	N12E25	9682		58		1
29 Oct	1130	1133	1137	M1.6	.006	1N	N12E23	9682		26		
29 Oct	2349	2358	0008	M1.5	.011	SF	N12E20	9682				
30 Oct	0830	0836	0841	M3.2	.011	1N	N12E11	9682				
31 Oct	0734	0809	0819	M3.2	.029	1N	N11E02	9682		140		
31 Oct	1039	1051	1100	M1.5	.013							
31 Oct	2102	2142	2155	M1.0	.018			9687				
01 Nov	0645	0653	0700	M1.3	.008	SF	N07W62	9678				
01 Nov	1125	1210	1308	M3.3	.098	SF	S20E77	9687				
01 Nov	1351	1503	1537	M1.7	.095	SF	S18E79	9687		480		
01 Nov	1950	1958	2007	M1.5	.013	SF	S18E69	9687				
01 Nov	2138	2352	2359	M1.1	.070	1F	N12W23	9682	620	34		
02 Nov	0742	0809	0845	M1.1	.031	SF	S20E71	9687				
04 Nov	1603	1620	1657	X1.0	.220	3B	N06W18	9684	7500	1900	2	1

Flare List

Date	Time			X-ray Class.	Optical Imp / Brtns	Location Lat CMD	Rgn
	Begin	Max	End				
29 October	0042	0044	0052	C2.8	SF	N13E32	9682
	0152	0159	0207	M1.3			
	0311	0314	0318	C2.5			
	0809	0811	0816	M1.0	1F	S18W82	9672
	0910	U0919	A0940		SF	N12E27	9682
	1045	1046	1050		SF	N12E23	9682
	1058	U1134	A1202	M3.6	1F	N12E25	9682
	1127	1133	1240	M1.6	1N	N12E23	9682
	1331	1335	1349	C6.7	SF	N12E23	9682
	1533	1534	1547	C3.0	SF	N12E24	9682
	1630	1633	1655	C8.7	1N	N16E23	9682
	1736	1741	1803	C2.6	SF	N12E24	9682
	1754	1755	1758		SF	N12E19	9682
	1846	1846	1854	C3.1	SF	N14E24	9682
	1900	1900	1905		SF	N12E19	9682
	1916	1939	1959	C4.9	1F	N12E22	9682
	1922	1927	1931	C5.0			9682
	2022	2030	2052	C3.6	SF	N12E22	9682
	2351	2356	0029	M1.5	SF	N12E20	9682
	30 October	0051	0052	0057		SF	N11E18
0303		0323	0346	C6.0			9682
0420		U0429	A0443		SF	N12E16	9682
0611		0616	0622	C3.1			9682
0804		0804	0820		SF	N12E14	9682



Flare List - continued.

Date	Time			X-ray Class.	Optical		Rgn
	Begin	Max	End		Imp / Brtns	Location Lat CMD	
30 October	0833	0836	0920	M3.2	1N	N12E11	9682
	1012	U1015	1037	C6.6	SF	N13E13	9682
	1109	U1208	1217	C4.4	SF	N12E11	9682
	1127	1221	1229	C6.7	1N	N12E11	9682
	1157	1158	1202	C3.5	SF	N03E48	9684
	1218	U1220	1232	C7.4	1N	N13E05	9682
	1351	1354	1359	C4.2			
	1402	1403	1408		SF	N13E11	9682
	1447	1457	1503	C5.0			
	1516	1518	1541	C3.6	SF	N12E10	9682
	1639	1657	1727	C7.0	SF	N14E09	9682
	1802	2032	2112	C9.2			
	1907	1907	1910		SF	N11E07	9682
	1926	1930	1936		SF	N12E05	9682
31 October	0001	0010	0020		SF	N12E05	9682
	0206	0211	0218	C3.3			
	0800	0805	0847	M3.2	1N	N11E02	9682
	0918	0918	0925		SF	N16W04	9682
	1039	1051	1100	M1.5			
	1206	1228	1316		SF	N14W63	9676
	1332	1345	1355		SF	N07W54	9678
	1522	1524	1531		SF	N13W05	9682
	1603	1604	1613	C5.6	SF	N13W04	9682
	2102	2142	2155	M1.0			9687
	2314	2319	2326	C2.4			
01 November	0034	0039	0044	C3.3			
	0129	0129	0134		SF	N09W11	9682
	0235	0236	0239		SF	S19E78	
	0346	0350	0357	C3.6			
	0620	0626	0635	C3.2			
	0648	0648	0653	M1.3	SF	N07W62	9678
	0743	0744	0757	C2.8	SF	N06E24	9684
	0855	0900	0905	C2.2			
	1134	1135	1159		SF	N15W19	9682
	1242	1244	1256		SF	N09W17	9682
	1244	1247	1302	M3.3	SF	S20E77	9687
	1357	U1359	1459	M1.7	SF	S19E77	9687
	1418	1418	1424		SF	S18E79	9687
	1518	1518	1522		SF	N14W13	9682
	1533	1537	1539		SF	S20E73	9682
	1711	1711	1727		SF	N06E18	9684
1739	1740	1744		SF	N05E60	9685	



Flare List - continued.

Date	Time			X-ray Class.	Optical		Rgn
	Begin	Max	End		Imp / Brtns	Location Lat CMD	
01 November	1740	1742	1744		SF	N12W19	9682
	1803	1804	1815		SF	N05W69	9678
	1924	1927	1955		SF	N11W20	9682
	1954	1955	2018	M1.5	SF	S18E69	9687
	1954	1955	2005		SF	N12W19	9682
	2155	U2312	0159	M1.1	1F	N12W23	9682
02 November	0156	0201	0208	C8.9			9687
	0413	0413	0446	C4.4	SF	N12W22	9682
	0513	0513	0517	C4.0	SF	S20E62	9687
	0803	0809	0821	M1.1	SF	S20E71	9687
	0813	0819	0825		SF	N09W28	9682
	1436	1438	1444	C3.1	SF	S21E70	9687
	1514	1514	1520	C2.3	SF	N12W33	9682
	1605	1606	1611		SF	N02E02	9684
	1612	1615	1641		SF	S18E63	9687
	1703	1703	1710	C3.2	SF	N04E03	9684
	1938	1945	1952	C2.6			
	2128	2130	2135		SF	S18E62	9687
	2231	2236	2242	C3.1			9687
	03 November	0232	0232	0238	C2.7	SF	N04W10
0240		0243	0245	C2.1			9687
0249		0250	0258	C3.0	SF	N03W03	9684
0434		0435	0439	C2.3	SF	N05W07	9684
0530		0535	0539	C2.4			9687
0738		0741	0743	C5.1			9687
0740		0741	0752		SF	N13W42	9682
0833		0834	0838		SF	N13W44	9682
0936		0936	A0950	C5.1	SF	N12W43	9682
B1022		U1023	A1038	C2.7	SF	S21E54	9687
1407		1408	1410		SF	N12W47	9682
B1411		U1412	A1419		SF	N12W47	9682
1525		1526	1534	C2.4	SF	N03W09	9684
1537		1538	1540		SF	N02W10	9684
1819		1821	1825		SF	N10W49	9682
1826		1826	1829		SF	N10W49	9682
1848		1851	1856		SF	N04W20	9684
2029		2039	2047	C3.8			9682
2108		2110	2121	C4.1	SF	N03W16	9684
04 November		0030	0033	0036	C2.7		
	0101	0101	0109		SF	N13W52	9682
	0144	0144	0150		SF	N06W19	9684
	0307	0307	0312		SF	N05W20	9684



Flare List - continued.

Date	Time			X-ray Class.	Imp / Brtns	Optical	Rgn
	Begin	Max	End			Location Lat CMD	
04 November	0641	0643	0700	C8.4	1N	N14W57	9682
	1050	1052	1101	C3.2	SF	S21E42	9687
	1125	1130	1139		SF	N02W25	9684
	1217	1219	1226		SF	N07W20	9684
	1347	1351	1401	C5.5	SF	S19E40	9687
	1524	1525	1530		SF	N07W16	9684
	1538	1540	1601	C5.1	SF	S19E37	9687
	1603	U1622	A2340	X1.0	3B	N06W18	9684
	1700	1701	1721		SF	S20E40	9687
	1856	1856	1906		SF	S20E39	9687
	1943	1944	1957		SF	S20E38	9687

Region Summary

Date	Location		Sunspot Characteristics					Flares															
	Helio		Area (10 ⁶ 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 9672</i>																							
18 Oct	S21E69	266	0100	02	HAX	003	A	1			1												
19 Oct	S20E53	269	0160	03	HAX	004	A	1			1												
20 Oct	S20E40	269	0150	05	DAO	008	B																
21 Oct	S19E26	269	0330	07	DKO	014	B	1			4												
22 Oct	S18E13	268	0440	08	DKI	017	BGD	1	1	1	4			2									
23 Oct	S18E00	268	0420	09	DKO	020	BGD	4	2		8	1											
24 Oct	S19W13	268	0490	11	DKI	026	BGD	3			3												
25 Oct	S18W27	269	0540	10	DKI	023	BGD	2		1	4			1	1								
26 Oct	S18W41	269	0590	07	DKI	015	BGD	1	1														
27 Oct	S18W53	268	0450	06	DKI	011	BGD	2			3												
28 Oct	S18W67	269	0390	07	DKI	010	BGD																
29 Oct	S18W81	270	0260	04	HKX	004	A		1		1												
30 Oct	S16W92	268	0110	02	HAX	001	A																
								16	5	2	28	2	3	1	0								

Crossed West Limb.

Absolute heliographic longitude: 268



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 9673</i>																		
18 Oct	N03E73	262	0110	02	HSX	001	A											
19 Oct	N04E58	264	0130	02	HAX	001	A											
20 Oct	N03E46	263	0070	04	CAO	004	B											
21 Oct	N03E32	263	0140	04	CSO	006	B											
22 Oct	N02E18	263	0140	07	CSO	009	B											
23 Oct	N02E05	263	0110	07	CAO	008	B											
24 Oct	N02W09	264	0130	04	CAO	004	B					1						
25 Oct	N04W22	264	0100	03	CSO	005	B											
26 Oct	N04W35	263	0100	02	CSO	003	B											
27 Oct	N04W49	264	0090	02	HSX	001	A											
28 Oct	N05W63	265	0080	02	HAX	001	A											
29 Oct	N05W76	265	0080	02	HAX	002	A											
30 Oct	N05W89	265	0030	01	HSX	001	A											
											0	0	0	1	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 263

<i>Region 9675</i>																		
20 Oct	S14E69	240	0030	01	HSX	001	A											
21 Oct	S13E56	239	0030	01	HSX	001	A											
22 Oct	S15E44	237	0040	06	CSO	004	B											
23 Oct	S12E28	240	0020	01	HSX	001	A											
24 Oct	S13E15	240	0020	03	CSO	002	B					1						
25 Oct	S12E02	240	0020	04	CSO	003	B					1						
26 Oct	S12W12	240	0010	01	AXX	001	A											
27 Oct	S12W25	240																
28 Oct	S12W38	240																
29 Oct	S12W51	240																
30 Oct	S12W64	240																
31 Oct	S12W77	240																
											0	0	0	2	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 240



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 9676</i>																							
20 Oct	N13E70	239	0070	02	CAO	001	B																
21 Oct	N13E58	237	0090	07	DSO	005	B																
22 Oct	N15E45	236	0060	03	CSO	002	B																
23 Oct	N14E30	238	0050	02	HSX	001	A	1				2	1										
24 Oct	N16E18	237	0050	02	HSX	002	A																
25 Oct	N15E04	238	0040	02	HSX	002	A																
26 Oct	N15W08	236	0040	02	HSX	001	A																
27 Oct	N16W21	236	0030	01	HSX	001	A					2											
28 Oct	N15W35	237	0030	01	HSX	001	A																
29 Oct	N15W49	238	0030	01	HSX	001	A																
30 Oct	N15W62	238	0020	01	HSX	001	A																
31 Oct	N16W74	237	0010	01	HSX	001	A						1										
								1	0	0	5	1	0	0	0								

Crossed West Limb.

Absolute heliographic longitude: 238

<i>Region 9677</i>																							
22 Oct	N20E48	233	0030	03	CSO	002	B																
23 Oct	N21E33	235	0040	06	CSO	008	B					1											
24 Oct	N19E19	236	0040	07	DAO	011	B																
25 Oct	N21E07	235	0030	07	DAO	006	B					1											
26 Oct	N21W07	235	0030	07	DSO	007	B																
27 Oct	N23W19	234	0010	06	BXO	004	B																
28 Oct	N24W36	238	0000	01	AXX	003	A																
29 Oct	N24W49	238	0000	01	AXX	002	A																
30 Oct	N24W62	238																					
31 Oct	N24W75	238																					
								0	0	0	2	0	0	0	0								

Crossed West Limb.

Absolute heliographic longitude: 235



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 9678</i>																	
23 Oct	N07E48	220	0050	07	CAO	010	B	3				5					
24 Oct	N07E34	221	0140	09	DAO	022	BG	1				10					
25 Oct	N08E20	222	0300	11	EAI	035	BGD	6				10					
26 Oct	N11E07	221	0680	14	EKC	048	BGD	4	1			7					
27 Oct	N07W07	222	0630	15	EKC	043	BG	4				6					
28 Oct	N07W21	223	0620	13	EKI	034	BGD					1					
29 Oct	N08W34	223	0560	13	EKO	028	BG										
30 Oct	N07W47	223	0490	12	EKI	021	BG										
31 Oct	N06W61	224	0450	12	EKO	017	B					1					
01 Nov	N07W75	224	0290	11	EAO	012	B		1			2					
02 Nov	N07W90	226	0290	12	EAO	004	B										
								18	2	0	42	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 221

<i>Region 9679</i>																	
23 Oct	S10E58	210	0010	03	BXO	003	B										
24 Oct	S11E46	209	0030	05	CRO	004	B										
25 Oct	S11E35	207	0040	05	DSO	007	B										
26 Oct	S10E07	221	0040	07	DSO	008	B										
27 Oct	S10E07	208	0030	06	DSO	010	B										
28 Oct	S09W07	209	0040	07	DAO	008	B										
29 Oct	S10W21	210	0030	08	CAO	011	B										
30 Oct	S10W34	210	0020	06	BXO	007	B										
31 Oct	S12W44	207	0020	06	BXO	006	B										
01 Nov	S12W57	207															
02 Nov	S12W70	206															
03 Nov	S12W83	206															
								0	0	0	0	0	0	0	0	0	

Still on Disk.

Absolute heliographic longitude: 221



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 9680</i>																		
23 Oct	N22E61	207	0010	02	AXX	001	A											
24 Oct	N22E48	207						1			1							
25 Oct	N22E37	205																
26 Oct	N22E24	205																
27 Oct	N22E11	205																
28 Oct	N22W07	209	0010	08	BXO	002	B											
29 Oct	N22W22	211	0010	09	BXO	004	B											
30 Oct	N22W35	211																
31 Oct	N22W48	211																
01 Nov	N22W61	211																
02 Nov	N22W74	210																
03 Nov	N22W87	210																
											1	0	0	1	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 209

<i>Region 9681</i>																		
25 Oct	S25E05	237	0040	03	DSO	006	B											
26 Oct	S24W07	235	0070	06	DAO	008	B											
27 Oct	S23W22	237	0040	06	DAO	005	B											
28 Oct	S24W37	239	0030	01	HSX	001	A											
29 Oct	S23W51	240	0040	02	HAX	001	A											
30 Oct	S23W65	241	0010	01	AXX	001	A											
31 Oct	S22W78	241	0000	00	AXX	001	A											
											0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 237



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 9682</i>																		
25 Oct	N09E70	172	0400	07	DKO	004	B											
26 Oct	N11E59	169	0710	09	DKI	011	B	1				5						
27 Oct	N12E45	170	0990	11	EKI	028	BGD	2				4						
28 Oct	N12E32	170	0830	17	FKC	032	BG	5	3			6	3					
29 Oct	N12E18	171	0910	14	EKC	042	BGD	9	3			11	4					
30 Oct	N12E04	172	1130	14	EKC	059	BGD	8	1			10	3					
31 Oct	N11W10	173	1210	14	EKC	061	BGD	1	1			4	1					
01 Nov	N11W22	171	0980	13	EKC	045	BGD		1			8	1					
02 Nov	N12W37	173	1130	14	EKC	050	BGD	1				3						
03 Nov	N12W50	173	0790	13	EKC	039	BGD	2				7						
04 Nov	N12W64	174	0660	13	EKI	022	BG	1				1	1					
								30	9	0	0	59	1	0	0	0	0	

Still on Disk.

Absolute heliographic longitude: 172

<i>Region 9683</i>																		
26 Oct	N28E30	198	0030	07	DSO	006	B											
27 Oct	N28E14	201	0010	04	CSO	005	B											
28 Oct	N28E01	201	0010	07	BXO	002	B											
29 Oct	N28W14	203	0010	05	CRO	005	B											
30 Oct	N28W28	204	0020	04	BXO	004	B											
31 Oct	N27W35	198	0010	03	BXO	003	B											
01 Nov	N27W48	198																
02 Nov	N27W61	198																
03 Nov	N27W74	198																
04 Nov	N27W87	198																
								0	0	0	0	0	0	0	0	0	0	

Still on Disk.

Absolute heliographic longitude: 201



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 9684</i>																							
27 Oct	N05E78	137	0140	03	HHX	001	A																
28 Oct	N06E69	133	0510	09	DKI	010	B						1										
29 Oct	N06E54	135	0510	08	DKI	014	B																
30 Oct	N05E41	135	0470	09	DKO	020	B	1				1											
31 Oct	N06E29	134	0470	12	EKI	027	BG																
01 Nov	N06E14	135	0440	11	EKI	018	B	1				2											
02 Nov	N06E00	136	0430	11	EKI	020	BG	1				2											
03 Nov	N05W15	138	0440	09	DKI	027	BG	5				7											
04 Nov	N05W28	138	0550	12	EKC	033	BGD				1	5							1				
								8	0	1	18	0	0	1	0								

Still on Disk.

Absolute heliographic longitude: 136

<i>Region 9685</i>																							
31 Oct	N05E68	095	0030	07	CSO	005	B																
01 Nov	N06E55	094	0070	08	DSO	010	B					1											
02 Nov	N05E41	095	0100	09	DSO	012	B																
03 Nov	N05E27	096	0090	10	DSO	011	B																
04 Nov	N04E14	096	0060	10	DSO	019	B																
												0	0	0	1	0	0	0	0	0	0		

Still on Disk.

Absolute heliographic longitude: 096

<i>Region 9686</i>																							
31 Oct	N16E68	095	0050	02	HSX	001	A																
01 Nov	N15E54	095	0030	05	CRO	002	B																
02 Nov	N15E39	097	0020	01	HSX	001	A																
03 Nov	N15E26	097	0010	01	AXX	001	A																
04 Nov	N15E13	097																					
												0	0	0	0	0	0	0	0	0	0		

Still on Disk.

Absolute heliographic longitude: 097

<i>Region 9687</i>																							
01 Nov	S19E71	078	0220	12	EAO	010	B				3	4											
02 Nov	S19E61	075	0360	20	FAI	017	B	4	1		5												
03 Nov	S19E49	074	0310	23	FAI	023	BG	4			1												
04 Nov	S20E35	075	0390	21	FAC	039	BG	3			6												
								11	4	0	16	0	0	0	0	0	0	0	0	0	0		

Still on Disk.

Absolute heliographic longitude: 075



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 9688</i>																	
03 Nov	N25E70	053	0040	02	HSX	001	A										
04 Nov	N26E64	046	0110	15	EAO	005	B										
								0	0	0	0	0	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 046																	
<i>Region 9689</i>																	
04 Nov	S28E15	095	0050	05	DAO	008	B										
								0	0	0	0	0	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 095																	

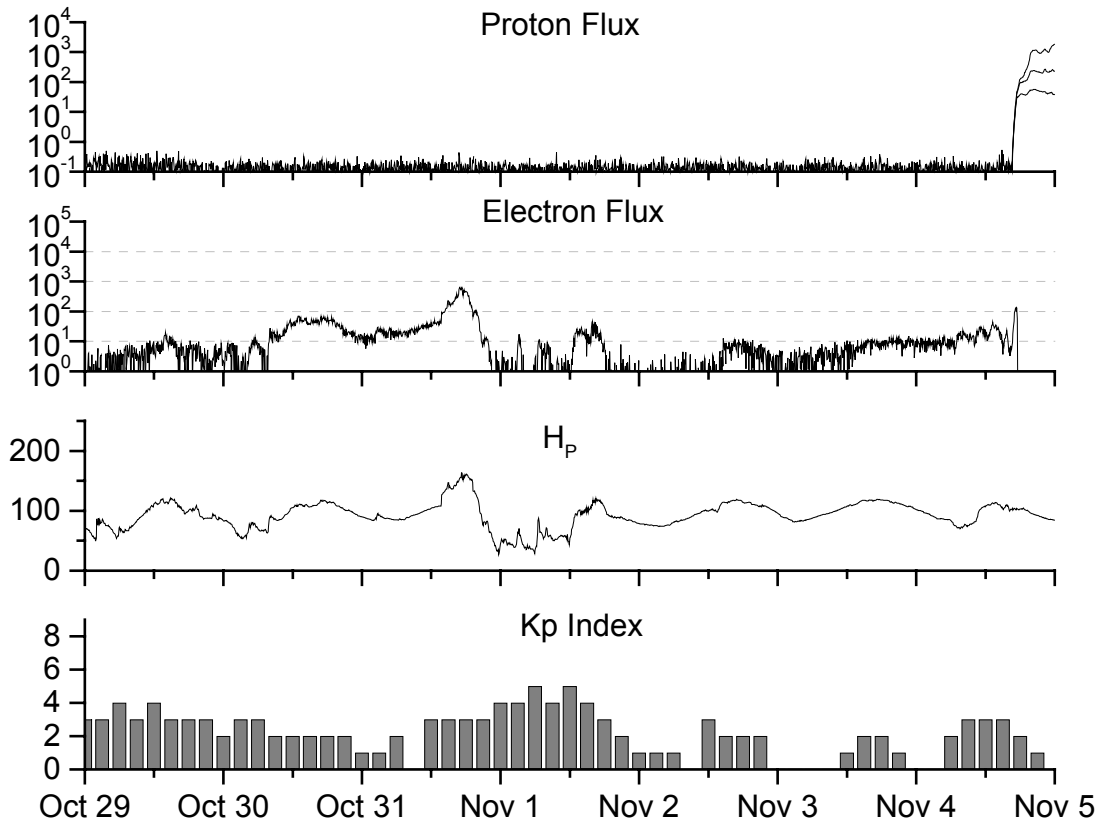


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

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
1999									
November	199.3	133.2	0.67	164.7	110.0	191.5	171.5	14	13.1
December	123.5	86.4	0.69	165.9	111.1	169.8	173.4	10	13.8
2000									
January	140.8	90.1	0.64	168.0	112.9	158.1	175.5	13	14.5
February	161.9	112.9	0.70	172.1	116.7	173.2	176.8	15	15.0
March	203.6	138.5	0.68	175.4	119.9	208.2	178.4	09	15.0
April	193.4	125.5	0.65	176.3	120.8	184.2	180.5	15	15.0
May	188.8	121.6	0.64	173.1	119.0	184.5	180.0	15	15.0
June	190.3	124.9	0.66	172.0	118.7	179.8	179.7	15	15.1
July	236.7	169.1	0.71	173.0	119.7	204.7	180.2	21	14.8
August	166.6	130.5	0.78	171.8	118.6	163.1	179.5	16	14.2
September	157.9	109.9	0.70	169.0	116.2	182.1	177.1	18	14.2
October	138.9	100.1	0.72	166.2	114.4	167.7	175.6	18	14.6
November	149.9	106.5	0.71	162.7	112.7	178.8	173.6	17	14.6
December	146.4	104.5	0.71	160.8	112.1	173.6	172.0	08	14.4
2001									
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			148.7		12	
June	196.7	134.0	0.68			173.7		12	
July	124.6	82.2	0.66			131.3		11	
August	159.4	106.8	0.67			163.2		13	
September	229.1	150.7	0.66			233.3		12	
October	197.4	125.6	0.64			208.2		18	

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 October 2001

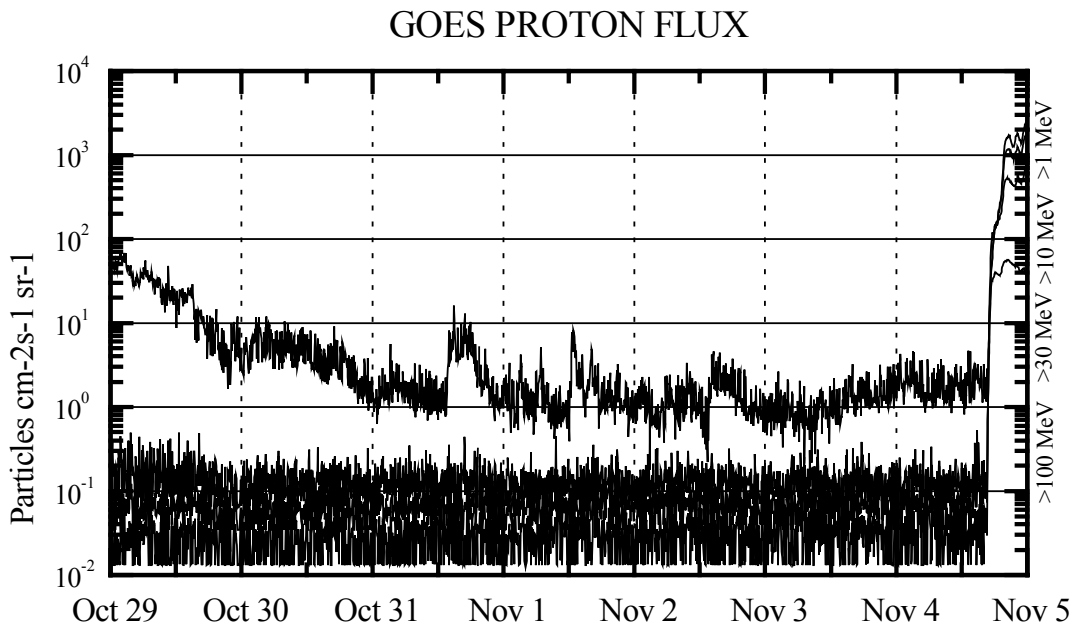
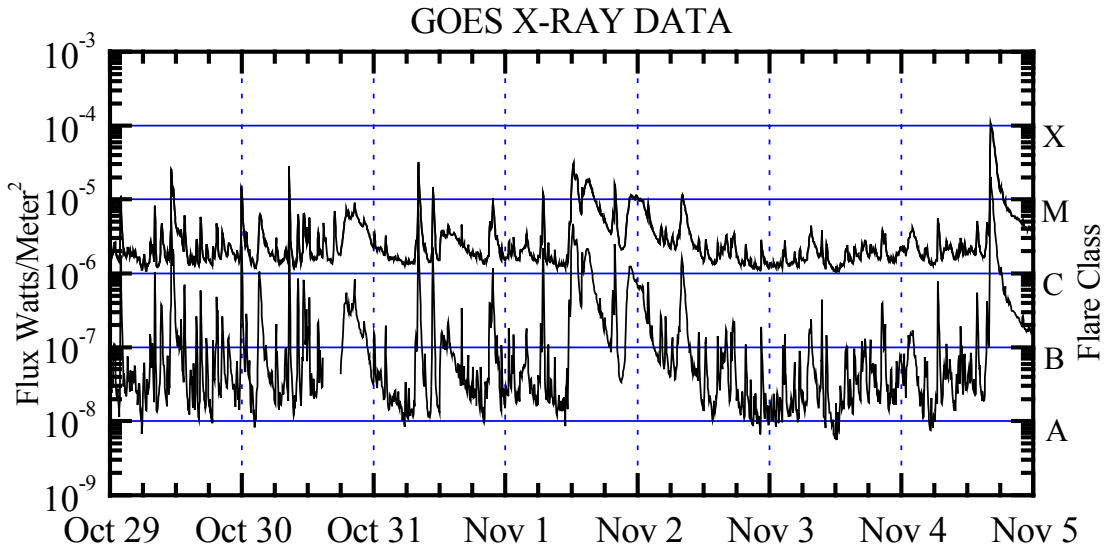
Protons plot contains the five-minute averaged integral proton flux (protons/cm²-sec -sr) as measured by GOES-8 (W75) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

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 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.



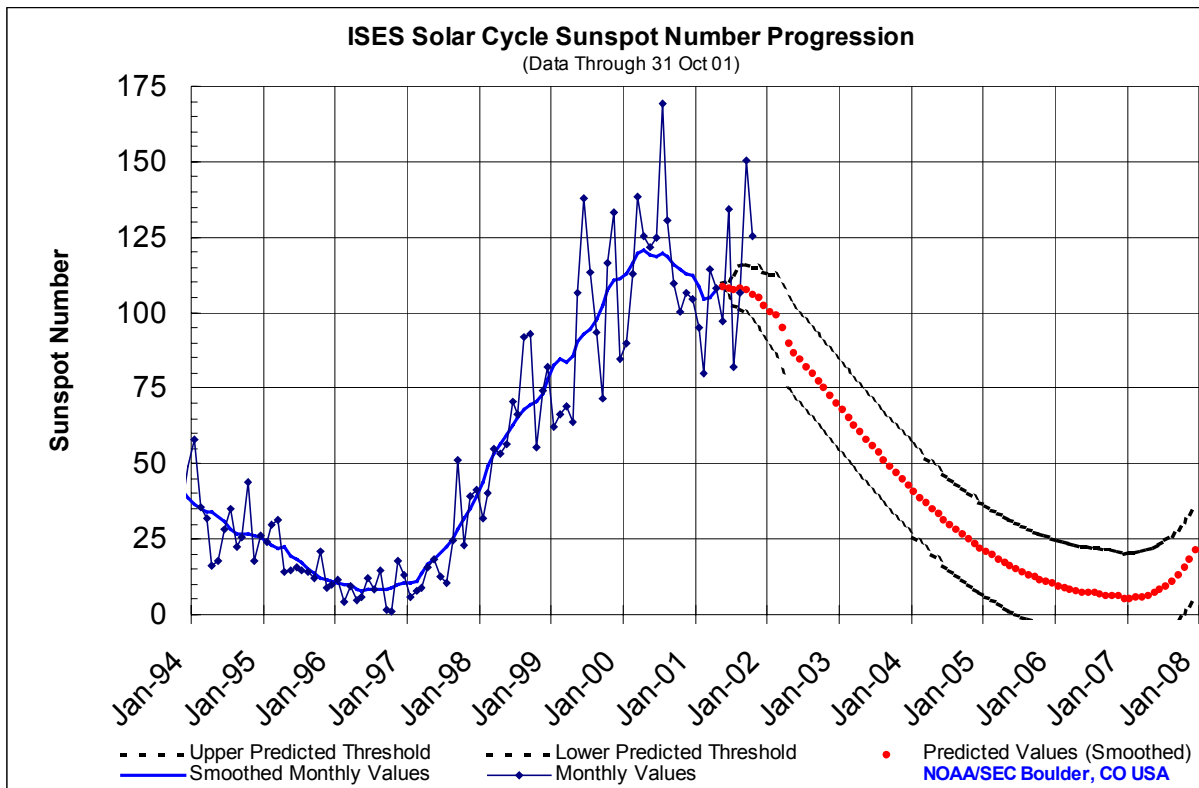


Weekly GOES Satellite X-ray and Proton Plots

X-ray plot contains five-minute averaged x-ray flux (watts/m²) as measured by GOES 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.

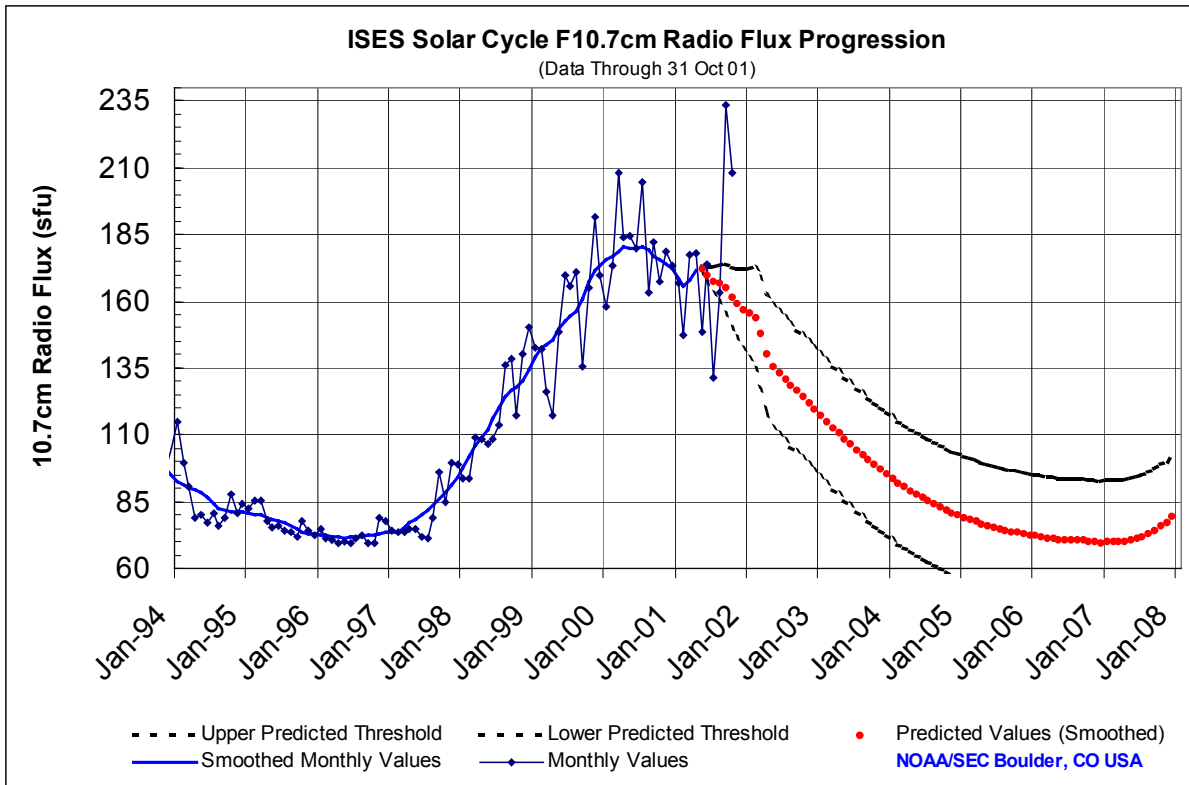




SEC Prediction of Smoothed Sunspot Number

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
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	108	108	108	108	106	105	102
	(***)	(***)	(***)	(***)	(1)	(3)	(5)	(7)	(8)	(9)	(10)	(11)
2002	100	99	95	90	87	85	82	80	77	75	73	70
	(12)	(13)	(14)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)
2003	68	65	63	61	58	56	54	51	49	47	45	43
	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)
2004	41	39	37	35	33	31	30	28	27	25	24	22
	(15)	(15)	(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)





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 (***)	172 (1)	170 (3)	168 (5)	167 (7)	165 (9)	162 (11)	159 (13)	157 (15)
2002	155 (17)	154 (19)	148 (21)	140 (22)	136 (23)	133 (23)	131 (23)	129 (23)	126 (23)	124 (23)	122 (23)	120 (23)
2003	117 (23)	115 (23)	113 (23)	111 (23)	109 (23)	107 (23)	104 (23)	103 (23)	101 (23)	99 (23)	97 (23)	95 (23)
2004	94 (23)	92 (23)	91 (23)	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 31 Oct 01)

