

Solar activity was at low to moderate levels. Moderate levels were observed on 07 – 09 January. The largest event of the period was an impulsive M4/Sf flare on 08 January from Region 251 (S13, L=125, class/area Eao/330 on 09 January). For flare times and magnitudes, please refer to the Energetic Event and Flare List. Region 251 appeared on the visible disk on 07 January, and over the next few days developed into a moderate sized spot group with a beta gamma magnetic configuration. By 12 January, it became apparent that Region 251 contained two distinct bipoles; consequently, the region was separated. Region 251 (S14, L=123, class/area Eai/120 on 12 January) remained with the trailing spots, and Region 255 (S13, L=117, class/area Cko/200 on 12 January) was the new designation for the leader spots. Region 244 (S23, L=209, class/area Cao/090 on 06 January) produced an M1/1f flare on 07 January as well as six C-class flares. By the close of the period, Region 244 has decayed to a small spot group with a simplified beta magnetic configuration. Region 242 (S08, L=219, class/area Dac/370 on 08 January) was a mildly active beta-gamma region that produced a number of C-class events and numerous sub-flares throughout the period. On 12 January, Region 242 has shown slight decay, as it approaches the west limb, and has simplified to a beta magnetic configuration.

Solar wind data were available from the NASA Advanced Composition Explorer (ACE) spacecraft for most of the summary period. On 10 January, solar wind speed increased to near 500 km/s and slowly decayed back to 400 km/s over the next couple of days. The Bz component of the interplanetary magnetic field remained relatively positive throughout the period.

There were no greater than 10 MeV proton events at geo-synchronous orbit during the summary period.

The greater than 2 MeV electron flux at geo-synchronous orbit reached moderate levels during the period.

The geomagnetic field was at quiet to unsettled levels. On 11 January, a weak high speed coronal hole stream produced unsettled conditions early in the period.

### **Space Weather Outlook** **15 January - 10 February 2003**

Solar activity is expected to be low to moderate during the forecast period. Region 251/255 complex is expected to have M-class potential early in the period and again late in the period when it is due to return.

No greater than 10 MeV proton events are expected during the forecast period.

The greater than 2 MeV electron flux is expected to reach high levels on 17-18 January, on 25 – 28 January and again on 01 – 02 February due to recurring coronal holes.

The geomagnetic field is expected to be at quiet to major storm conditions during the period. Isolated active conditions are possible on 15-16 January due to a weak recurring coronal hole. Minor to major storm conditions are possible on 23 -24 January due to a returning transequatorial coronal hole that was 30 degrees wide during its last rotation. Isolated active conditions are possible on 30 – 31 January due to a smaller recurring coronal hole.



### *Daily Solar Data*

Date	Radio Flux 10.7 cm	Sun spot No.	Sunspot Area (10 <sup>-6</sup> hemi.)	X-ray Background	Flares							
					X-ray Flux			Optical				
					C	M	X	S	1	2	3	4
06 January	162	141	520	B7.4	5	0	0	2	0	0	0	0
07 January	163	199	850	B9.3	5	2	0	7	1	0	0	0
08 January	174	198	1270	B9.4	8	0	0	12	1	0	0	0
09 January	183	206	1300	C1.1	8	1	0	19	2	0	0	0
10 January	185	199	1160	B7.6	2	0	0	2	0	0	0	0
11 January	189	238	1490	B8.7	11	0	0	12	0	0	0	0
12 January	173	232	1210	B7.1	5	0	0	2	0	0	0	0

### *Daily Particle Data*

Date	Proton Fluence (protons/cm <sup>2</sup> -day-sr)			Electron Fluence (electrons/cm <sup>2</sup> -day-sr)		
	>1MeV	>10MeV	>100MeV	>6MeV	>2MeV	>4MeV
	06 January	4.3E+5	1.3E+4	3.3E+3		2.7E+7
07 January	4.0E+5	1.4E+4	3.4E+3		1.8E+7	
08 January	2.7E+5	1.4E+4	3.7E+3		8.6E+6	
09 January	2.5E+5	1.4E+4	3.7E+3		9.2E+6	
10 January	3.2E+5	1.3E+4	2.9E+3		3.1E+6	
11 January	5.8E+4	1.3E+4	2.9E+3		2.0E+6	
12 January	4.3E+4	1.3E+4	3.1E+3		1.4E+6	

### *Daily Geomagnetic Data*

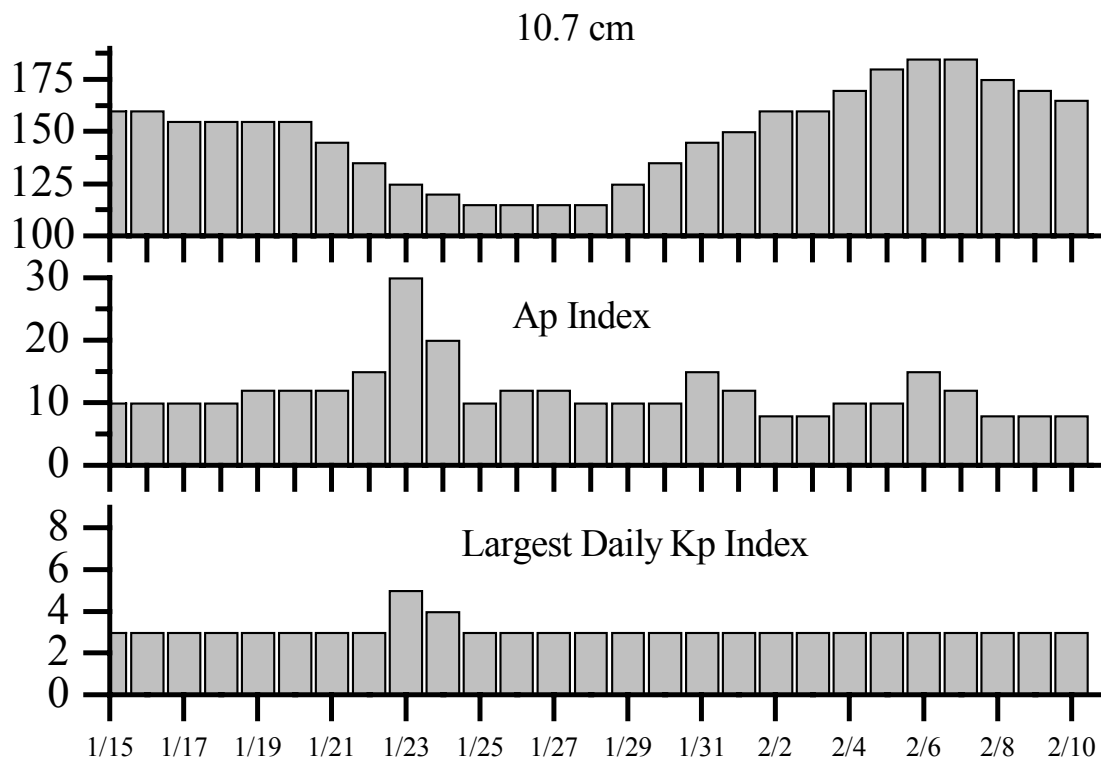
Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	06 January	2	0-0-0-0-1-2-1-1	1	1-0-0-1-0-0-0-1	7
07 January	5	1-2-2-1-1-2-1-1	7	2-1-1-4-2-1-1-1	9	2-3-2-3-2-2-3-2
08 January	4	2-0-3-1-1-1-0-0	2	1-0-2-2-0-0-0-0	7	2-2-3-2-2-2-2-2
09 January	2	0-0-0-0-1-1-2-1	1	0-0-0-0-0-1-1-0	7	2-2-1-1-2-3-3-3
10 January	7	1-2-1-2-2-2-2-3	15	1-1-2-3-5-3-3-3	10	2-2-2-2-3-3-3-3
11 January	9	4-4-0-0-1-1-2-2	7	3-3-1-1-2-1-2-2	10	3-3-1-1-2-3-3-3
12 January	4	1-1-2-1-1-1-1-1	14	1-2-5-3-3-2-3-1	11	2-2-3-3-3-3-3-2

### *Alerts and Warnings Issued*

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UT
06 Jan 1234	ALERT: STRATWARM	06 Jan
07 Jan 1344	ALERT: STRATWARM	07 Jan
08 Jan 0012	1 - 245 MHz Radio Burst	07 Jan
08 Jan 1328	ALERT: STRATWARM	08 Jan
09 Jan 0006	1 - 245 MHz Bursts	08 Jan
09 Jan 0006	1 - 245 MHz Radio Noise Storm	08 Jan
10 Jan 0036	5 - 245 MHz Bursts	09 Jan
11 Jan 0250	1 - 245 MHz Bursts	10 Jan



## 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
15 Jan	160	10	3	29 Jan	125	10	3
16	160	10	3	30	135	10	3
17	155	10	3	31	145	15	3
18	155	10	3	01 Feb	150	12	3
19	155	12	3	02	160	8	3
20	155	12	3	03	160	8	3
21	145	12	3	04	170	10	3
22	135	15	3	05	180	10	3
23	125	30	5	06	185	15	3
24	120	20	4	07	185	12	3
25	115	10	3	08	175	8	3
26	115	12	3	09	170	8	3
27	115	12	3	10	165	8	3
28	115	10	3				



### *Energetic Events*

Date	Time			X-ray		Optical Information			Peak		Sweep Freq		
	Begin	Max	½	Class	Integ Flux	Imp/ Brtns	Location		Rgn #	Radio Flux		Intensity	
			Max				Lat	CMD		245	2695	II	IV
07 Jan	0729	0750	0811	M1.0	.019	1f	S24E07		244				
07 Jan	2325	2333	2340	M4.9	.023	Sf	S14E81		251	81			
09 Jan	0532	0537	0544	M1.0	.005	1n	S14E64		251				

### *Flare List*

Date	Time			X-ray Class.	Optical		Rgn
	Begin	Max	End		Imp / Brtns	Location Lat CMD	
06 January	0242	0244	0248	B7.7	Sf	S08W63	239
	0808	0817	0825	C1.0			243
	0940	0941	0958	C2.7	Sf	S25E18	244
	1423	1429	1433	C2.9			
	2004	2008	2011	C1.3			
07 January	2058	2104	2113	C1.6			
	0226	0234	0244	C3.5			
	0724	0724	0729		Sf	S08E00	242
	0732	0750	0839	M1.0	1f	S24E07	244
	0828	0833	0838	C7.7			
	0838	0839	0851		Sf	S08W01	242
	0932	0936	0946	C2.3			
	1308	1312	1329		Sf	S22E04	244
	1730	1736	1743	C2.8			
	1753	1754	1757		Sf	S07W05	242
08 January	B1930	U1932	A1941	C1.6	Sf	S21E02	244
	2233	2233	2237		Sf	S11W07	242
	B2331	U2342	A2350	M4.9	Sf	S14E81	251
	0134	0136	A0142	C1.4	Sf	S13E83	251
	0231	0238	0245	C2.0			
	0543	0550	0637	C6.2	1f	S22W05	244
	0613	0618	0626		Sf	S13W12	242
	B0729	U0730	0738	C3.4	Sf	S14W11	242
	0844	0847	0849	C2.6			
	B1430	U1430	1449		Sf	S13E76	251
	1525	1530	1534	C2.5			
	1555	1559	A1610		Sf	S16E52	247
	1558	1558	1601		Sf	N11E13	245
	B1611	U1631	A1702	C1.7	Sf	S08W18	242
	B1618	U1649	1731		Sf	S16E53	247
	B1704	U1713	A1724		Sf	S08W17	242
1854	1855	1902		Sf	S25W09	244	
1909	1925	1929		Sf	S16E52	247	
2137	2142	2150	C1.8				
2304	2323	2351		Sf	S16E49	247	



*Flare List - continued.*

Date	Time			X-ray Class.	Optical		Rgn	
	Begin	Max	End		Imp / Brtns	Location Lat CMD		
09 January	0026	0031	0038		Sf	S13E68	251	
	0034	0039	0110		Sf	S06W23	242	
	0118	0119	0123		Sf	S18W18	244	
	0130	0135	0232	C9.8	1f	S07W24	242	
	0249	0253	0257	C3.4				
	0446	0448	0453		Sf	S12E65	251	
	0454	0459	0503		Sf	S12E65	251	
	0533	0535	0616	M1.0	1n	S14E64	251	
	0628	0631	0633		Sf	S15E45	247	
	0748	0752	0755	C2.6				
	0845	0849	0851		Sf	S19E41	247	
	0912	0912	0915		Sf	S04W30	242	
	0934	0934	0939		Sf	S16E41	247	
	B1145	U1145	1151		Sf	S13E65	251	
	B1321	U1321	1326	C2.5	Sf	S12E60	251	
	B1512	U1512	1518		Sf	S12E59	251	
	1555	1557	1605		Sf	S17E61	251	
	1722	1724	1730	C2.4	Sf	S10E59	251	
	1822	U1824	A1828	C1.7	Sf	S12E59	251	
	1841	1844	1908	C3.4	Sf	S16E71	251	
	1921	1922	1930		Sf	S19E36	247	
	2237	2237	2243	C2.0	Sf	S05W37	242	
	B2242	U2242	2246		Sf	S08W33	242	
	10 January	2201	2203	2224	C3.0	Sf	S09W54	242
		2336	2341	A2346	C2.5	Sf	S09W54	242
	11 January	0031	0048	0101	C2.5	Sf	S08W54	242
0337		0340	0343	C1.2				
0434		0444	0455	C1.4				
1026		1031	A1043	C2.7	Sf	S22W49	244	
1050		1055	1101	C3.0				
1109		1111	1112	C2.3				
1308		U1319	1345	C1.9	Sf	S08W56	242	
1447		1454	1504		Sf	S13E52	0	
1450		1450	1457		Sf	S16E14	247	
1510		1512	1516		Sf	S11E33	251	
1605		1605	1612	C2.3	Sf	S09W57	242	
1734		1743	1754	C1.7	Sf	S21W49	244	
1843		1845	1850		Sf	S09W58	242	
1903		1904	1912		Sf	S20W55	244	
11 January		1928	1938	1958	C2.4	Sf	S21W52	244
	2249	2249	2302	C1.6	Sf	S08W60	242	



**Flare List - continued.**

Date	Time			X-ray Class.	Optical		Rgn
	Begin	Max	End		Imp / Brtns	Location Lat CMD	
12 January	0039	0039	0055	C2.1	Sf	S16E05	247
	0422	0425	0445		Sf	S12E51	254
	0637	0703	0711	C2.2			
	0729	0742	0833	C3.7			242
	1412	1425	1443	C6.1			242
	1806	1810	1812	C1.2			

**Region Summary**

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

*Region 239*

29 Dec	S10E37	290	0030	04	Cro	005	B											
30 Dec	S10E24	290	0040	06	Dso	009	B											
31 Dec	S10E10	291	0070	08	Dao	012	B											
01 Jan	S09W04	292	0080	06	Dai	011	B											
02 Jan	S09W17	292	0070	09	Dao	010	B											
03 Jan	S09W30	292	0040	04	Cao	005	B											
04 Jan	S09W43	292	0020	01	Hrx	002	A											
05 Jan	S07W54	290	0030	05	Cso	007	B											
06 Jan	S07W67	290	0020	05	Bxo	003	B						1					
07 Jan	S08W82	299	0050	03	Hax	001	A											
										0	0	0	1	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 292

*Region 240*

31 Dec	S06E20	281	0040	04	Dso	007	B											
01 Jan	S08E06	282	0010	03	Bxo	003	B											
02 Jan	S08W04	279	0010	02	Axx	002	A											
03 Jan	S08W17	279																
04 Jan	S08W38	287	0010	01	Hrx	001	A											
05 Jan	S08W53	289	0010	02	Hrx	002	A											
06 Jan	S08W65	288	0010	05	Cso	003	B											
07 Jan	S04W78	288	0030	04	Cso	003	B											
										0	0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 279



**Region Summary - continued.**

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

*Region 241*

02 Jan	S25W40	315	0020	03	Cao	005	B												
03 Jan	S24W53	315	0020	01	Hrx	002	A												
04 Jan	S24W66	315	0030	06	Dro	003	B												
05 Jan	S24W79	315																	
06 Jan	S24W92	315																	

Crossed West Limb.

Absolute heliographic longitude: 315

*Region 242*

02 Jan	S08E61	214	0030	03	Cso	006	B												
03 Jan	S08E48	214	0090	06	Dai	015	B	1											
04 Jan	S08E33	216	0180	08	Dai	018	Bg												
05 Jan	S08E20	216	0190	09	Dai	028	Bg	1											
06 Jan	S08E03	216	0190	10	Dac	027	B												
07 Jan	S06W09	219	0340	10	Dkc	036	B												
08 Jan	S08W22	219	0370	09	Dac	046	Bg	2											
09 Jan	S08W34	217	0310	09	Dai	035	Bg	2											
10 Jan	S08W48	218	0190	09	Dai	023	Bg	2											
11 Jan	S07W61	218	0300	09	Dai	028	Bg	4											
12 Jan	S07W75	219	0170	08	Dao	012	B	2											

Still on Disk.

Absolute heliographic longitude: 216

*Region 243*

03 Jan	S19W34	296	0050	04	Dao	005	B	1											
04 Jan	S19W47	296	0150	06	Dao	013	Bg	2											
05 Jan	S19W60	296	0200	08	Dao	013	Bg	1											
06 Jan	S19W73	296	0150	10	Cao	009	Bg	1											
07 Jan	S18W88	302	0060	02	Hax	001	A												

Crossed West Limb.

Absolute heliographic longitude: 296



**Region Summary - continued.**

Date	Location		Sunspot Characteristics				Flares										
	( ° Lat ° CMD)	Helio Lon	Area (10 <sup>-6</sup> hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical						
							C	M	X	S	1	2	3	4			
<i>Region 244</i>																	
03 Jan	S15E58	204	0050	05	Dao	009	B	1			1						
04 Jan	S23E40	209	0140	07	Dao	009	B	2			4						
05 Jan	S23E27	209	0150	07	Dao	015	B	1			1						
06 Jan	S23E14	209	0090	09	Cao	013	Bg	1			1						
07 Jan	S23W01	211	0080	09	Dao	015	B	1	1		2	1					
08 Jan	S22W16	213	0070	07	Dso	015	B	1			1	1					
09 Jan	S22W31	214	0030	03	Cso	007	B				1						
10 Jan	S22W44	214	0010	02	Cso	003	B										
11 Jan	S22W56	213	0020	03	Cao	004	B	3			4						
12 Jan	S22W71	215	0020	03	Bxo	004	B										
										10	1	0	15	2	0	0	0

Still on Disk.

Absolute heliographic longitude: 211

<i>Region 245</i>																	
03 Jan	N12E74	188	0070	02	Hax	001	A										
04 Jan	N11E59	190	0110	02	Hax	001	A										
05 Jan	N11E46	190	0080	02	Hax	003	A										
06 Jan	N11E33	190	0030	01	Hax	002	A										
07 Jan	N12E21	189	0030	03	Cso	003	B										
08 Jan	N11E07	190	0030	04	Cso	008	B				1						
09 Jan	N12W05	188	0030	03	Cao	006	B										
10 Jan	N12W20	190	0010	02	Cao	003	B										
11 Jan	N12W33	190	0000	00		000											
12 Jan	N12W46	190	0000	00		000											
										0	0	0	1	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 188

<i>Region 246</i>																	
06 Jan	N08E10	213	0010	03	Cro	003	B										
07 Jan	N09W02	212	0000	00	Axx	001	A										
08 Jan	N09W15	212	0000	00		000											
09 Jan	N09W28	212	0000	00		000											
10 Jan	N09W41	212	0000	00		000											
11 Jan	N09W54	212	0000	00		000											
12 Jan	N09W67	212	0000	00		000											
										0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 212





**Region Summary - continued.**

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

*Region 247*

06 Jan	S17E73	150	0020	01	Hsx	001	A											
07 Jan	S18E59	151	0070	08	Cao	005	B											
08 Jan	S18E47	150	0240	10	Dai	018	B					4						
09 Jan	S17E34	149	0340	10	Dai	036	B					4						
10 Jan	S15E20	150	0300	11	Eai	033	Bg											
11 Jan	S17E07	150	0300	11	Eai	046	B						1					
12 Jan	S16W07	151	0230	11	Eai	044	B	1				1						
								1	0	0	0	10	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 150

*Region 248*

07 Jan	S11W41	251	0010	03	Cso	004	B											
08 Jan	S12W55	252	0030	04	Cso	007	B											
09 Jan	S10W69	252	0050	00	Axx	001	A											
								0	0	0	0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 251

*Region 249*

07 Jan	S16E18	192	0020	04	Cro	007	B											
08 Jan	S16E05	192	0060	06	Dso	010	B											
09 Jan	S15W08	191	0040	06	Dso	013	B											
10 Jan	S15W21	191	0040	07	Dao	011	B											
11 Jan	S15W34	191	0040	02	Hsx	004	A											
12 Jan	S15W47	191	0040	04	Dao	003	B											
								0	0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 192

*Region 250*

07 Jan	S27E79	131	0100	02	Hsx	002	A											
08 Jan	S28E66	131	0190	05	Cao	003	B											
09 Jan	S27E53	130	0160	07	Cao	005	B											
10 Jan	S26E37	133	0170	06	Cao	007	B											
11 Jan	S27E27	130	0180	04	Cko	007	B											
12 Jan	S27E13	131	0180	05	Cko	009	B											
								0	0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 131



**Region Summary - continued.**

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

*Region 251*

07 Jan	S14E81	129	0060	02	Hax	001	A		1		1						
08 Jan	S14E70	127	0280	10	Dki	011	Bg	1			2						
09 Jan	S13E58	125	0330	11	Eao	012	Bg	4	1		10	1					
10 Jan	S13E44	126	0340	12	Eho	012	B										
11 Jan	S14E32	125	0380	15	Eko	034	B				1						
12 Jan	S14E21	123	0120	11	Eai	024	B										
								5	2	0	14	1	0	0	0	0	

Still on Disk.

Absolute heliographic longitude: 123

*Region 252*

09 Jan	S04E61	122	0010	01	Axx	001	A										
10 Jan	S03E46	124	0020	02	Hsx	002	A										
11 Jan	S03E33	124	0020	02	Hax	003	A										
12 Jan	S03E18	126	0010	02	Axx	002	A										
								0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 126

*Region 253*

10 Jan	N11W36	206	0010	03	Cso	004	B										
11 Jan	N09W48	205	0060	07	Dao	011	B										
12 Jan	N09W61	205	0030	07	Dso	004	B										
								0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 206

*Region 254*

10 Jan	S15E72	098	0070	02	Hsx	001	A										
11 Jan	S16E63	094	0190	11	Eao	011	B										
12 Jan	S16E44	100	0130	05	Cao	006	B				1						
								0	0	0	1	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 100

*Region 255*

12 Jan	S13E14	117	0200	05	Cko	009	B										
								0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 117



***Region Summary - continued.***

Date	Location		Sunspot Characteristics				Flares							
	( ° Lat ° CMD)	Helio Lon	Area (10 <sup>-6</sup> hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical			
							C	M	X	S	1	2	3	4
<i>Region 256</i>														
12 Jan	S17E55	089	0080	03	Cao	005	B							

Still on Disk.

Absolute heliographic longitude: 89

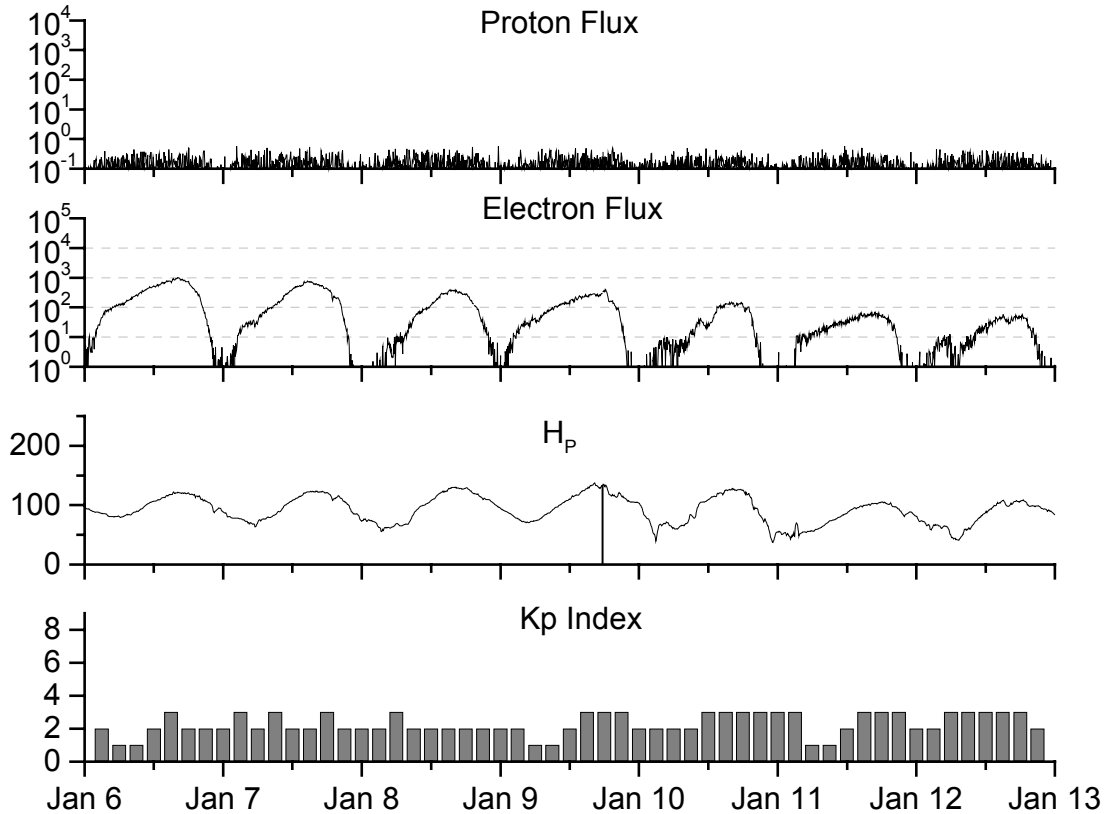


**Recent Solar Indices (preliminary)  
of the observed monthly mean values**

Month	Sunspot Numbers			Radio Flux		Geomagnetic			
	Observed values SWO	Ratio RI	Ratio RI/SWO	Smooth values SWO	Smooth values RI	*Penticton 10.7 cm	Smooth Value	Planetary Ap	Smooth Value
<b>2001</b>									
January	142.7	95.1	0.67	156.3	108.8	166.7	168.8	08	13.8
February	131.0	80.1	0.61	151.4	104.2	147.3	165.8	06	13.3
March	166.7	114.2	0.69	154.0	104.9	177.7	167.9	17	12.9
April	163.6	108.2	0.66	159.4	107.7	178.3	171.7	18	12.7
May	135.1	97.3	0.72	163.1	108.8	148.7	174.8	12	12.5
June	196.7	134.0	0.68	167.2	109.9	173.7	178.8	12	12.4
July	124.6	82.2	0.66	172.1	111.8	131.3	183.9	11	12.4
August	159.4	106.8	0.67	176.7	113.8	163.2	188.8	13	12.5
September	229.1	150.7	0.66	178.8	114.3	233.8	191.3	13	12.8
October	197.4	125.6	0.64	179.5	114.1	208.1	191.9	20	12.0
November	178.6	106.5	0.60	183.7	115.6	212.7	193.7	16	12.0
December	217.5	131.8	0.61	184.5	114.7	235.6	193.9	09	12.2
<b>2002</b>									
January	189.0	113.9	0.60	184.8	113.5	227.3	194.6	08	12.4
February	194.5	108.0	0.56	188.6	114.7	205.0	197.2	10	12.8
March	153.1	98.1	0.64	188.9	113.3	180.3	195.7	10	13.0
April	194.9	120.4	0.62	186.2	110.4	189.8	191.5	15	13.2
May	204.1	120.8	0.59	183.6	108.8	178.4	188.0	15	13.3
June	146.0	88.5	0.61	179.9	106.2	148.7	183.0	11	13.5
July	183.5	99.9	0.54			173.5		13	
August	191.0	116.4	0.61			183.9		16	
September	206.4	109.3	0.53			175.8		14	
October	153.9	97.5	0.63			167.0		23	
November	159.8	95.0	0.59			168.7		16	
December	147.9	81.6	0.55			158.6		13	

**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 06 January 2003*

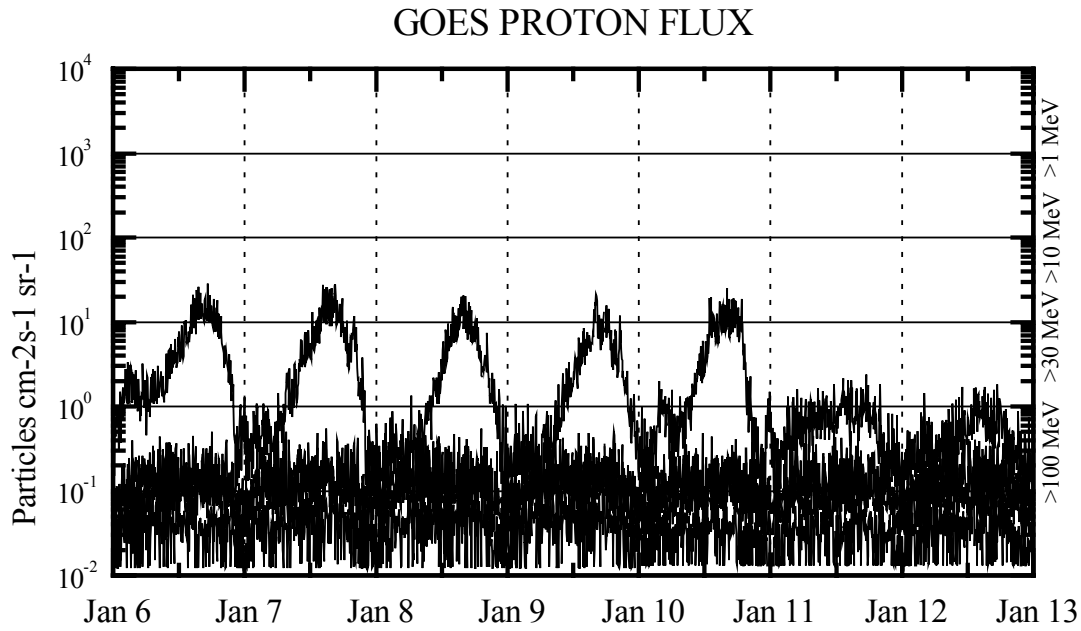
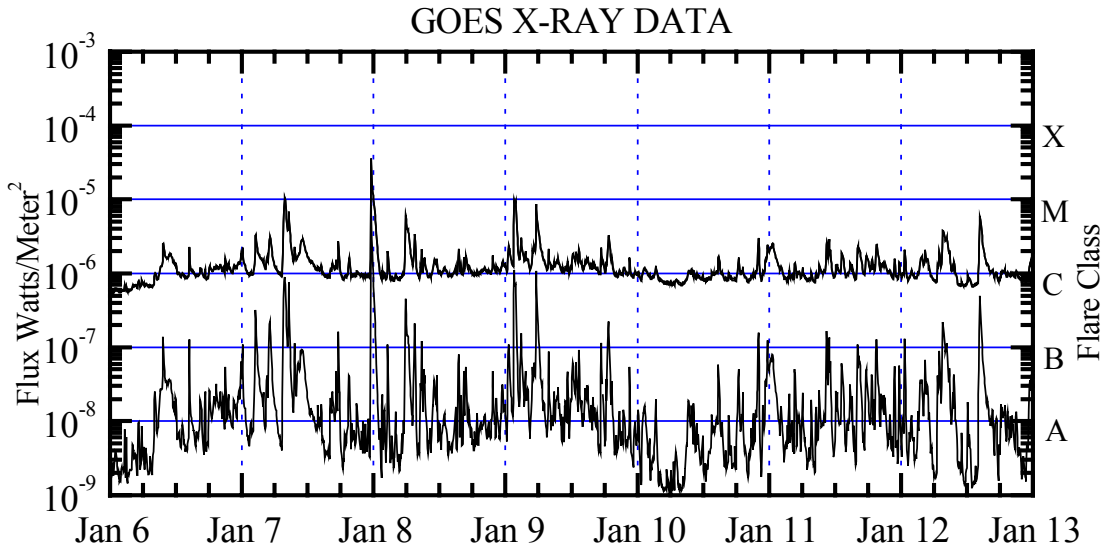
*Protons* plot contains the five-minute averaged integral proton flux (protons/cm<sup>2</sup>-sec -sr) as measured by GOES-8 (W75) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

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

*H<sub>p</sub>* plot contains the five minute averaged magnetic field H - component in nanoteslas (nT) as measured by GOES-8. The H component is parallel to the spin axis of the satellite, which is nearly parallel to the Earth's rotation axis.

*K<sub>p</sub>* plot contains the estimated planetary 3-hour K-index (derived by the Air Force Weather Agency) in real time from magnetometers at Meanook, Canada; Sitka, AK; Glenlea, Canada; St. Johns, Canada; Ottawa, Canada; Newport, WA; Fredericksburg, VA; Boulder, CO; Fresno, CA and Heartland, UK. These data are made available through cooperation from the Geological Survey of Canada (GSC) and the US Geological Survey. These may differ from the final K<sub>p</sub> values derived from a more extensive network of magnetometers. The data included here are those now available in real time at the SWO and are incomplete in that they do not include the full set of parameters and energy ranges known to cause satellite operating anomalies. The proton and electron fluxes and K<sub>p</sub> are "global" parameters that are applicable to a first order approximation over large areas. H<sub>p</sub> is subject to more localized phenomena and the measurements generally are applicable to within a few degrees of longitude of the measuring satellite.





*Weekly GOES Satellite X-ray and Proton Plots*

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

Proton plot contains the five-minute averaged integral proton flux (protons/cm<sup>2</sup>-sec-sr) as measured by GOES-8 (W75) for each of the energy thresholds: >1, >10, >30 and >100 MeV. P10 event threshold is 10 pfu (protons/cm<sup>2</sup>-sec-sr) at greater than 10 MeV.

