

Solar activity ranged from very low to high levels. The summary period began with very low to low levels on 10 – 13 January and increased rapidly to moderate to high levels on 14 – 17 January due to the rapid development of Regions 718 (S07, L=197, class/area, Fki/360 on 15 January) and 720 (N13, L=179, class/area, Dkc/1620 on 15 January). Region 718 exhibited moderate growth both in area and sunspot number, and produced two low-level M-class flares on 14 and 15 January. New Region 720 was the largest and most impressive group on the visible disk. The region rotated quietly onto the disk as a simple beta magnetic sunspot group on the 10th, grew rapidly in both area and sunspot count on 12 and 13 January, and ended the summary period as a large, magnetically complex sunspot region. From 14 - 17 January, Region 720 produced eleven M-class and three X-class flares of which three were significant. The first of these significant events was a long duration M8.6/Sf Tenflare (3000 sfu) at 15/0638 UTC with associated Type II (1292 km/s) and Type IV radio sweeps. SOHO/LASCO imagery detected a fast, full-halo CME with this event. Later in the day, Region 720 produced an X2.6/3b at 15/2302 UTC. This flare was associated with significant radio output including a 6400 sfu Tenflare and a Type II (1151 km/s) radio sweep. An even faster asymmetric, full-halo CME was detected with this event. The third significant event, though occurring outside of the summary period, merits discussion. At 17/0952 UTC, Region 720 produced an X3.8/2f Tenflare (12,000 sfu) with very significant discrete radio output and Type II (1568 km/s) and Type IV radio sweeps. Region 720 ended the period as large and magnetically complex sunspot group; however, some decay and restructuring of the sunspots were apparent following the X3.8 flare.

The period began with generally quiet solar wind plasma and IMF conditions. An increase in solar wind density and changes in the IMF structure late on 11 January indicated the arrival of a co-rotating interaction region (CIR) and coronal hole high speed stream. Solar wind gradually increased to over 750 km/s by midday on the 13th, before gradually declining to near 600 km/s by late on 14 January. Another short-lived high speed stream occurred on 15 January with solar wind speed increasing to near 750 km/s. The onset of transient flow from the strong solar events and CMEs of 15 January began midday on 16 January. The initial onset of transient flow was weak. The stronger, more significant activity arrived early on 17 January. Solar wind speed exceeded 800 km/s and periods of sustained southward Bz were observed.

A greater than 10 MeV proton enhancement began following the long duration M8.6 flare on 15 January; however, the 10 pfu event threshold was not exceeded during this enhancement. A greater than 10 MeV proton event began on 16/0210 UTC following the X2.6 flare late on the 15th. The peak flux following this flare was 365 pfu at 16/1840 UTC. The period ended with the protons in gradual decline. At the time of this writing, a second stronger injection of protons occurred following the X3.8 flare and CME that occurred early on the 17th. This new intensification included protons at greater than 100 MeV. The proton event remains in progress. The peak flux so far at greater than 10 MeV was 5040 pfu on the 17th. The greater than 100 MeV protons peaked at 28 pfu, also on the 17th.

The greater than 2 MeV electron flux at geosynchronous orbit was at high levels from 13 – 16 January.

The geomagnetic field ranged from quiet to major storm levels with an isolated period of severe storming observed at higher latitudes. Quiet to active, with some minor high latitude storming periods, were experienced on 10 – 11 January, as the IMF Bz fluctuated between +/- 5 nT. By early on the 12th, activity levels generally increased to unsettled to minor storming with isolated major to severe storming at higher latitudes, due to the onset of a geoeffective coronal hole high speed wind stream. Prolonged periods of southward Bz produced occasional active levels from late on the 12th through early on the 15th. Isolated minor to major storming was observed midday on 15 January due to a short-lived high speed coronal hole wind stream. Activity declined to mostly quiet to unsettled until midday on the 16th when activity increased at higher latitudes to unsettled to isolated minor storming following the onset of transient flow from the first of the CMEs.



Space Weather Outlook

19 January - 14 February 2005

Solar activity is expected to be at moderate to high levels through 22 January when Region 720 is due to rotate around the west limb. Thereafter, very low to low conditions are expected through 05 February with a chance of isolated M-class activity after the 5th due to the return of old Region 720 (N13, L=178).

A greater than 10 MeV proton event is in progress and is expected to persist through 21 January. Further intensifications of the existing event are possible with additional major flare activity from Region 720. Proton flux levels are expected to return to background conditions by the end of January and are expected to remain so for the balance of the forecast period.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at high levels on 19 – 21 January, 30 January to 02 February, and 08 – 11 February.

The geomagnetic field is expected to range from quiet to severe storm levels. Early in the forecast period, minor to severe storming is expected as effects from the 17 January CME are due to arrive. Coronal hole high speed wind streams are expected to produce unsettled to active with occasional minor storm periods on 29 - 31 January and 07 – 08 February. Otherwise, expect quiet to unsettled conditions.



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
10 January	90	40	180	A7.9	1	0	0	0	0	0	0	0
11 January	94	25	120	A8.6	2	0	0	1	0	0	0	0
12 January	102	58	600	B1.6	0	0	0	3	0	0	0	0
13 January	116	77	1240	B2.6	9	0	0	7	0	0	0	0
14 January	130	65	1790	B7.3	26	4	0	9	2	1	0	0
15 January	145	100	1980	C1.6	12	6	2	24	4	2	1	0
16 January	145	99	1960	C1.6	7	1	0	8	1	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
	10 January	1.5E+6	1.4E+4	3.1E+3		6.5E+6
11 January	1.7E+6	1.4E+4	3.2E+3		1.4E+7	
12 January	2.0E+6	1.4E+4	3.5E+3		1.2E+7	
13 January	2.0E+6	1.4E+4	3.4E+3		1.8E+8	
14 January	2.2E+6	1.5E+4	3.5E+3		2.5E+8	
15 January	5.8E+6	2.7E+5	6.3E+3		8.1E+7	
16 January	1.4E+8	1.3E+7	3.0E+4		2.2E+8	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	10 January	4	0-1-1-1-2-1-1-2	5	0-1-1-1-2-2-2-2	6
11 January	9	1-3-3-2-1-3-2-2	22	1-4-5-3-3-5-2-3	14	1-4-4-2-2-3-2-3
12 January	18	3-4-3-3-4-3-3-3	47	3-4-3-7-6-5-4-4	30	4-5-3-5-5-3-3-3
13 January	10	2-3-2-1-2-3-3-2	20	3-3-2-4-4-4-3-4	13	2-4-2-2-3-3-3-3
14 January	11	2-2-2-1-1-1-4-4	9	4-2-2-1-1-1-2-3	12	2-2-2-1-1-1-4-4
15 January	11	2-3-3-2-3-3-2-2	29	4-4-6-5-3-3-3-1	22	3-6-4-3-3-3-3-2
16 January	10	2-1-2-2-3-3-2-3	16	1-2-3-5-4-3-2-2	12	2-2-2-2-3-3-2-3

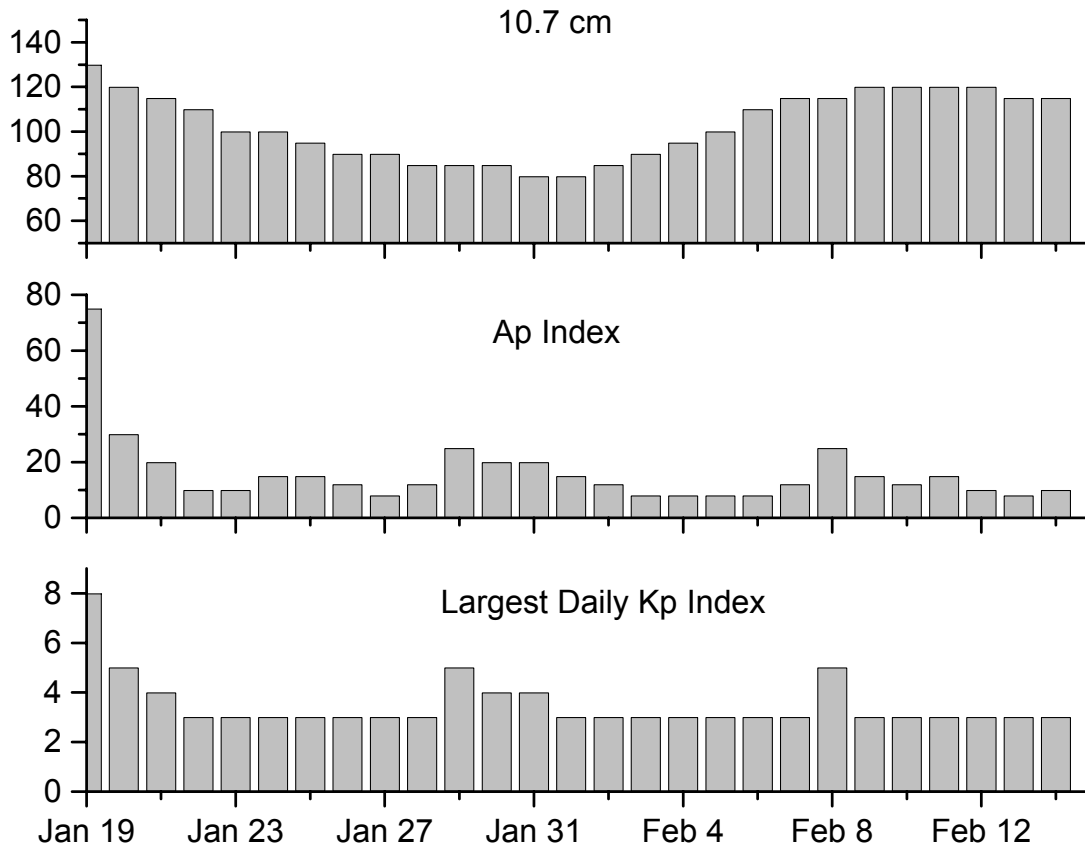


Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UT
11 Jan 0512	WARNING: Geomagnetic K = 4	11 Jan 0514 - 1500
11 Jan 0518	ALERT: Geomagnetic K = 4	11 Jan 0515
12 Jan 0026	WARNING: Geomagnetic K = 4	12 Jan 0100 -1500
12 Jan 0337	ALERT: Geomagnetic K = 4	12 Jan 0335
12 Jan 0352	ALERT: Geomagnetic K = 5	12 Jan 0350
12 Jan 1029	ALERT: Geomagnetic K = 5	12 Jan 1030
13 Jan 0006	1 - 245 MHz Radio Burst	12 Jan
13 Jan 0006	WARNING: Geomagnetic K = 4	13 Jan 0100 - 1600
13 Jan 0513	ALERT: Geomagnetic K = 4	13 Jan 0508
13 Jan 0849	ALERT: Electron 2MeV Integral Flux > 1000pfu	13 Jan 0830
13 Jan 1717	WARNING: Geomagnetic K = 4	13 Jan 1720 - 2359
14 Jan 0021	23 - 245 MHz Radio Bursts	13 Jan
14 Jan 0021	1 - 245 MHz Radio Noise Storm	13 Jan
14 Jan 0731	ALERT: Electron 2MeV Integral Flux > 1000pfu	14 Jan 0710
14 Jan 1322	ALERT: Type II Radio Emission	14 Jan 1247
14 Jan 2105	ALERT: Geomagnetic K = 4	14 Jan 2059
14 Jan 2113	WARNING: Geomagnetic K = 4	14 Jan 2115 - 2359
14 Jan 2354	EXTENDED WARNING: Geomagnetic K = 4	14 Jan 2115 -15 Jan 1600
15 Jan 0043	ALERT: X-Ray Flux > M5	15 Jan 0041
15 Jan 0108	SUMMARY: X-ray Event > X1	15 Jan 0022
15 Jan 0431	ALERT: X-Ray Flux > M5	15 Jan 0430
15 Jan 0440	SUMMARY: X-ray Event > M5	15 Jan 0426
15 Jan 0541	WARNING: Geomagnetic K= 5	15 Jan 0545 - 1600
15 Jan 0545	ALERT: Geomagnetic K= 5	15 Jan 0545
15 Jan 0619	ALERT: X-Ray Flux > M5	15 Jan 0618
15 Jan 0649	ALERT: Type II Radio Emission	15 Jan 0559
15 Jan 0656	ALERT: Type IV Radio Emission	15 Jan 0556
15 Jan 0720	SUMMARY: X-ray Event > M5	15 Jan 0554
15 Jan 0855	WARNING: Proton 10MeV Integral Flux > 10pfu	15 Jan 0900 -2359
15 Jan 1049	SUMMARY: 10cm Radio Burst	15 Jan 0552
15 Jan 1503	SUMMARY: 10cm Radio Burst	15 Jan 1413
15 Jan 1516	ALERT: Electron 2MeV Integral Flux > 1000pfu	15 Jan 1455
15 Jan 2042	WATCH: Geomagnetic A \geq 30	16 Jan
15 Jan 2043	WATCH: Geomagnetic A \geq 50	17 Jan
15 Jan 2240	ALERT: X-Ray Flux > M5	15 Jan 2238
15 Jan 2247	ALERT: Type IV Radio Emission	15 Jan 2230
15 Jan 2309	ALERT: Type II Radio Emission	15 Jan 2234
15 Jan 2336	SUMMARY: X-ray Event > X1	15 Jan 2225
15 Jan 2347	EXT WARNING: Proton 10MeV Integral Flux > 10pfu	15 Jan 0900 -16 Jan 2359
16 Jan 0143	SUMMARY: 10cm Radio Burst	15 Jan 2230
16 Jan 0229	ALERT: Proton Event 10MeV Integral Flux > 10pfu	16 Jan 0210
16 Jan 0335	CANCEL WATCH: Geomagnetic A= 50	15 Jan 2043
16 Jan 0337	WATCH: Geomagnetic A \geq 100	17 Jan
16 Jan 0731	ALERT: Electron 2MeV Integral Flux > 1000pfu	16 Jan 0710
16 Jan 1030	ALERT: Proton Event 10MeV Integral Flux > 100pfu	16 Jan 1030
16 Jan 1210	EXT WARNING: Proton 10MeV Integral Flux > 10pfu	15 Jan 0900 -16 Jan 2359
16 Jan 1630	WARNING: Geomagnetic K = 4	16 Jan 1630 - 2359
16 Jan 1632	ALERT: Geomagnetic K = 4	16 Jan 1629
16 Jan 2248	ALERT: Type IV Radio Emission	16 Jan 2230
16 Jan 2355	EXT WARNING: Proton 10MeV Integral Flux > 10pfu	15 Jan 0900 -17 Jan 2359

ITwenty-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
19 Jan	130	75	8	02 Feb	85	12	3
20	120	30	5	03	90	8	3
21	115	20	4	04	95	8	3
22	110	10	3	05	100	8	3
23	100	10	3	06	110	8	3
24	100	15	3	07	115	12	3
25	95	15	3	08	115	25	5
26 Jan	90	12	3	09	120	15	3
27	90	8	3	10	120	12	3
28	85	12	3	11	120	15	3
29	85	25	5	12	120	10	3
30	85	20	4	13	115	8	3
31	80	20	4	14	115	10	3
01 Feb	80	15	3				



Energetic Events

Date	Time		X-ray		Optical Information			Peak		Sweep Freq		
	Begin	Max	Max	Class	Integ Flux	Imp/ Brtns	Location Lat CMD	Rgn #	Radio Flux		Intensity	
									245	2695	II	IV
14 Jan	1353	1411	1445	M1.8	.039	Sf	N13E14	720				
14 Jan	1602	1606	1614	M1.0	.006	718	S06E02		67			
14 Jan	1753	1757	1803	M1.5	.007	720	N14E12					
14 Jan	2108	2126	2139	M1.9	.023	2n	N15E08	720				
15 Jan	0022	0043	0102	X1.2	.120	1b	N11E10	720	97			
15 Jan	0409	0416	0422	M1.3	.007	2n	N11E08	720				
15 Jan	0426	0431	0436	M8.4	.028	2n	N14E06	720				
15 Jan	0554	0638	0717	M8.6	.290	Sf	N11E06	720	41000	3000	2	2
15 Jan	1141	1148	1150	M1.2	.004	Sf	N12E04	720				
15 Jan	1408	1423	1439	M3.2	.039	Sf	S08W11	718	500	420		
15 Jan	2201	2208	2216	M1.0	.007			720				
15 Jan	2225	2302	2331	X2.6	.630	3b	N14W08	720	33000	6400	2	2
16 Jan	2155	2203	2222	M2.4	.024	1n	N13W16	720	54			

Flare List

Date	Time			X-ray Class.	Optical		Rgn
	Begin	Max	End		Imp / Brtns	Location Lat CMD	
10 January	0511	0519	0524	B2.5			
	0709	0712	0714	B1.2			
	1003	1011	1020	B3.3			719
	1957	2011	2028	B1.7			
	2145	2215	2227	C1.0			719
11 January	B0001	0003	0005		Sf	N14E66	720
	0652	0722	0734	B8.4			718
	1134	1137	1142	B1.1			
	1229	1232	1234	B1.7			
	1315	1318	1321	B1.7			
	1429	1435	1438	B1.8			
	1515	1520	1526	B2.7			718
	1604	1616	1619	C1.4			718
	1754	1757	1801	B9.2			718
	1850	1853	1856	B1.7			
12 January	2035	2041	2046	B5.7			720
	2100	2104	2107	B3.6			718
	2325	2329	2331	C1.1			718
	0013	0018	0024	B2.2			720
	B0108	0108	0113		Sf	N14E50	720
	0122	0125	0130	B1.9			720
	0701	0708	0717	B7.0			720
	0805	0828	0840	B5.9			718
	0853	0858	0901	B6.2			720
	0955	0959	1003	B4.1			720
1133	1142	1149	B5.0				
1359	1406	1410	B4.1			720	



Flare List – continued.

Date	Time			X-ray Class.	Optical		Rgn
	Begin	Max	End		Imp / Brtns	Location Lat CMD	
12 January	1611	1612	1615	B2.8	Sf	N12E42	720
	1720	1721	1727	B4.1	Sf	N11E43	720
	2008	2011	2013	B4.6			720
13 January	0058	0058	0108	C1.0	Sf	S10E17	718
	0131	0134	0139	B4.6			720
	0412	0416	0418	B2.4			
	B0552	0552	0556	B6.5	Sf	S06E25	718
	0808	0819	0829	C1.0			718
	1119	1126	1129	C1.6			718
	1225	1230	1235	B5.4			718
	1304	1309	1314	B7.4			718
	1403	1410	1413	C2.3			
	1636	1638	1650	C3.3	Sf	S07E16	718
	1708	1714	1721	C4.2	Sf	S08E16	718
	1903	1903	1907	C2.5	Sf	S07E15	718
	2021	2026	2031	C1.2			718
	2245	2253	2313	C6.8	Sf	S10E05	718
2314	2314	2321		Sf	S10E05	718	
14 January	0010	0013	0016	C1.0	Sf	N11E24	720
	0208	0212	0222	B8.6	Sf	N11E23	720
	0246	0247	0249	C1.4	Sf	N11E22	720
	0358	0405	0425	C9.3	Sf	S10E02	718
	0545	0549	0552	C1.0			720
	0601	0604	0610	B6.7			720
	0648	0653	0657	B8.1			720
	0736	0738	0747	C6.8	Sf	N11E20	720
	0821	0837	0844	C1.4			720
	0854	0858	0901	C1.8			720
	0912	0917	0923	C1.9			720
	0951	0955	0958	C1.0			720
	B1017	1017	A1042	C8.9	Sf	N21E15	720
	1134	1144	1153	C2.3			718
	1202	1205	1208	C2.1			720
	1233	1241	1250	C4.6			718
	1338	1342	1346	C2.4			720
	1400	1424	1447	M1.8	Sf	N13E14	720
	1524	1551	1556	C8.0			720
	1602	1606	1614	M1.0		S06E02	718
1655	1658	1703	C2.5			720	
1735	1742	1750	C2.8			720	
1753	1757	1803	M1.5		N14E12	720	
1821	1829	1833	C6.8			720	



Flare List – continued.

Date	Time			X-ray Class.	Optical		Rgn
	Begin	Max	End		Imp / Brtns	Location Lat CMD	
14 January	1836	1841	1845	C7.7			720
	1907	1911	1917	C3.3			720
	1932	1936	1943	C1.4			720
	2026	2030	2035	C1.2			720
	B2058	2127	A2127	M1.9	2n	N15E08	720
	B2208	2210	2217	C9.6	1f	N13E10	720
	B2225	2226	2230	C3.0	1f	N13E10	720
	2256	2256	2307	C6.0	Sf	N11E11	720
	2330	2330	2343	C5.6	Sf	N11E11	720
15 January	0028	0029	0037		Sf	N11E10	720
	0039	0041	0130	X1.2	1b	N11E10	720
	B0204	0204	0208		Sf	N18E07	720
	0238	0240	0242	C2.9	Sf	N11E09	720
	0319	0321	0323		Sf	N11E09	720
	0334	0339	0409	C4.2	Sf	S10W11	718
	0356	0400	0402		Sf	N11E08	720
	0410	0434	0459	M1.3	2n	N11E08	720
	0411	0414	0424		Sf	S10W11	718
	B0429	0431	0452	M8.4	2n	N14E06	720
	0556	0559	0750	M8.6	Sf	N11E06	720
	0803	0804	0807		Sf	N13E03	720
	0914	0916	0919		Sf	N13E03	720
	0927	0939	0948		Sf	N12E03	720
	B1149	U1149	A1159	M1.2	Sf	N12E04	720
	1227	1231	1234	C7.4			720
	1352	1357	1359	C5.5			720
	B1436	1510	1552	M3.2	Sf	S08W11	718
	1441	1527	1534		Sf	N13E01	720
	1607	1609	1616		Sf	N12E01	720
	1652	1705	1723	C8.0	Sf	N14W01	720
	1703	1707	1709	C7.2			720
	1731	1731	1736		Sf	N14W02	720
	1751	1802	1828	C4.2	Sf	N14W02	720
	1757	1802	1805	C2.9			720
	1812	1815	1818	C4.4			
	1846	1852	1918	C8.8	1n	N14W01	720
	1947	1948	2053	C3.5	Sf	N14W03	720
	B2013	2021	2027	C5.4	Sf	N15W04	720
	B2045	2046	2050		Sf	N17E02	720
2057	2058	2111		Sf	N13E00	720	
2125	2126	2133		Sf	N13E00	720	
2154	2249	0114	X2.6	3b	N14W08	720	



Flare List – continued.

Date	Time			X-ray Class.	Optical		Rgn
	Begin	Max	End		Imp / Brtns	Location Lat CMD	
15 January	2201	2208	2216	M1.0			720
	2220	2224	2227		Sf	S08W16	718
16 January	B0048	0057	A0057		Sf	N11W03	
	0115	0115	0124		Sf	N11W03	720
	0255	0311	0314		Sf	N13W06	720
	0754	0758	0802	C4.4			720
	1005	1009	1013	C4.0			720
	1147	1151	1157	C2.8			
	B1441	1442	1458	C2.9	Sf	N14W12	720
	1512	1514	1613	C5.9	Sf	N14W12	720
	1651	1652	1728		Sf	N13W13	720
	1758	1807	1816	C2.0			720
	1828	1830	1838	C3.7	Sn	N13W14	720
1937	1939	1943		Sf	N17W12	720	
2200	2201	2303	M2.4	1n	N13W16	720	

Region Summary

Date	Location		Sunspot Characteristics				Flares												
	(° Lat ° CMD)	Helio	Area (10 ⁻⁶ hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical								
		Lon						C	M	X	S	1	2	3	4				
<i>Region 718</i>																			
07 Jan	S09E78	204	0060	02	Hax	001	A												
08 Jan	S08E67	202	0090	03	Cao	002	B												
09 Jan	S08E54	202	0090	03	Dao	003	B												1
10 Jan	S08E44	198	0100	03	Dao	003	B												
11 Jan	S06E32	197	0070	05	Dao	002	B	2											
12 Jan	S07E19	197	0180	13	Eao	016	B												
13 Jan	S07E07	196	0160	16	Fko	019	B	8					6						
14 Jan	S05W06	196	0250	18	Fao	022	B	3	1				1						
15 Jan	S07W21	197	0360	17	Fki	026	Bg		1				4						
16 Jan	S07W34	197	0310	17	Fai	019	Bg												
								13	2	0	11	1	0	0	0	0			

Still on Disk.

Absolute heliographic longitude:196



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 719</i>																	
08 Jan	S09E82	187	0060	02	Hax	001	A	1									
09 Jan	S08E64	192	0100	04	Cao	005	B	1	1			1	1				
10 Jan	S10E52	190	0070	05	Dso	004	B	1									
								3	1	0	1	1	0	0	0	0	
Still on Disk.																	
Absolute heliographic longitude:194																	
<i>Region 720</i>																	
10 Jan	N09E65	177	0010	06	Bxo	003	B										
11 Jan	N13E52	177	0050	05	Cao	003	B										
12 Jan	N13E37	179	0420	08	Dkc	022	B					2					
13 Jan	N13E24	179	1080	09	Dkc	038	Bd	1									
14 Jan	N13E10	180	1540	10	Dkc	023	Bd	23	3		8	2	1				
15 Jan	N13W03	179	1620	10	Dkc	054	Bd	11	5	2	19	3	2	1			
16 Jan	N13W15	178	1630	15	Ekc	037	Bd	5	1		7	1					
								40	9	2	36	6	3	1	0		
Still on Disk.																	
Absolute heliographic longitude:179																	
<i>Region 721</i>																	
16 Jan	S03E14	149	0020	04	Cso	002	B										
								0	0	0	0	0	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude:149																	
<i>Region 722</i>																	
16 Jan	N19E04	159	0000	01	Axx	001	A										
								0	0	0	0	0	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude:159																	

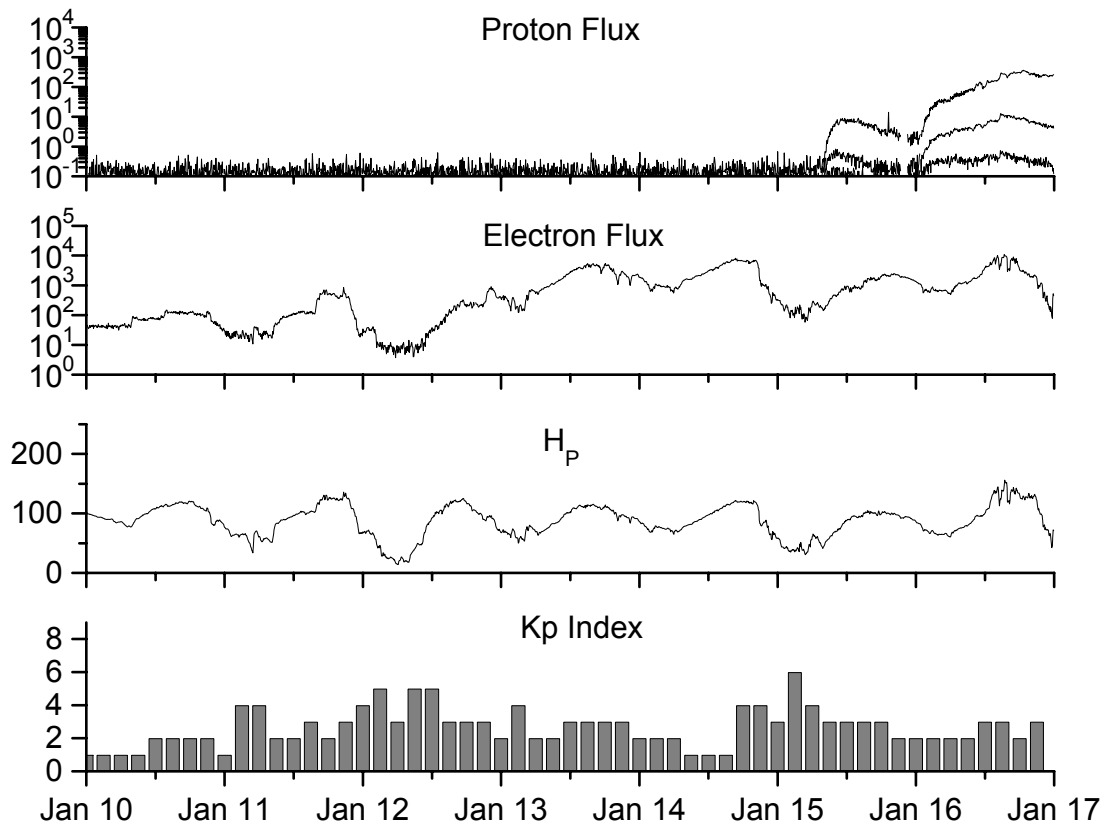


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

Month	Sunspot Numbers			Radio Flux		Geomagnetic			
	Observed SWO	values RI	Ratio RI/SWO	Smooth SWO	values RI	*Penticton 10.7 cm	Smooth Value	Planetary Ap	Smooth Value
2003									
January	149.3	79.7	0.53	141.7	81.0	144.0	149.2	13	18.2
February	87.0	46.0	0.53	136.4	78.5	124.5	144.7	17	18.9
March	119.7	61.1	0.51	128.1	74.2	132.2	139.5	21	19.4
April	119.7	60.0	0.50	121.5	70.3	126.3	135.0	20	20.1
May	89.6	55.2	0.62	118.3	67.8	129.3	133.1	26	21.0
June	118.4	77.4	0.65	113.6	65.2	129.4	130.2	24	21.5
July	132.8	85.0	0.64	106.9	62.0	127.8	127.2	19	22.0
August	114.3	72.7	0.64	102.8	60.3	122.1	125.2	23	22.2
September	82.6	48.8	0.59	100.7	59.8	112.3	123.7	18	21.8
October	118.9	65.5	0.55	96.6	58.4	153.1	121.8	35	21.1
November	118.9	67.3	0.57	93.6	57.0	153.1	120.1	28	20.0
December	75.4	46.5	0.62	91.4	55.0	115.1	118.0	16	18.6
2004									
January	62.3	37.7	0.61	87.9	52.0	114.1	116.3	22	18.1
February	75.6	45.8	0.61	84.2	49.4	107.0	115.5	13	17.7
March	81.0	49.1	0.61	80.9	47.2	112.2	114.6	14	16.9
April	59.3	39.3	0.66	77.9	45.6	101.2	112.3	11	15.5
May	77.3	41.5	0.54	74.1	43.9	99.8	109.2	8	14.3
June	78.9	43.2	0.55	70.4	41.7	97.4	107.2	8	14.0
July	87.8	51.0	0.58			118.5		23	
August	69.5	40.9	0.59			110.1		11	
September	50.0	27.7	0.55			103.1		10	
October	77.9	48.4	0.62			105.7		9	
November	70.5	43.7	0.62			113.2		26	
December	34.7	17.9	0.52			94.6		11	

NOTE: All smoothed values after September 2002 and monthly values after March 2003 are preliminary estimates. The lowest smoothed sunspot index number for Cycle 22, RI = 8.0, occurred in May 1996. The highest smoothed sunspot number for Cycle 23, RI= 120.8, occurred April 2000. *After June 1991, the 10.7 cm radio flux data source is Penticton, B.C. Canada. Prior to that, it was Ottawa.





*Weekly Geosynchronous Satellite Environment Summary
Week Beginning 10 January 2005*

Protons plot contains the five-minute averaged integral proton flux (protons/cm²-sec-sr) as measured by GOES-11 (W107) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

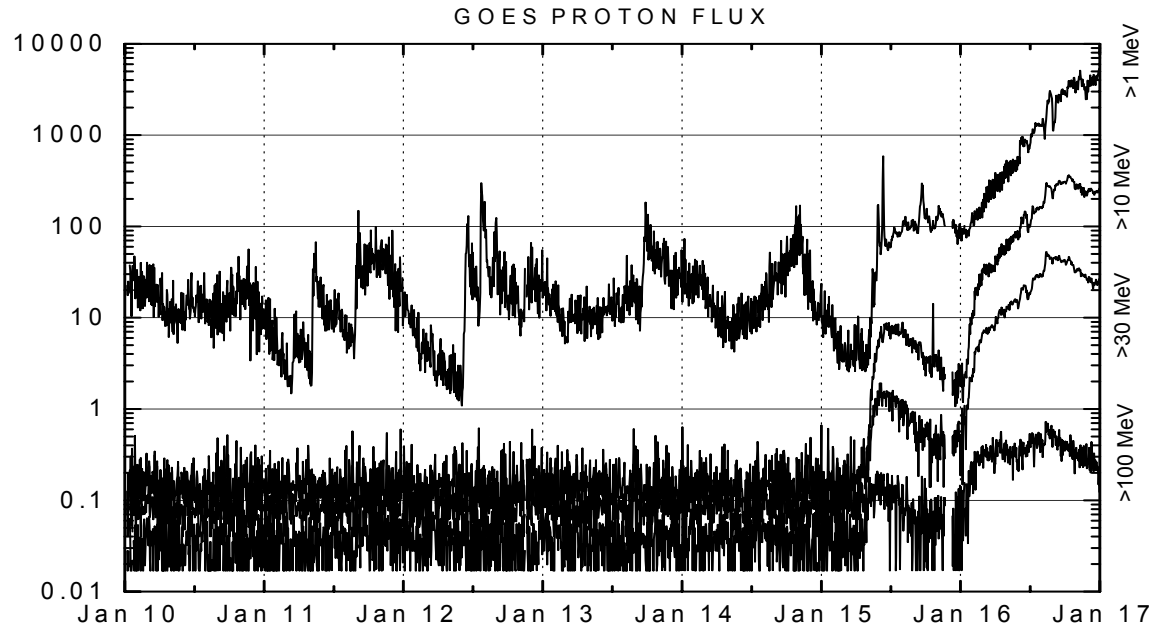
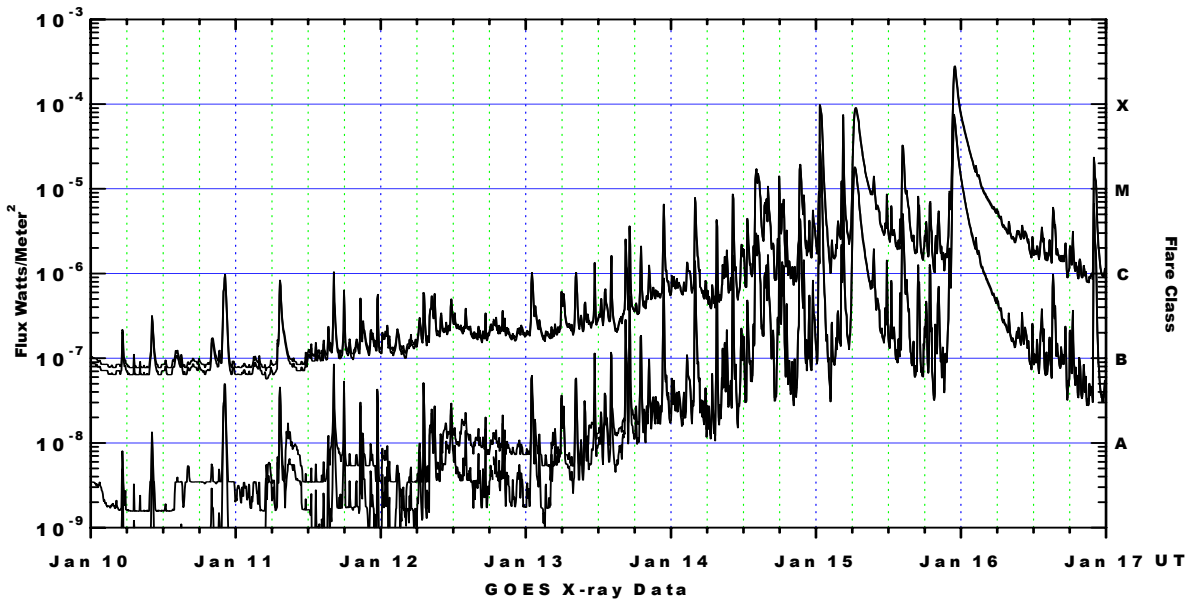
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec-sr) with energies greater than 2 MeV at GOES-12 (W75).

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

K_p plot contains the estimated planetary 3-hour K-index (derived by the Air Force Weather Agency) in real time from magnetometers at Meanook, Canada; Sitka, AK; Glenlea, Canada; St. Johns, Canada; Ottawa, Canada; Newport, WA; Fredericksburg, VA; Boulder, CO; Fresno, CA and Hartland, UK. These data are made available through cooperation from the Geological Survey of Canada (GSC), British Geological Survey (BGS) and the US Geological Survey. These may differ from the final K_p values derived from a more extensive network of magnetometers.

The data included here are those now available in real time at the SWO and are incomplete in that they do not include the full set of parameters and energy ranges known to cause satellite operating anomalies. The proton and electron fluxes and K_p are "global" parameters that are applicable to a first order approximation over large areas. H_p is subject to more localized phenomena and the measurements generally are applicable to within a few degrees of longitude of the measuring satellite.





Weekly GOES Satellite X-ray and Proton Plots

X-ray plot contains five-minute averaged x-ray flux (watts/m²) as measured by GOES 12 (W75) and GOES 10 (W135) in two wavelength bands, .05 - .4 and .1 - .8 nm. The letters A, B, C, M and X refer to x-ray event levels for the .1 - .8 nm band.

Proton plot contains the five-minute averaged integral proton flux (protons/cm²-sec-sr) as measured by GOES-11 (W107) 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.

