

Space Weather Highlights
02 – 08 July 2007

SEC PRF 1662
10 July 2007

Solar activity ranged from very low to low levels. Activity was very low from 02 – 06 July and was low the remainder of the summary period. New Region 963 (S07, L=058, class/area, Dao/150 on 08 July) produced four C-class flares since rotating onto the disk on 07 July. The largest of these flares was a C1.9 event observed at 07/1430 UTC. The region has grown steadily since the 7th, and exhibits signs of continued growth, both in size and magnetic complexity.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit reached high levels on 07 July.

The geomagnetic field was mostly quiet at all latitudes during the period. Field activity increased to unsettled to active levels beginning late on 03 July through late on 04 July. During this same time interval, high latitudes observed an isolated major storm period midday on 04 July. This activity was due to a solar sector boundary (SSB) crossing (away {+} to toward {-}). The boundary change occurred in a fairly rapid fashion on 03 July beginning at about 1000 UTC. A increase in solar wind density was associated with the boundary crossing with a peak of 12 p/cc detected at 03/2006 UTC. A period of increased interplanetary magnetic field (IMF) variability was also associated with the boundary crossing with total IMF intensity peak of 9 nT at 03/1132 UTC and a minimum southward Bz reading of -10 nT at 03/2103 UTC. Wind velocities increased after the SSB, and peaked at 652 km/s at 04/0931 UTC.

Space Weather Outlook
11 July – 06 Aug. 2007

Solar activity is expected to be at very low to low levels with isolated moderate activity possible through 20 July (the date when Region 963 will rotate around the solar west limb). Thereafter, through 03 August, activity is expected to be at mostly very low levels. Old Region 963 (S07, L=058) is due to return after 03 August, so levels are expected to increase to low, with isolated moderate activity possible.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to reach high levels during 16 – 17 July, 22 – 23 July, and on 03 August.

Geomagnetic field activity is expected to be at unsettled to active levels on 11 July due to a recurrent coronal hole high-speed stream. Quiet to unsettled conditions are expected during 12 – 17 July. An increase to quiet to active conditions is expected during 18 – 20 July with minor storm periods possible on 19 July due to another recurrent coronal hole high-speed stream. Mostly quiet conditions are expected during 21 – 30 July. Another recurrent coronal hole high-speed stream is expected to rotate into a geoeffective position on 31 July, with unsettled to active levels expected. Field activity is expected to be mostly quiet to unsettled from 01 – 06 August.



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
02 July	73	13	90	<A1.0	0	0	0	0	0	0	0	0
03 July	72	12	90	<A1.0	0	0	0	1	0	0	0	0
04 July	72	13	100	<A1.0	0	0	0	0	0	0	0	0
05 July	72	24	120	<A1.0	0	0	0	0	0	0	0	0
06 July	71	12	50	<A1.0	0	0	0	0	0	0	0	0
07 July	73	23	110	A1.7	1	0	0	0	0	0	0	0
08 July	75	16	150	A6.9	3	0	0	10	0	0	0	0

Daily Particle Data

Date	Proton Fluence (protons/cm ² -day-sr)			Electron Fluence (electrons/cm ² -day-sr)		
	>1 MeV	>10 MeV	>100 MeV	>.6 MeV	>2MeV	>4 MeV
02 July	4.5E+5	1.7E+4	4.1E+3		3.4E+6	
03 July	8.1E+5	1.8E+4	4.0E+3		3.9E+6	
04 July	8.0E+6	1.7E+4	3.8E+3		1.3E+7	
05 July	2.9E+6	1.6E+4	3.8E+3		3.1E+7	
06 July	2.3E+6	1.7E+4	4.0E+3		3.3E+7	
07 July	1.9E+6	1.7E+4	4.2E+3		3.6E+7	
08 July	1.5E+6	1.7E+4	4.0E+3		3.2E+7	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
02 July	2	0-0-1-1-1-1-0-1	1	1-0-1-1-0-0-0-0	3	1-0-1-1-1-0-1-1
03 July	6	0-1-1-1-2-2-2-3	8	0-1-1-1-3-4-1-2	9	1-1-1-1-2-3-2-4
04 July	13	3-3-2-4-3-2-2-2	25	4-4-3-6-4-3-1-1	16	4-4-3-4-3-2-3-2
05 July	3	1-1-1-1-1-1-1-1	5	2-2-2-2-3-0-0-0	5	1-1-2-1-2-1-1-2
06 July	4	1-1-1-1-1-1-1-2	6	1-1-1-2-3-2-1-1	5	1-1-1-1-2-2-1-2
07 July	4	2-1-1-0-1-1-2-2	4	2-3-1-1-0-1-0-1	6	2-1-1-1-1-2-2-2
08 July	3	1-2-1-0-1-0-1-1	3	2-2-2-1-0-0-0-0	4	1-2-1-1-1-1-1-1

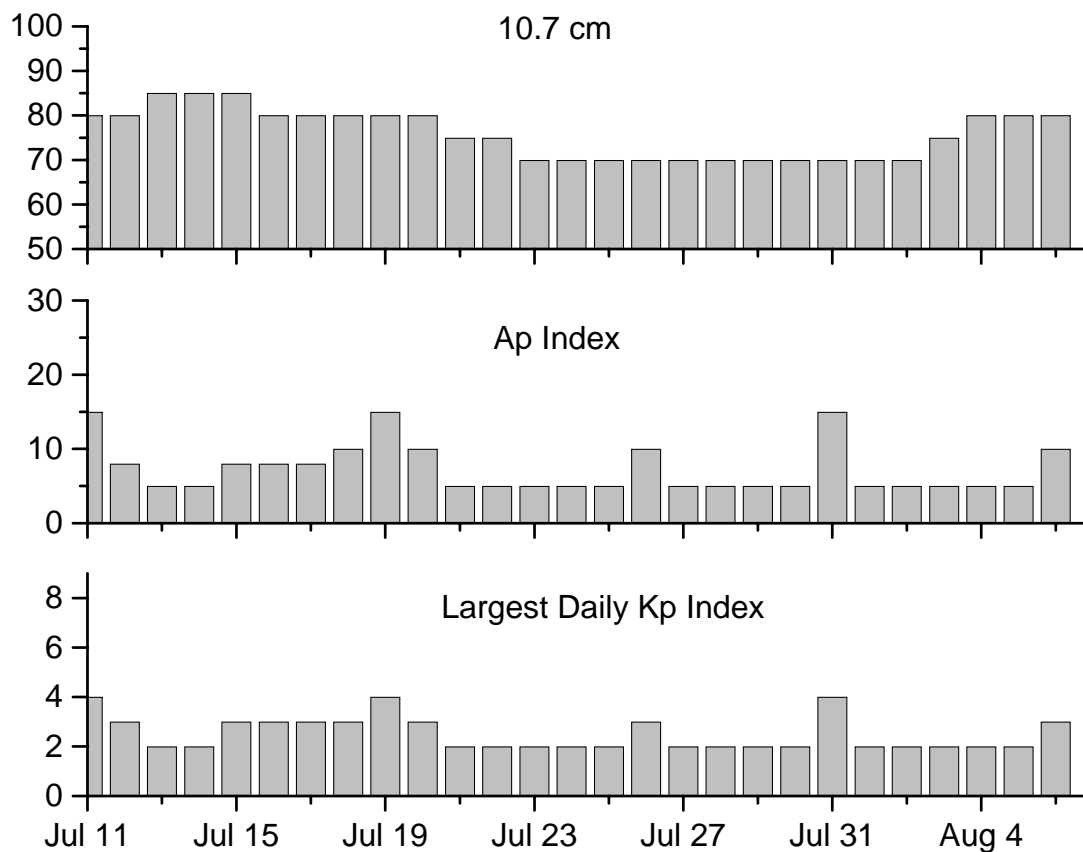


Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
03 Jul 2301	ALERT: Geomagnetic K=4	03 Jul 2259
04 Jul 0539	WARNING: Geomagnetic K=4	04 Jul 0537 - 1600
04 Jul 0546	ALERT: Geomagnetic K=4	04 Jul 0545
07 Jul 1509	ALERT: Electron 2MeV Integral Flux >1000pfu	07 Jul 1450



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
11 July	80	15	4	25 July	70	5	2
12	80	8	3	26	70	10	3
13	85	5	2	27	70	5	2
14	85	5	2	28	70	5	2
15	85	8	3	29	70	5	2
16	80	8	3	30	70	5	2
17	80	8	3	31	70	15	4
18	80	10	3	01 Aug	70	5	2
19	80	15	4	02	70	5	2
20	80	10	3	03	75	5	2
21	75	5	2	04	80	5	2
22	75	5	2	05	80	5	2
23	70	5	2	06	80	10	3
24	70	5	2				



Energetic Events

Date	Energetic Events											Sweep Freq Intensity
	Time			X-ray		Optical Information			Peak			
	Begin	Max	Max	Class	Flux	Imp/ Brtns	Location Lat CMD	Rgn #	Radio Flux			
									245	2695		
1/2	Integ	Imp/	Location	Rgn	Radio Flux	II	IV					

No Events Observed

Flare List

Date	Time			Optical	Imp / Brtns	Location Lat CMD	Rgn
	Begin	Max	End	X-ray Class.			
02 July	No Flares Observed						
03 July	0229	0234	0237		Sf	S11W19	961
04 July	No Flares Observed						
05 July	No Flares Observed						
06 July	No Flares Observed						
07 July	0333	0344	0359	B7.5			
	0738	0744	0748	B1.2			
	1056	1118	1151	B9.1			
	1215	1241	1248	B3.8			
	1317	1322	1329	B4.7			
	1400	1430	1452	C1.9			
	1647	1721	1733	B4.0			
	1844	1851	1901	B2.6			
	2011	2016	2025	B1.8			
	2124	2147	2156	B6.9			
	2310	2313	2316	B1.2			
	2318	2339	2344	B1.9			



Flare List-Continued

Date	Time			Optical	Imp / Brtns	Location Lat CMD	Rgn
	Begin	Max	End	X-ray Class.			
08 July	0023	0036	0044	B2.9			
	0058	0108	0118	B4.7			
	0402	0432	0443	B1.1	Sf	S08E77	963
	0448	0449	0455		Sf	S08E77	963
	0456	0500	0509		Sf	S07E79	963
	0511	0547	0603	B2.5	Sf	S07E77	963
	0620	0621	0626		Sf	S06E75	963
	0647	0651	0655	B1.7			
	0717	0736	0741	B4.0			
	0811	0827	0835	B4.0			
	0851	0855	0901	B2.5			
	1006	1025	1033	B4.3			
	1120	1127	1137	B3.2			
	1156	1226	1237	B4.9			
	1327	1345	1403	C1.1			
	1504	1507	1510	B1.8			
	1552	1602	1611	C1.0			
	1648	1658	1706	C1.8			
	1747	1748	1752		Sf	S07E71	963
	1753	1757	1807	B9.8	Sf	S07E71	963
	1814	1820	1827	B4.6	Sf	S08E74	963
	1921	1927	1930	B2.7			
	1951	1951	1956		Sf	S07E70	963
	2019	2022	2024	B1.4			
	2057	2101	2105	B1.3			
	2134	2214	2222	B6.7			
	2313	2316	2319	B2.1			
	2330	2336	2342		Sf	S07E68	963



Region Summary

Region Summary																
Location			Sunspot Characteristics													
Date	Helio (° Lat ° CMD)		Lon	Flares												
				Area	Extent	Spot	Spot	Mag	X-ray			Optical				
	(10 ⁻⁶ hemi)	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4			

Region 961

25 Jun	S09E77	219	0110	04	Hsx	001	A								
26 Jun	S11E60	223	0110	05	Hsx	001	A								
27 Jun	S11E50	220	0180	07	Cko	005	B								
28 Jun	S11E36	221	0180	04	Cso	005	B								
29 Jun	S14E23	220	0170	05	Cso	007	B				1				
30 Jun	S12E09	221	0210	05	Dac	014	B								
01 Jul	S10W04	221	0140	04	Dso	008	B								
02 Jul	S09W17	222	0090	03	Cao	003	B								
03 Jul	S09W31	221	0090	03	Hsx	002	A								
04 Jul	S09W44	220	0100	03	Hsx	003	A								
05 Jul	S08W57	220	0060	02	Hsx	003	A								
06 Jul	S09W71	221	0050	03	Hsx	002	A								
07 Jul	S08W86	223	0060	03	Hsx	002	A								

0 0 0 1 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 221

Region 962

28 Jun	S12E67	190	0040	06	Bxo	002	B				2				
29 Jun	S12E53	190	0020	07	Bxo	002	B	1			4				
30 Jun	S10E37	193	0030	03	Axx	002	A								
01 Jul	S08E25	189	0010	01	Axx	002	A								
02 Jul	S08E15	189													
03 Jul	S08E02	189													
04 Jul	S08W11	189													
05 Jul	S05W25	188	0060	02	Axx	001	A								
06 Jul	S05W38	188													
07 Jul	S05W51	188													
08 Jul	S05W64	188													

1 0 0 6 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 189

Region 963

07 Jul	S09E83	054	0050	05	Axx	001	A								
08 Jul	S07E66	058	0150	04	Dao	006	B				10				

0 0 0 10 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 058

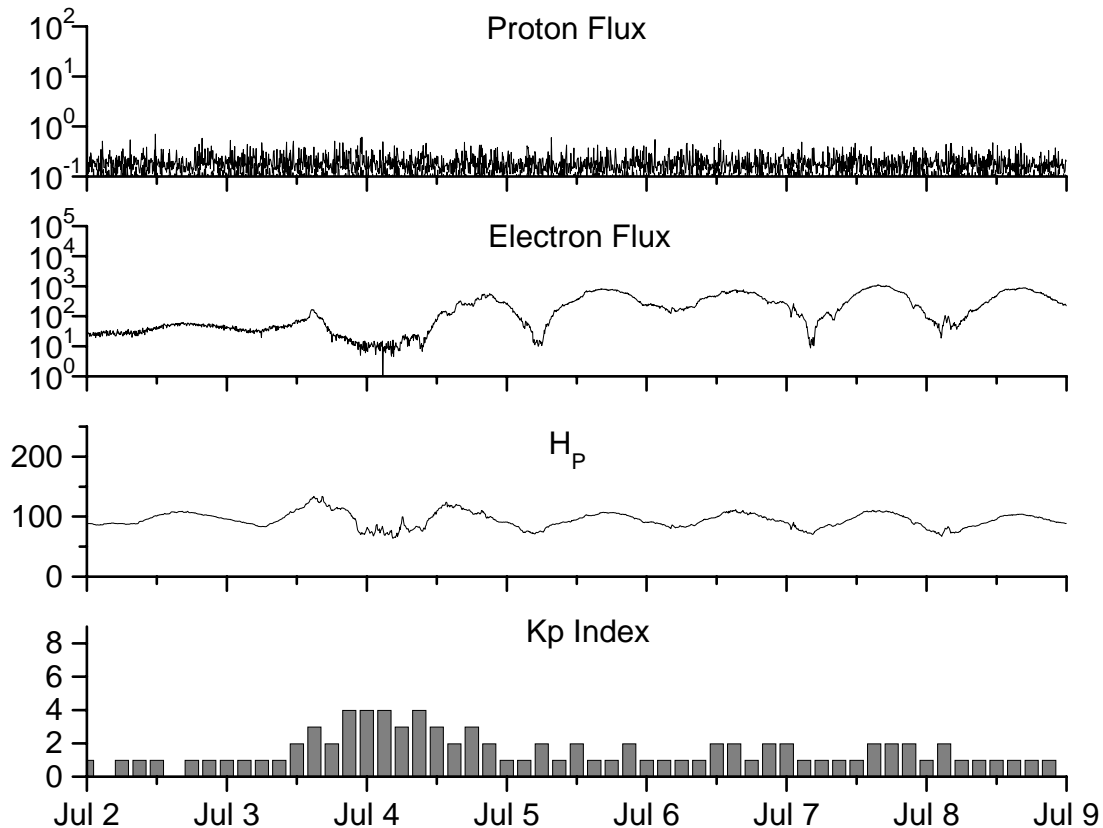


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

Month	Sunspot Numbers			Radio Flux		Geomagnetic			
	Observed values	Ratio	Smooth values	*Penticton	Smooth	Planetary	Smooth		
	SEC	RI	RI/SEC	SEC	RI	10.7 cm	Value	Ap	Value
2005									
July	71.0	39.9	0.56	48.1	29.2	96.6	90.9	16	13.1
August	65.6	36.4	0.55	45.4	27.5	90.7	89.3	16	12.2
September	39.2	22.1	0.56	42.9	25.9	90.8	87.8	21	11.8
October	13.0	8.5	0.65	42.6	25.5	76.7	87.4	7	11.6
November	32.2	18.0	0.56	42.1	24.9	86.3	86.7	8	11.1
December	62.6	41.2	0.66	40.1	23.0	90.8	85.4	7	10.4
2006									
January	28.0	15.4	0.55	37.2	20.8	83.8	84.0	6	9.9
February	5.3	4.7	0.89	33.4	18.7	76.6	82.6	6	9.2
March	21.3	10.8	0.51	31.0	17.4	75.5	81.6	8	8.4
April	55.2	30.2	0.55	30.6	17.1	89.0	80.9	11	7.9
May	39.6	22.2	0.56	30.7	17.3	81.0	80.8	8	7.9
June	37.7	13.9	0.37	28.9	16.3	80.1	80.6	9	8.3
July	22.6	12.2	0.54	27.2	15.3	75.8	80.3	7	8.7
August	22.8	12.9	0.57	27.6	15.6	79.0	80.3	9	8.7
September	25.2	14.5	0.58	27.7	15.6	77.8	80.2	8	8.7
October	15.7	10.4	0.66	25.2	14.2	74.3	79.4	8	8.6
November	31.5	21.5	0.68	22.3	12.7	86.4	78.5	9	8.5
December	22.2	13.6	0.61			84.3		15	
2007									
January	26.6	16.9	0.64			83.5		6	
February	17.2	10.6	0.62			77.8		6	
March	9.7	4.8	0.49			72.3		7	
April	6.9	3.7	0.54			72.4		9	
May	19.4	11.7	0.60			74.5		8	
June	20.0	12.0	0.60			73.7		7	

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 02 July 2007

Protons plot contains the five-minute averaged integral proton flux (protons/cm²-sec-sr) as measured by GOES-11 (W135) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

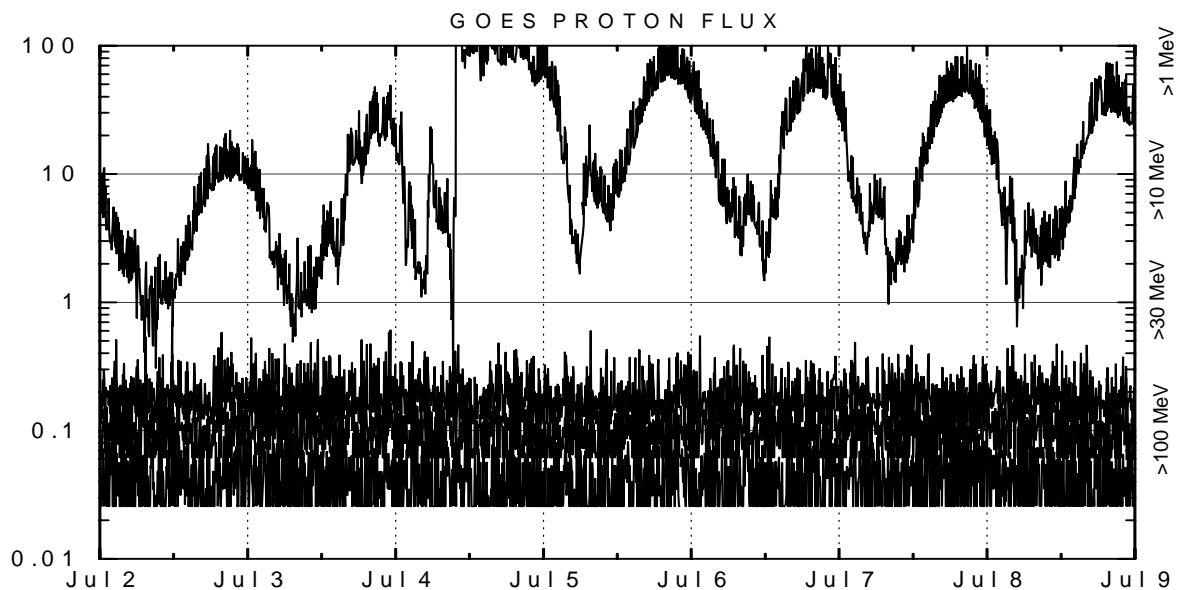
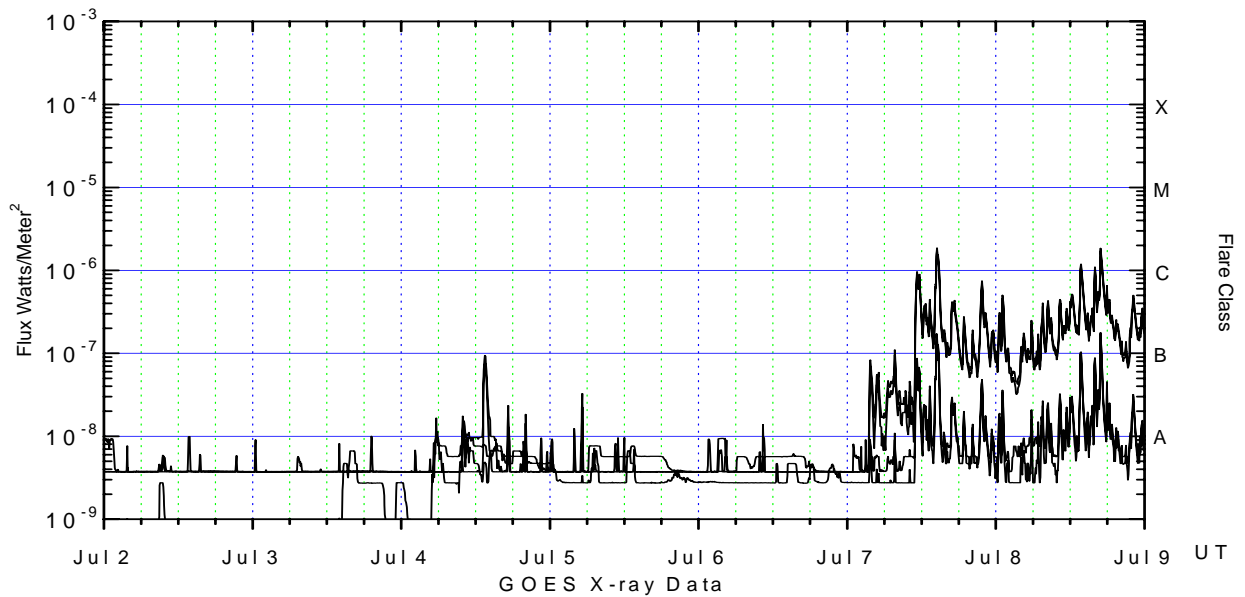
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec-sr) with energies greater than 2 MeV at GOES-12 (W075).

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.

Kp plot contains the estimated planetary 3-hour K-index (derived by the Air Force Weather Agency) in real time from magnetometers at Meenook, 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 Kp values derived from a more extensive network of magnetometers.

The data included here are those now available in real time at the SEC and are incomplete in that they do not include the full set of parameters and energy ranges known to cause satellite operating anomalies. The proton and electron fluxes and Kp are "global" parameters that are applicable to a first order approximation over large areas. H parallel 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^2) as measured by GOES 10 (W060) and GOES 11 (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 ($\text{protons/cm}^2\text{-sec-sr}$) as measured by GOES-11 (W135) for each of the energy thresholds: >1, >10, >30 and >100 MeV. P10 event threshold is 10 pfu ($\text{protons/cm}^2\text{-sec-sr}$) at greater than 10 MeV.

