

Solar activity was at very low levels throughout the period. Region 1131 (N31, L = 204, class/area Dho/290 on 12 December) and Region 1133 (N15, L = 180, class/area Cso/110 on 11 December) remained stable. A large filament erupted in the southeast quadrant at 06/1535Z. An associated CME was observed in STEREO-A COR2 imagery beginning at 06/1909Z. This CME was not forecast to become geoeffective. Another filament eruption occurred early on 12 December. An associated CME was first visible in STEREO-A imagery at 12/0330Z and was observed departing the southwest limb at 12/0412Z in LASCO C2 imagery. A weak influence at Earth is possible on 17 December. Coincident with the eruption was a long duration B4 x-ray event that peaked at 12/0628Z. There were two additional CMEs observed in LASCO C2 imagery on 12 December. The first was observed departing from the northeast limb at 12/0524Z and the second from the southeast limb at 12/0612Z. Neither are expected to be geoeffective.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal levels throughout the period.

Geomagnetic field activity was at predominantly quiet levels throughout the period. At approximately 12/1500Z the field became unsettled to active. The increase in geomagnetic activity was due to the arrival of a Coronal Hole High-Speed Stream (CH HSS).

Space Weather Outlook

15 December 2010 - 10 January 2011

Solar activity is expected to be at very low levels with a slight chance for C-class activity throughout the forecast period. Old Region 1130 (N13, L = 331) and old Region 1132 (N10, L = 251) are expected to rotate back on the visible disk on 19 December and 24 December respectfully.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at normal levels on 13 -14 December. Activity is expected to increase to moderate to high levels from 15-20 December. Normal levels are expected for the remainder of the period.

Geomagnetic field activity is expected to be quiet to unsettled on 15-16 December due to a recurrent CH HSS. Quiet conditions are expected from 17-18 December and then the return of quiet to unsettled conditions is expected from 15-20 December due to a second CH HSS. Activity is expected to again decrease to mostly quiet levels from 21 -23 December. The geomagnetic field is expected to be quiet to unsettled from 24-25 December due to a third recurrent CH HSS. Mostly quiet levels are expected for the remainder of the period.



Daily Solar Data

Date	Radio	Sun	Sunspot	X-ray	Flares							
	Flux	spot	Area	Background	X-ray Flux			Optical				
	10.7 cm	No.	(10 ⁻⁶ hemi.)		C	M	X	S	1	2	3	4
06 December	89	35	580	B1.0	0	0	0	0	0	0	0	0
07 December	87	34	630	A9.7	0	0	0	0	0	0	0	0
08 December	87	22	450	A8.6	0	0	0	0	0	0	0	0
09 December	87	22	400	A8.8	0	0	0	0	0	0	0	0
10 December	88	33	410	B1.0	0	0	0	0	0	0	0	0
11 December	87	25	410	B1.2	0	0	0	0	0	0	0	0
12 December	89	23	380	B1.4	0	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)		
	>1 MeV	>10 MeV	>100 MeV	>.6 MeV	>2MeV	>4 MeV
06 December	8.5e+05	1.4e+04	3.4e+03		1.0e+06	
07 December	1.1e+06	1.4e+04	3.3e+03		9.3e+05	
08 December	3.6e+05	1.4e+04	3.3e+03		8.7e+05	
09 December	4.6e+05	1.4e+04	3.4e+03		9.2e+05	
10 December	6.2e+05	1.4e+04	3.5e+03		9.7e+05	
11 December	9.7e+05	1.4e+04	3.5e+03		9.9e+05	
12 December	2.9e+06	1.5e+04	3.5e+03		1.1e+06	

Daily Geomagnetic Data

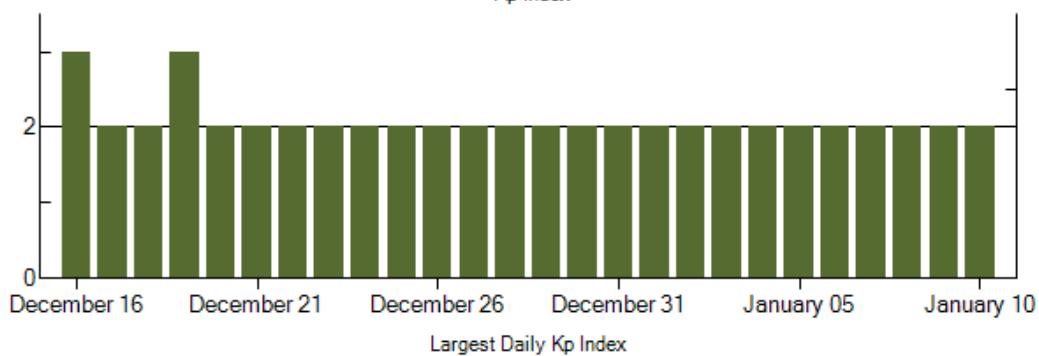
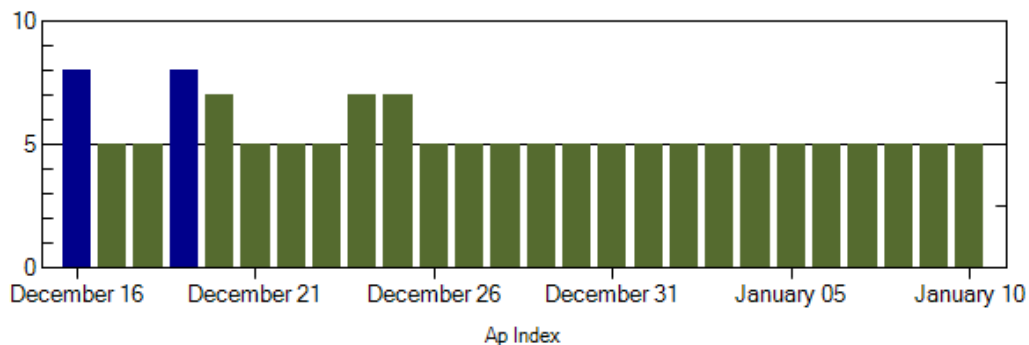
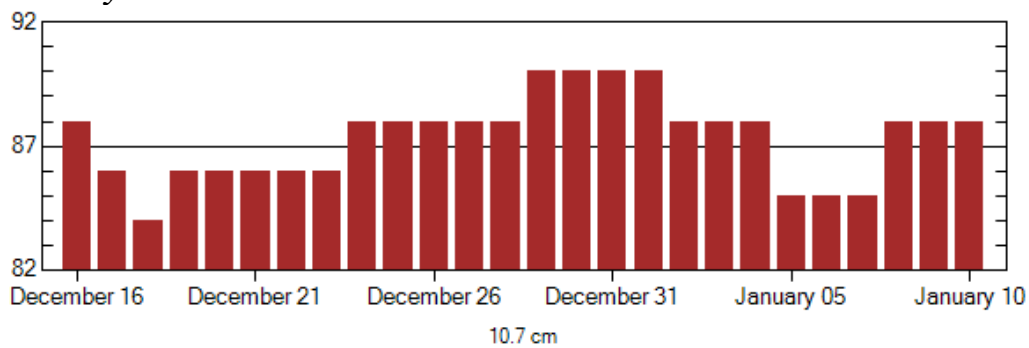
Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
06 December	3	0-1-1-0-1-2-2-0	2	0-0-0-2-0-1-1-0	2	0-0-0-1-1-1-1-1
07 December	3	0-0-1-1-2-2-1-1	3	0-0-0-1-3-1-1-1	4	1-0-1-0-2-1-1-1
08 December	3	1-1-0-0-1-2-2-0	6	1-0-1-1-2-3-2-2	3	1-1-0-0-1-0-3-1
09 December	0	0-0-1-0-0-0-0-0	1	1-0-2-0-0-0-0-0	2	1-1-1-0-0-0-0-1
10 December	0	0-0-0-0-0-0-0-0	1	0-0-0-2-0-0-0-0	0	0-0-0-0-0-0-0-0
11 December	1	0-0-0-0-1-1-0-0	0	0-0-0-0-0-0-0-0	1	0-0-0-0-0-0-0-1
12 December	3	0-0-0-0-2-2-1-2	2	0-0-0-0-0-2-2-1	4	0-0-0-0-1-3-1-2

Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
12 Dec 1708	WARNING: Geomagnetic K = 4	12 Dec 1710 - 13/0700
12 Dec 1742	ALERT: Geomagnetic K = 4	12 Dec 1741



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 Dec	88	5	2	29 Dec	90	5	2
16	88	8	3	30	90	5	2
17	86	5	2	31	90	5	2
18	84	5	2	01 Jan	90	5	2
19	86	8	3	02	88	5	2
20	86	7	2	03	88	5	2
21	86	5	2	04	88	5	2
22	86	5	2	05	85	5	2
23	86	5	2	06	85	5	2
24	88	7	2	07	85	5	2
25	88	7	2	08	88	5	2
26	88	5	2	09	88	5	2
27	88	5	2	10	88	5	2
28	88	5	2				



Energetic Events

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

No Events Observed

Flare List

Date	Time			X-ray	Imp /	Optical		Rgn
	Begin	Max	End			Class.	Location	
							Lat CMD	
06 December	No Flares Observed							
07 December	0719	0739	0742	B1.9				1133
	2017	2020	2023	B1.3				
08 December	0505	0508	0512	B1.4				1131
09 December	0317	0320	0324	B1.3				1131
10 December	1909	1912	1916	B2.4				1132
11 December	1114	1117	1120	B4.0				1131
12 December	0337	0628	0906	B4.1				
	1849	1849	1852	B5.9	SF		N21E77	1135
	2126	2130	2135	B2.4				

Region Summary

Date	Location		Sunspot Characteristics					Flares							
	Helio		Area	Extent	Spot	Spot	Mag	X-ray				Optical			
	(° Lat ° CMD)	Lon						C	M	X	S	1	2	3	4

Region 1128

25 Nov	S16E59	310	10	1	AXX	1	A								
26 Nov	S14E46	310	10	3	BXO	2	B								
27 Nov	S14E35	310													
28 Nov	S14E22	310													
29 Nov	S14E09	310													
30 Nov	S14W04	310													
01 Dec	S14W17	310													
02 Dec	S14W30	310													
03 Dec	S14W43	310													
04 Dec	S14W56	310													

0 0 0 0 0 0 0 0

Died on Disk.

Absolute heliographic longitude: 310



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
Region 1131															
02 Dec	N30E68	208	240	5	HSX	1	A								
03 Dec	N31E53	211	390	4	HHX	1	A								
04 Dec	N30E40	211	350	5	CHO	2	B								
05 Dec	N31E28	210	310	4	HHX	1	A								
06 Dec	N31E15	209	410	4	HHX	1	A								
07 Dec	N31E03	208	430	7	CHO	12	B								
08 Dec	N31W10	209	330	4	HAX	1	A								
09 Dec	N32W23	208	310	5	HHX	1	A								
10 Dec	N31W35	207	320	4	HHX	1	A								
11 Dec	N31W47	205	300	5	CHO	2	B								
12 Dec	N31W58	204	290	5	DHO	2	B								
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 208

<i>Region 1132</i>															
04 Dec	N11W01	251	30	4	CRO	4	B								
05 Dec	N11W15	252	10	6	BXO	4	B								
06 Dec	N10W30	251	10	7	BXO	2	B								
07 Dec	N10W43	251													
08 Dec	N10W56	251													
09 Dec	N10W69	251													
10 Dec	N11W83	255			AXX	1	A								
								0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 251

<i>Region 1133</i>															
04 Dec	N14E72	180	100	2	HHX	1	A								
05 Dec	N14E58	180	80	2	HSX	1	A								
06 Dec	N16E43	178	160	2	HSX	2	A								
07 Dec	N15E31	181	200	2	HSX	2	A								
08 Dec	N14E18	179	120	3	HRX	1	A								
09 Dec	N15E05	178	90	2	HSX	1	A								
10 Dec	N15W09	181	90	2	HSX	1	A								
11 Dec	N15W22	180	110	3	CSO	3	B								
12 Dec	N14W33	179	90	2	HSX	1	A								
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 178



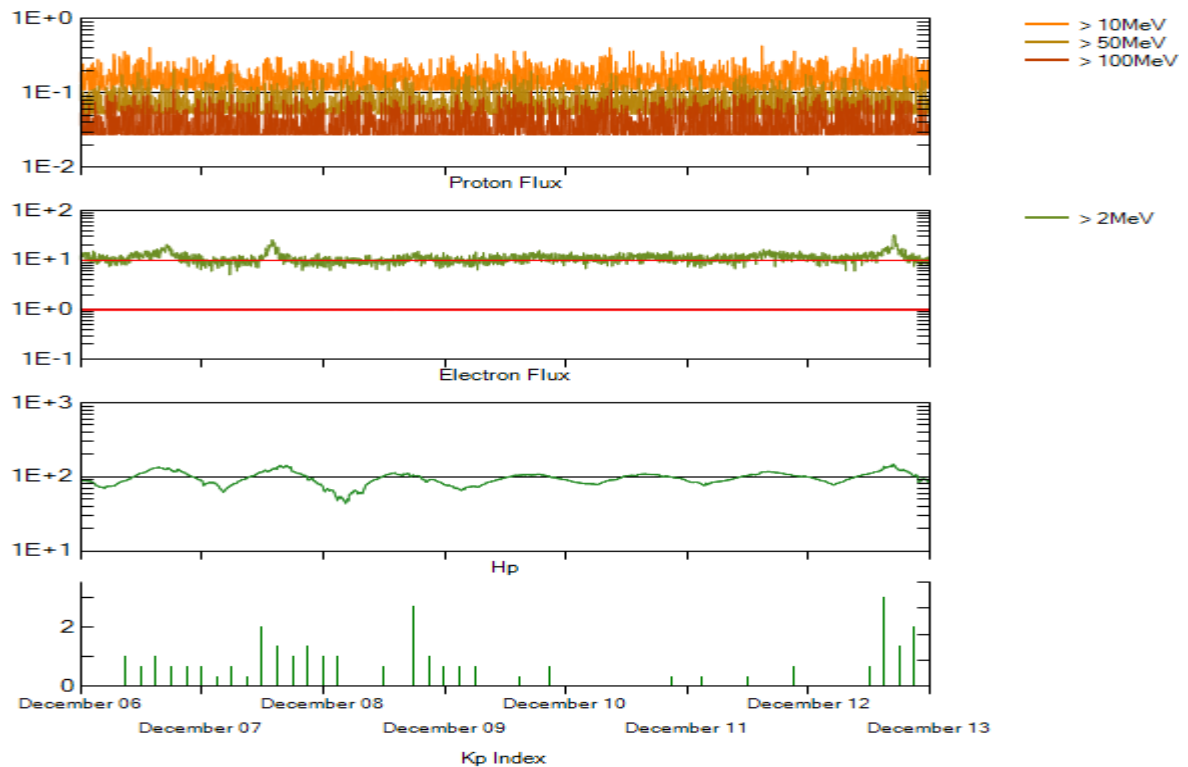
Recent Solar Indices (preliminary)
Of the observed monthly mean values

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
2008									
December	1.3	0.8	0.62	2.7	1.7	69.2	68.5	4	4.9
2009									
January	2.8	1.3	0.46	3.0	1.8	69.8	68.7	4	4.7
February	2.5	1.4	0.56	3.1	1.9	70.0	68.8	5	4.7
March	0.7	0.7	1.00	3.4	2.0	69.2	69.0	5	4.6
April	1.2	0.8	1.00	3.7	2.2	69.7	69.3	4	4.3
May	3.9	2.9	0.74	3.8	2.3	70.5	69.7	4	4.1
June	6.6	2.9	0.39	4.4	2.7	68.6	70.2	4	4.0
July	5.0	3.2	0.70	5.8	3.6	68.2	71.0	4	3.9
August	0.3	0.0	0.00	7.7	4.8	67.4	72.1	5	3.8
September	6.6	4.3	0.64	9.9	6.2	70.5	73.3	4	3.8
October	7.0	4.8	0.66	11.3	7.1	72.3	74.1	3	4.1
November	7.7	4.1	0.55	12.4	7.6	73.6	74.5	3	4.5
December	15.7	10.8	0.68	13.6	8.3	76.8	74.9	2	4.8
2010									
January	21.3	13.2	0.62	14.8	9.3	81.1	75.5	3	5.0
February	31.0	18.8	0.60	16.7	10.6	84.7	76.5	5	5.1
March	24.7	15.4	0.62	19.1	12.3	83.3	77.5	5	5.3
April	11.2	8.0	0.71	21.4	14.0	75.9	78.3	10	5.5
May	19.9	8.7	0.44	23.8	15.5	73.8	79.0	8	5.7
June	17.9	13.6	0.75			72.6		7	
July	23.1	16.1	0.70			79.9		5	
August	28.2	19.6	0.70			79.7		8	
September	35.6	25.2	0.71			81.1		5	
October	35.0	23.5	0.67			81.6		6	
November	36.1	21.6	0.60			82.5		5	

NOTE: Values are final except for the most recent 6 months which are considered preliminary. Cycle 23 started in May 1996 with an RI=8.0. Cycle 23 maximum was April 2000 with an RI=120.8.

** SWPC sunspot number was less than RI value, so a ratio could not be computed.





Weekly Geosynchronous Satellite Environment Summary
Week Beginning 06 December 2010

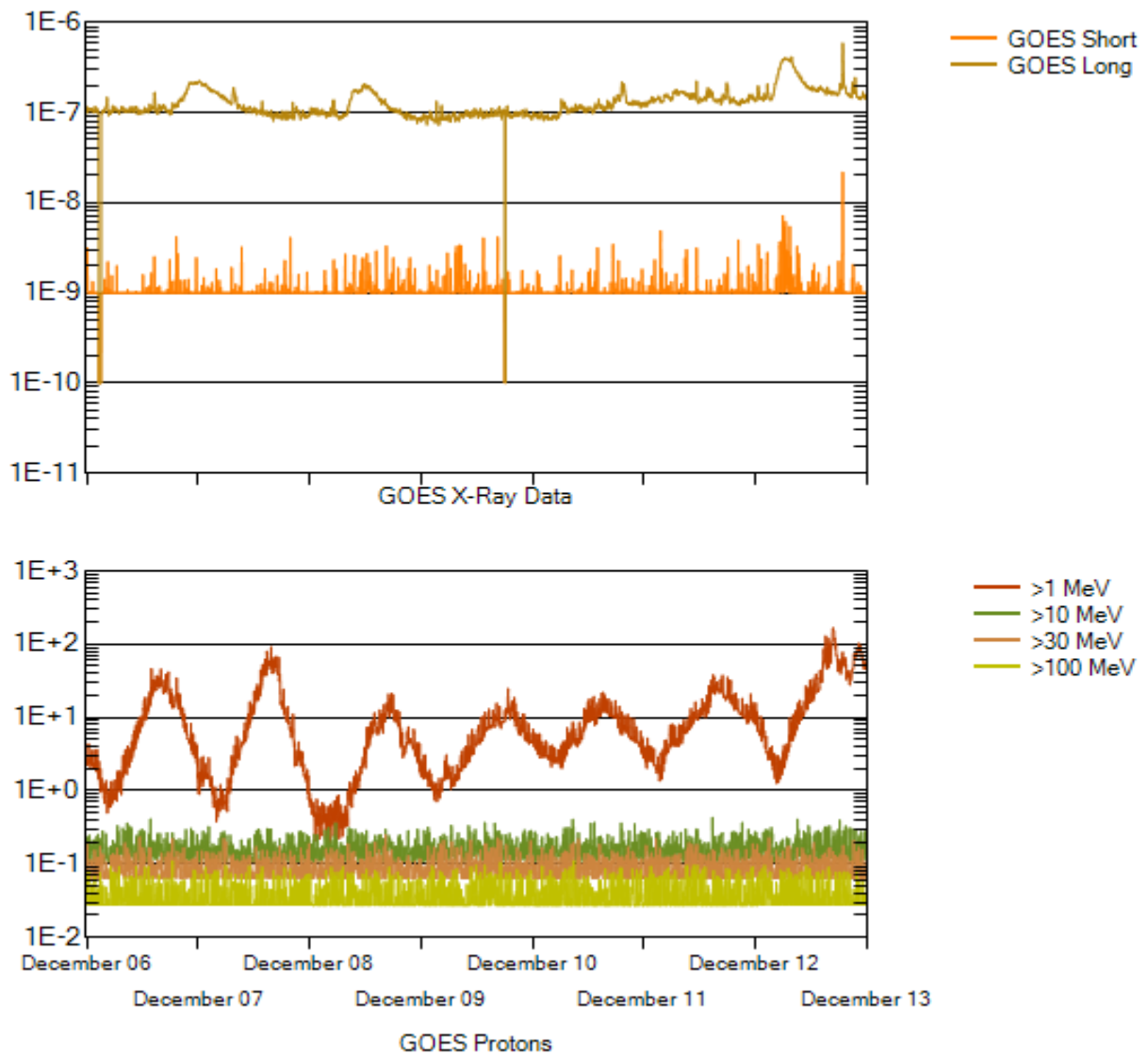
The proton flux plot contains the five-minute averaged integral proton flux (protons/cm²–sec–sr) as measured by GOES-13 (W75) for each of three energy thresholds: greater than 10, 50, and 100 MeV. The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm²–sec–sr) with energies greater than 2 MeV at GOES-13.

The Hp plot contains the five minute averaged Hp magnetic field component in nanoteslas (nT) as measured by GOES-13. The Hp 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 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 Kp values derived from a more extensive network of magnetometers.

The data included here are those now available in real time at the SWPC 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

The x-ray plot contains five-minute averaged x-ray flux (Watts/m^2) as measured by GOES 14 (W105) in two wavelength bands, 0.05 - 0.4 and 0.1 - 0.8 nm. The letters A, B, C, M and X refer to x-ray event levels for the 0.1 - 0.8 nm band.

The proton plot contains the five-minute averaged integral proton flux ($\text{protons/cm}^2\text{-sec-sr}$) as measured by GOES-13 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.

