

Solar activity was at very low levels during the entire period. Region 1127 (N25, L = 056, class/area Hsx/80 on 22 November) was the dominant region, producing the occasional B-class event. Region 1130 (N13, L = 330, class/area Csi/60 on 28 November) emerged quickly on the disk and was numbered late in the summary period.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit reached moderate levels on 12-27 November and was at low levels on 28 November.

The geomagnetic field was mostly quiet with isolated active periods (at high latitudes) during 22-23 November. Generally quiet levels prevailed from 24-27 November. Late on 27 November, from 1800-2400 UTC, activity increased to mostly unsettled to active levels with an isolated storm period. This increase in activity was due to the combined effects of a coronal hole high-speed stream (CHHSS) and a slow moving CME observed on 24 November. Quiet to unsettled levels were observed throughout the remainder of the period.

Space Weather Outlook

01 - 27 December 2010

Solar activity is expected to be at very low to low levels. There is a chance for an increase in C-class flare activity for 04-16 December with the return of longitudes associated with old Regions 1123 (S22, L = 190) and 1124 (N14, L = 171). Activity is expected to return to predominantly very low levels from 17-27 December.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at normal to moderate levels for 01-10 December. An increase to high levels is possible for 10-17 December due to a recurrent CHHSS. Normal to moderate levels are expected for the remainder of the forecast period.

Geomagnetic field is expected to be predominantly quiet for 01-02 December. A small increase to quiet to unsettled levels is possible on 03-04 December due to a CME associated with a DSF. A return to quiet levels is expected from 06-10 December. Quiet to unsettled levels are possible for 11-15 December due to a recurrent CHHSS. Mostly quiet levels are expected for the remainder of the forecast 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
22 November	75	23	90	A4.3	0	0	0	0	0	0	0	0
23 November	75	12	60	A4.8	0	0	0	0	0	0	0	0
24 November	76	11	50	A5.0	0	0	0	1	0	0	0	0
25 November	78	22	50	A5.0	0	0	0	0	0	0	0	0
26 November	76	23	40	A4.6	0	0	0	0	0	0	0	0
27 November	77	22	45	A4.6	0	0	0	0	0	0	0	0
28 November	80	34	90	A6.5	0	0	0	0	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
22 November	2.1e+06	1.4e+04	3.2e+03		1.4e+07	
23 November	8.4e+05	1.4e+04	3.5e+03		4.6e+06	
24 November	5.6e+05	1.3e+04	3.2e+03		6.8e+06	
25 November	3.2e+05	1.4e+04	3.2e+03		1.1e+07	
26 November	3.6e+05	1.4e+04	3.6e+03		1.5e+07	
27 November	1.6e+06	1.3e+04	3.2e+03		2.3e+07	
28 November	9.0e+05	1.3e+04	3.1e+03		1.5e+06	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
22 November	4	0-1-1-2-2-1-1	6	0-0-1-4-3-1-1-0	4	1-1-1-2-2-1-0-1
23 November	7	1-1-3-1-1-3-2-1	10	0-1-3-1-3-4-2-2	8	2-1-3-1-1-3-3-2
24 November	3	0-1-1-1-1-1-2-1	7	1-0-2-3-3-1-2-1	4	1-1-1-1-1-1-2-2
25 November	2	0-1-1-1-1-0-1-0	3	0-1-1-2-2-0-0-0	4	1-2-1-1-1-1-1-0
26 November	0	0-0-0-0-0-0-0-0	0	0-0-0-1-0-0-0-0	2	0-0-0-0-1-1-1-1
27 November	5	0-0-0-0-1-2-3-3	4	0-0-0-0-0-1-3-3	12	0-0-0-0-1-1-6-4
28 November	7	2-3-2-1-1-2-2-1	7	3-3-1-0-2-2-1-2	6	2-2-1-0-1-2-3-1

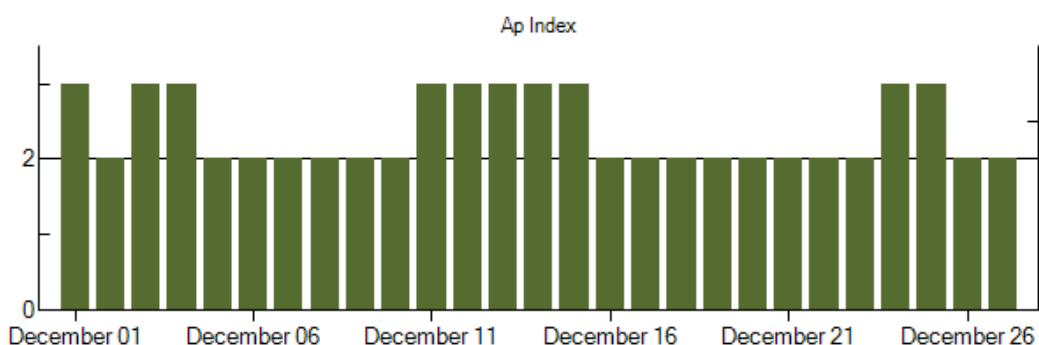
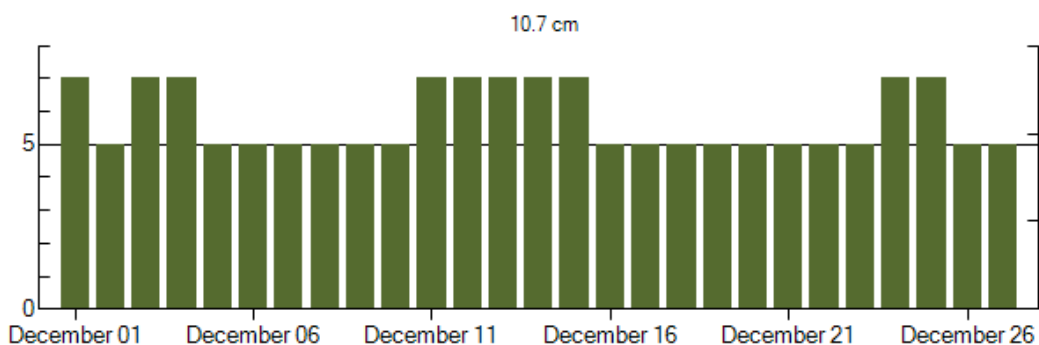
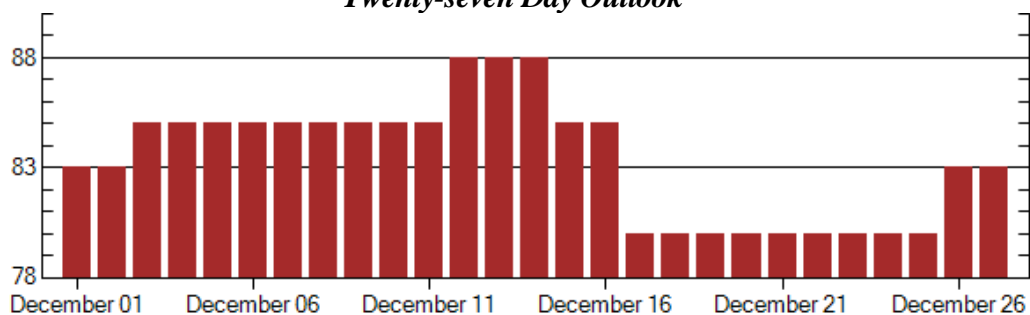


Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
27 Nov 1903	WARNING: Geomagnetic K = 4	27 Nov 1905 - 28/0300
27 Nov 2032	ALERT: Geomagnetic K = 4	27 Nov 2032



Twenty-seven Day Outlook



Largest Daily Kp Index

Date	Radio Flux 10.7 cm	Planetary A Index	Largest Kp Index	Date	Radio Flux 10.7 cm	Planetary A Index	Largest Kp Index
01 Dec	83	7	3	15 Dec	85	7	3
02	83	5	2	16	85	5	2
03	85	7	3	17	80	5	2
04	85	7	3	18	80	5	2
05	85	5	2	19	80	5	2
06	85	5	2	20	80	5	2
07	85	5	2	21	80	5	2
08	85	5	2	22	80	5	2
09	85	5	2	23	80	5	2
10	85	5	2	24	80	7	3
11	85	7	3	25	80	7	3
12	88	7	3	26	83	5	2
13	88	7	3	27	83	5	2
14	88	7	3				



Energetic Events

Date	Time		X-ray		Optical Information			Peak		Sweep Freq	
	$\frac{1}{2}$		Integ		Imp/	Location		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			Location	Lat CMD	
22 November	No Flares Observed							
23 November	0305	0309	0318	B1.1				
	0736	0745	0754	B1.1				
	0859	0920	0935	B1.3				1127
24 November	2358	2359	0002		SF	S33E77		
25 November	0027	0031	0035	B1.1				1128
	0046	0050	0054	B1.4				1128
	2059	2103	2105	B1.2				1127
	2115	2130	2149	B2.9				1126
	1814	1902	1923	B2.0				1127
	2232	2257	2316	B1.9				1126
26 November	No Flares Observed							
27 November	No Flares Observed							
28 November	0405	0408	0410	B1.3				1129
	1719	1754	1801	B2.5				1130



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 1126</i>															
12 Nov	S28E73	108	10	3	DSO	2	B								
13 Nov	S30E59	109	30	2	CRO	2	B								
14 Nov	S30E47	108	30	3	CRO	2	B								
15 Nov	S31E33	108	50	6	DRO	7	B					2			
16 Nov	S32E20	107	80	6	DAO	5	B								
17 Nov	S31E07	108	90	9	DAI	10	B								
18 Nov	S31W07	108	40	7	DSO	4	B								
19 Nov	S31W19	107	40	7	DSO	4	B								
20 Nov	S32W30	105	50	8	CAO	3	B								
21 Nov	S32W44	106	20	8	BXO	4	B								
22 Nov	S32W56	104	10	9	BXO	2	B								
23 Nov	S32W69	104													
24 Nov	S32W82	104													
25 Nov	S32W95	104													
								0	0	0	2	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 108

<i>Region 1127</i>															
16 Nov	N25E71	55	120	2	HSX	1	A								
17 Nov	N25E56	59	90	2	HSX	1	A								
18 Nov	N25E43	58	60	1	HSX	1	A								
19 Nov	N24E30	58	90	2	HSX	1	A								
20 Nov	N24E18	57	70	2	HSX	1	A								
21 Nov	N25E05	57	60	2	HSX	1	A								
22 Nov	N25W08	56	80	2	HSX	1	A								
23 Nov	N25W21	57	60	4	HSX	2	A								
24 Nov	N25W34	56	50	2	HSX	1	A								
25 Nov	N24W46	56	40	2	HRX	1	A								
26 Nov	N23W59	59	30	1	HSX	1	A								
27 Nov	N24W71	54	30	2	HSX	1	A								
28 Nov	N24W84	54													
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 57



Region Summary - continued

Location			Sunspot Characteristics					Flares							
Date	(° 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 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													

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 310

Region 1129

27 Nov	S26W60	43	15	1	BXO	1	B								
28 Nov	S25W76	46	30	10	BXO	3	B								

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 43

Region 1130

28 Nov	N13E00	330	60	5	CSI	11	B								
--------	--------	-----	----	---	-----	----	---	--	--	--	--	--	--	--	--

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 330



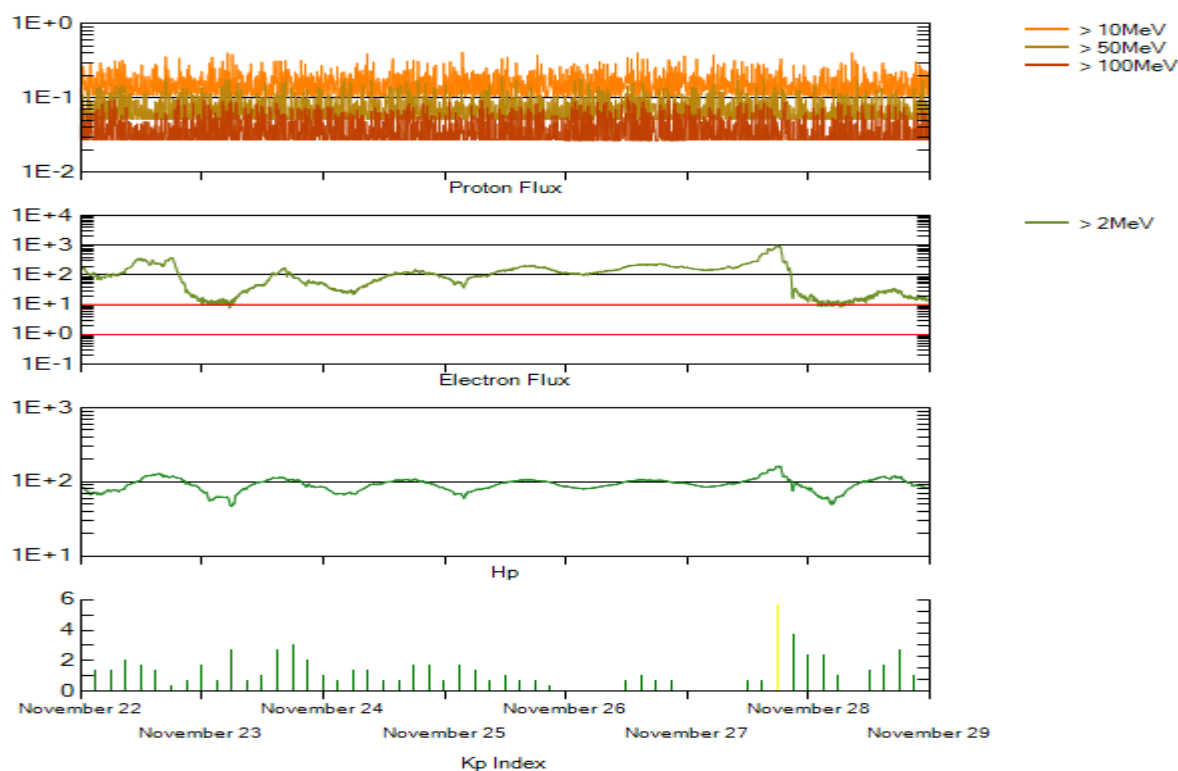
Recent Solar Indices (preliminary)

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
November	6.8	4.1	0.60	2.7	1.7	68.6	68.3	4	5.1
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			73.8		8	
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	

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. Solar minimum, marking the start of Cycle 24, was December 2008.





Weekly Geosynchronous Satellite Environment Summary
Week Beginning 22 November 2010

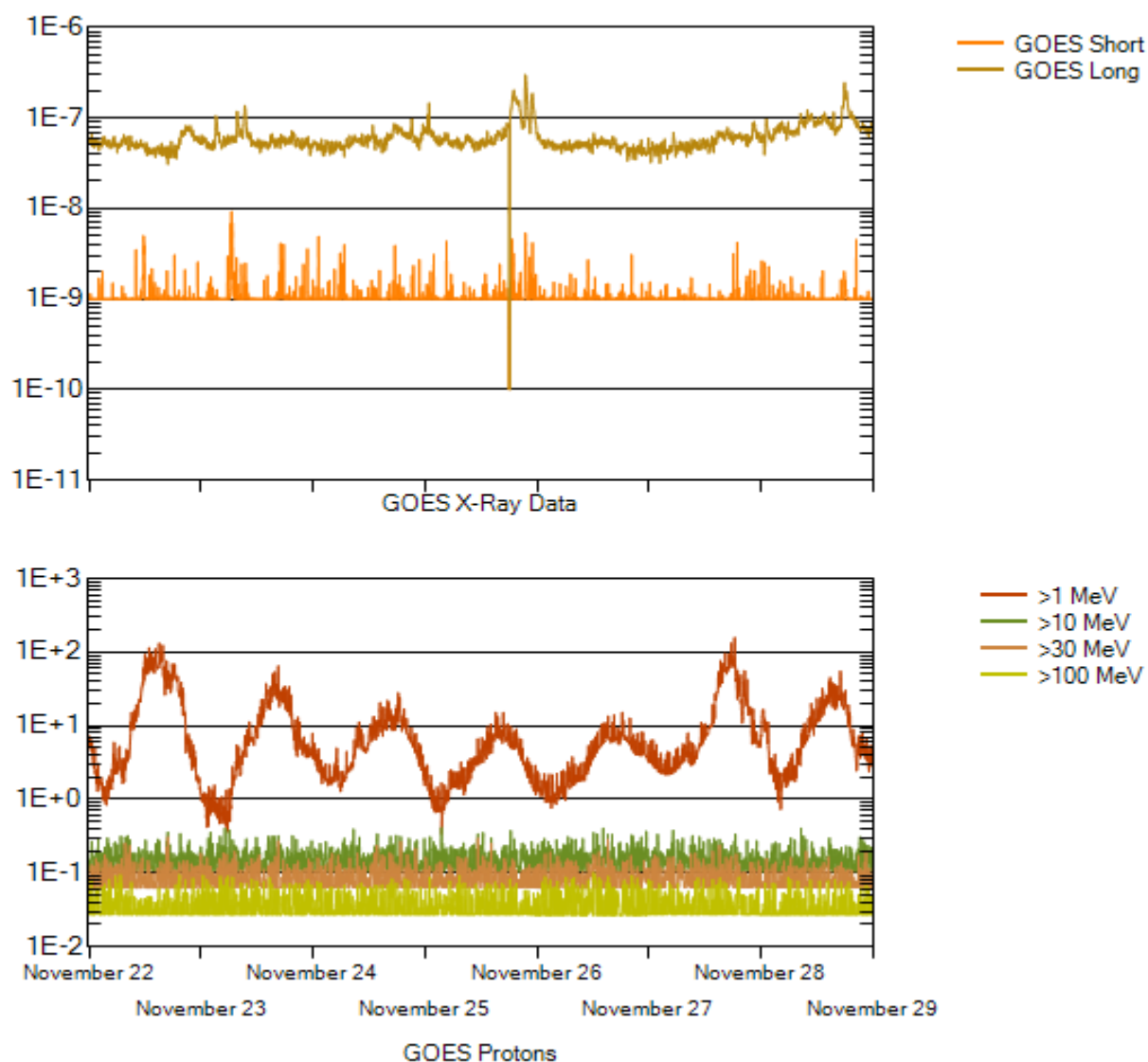
The proton flux plot contains the five-minute averaged integral proton flux (protons/cm²–sec–sr) as measured by GOES-13 (W75) for each of three energy thresholds: greater than 10, 50, and 100 MeV. The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm²–sec–sr) with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

