Space Weather Highlights **SWPC PRF 1825**
16 August - 22 August 2010 24 August 2010

Solar activity was at low levels for 16 August with Region 1099 (N17, L=345, class/area Bxo/060 on 16 August) producing several B-class flares and a C1 flare. New Region 1100 (S24, L=202, class/area Axx/010 on 16 August) was numbered on 16 August and remained a single spotted alpha magnetic configuration until it went spotless on 21 August. Solar activity was at very low levels for 17 August. Low levels returned on 18 August due to a long-duration (LDE) C4 flare at 18/0548Z from Region 1099. This event had an associated Type II radio sweep (estimated shock velocity of 545 km/s), a partial-halo CME at 18/0600Z observed by SOHO C3 imagery, and a weak enhancement (peak of 4.1 pfu) of the greater than 10 MeV proton flux observed on the GOES 13 spacecraft. Solar activity returned to very low conditions for 19 August for the remainder of the period.

The greater than 10 MeV protons at geosynchronous orbit were enhanced midday on 18 August in response to the LDE observed on the 18th. The enhancement reached a peak of 4.1 pfu at 18/1310Z.

The greater than 2 MeV electron flux at geosynchronous orbit was at high levels on 16 August. Normal to moderate flux levels occurred during the rest of the period.

Geomagnetic field activity was at quiet levels for the summary period except for 16 and 18 August when activity was at quiet to unsettled conditions.

Space Weather Outlook
25 August – 20 September 2010

Solar activity is expected to be at very low levels. Very low to low levels are expected on 31 August through the remainder of the forecast when Regions 1093 and 1099 return to the front of the solar disk.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at high levels from 25 August to 12 September. Normal to moderate levels are expected for the remainder of the period (13-20 September).

Geomagnetic field activity is expected to be unsettled to active condition for 25-26 August due to a recurrent coronal hole high speed stream (CH HSS). Mostly unsettled levels are expected for 27-28 August, becoming quiet conditions on 29 August as the CH HSS subsides. Quiet levels should prevail for the remainder of the forecast period until 20 September when quiet to unsettled conditions are expected due to the recurrent CH HSS.

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
16 August	85	39	100	B1.4	1	0	0	1	0	0	0	0
17 August	81	26	20	B1.4	1	0	0	0	0	0	0	0
18 August	81	23	20	B1.3	1	0	0	0	0	0	0	0
19 August	78	11	0	A6.9	0	0	0	0	0	0	0	0
20 August	77	11	0	A6.2	0	0	0	0	0	0	0	0
21 August	76	0	0	A5.6	0	0	0	0	0	0	0	0
22 August	75	0	0	A4.9	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
16 August	4.6e+05	1.8e+04	3.4e+03		3.6e+07	
17 August	2.3e+05	1.5e+04	3.6e+03		3.4e+07	
18 August	9.7e+05	1.2e+05	3.6e+03		2.5e+07	
19 August	2.0e+06	3.2e+04	3.7e+03		2.8e+07	
20 August	6.8e+05	1.5e+04	3.6e+03		3.1e+07	
21 August	4.5e+05	1.4e+04	3.6e+03		1.2e+07	
22 August	4.5e+05	1.4e+04	3.5e+03		1.1e+07	

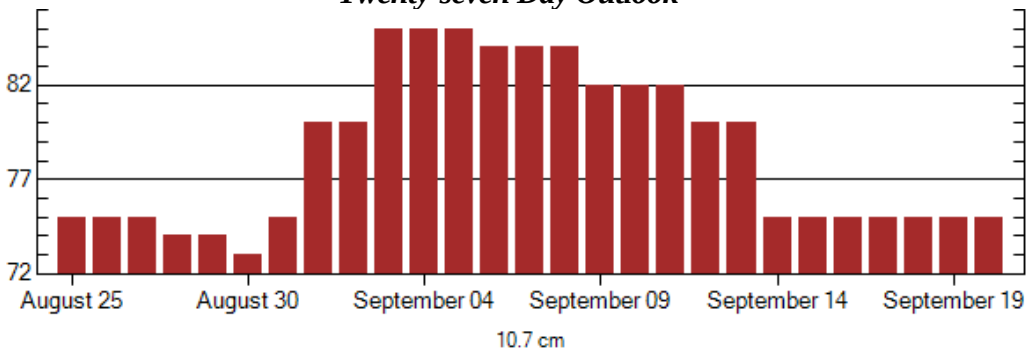
Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
16 August	4	2-2-1-1-1-1-1-1	8	1-2-2-3-3-2-1-1	7	2-3-1-2-2-2-2-2
17 August	3	1-1-1-0-1-1-1-1	3	1-1-1-1-2-1-0-1	5	1-1-1-1-2-1-2-2
18 August	3	1-3-1-0-1-0-0-0	3	1-2-1-1-2-0-0-0	5	2-2-1-1-2-1-2-1
19 August	3	0-1-1-2-2-1-0-0	2	1-1-1-2-0-0-0-0	5	1-2-1-2-0-1-2-1
20 August	1	0-0-0-0-1-1-0-1	2	1-0-0-1-2-0-1-0	4	1-0-0-0-2-2-2-2
21 August	3	0-1-1-1-1-1-1-1	0	0-0-0-0-0-0-0-0	3	1-1-0-0-2-1-1-1
22 August	0	0-0-0-0-0-0-0-0	0	0-0-0-0-1-0-0-0	4	1-0-0-0-1-2-2-2

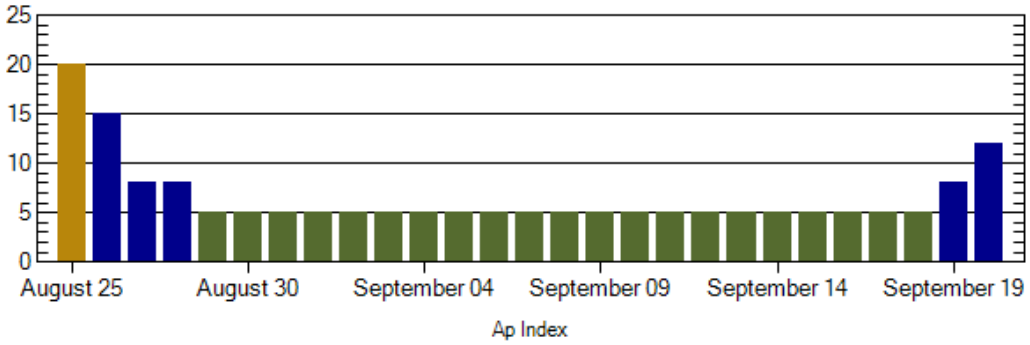
Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
16 Aug 1531	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	06 Aug 0920
18 Aug 0637	ALERT: Type II Radio Emission	18 Aug 0551
18 Aug 0857	WARNING: Proton 10MeV Integral Flux > 10pfu	18 Aug 0925 - 1800
18 Aug 1425	CANCELLATION: Proton 10MeV Integral Flux > 10pfu	

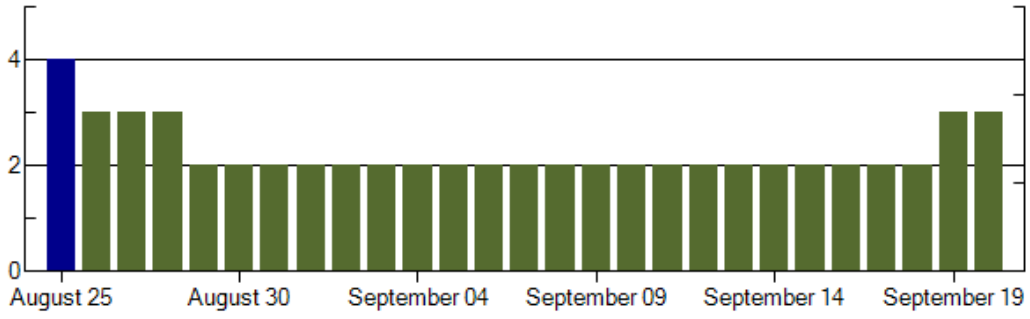
Twenty-seven Day Outlook



10.7 cm



Ap Index



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
25 Aug	75	20	4	08 Sep	84	5	2
26	75	15	3	09	82	5	2
27	75	8	3	10	82	5	2
28	74	8	3	11	82	5	2
29	74	5	2	12	80	5	2
30	73	5	2	13	80	5	2
31	75	5	2	14	75	5	2
01 Sep	80	5	2	15	75	5	2
02	80	5	2	16	75	5	2
03	85	5	2	17	75	5	2
04	85	5	2	18	75	5	2
05	85	5	2	19	75	8	3
06	84	5	2	20	75	12	3
07	84	5	2				

Energetic Events

Date	Time			X-ray		Optical Information			Peak		Sweep Freq	
			½		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	Optical		
	Begin	Max	End	Class.	Imp / Brtns	Location Lat CMD	Rgn
16 August	0123	0129	0133	B2.1			1099
	0146	0149	0152	B3.5			1099
	0220	0237	0249	B3.5			1098
	0153	0155	0158	B4.5			1099
	1134	1142	1151	B5.6			1099
	1358	1405	1410	B3.8			1099
	1518	1520	1528	B7.6	SF	N17W80	1099
	1634	1639	1651	C1.4			1099
	1807	1815	1821	B3.9			1099
17 August	0017	0030	0039	B5.7			1099
	0340	0352	0408	B3.0			1099
	0442	0446	0449	B2.3			1099
	0609	0637	0644	B2.9			1099
	0816	0823	0830	B3.1			1099
	1044	1050	1058	B5.1			1099
	1544	1603	1617	B7.6			1099
	2305	0001	0022	C1.5			1099
18 August	0445	0548	0651	C4.5			1099
	2217	2227	2241	B3.3			1100
19 August	No Flares Observed						
20 August	No Flares Observed						
21 August	No Flares Observed						
22 August	No Flares Observed						

Region Summary

Date	Location (° Lat ° CMD)	Helio Lon	Area (10^{-6} hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	Flares X-ray C	X-ray M	X-ray X	Optical S	Optical 1	Optical 2	Optical 3	Optical 4
			Region 1093												
04 Aug	N10E65	355	100	4	CAO	3	B								
05 Aug	N11E58	348	170	8	CAO	4	B	1							
06 Aug	N12E45	348	180	9	CSO	3	B								
07 Aug	N10E30	350	130	2	HSX	1	A		1				1		
08 Aug	N11E15	350	140	3	CSO	2	B								
09 Aug	N10E02	352	150	2	HSX	2	A								
10 Aug	N10W12	353	130	3	HSX	2	A								
11 Aug	N10W25	352	110	3	HSX	2	A								
12 Aug	N10W38	352	250	4	HKX	2	A								
13 Aug	N11W51	352	90	2	HSX	2	A								
14 Aug	N11W65	353	80	3	HSX	3	A				1				
15 Aug	N11W78	353	40	2	HSX	2	A								
								1	1	0	1	0	1	0	0

Crossed West Limb.
Absolute heliographic longitude: 352

Date	Location (° Lat ° CMD)	Helio Lon	Area (10^{-6} hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	Flares X-ray C	X-ray M	X-ray X	Optical S	Optical 1	Optical 2	Optical 3	Optical 4
			Region 1095												
05 Aug	S18E46	0	10	1	BXO	2	B								
06 Aug	S19E34	359	10	1	HAX	2	A								
07 Aug	S18E19	1	10	1	AXX	2	A								
08 Aug	S17E08	0	10	1	HRX	2	A								
09 Aug	S18W06	360	10	1	HSX	2	A								
10 Aug	S17W20	1	10	1	AXX	1	A								
11 Aug	S17W33	360	10	1	AXX	1	A								
12 Aug	S17W46	360													
								0	0	0	0	0	0	0	0

Died on Disk.
Absolute heliographic longitude: 360

Region Summary (Cont)

Date	Location (° Lat ° CMD)	Helio Lon	Area (10^{-6} hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	Flares: X-ray C	X-ray M	X-ray X	Optical S	Optical 1	Optical 2	Optical 3	Optical 4
					Region 1097										
10 Aug	N33E71	270	10	1	AXX	1	A								
11 Aug	N33E55	272	10	1	AXX	1	A								
12 Aug	N32E44	270		1	AXX	1	A								
17 Aug	N28W21	270													
18 Aug	N28W34	270													
19 Aug	N28W47	270													
20 Aug	N28W60	270													
21 Aug	N28W73	270													
22 Aug	N28W86	270													
								0	0	0	0	0	0	0	0
Still on Disk.															
Absolute heliographic longitude: 270															
					Region 1098										
11 Aug	N15E28	299	30	5	DRO	5	B								
12 Aug	N14E14	300	40	6	CRO	6	B								
13 Aug	N15E01	301	20	5	CRO	6	B								
16 Aug	N15W41	302	30	4	CRO	4	B								
17 Aug	N14W55	303	10	5	BXO	5	B								
18 Aug	N14W67	302	10	4	BXO	2	B								
19 Aug	N14W80	302													
20 Aug	N14W93	302													
								0	0	0	0	0	0	0	0
Crossed West Limb.															
Absolute heliographic longitude: 301															
					Region 1099										
13 Aug	N17W41	347	10	4	BXO	13	B				1				
14 Aug	N18W58	346	70	6	CRO	8	B	2			4				
15 Aug	N18W73	347	90	7	CRI	11	B	1			3				
16 Aug	N17W84	345	60	6	BXO	4	B	1			1				
17 Aug	N17W97	345						1							
								5	0	0	9	0	0	0	0
Crossed West Limb.															
Absolute heliographic longitude: 347															

Region Summary (Cont)

	Location		Sunspot Characteristics					Flares							
		Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
Date	(° Lat ° CMD)	Lon	(10^{-6} hemi)	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4
	Region 1100														
16 Aug	S24E59	202	10	1	AXX	1	A								
17 Aug	S23E49	199	10	1	AXX	1	A								
18 Aug	S22E36	199	10	1	AXX	1	A								
19 Aug	S23E22	200		1	AXX	1	A								
20 Aug	S27E05	204			AXX	1	A								
21 Aug	S27W08	204													
22 Aug	S27W21	204													
								0	0	0	0	0	0	0	0

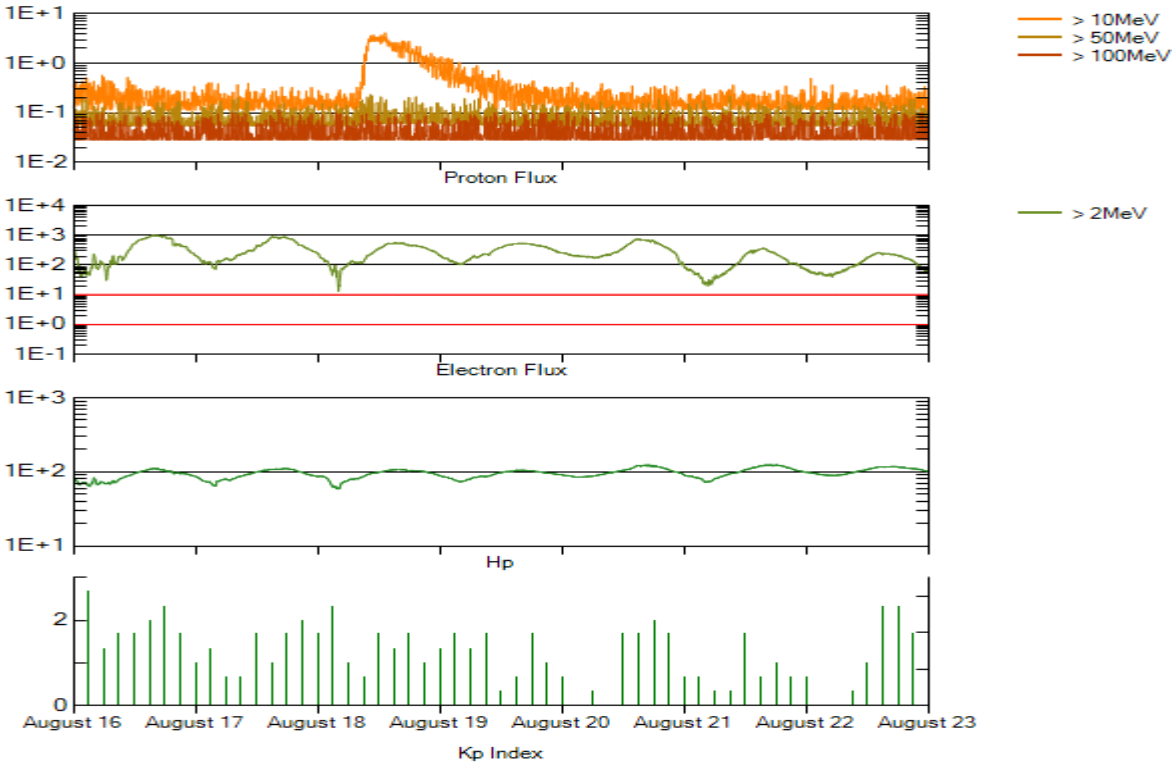
Still on Disk.
Absolute heliographic longitude: 204

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

	Sunspot Numbers					Radio Flux		Geomagnetic	
	Observed values		Ratio	Smooth values		*Penticton	Smooth	Planetary	Smooth
Month	SEC	RI	RI/SEC	SEC	RI	10.7 cm	Value	Ap	Value
				2008					
August	0.0	0.5	**	4.4	2.7	66.3	68.6	5	6.3
September	1.5	1.1	0.73	3.7	2.3	67.1	68.4	6	5.8
October	5.2	2.9	0.56	2.9	1.8	68.3	68.2	7	5.4
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			84.7		5	
March	24.7	15.4	0.62			83.3		5	
April	11.2	7.9	0.71			75.9		10	
May	19.9	8.8	0.44			73.8		8	
June	17.9	13.5	0.75			72.6		7	
July	23.1	16.1	0.70			79.9		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.

** SWPC sunspot number was zero, so a ratio could not be computed.



Weekly Geosynchronous Satellite Environment Summary
Week Beginning 16 August 2010

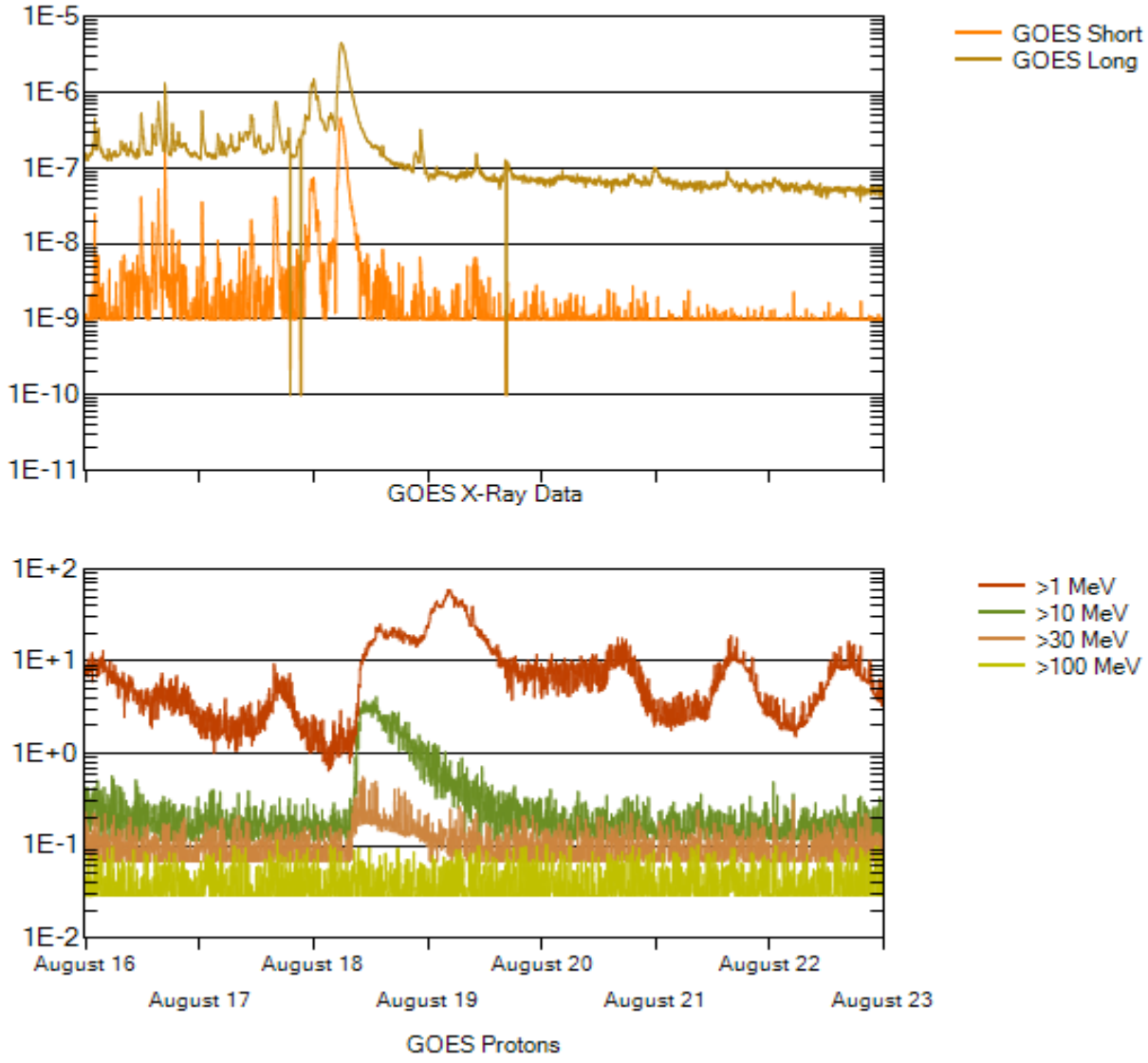
The proton flux plot contains the five-minute averaged integral proton flux (protons/cm^2 –sec –sr) as measured by GOES-13 (W75) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm^2 –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 (protons/cm^2–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 (protons/cm^2-sec-sr) at greater than 10 MeV.