

Space Weather Highlights
09 August - 15 August 2010

SWPC PRF 1824
17 August 2010

Solar activity was at very low levels from 09 - 13 August and at low levels from 14-15 August. New Region 1099 (N18, L=346, class/area Cro/070 on 14 August) formed on the disk on 13 August and was responsible for most of the activity late in the summary period. On 14 August, Region 1099 produced the most significant event of the period, a C4/Sf at 14/1005 UTC. Associated with this flare was a Type II radio sweep (estimated shock velocity of 406 km/s), a weak, short-lived 10 MeV proton event with a peak flux of 14 pfu at 14/1245 UTC observed by the GOES 13 spacecraft, and a full-halo coronal mass ejection (CME) observed on STEREO-A COR2. To finish out the summary period, on 15 August, a disappearing solar filament (DSF) was observed with SOHO C2 imagery, at 15/0812 UTC and Region 1099 produced a C5/Sf at 15/1830 UTC. The remainder of the disk and limb was quiet and stable.

The greater than 10 MeV protons at geosynchronous orbit exceeded threshold at 14/1230 UTC with a peak flux of 14 pfu at 14/1245 UTC. The proton event ended at 14/1410 UTC. This event was associated with the C4/Sf and subsequent CME activity on 14 August.

The greater than 2 MeV electron flux at geosynchronous orbit reached high levels during the entire summary period.

Geomagnetic field activity was at quiet to unsettled levels during a majority of the summary period. On 09 August, an isolated period at active levels was observed at 09/0600-0900 UTC. On 10-11 August, mostly quiet to unsettled levels with isolated periods of active to minor storm levels were observed due to effects from the 07 August CME. The geomagnetic field returned to mostly quiet levels for the remainder of the period, 12-16 August.

Space Weather Outlook
18 August – 13 September 2010

Solar activity is expected to be at very low to low levels.

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 during 18 – 24 August and at high levels from 25 August - 10 September. Normal to moderate levels are expected for the remainder of the period (11-13 September).

Geomagnetic field activity is expected to be quiet through most of the period. A recurrent coronal hole high speed stream (CH HSS) is forecasted to become geoeffective from 22 - 24 August with quiet to unsettled conditions expected. Isolated active periods are possible on 23 August. Mostly quiet conditions are expected for the remainder of the period (25 August - 13 September).



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
09 August	84	53	380	A8.9	0	0	0	0	0	0	0 0
10 August	84	56	210	B1.0	0	0	0	0	0	0	0 0
11 August	86	66	200	A9.8	0	0	0	0	0	0	0 0
12 August	84	50	290	A8.3	0	0	0	0	0	0	0 0
13 August	84	51	120	A9.0	0	0	0	1	0	0	0 0
14 August	85	31	150	B1.4	2	0	0	5	0	0	0 0
15 August	86	33	130	B1.5	1	0	0	3	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
09 August	5.1e+05	2.0e+04	3.6e+03		1.5e+08	
10 August	4.2e+05	1.6e+04	3.5e+03		8.4e+07	
11 August	3.0e+05	1.5e+04	3.4e+03		6.4e+07	
12 August	1.5e+05	1.4e+04	3.5e+03		4.0e+07	
13 August	1.4e+05	1.4e+04	3.5e+03		6.2e+07	
14 August	1.4e+06	2.6e+05	4.1e+03		9.9e+07	
15 August	3.7e+06	6.5e+04	3.6e+03		7.3e+07	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
09 August	7	2-3-2-1-2-2-1-2	7	1-3-2-1-2-2-2-1	10	3-4-2-1-2-2-2-3
10 August	7	2-2-3-1-2-1-1-2	6	2-2-2-1-2-1-1-2	8	2-2-2-1-1-1-2-3
11 August	9	4-2-4-1-0-2-0-1	16	3-3-5-3-3-3-1-0	10	3-3-3-2-2-1-1-1
12 August	3	1-1-1-1-1-0-1-1	5	0-1-2-2-3-0-1-1	4	2-2-1-1-1-0-0-1
13 August	3	1-2-0-1-1-1-1-1	1	1-1-0-0-0-0-0-0	4	1-2-0-1-1-1-1-1
14 August	2	1-0-0-0-1-1-1-1	2	1-0-0-1-1-0-1-1	3	1-0-0-1-1-1-1-2
15 August	5	2-2-0-1-2-1-2-2	4	1-1-0-1-3-0-1-1	5	2-2-0-1-1-1-1-2

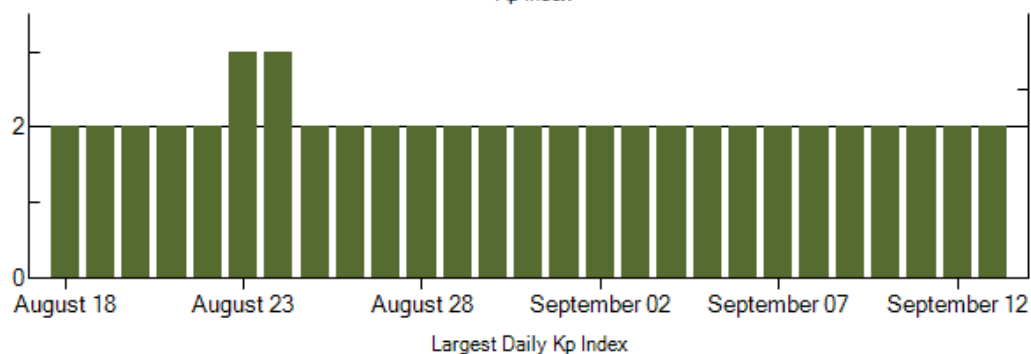
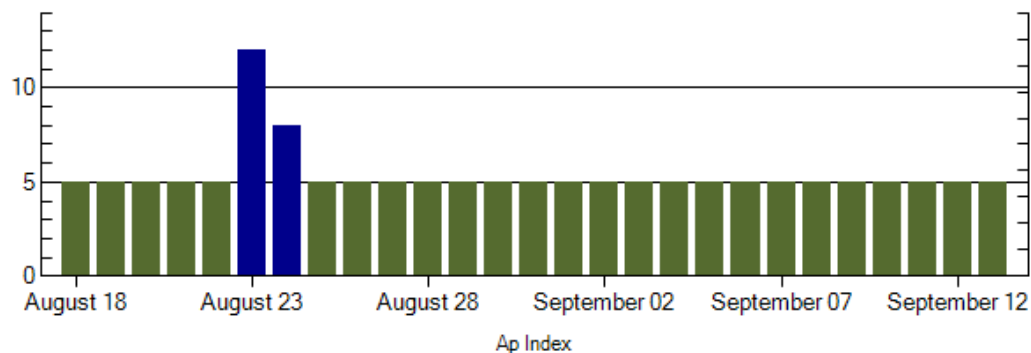
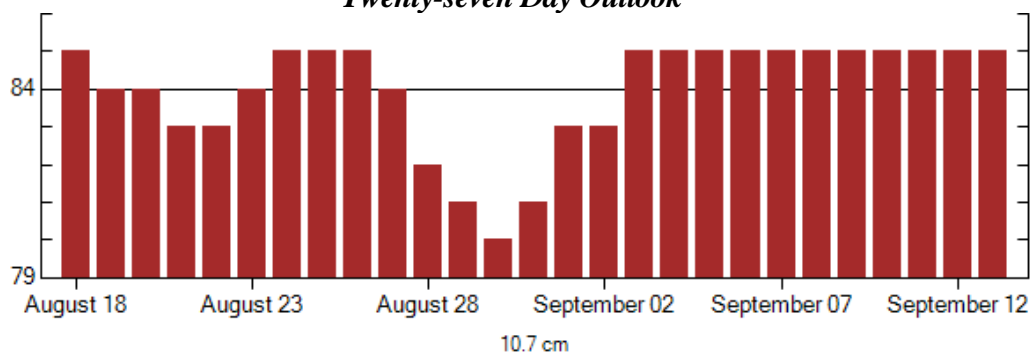


Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
09 Aug 0459	WARNING: Geomagnetic K = 4	09 Aug 0500 - 1500
09 Aug 0503	ALERT: Geomagnetic K = 4	09 Aug 0501
09 Aug 0506	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	06 Aug 0920
09 Aug 1927	WARNING: Geomagnetic K = 4	09 Aug 1930 - 10/1600
10 Aug 1131	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	06 Aug 0920
10 Aug 1922	WARNING: Geomagnetic K = 4	10 Aug 1930 - 11/1600
11 Aug 0743	ALERT: Geomagnetic K = 4	11 Aug 0741
11 Aug 1325	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	06 Aug 0920
12 Aug 1342	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	06 Aug 0920
13 Aug 1308	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	06 Aug 0920
14 Aug 0956	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	06 Aug 0920
14 Aug 1022	ALERT: Type II Radio Emission	14 Aug 0952
14 Aug 1206	WARNING: Proton 10MeV Integral Flux > 10pfu	14 Aug 1207 - 1800
14 Aug 1245	ALERT: Proton Event 10MeV Integral Flux >= 10pfu	14 Aug 1230
14 Aug 1730	EXTENDED WARNING: Proton 10MeV Integral Flux > 10pfu	14 Aug 1207 - 2359
14 Aug 2011	SUMMARY: Proton Event 10MeV Integral Flux >= 10pfu	14 Aug 1230 - 1410
14 Aug 2058	CANCELLATION: Proton 10MeV Integral Flux > 10pfu	
15 Aug 1212	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	06 Aug 0920



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
18 Aug	85	5	2	01 Sep	83	5	2
19	84	5	2	02	83	5	2
20	84	5	2	03	85	5	2
21	83	5	2	04	85	5	2
22	83	5	2	05	85	5	2
23	84	12	3	06	85	5	2
24	85	8	3	07	85	5	2
25	85	5	2	08	85	5	2
26	85	5	2	09	85	5	2
27	84	5	2	10	85	5	2
28	82	5	2	11	85	5	2
29	81	5	2	12	85	5	2
30	80	5	2	13	85	5	2
31	81	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	Brtns	Lat CMD	#	245	2695	II	IV

No Events Observed

Flare List

Date	Time			X-ray Class.	Imp / Brtns	Optical		Rgn
	Begin	Max	End			Location Lat CMD		
09 August	0214	0225	0237	B1.8				1093
	1950	1954	1956	B1.6				1095
10 August	0445	0451	0455	B1.9				1096
	0848	0912	0925	B1.9				1096
11 August	1641	1701	1712	B8.1				1097
	0757	0801	0805	B2.6				1098
	1056	1103	1107	B1.8				
	1142	1146	1149	B1.9				
	1202	1206	1209	B3.9				
	1338	1348	1354	B3.8				1098
	1843	1846	1848	B1.7				1098
12 August	0030	0035	0044	B2.5				1098
	0416	0421	0425	B1.4				1098
13 August	2148	2155	2201	B3.4				1099
	1528	1544	1631	B1.7				1093
	2339	2346	2350	B1.5	SF	N18W46		1099
	2353	0022	0027	B2.2				1099
14 August	0027	0031	0040		SF	N18W46		1099
	0057	0057	0105	B2.7	SF	N17W46		1099
	0352	0401	0414	B2.5				1099
	0941	0959	1110	C4.4	SF	N17W52		1099
	0939	1000	1030		SF	N11W53		1093
	1709	1714	1716	B9.7				1099
15 August	1807	1807	1813	C1.6	SF	N19W54		1099
	0059	0104	0106	B3.9				1099
	0711	0712	0718		SF	N17W63		1099
	0820	0820	0828	B4.9	SF	N16W63		1099
	1243	1249	1255	B7.8				1099
	1604	1609	1617	B5.3				1099
	1828	1832	1839	C5.4	SF	N15W71		1099
	1852	1857	1906	B6.4				1099
	2231	2236	2238	B3.0				1099



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
Region 1092															
28 Jul	N16E76	78	180	6	CSO	2	B								
29 Jul	N14E63	77	210	9	CSO	2	B								
30 Jul	N15E49	79	170	7	CSO	4	B						2		
31 Jul	N13E35	79	230	3	HKX	2	A						1		
01 Aug	N13E21	79	290	4	HKX	3	A	1					1		
02 Aug	N16E10	76	280	11	CHO	7	B								
03 Aug	N15W04	77	190	10	CHO	3	B								
04 Aug	N14W15	75	180	6	CSO	4	B								
05 Aug	N13W33	80	200	3	HSX	1	A								
06 Aug	N12W46	79	210	5	HHX	1	A								
07 Aug	N13W60	80	130	2	HSX	1	A								
08 Aug	N13W74	81	180	3	HSX	1	A								
09 Aug	N12W87	81	200	3	HSX	1	A								
								1	0	0	4	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 77

<i>Region 1093</i>															
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

Still on Disk.

Absolute heliographic longitude: 352



Region Summary (Cont)

Date	Location		Area (10 ⁻⁶ hemi)	Sunspot Characteristics				Flares						
	° Lat ° CMD)	Helio Lon		Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical			
		C						M	X	S	1	2	3	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	11	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 1096

08 Aug	N22W05	12	10	1	AXX	1	A								
09 Aug	N22W20	14	20	5	BXO	8	B								
10 Aug	N21W33	14	60	7	CRI	12	B								
11 Aug	N21W46	13	40	7	BXO	7	B								
12 Aug	N22W55	9			AXX	1	A								

0 0 0 0 0 0 0 0

Died on Disk.

Absolute heliographic longitude: 12

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								

0 0 0 0 0 0 0 0

Died 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								

0 0 0 0 0 0 0 0

Died on Disk.

Absolute heliographic longitude: 301

Region Summary (Cont)



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 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			
								3	0	0	8	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 347



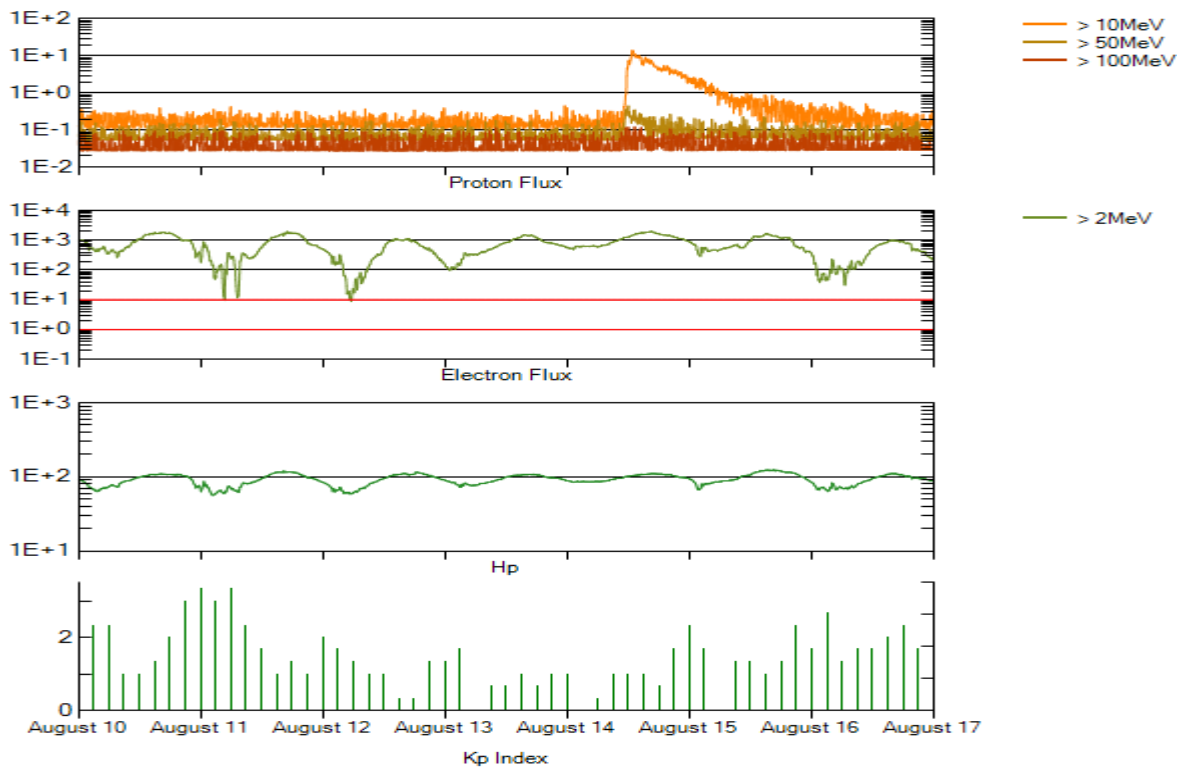
Recent Solar Indices (preliminary)
Of the observed monthly mean values

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									
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 09 August 2010

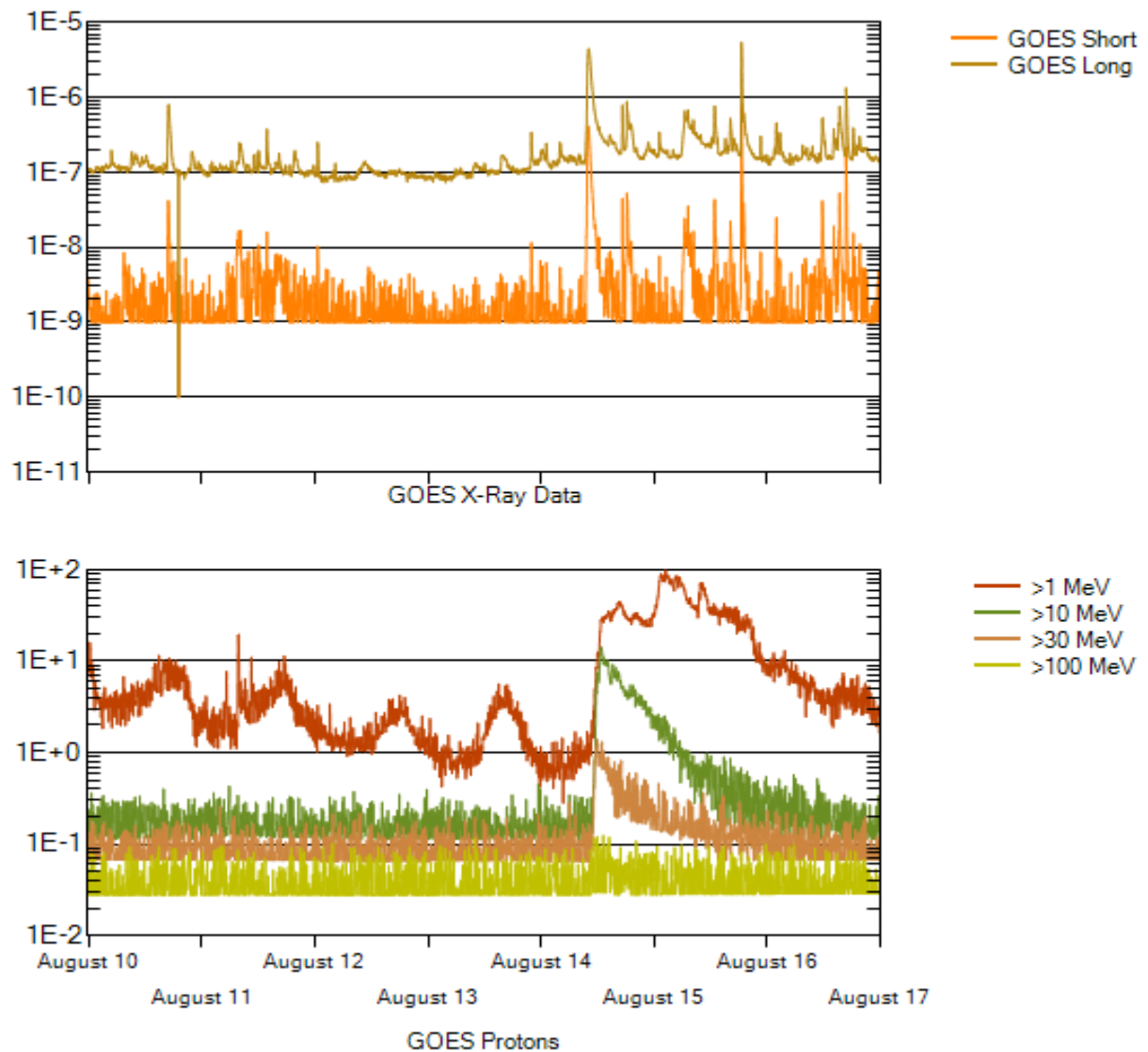
The proton flux plot contains the five-minute averaged integral proton flux (protons/cm²–sec–sr) as measured by GOES-13 (W75) for each of three energy thresholds: greater than 10, 50, and 100 MeV. The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm²–sec–sr) with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

