

Solar activity was at very low levels the majority of the period with low levels reached on 28 August due to an isolated C1/Sf flare at 28/2128 UTC from Region 2583 (N13, L=023, class/area Dao/030 on 28 Aug). Regions 2579 (N12, L=034, class/area Dao/090 on 23 Aug) and 2581 (N12, L=337, class/area Cao/110 on 28 Aug) were the largest spot groups on the visible disk, but were in a decay phase as of 24 and 28 August, respectively. No Earth-directed coronal mass ejections were observed during the period.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal levels on 22 August, moderate levels on 23-24 August, and high levels from 25-28 August. The maximum flux reached 2,334 pfu at 27/1705 UTC.

Geomagnetic field activity ranged from quiet to G1-minor storm levels during the period. The beginning of the period, solar wind conditions were nominal with solar wind speeds between 350 km/s and 420 km/s. The geomagnetic field was at quiet levels on 22 August. By 23 August, total field increased to around 14 nT with the solar wind speed increasing to around 550 km/s as a negative polarity coronal hole high speed stream (CH HSS) moved into geoeffective position. By midday on 24 August, total field had decreased to near 5 nT, however solar wind speeds remained elevated until late on 25 August when they began to decline. The geomagnetic field responded with quiet to G1-minor storm levels on 23-24 August, followed by quiet to unsettled conditions on 25-27 August. Quiet conditions were observed on 28 August under a nominal solar wind environment.

Space Weather Outlook **29 August - 24 September 2016**

Solar activity is expected to be at very low to low levels throughout the period.

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 with high levels expected on 31 August-12 September and again from 21-24 September due to recurrent CH HSS activity.

Geomagnetic field activity is expected to be at unsettled to active levels on 29 August-08 September, 13-14 September, 17 September, and 19-21 September with G1-minor storm levels likely on 29-30 August due to recurrent CH HSS activity.



Daily Solar Data

Date	Radio Flux 10.7cm	Sun spot No.	Sunspot Area (10 ⁻⁶ hemi.)	X-ray Background Flux	Flares							
					X-ray			Optical				
					C	M	X	S	1	2	3	4
22 August	80	33	80	A7.7	0	0	0	3	0	0	0	0
23 August	81	47	120	A9.6	0	0	0	0	0	0	0	0
24 August	78	43	120	A8.5	0	0	0	0	0	0	0	0
25 August	79	39	120	A8.7	0	0	0	0	0	0	0	0
26 August	82	44	110	B1.0	0	0	0	5	0	0	0	0
27 August	84	52	130	B1.0	0	0	0	0	0	0	0	0
28 August	85	64	200	B1.1	1	0	0	2	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	>0.6 MeV	>2MeV	>4 MeV
	22 August		2.5e+05	1.3e+04	3.2e+03	
23 August		4.9e+05	1.3e+04	3.2e+03		2.8e+06
24 August		7.2e+05	1.3e+04	3.0e+03		2.6e+06
25 August		1.2e+06	1.3e+04	3.4e+03		3.3e+07
26 August		4.7e+05	1.3e+04	3.4e+03		3.8e+07
27 August		5.5e+05	1.4e+04	3.3e+03		9.0e+07
28 August		6.0e+05	1.3e+04	3.2e+03		1.1e+08

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	22 August	6	1-1-2-2-3-2-1-1	3	2-1-2-2-0-0-0-0	5
23 August	12	1-2-1-2-4-2-3-4	24	1-1-0-1-6-5-4-4	18	2-2-1-2-4-3-5-5
24 August	17	5-3-3-3-3-2-2-3	31	4-3-3-6-6-3-2-2	19	5-3-3-3-4-2-2-3
25 August	9	2-1-2-3-2-2-2-3	17	2-2-5-4-4-2-2-2	11	2-1-3-3-2-2-2-3
26 August	5	2-2-0-2-2-1-2-1	6	3-2-0-0-2-2-2-1	7	3-2-1-1-1-2-2-2
27 August	5	2-2-0-2-2-1-2-0	7	1-3-1-4-2-0-1-0	5	2-3-1-2-1-1-1-0
28 August	4	0-0-1-1-3-1-1-1	6	0-1-0-4-3-0-0-0	3	1-1-1-1-1-0-1-0

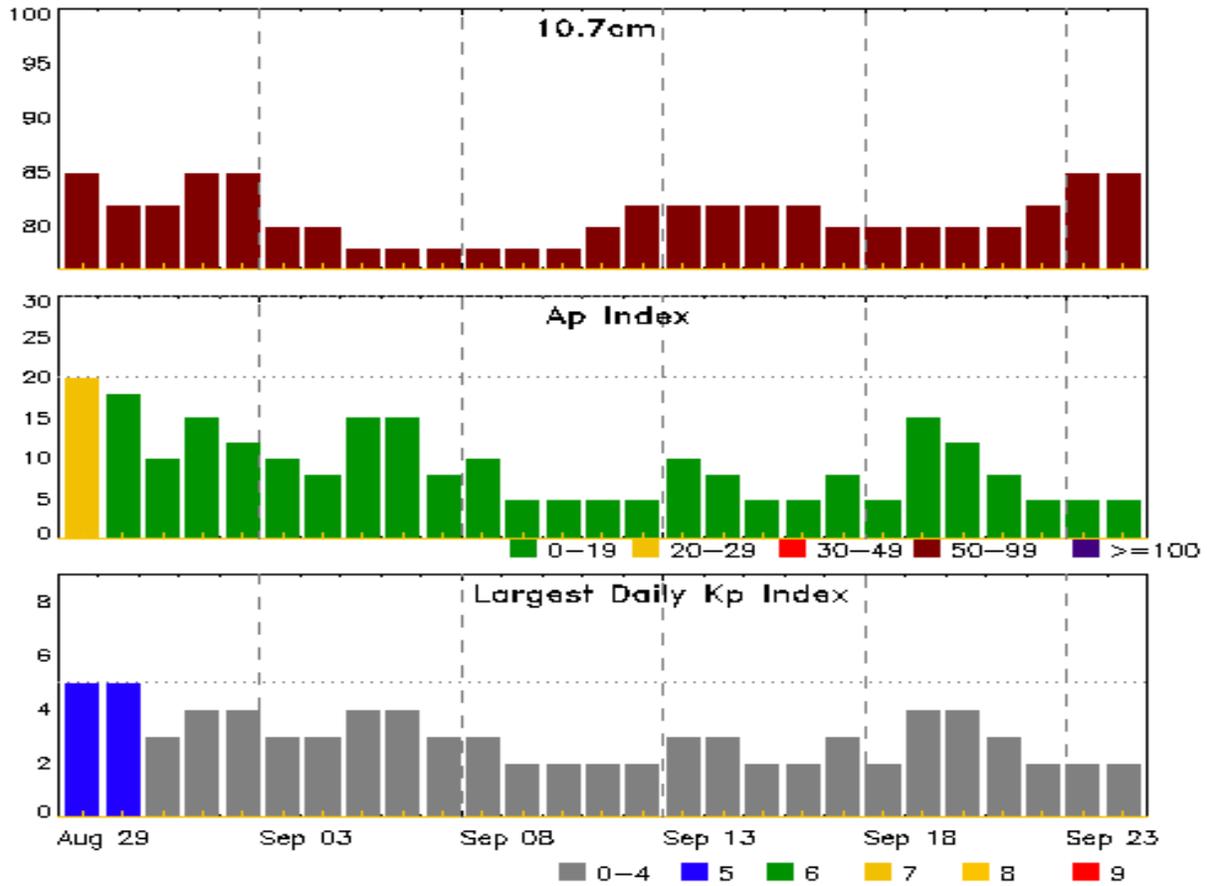


Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
23 Aug 1247	WARNING: Geomagnetic K = 4	23/1247 - 1600
23 Aug 1302	ALERT: Geomagnetic K = 4	23/1253
23 Aug 1422	WARNING: Geomagnetic K = 5	23/1423 - 1600
23 Aug 1527	EXTENDED WARNING: Geomagnetic K = 4	23/1247 - 2300
23 Aug 1833	EXTENDED WARNING: Geomagnetic K = 4	23/1247 - 24/0600
23 Aug 1834	WATCH: Geomagnetic Storm Category G1 predicted	
23 Aug 1835	WARNING: Geomagnetic K = 5	23/1845 - 24/0300
23 Aug 2045	ALERT: Geomagnetic K = 5	23/2045
23 Aug 2333	ALERT: Geomagnetic K = 5	23/2333
24 Aug 0200	ALERT: Geomagnetic K = 5	24/0200
24 Aug 0204	WARNING: Geomagnetic K = 6	24/0205 - 0600
24 Aug 0204	EXTENDED WARNING: Geomagnetic K = 5	23/1845 - 24/0900
24 Aug 0204	EXTENDED WARNING: Geomagnetic K = 4	23/1247 - 24/1300
24 Aug 1311	WARNING: Geomagnetic K = 4	24/1312 - 1800
24 Aug 1500	ALERT: Geomagnetic K = 4	24/1500
25 Aug 2013	ALERT: Electron 2MeV Integral Flux \geq 1000pfu	25/1900
25 Aug 2243	WARNING: Geomagnetic K = 4	25/2243 - 26/0600
26 Aug 1416	WATCH: Geomagnetic Storm Category G1 predicted	
26 Aug 1757	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	25/1900
27 Aug 1146	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	25/1900
27 Aug 1439	WATCH: Geomagnetic Storm Category G1 predicted	
28 Aug 1121	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	25/1900



Twenty-seven Day Outlook



Date	Radio Flux 10.7cm	Planetary A Index	Largest Kp Index	Date	Radio Flux 10.7cm	Planetary A Index	Largest Kp Index
29 Aug	85	20	5	12 Sep	82	5	2
30	82	18	5	13	82	10	3
31	82	10	3	14	82	8	3
01 Sep	85	15	4	15	82	5	2
02	85	12	4	16	82	5	2
03	80	10	3	17	80	8	3
04	80	8	3	18	80	5	2
05	78	15	4	19	80	15	4
06	78	15	4	20	80	12	4
07	78	8	3	21	80	8	3
08	78	10	3	22	82	5	2
09	78	5	2	23	85	5	2
10	78	5	2	24	85	5	2
11	80	5	2				



Energetic Events

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

No Events Observed

Flare List

Date	Time			X-ray Class	Imp/ Brtns	Optical		Rgn #
	Begin	Max	End			Location Lat CMD	Rgn #	
22 Aug	0935	0938	0946	B1.3				2580
22 Aug	1402	1403	1419		SF	N11E24		2579
22 Aug	1431	1432	1439		SF	N11E24		2579
22 Aug	B1549	U1554	A1555		SF	N11E23		2579
22 Aug	2148	2152	2157	B2.8				2579
23 Aug	0219	0223	0226	B2.2				2579
23 Aug	0335	0339	0342	B3.0				2579
23 Aug	0600	0603	0605	B2.8				2579
23 Aug	0847	0851	0857	B2.8				2580
26 Aug	0128	0137	0146	B5.8	SF	N12W24		2579
26 Aug	0550	0600	0628		SF	N15E34		2581
26 Aug	0650	0702	0727	B6.6	SF	N11W27		2579
26 Aug	0707	0707	0710		SF	N14E33		2581
26 Aug	1123	1128	1136		SF	N14E31		2581
27 Aug	1424	1429	1434	B2.5				2582
28 Aug	1621	1622	1631		SF	N11W45		2582
28 Aug	1958	2001	2005	B2.6				2582
28 Aug	2012	2017	2026	B3.0				2583
28 Aug	2125	2128	2130	C1.0	SF	N14W50		2583
28 Aug	2314	2317	2319	B3.6				



Region Summary

Date	Location		Sunspot Characteristics					Flares															
	Lat CMD	Lon	Helio 10 ⁶ hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical												
								C	M	X	S	1	2	3	4								
Region 2578																							
14 Aug	N08E75		83	plage																			
15 Aug	N08E61		83	10	1	Axx	1	A															
16 Aug	N08E49		82	20	3	Bxo	3	B															
17 Aug	N09E33		84	10	2	Axx	2	A															
18 Aug	N09E20		84	20	4	Cro	4	B															
19 Aug	N09E07		84	20	2	Cro	3	B															
20 Aug	N09W07		85	10	1	Axx	2	A															
21 Aug	N09W23		88	10	1	Axx	1	A															
22 Aug	N09W37		88	plage																			
23 Aug	N09W49		87	10	3	Bxo	5	B															
24 Aug	N09W62		87	20	5	Cro	3	B															
25 Aug	N09W76		87	plage																			
26 Aug	N09W90		89	plage																			
									2	0	0	2	0	0	0	0	0						

Crossed West Limb.

Absolute heliographic longitude: 84

Region 2579																							
22 Aug	N12E17		34	60	5	Dai	12	B															
23 Aug	N12E04		34	90	6	Dao	11	B															
24 Aug	N11W08		33	80	5	Dao	9	B															
25 Aug	N12W21		32	40	4	Cao	4	B															
26 Aug	N12W37		35	10	2	Axx	3	A															
27 Aug	N11W47		32	plage																			
28 Aug	N11W61		33	plage																			
									0	0	0	5	0	0	0	0	0						

Still on Disk.

Absolute heliographic longitude: 34



Region Summary - continued

Date	Location		Sunspot Characteristics				Flares																
	Lat CMD	Lon	Helio 10 ⁶ hemi.	Area	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical											
									C	M	X	S	1	2	3	4							
Region 2580																							
22 Aug	S16E60	351	20	1	Hsx	1	A																
23 Aug	S17E46	352	20	1	Hsx	1	A																
24 Aug	S18E34	351	20	1	Hsx	1	A																
25 Aug	S18E21	350	40	6	Cso	2	B																
26 Aug	S18E09	350	20	1	Hsx	2	A																
27 Aug	S18W05	350	20	1	Hsx	1	A																
28 Aug	S18W19	351	20	3	Hrx	2	A																
													0	0	0	0	0	0	0	0	0	0	

Still on Disk.
Absolute heliographic longitude: 350

Region 2581																							
25 Aug	N12E35	336	40	3	Cso	3	B																
26 Aug	N12E22	337	80	6	Dao	9	B						3										
27 Aug	N12E08	337	100	8	Cai	17	B																
28 Aug	N12W05	337	110	9	Cao	10	B																
													0	0	0	3	0	0	0	0	0	0	

Still on Disk.
Absolute heliographic longitude: 337

Region 2582																							
27 Aug	N08W39	24	10	3	Bxo	4	B																
28 Aug	N08W51	23	40	5	Dao	8	B						1										
													0	0	0	1	0	0	0	0	0	0	

Still on Disk.
Absolute heliographic longitude: 24

Region 2583																							
28 Aug	N13W51	23	30	3	Dao	4	B	1					1										
								1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	

Still on Disk.
Absolute heliographic longitude: 23

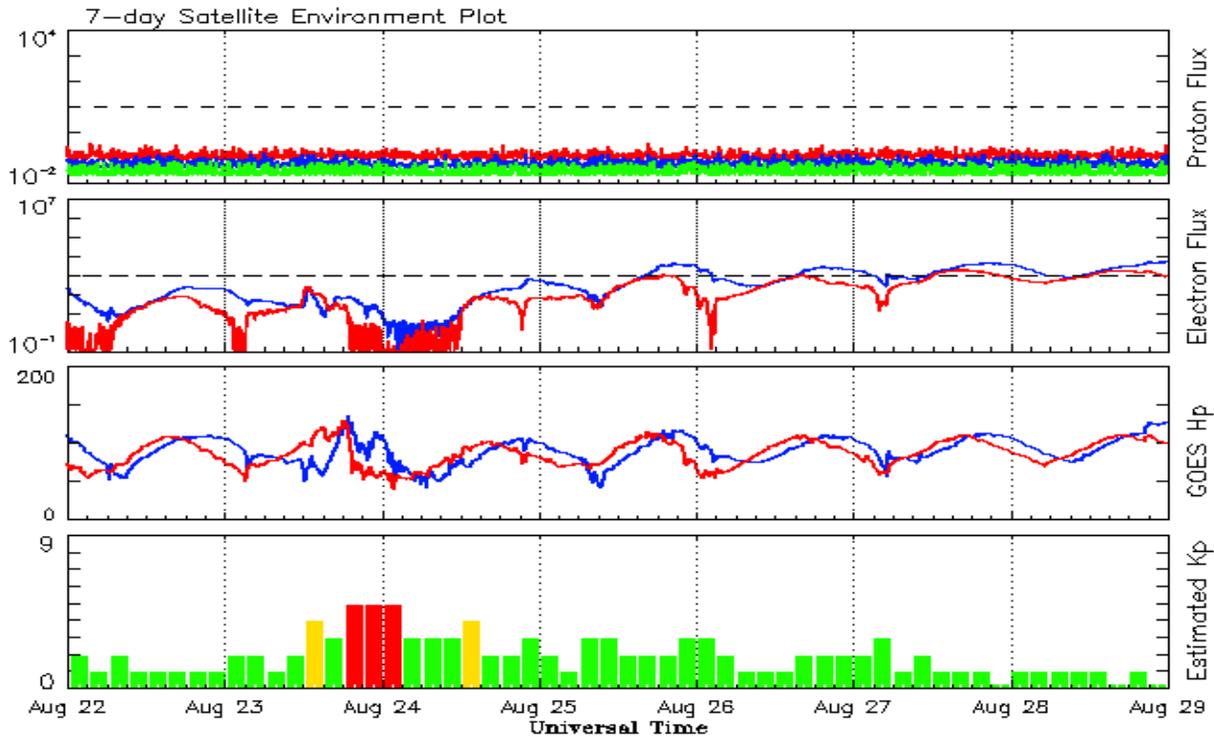


Recent Solar Indices (preliminary)
Observed monthly mean values

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
2014									
August	106.2	64.1	0.70	115.1	65.0	124.7	142.8	9	8.9
September	127.4	78.0	0.69	107.4	61.1	146.1	140.1	11	9.3
October	92.0	54.0	0.66	101.7	58.4	153.7	138.4	10	9.9
November	101.8	62.2	0.69	97.9	56.8	155.3	137.4	10	10.1
December	120.0	67.7	0.65	95.2	55.3	158.7	137.0	12	10.5
2015									
January	101.2	55.8	0.66	92.1	53.6	141.7	135.8	10	11.0
February	70.6	40.0	0.63	88.3	51.7	128.8	133.8	10	11.5
March	61.7	32.7	0.62	84.2	49.3	126.0	131.2	17	12.0
April	72.5	45.2	0.75	80.5	47.3	129.2	127.3	12	12.4
May	83.0	53.3	0.71	77.5	45.7	120.1	123.3	9	12.7
June	77.3	39.9	0.53	73.1	43.3	123.2	119.5	14	13.0
July	68.4	39.5	0.58	68.2	41.0	107.0	116.0	10	13.1
August	61.6	38.6	0.63	65.5	39.8	106.2	113.3	16	13.1
September	72.5	47.2	0.65	64.0	39.5	102.1	110.8	16	12.8
October	59.5	38.2	0.62	61.8	38.6	104.1	107.9	15	12.5
November	61.8	37.3	0.61	59.0	36.8	109.6	105.3	13	12.5
December	54.1	34.8	0.64	55.1	34.7	112.8	102.5	15	12.5
2016									
January	50.4	34.2	0.67	51.4	32.7	103.5	99.9	10	12.3
February	56.0	33.8	0.61			103.5		10	
March	40.9	32.5	0.80			91.6		11	
April	39.2	22.8	0.58			93.4		10	
May	48.9	31.3	0.64			93.1		12	
June	19.3	12.5	0.65			81.9		9	
July	36.8	19.5	0.53			85.9		10	

Note: Values are final except for the most recent 6 months which are considered preliminary.
Cycle 24 started in Dec 2008 with an RI=1.7.





*Weekly Geosynchronous Satellite Environment Summary
Week Beginning 22 August 2016*

The proton flux plot contains the five-minute averaged integral proton flux (protons/cm²-sec -sr) as measured by the SWPC Primary GOES satellite, near West 75, for each of three energy thresholds: greater than 10, 50, and 100 MeV.

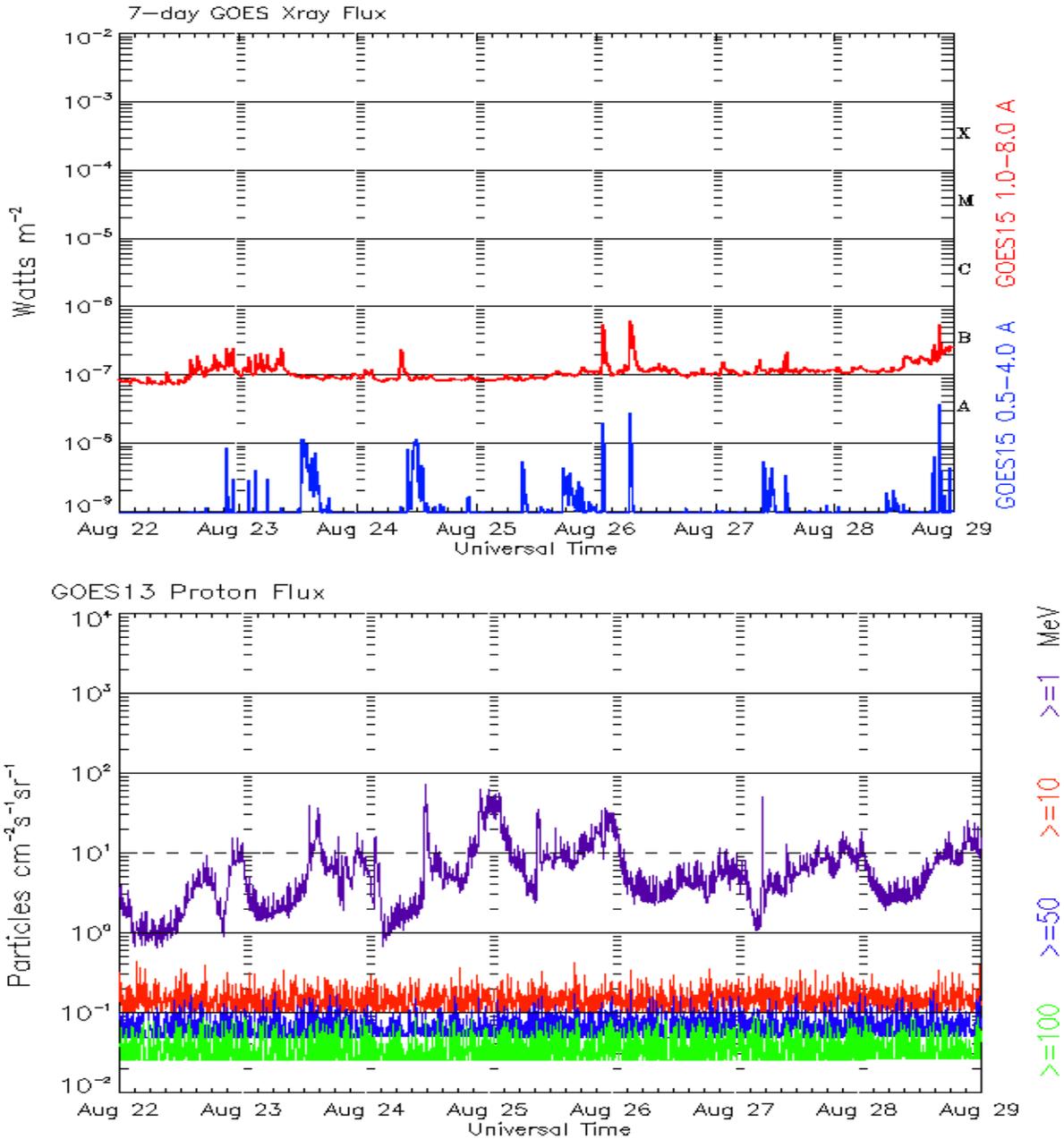
The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

The Hp plot contains the five minute averaged Hp magnetic field component in nanoteslas (nT) as by the SWPC Primary GOES satellite. The Hp component is parallel to the spin axis of the satellite, which is nearly parallel to the Earth's rotation axis.

The Estimated 3-hour Planetary Kp-index is derived at the NOAA Space Weather Prediction Center using data from the following ground-based magnetometers: Boulder, Colorado; Chambon la Foret, France; Fredericksburg, Virginia; Fresno, California; Hartland, UK; Newport, Washington; Sitka, Alaska. These data are made available thanks to the cooperative efforts between SWPC and data providers around the world, which currently includes the U.S. Geological Survey, the British Geological Survey, and the Institut de Physique du Globe de Paris.

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
Week Beginning 22 August 2016*

The x-ray plots contains five-minute averages x-ray flux (Watt/m²) as measure by the SWPC primary GOES X-ray satellite, usually at West 105 longitude, 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 intergral flux units (pfu = protons/cm² -sec -sr) as measured by the primary SWPC GOES Proton satellite for each of the energy thresholds: >1, >10, >30, and >100 MeV. The P10 event threshold is 10 pfu at greater than 10 MeV.



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Notice: The 27-day Outlook, Satellite Environment, X-ray and Proton plots have been redesigned. Comments and suggestions are welcome SWPC.Webmaster@noaa.gov

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