

Solar activity was very low throughout the period with the exception of a single C1 flare at 25/0909 UTC from departed Region 2567 (N05, L=166, class/area Dki/380 on 21 July). Region 2570 (N10E24, Axx/alpha) was the sole numbered sunspot for the majority of the period but was unimpressive and did not contribute any significant flaring. A 25 degree filament, centered near N01E06, was observed lifting off of the visible disk in SDO/AIA imagery beginning at 28/1620 UTC. ENLIL analysis showed an Earth-directed component with CME arrival expected early on 02 August.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at moderate levels on 25, 28-29 July and high levels on 26-27 and 30-31 July.

Geomagnetic field activity was at quiet to active levels on 25 July due to residual influence from a weak transient that arrived at Earth on 24 July. This shock enhancement was likely associated with flare activity from 20 July. Geomagnetic field activity was quiet on 26-27 July under a nominal solar wind regime. Quiet to active conditions were observed on 28-29 July after the arrival of a CIR followed by a transition into a negative polarity CH HSS. Wind speeds reached 600 km/s while total field (Bt) measurements were as high as 17 nT. Geomagnetic field activity returned to quiet conditions on 30-31 July.

Space Weather Outlook **01 August - 27 August 2016**

Solar activity is expected to be at very low levels from 01-04 August. Low levels with a chance for M-class (R1-R2, Minor-Moderate) flares are expected from 05-19 August with the return of Regions 2565 and 2567. A return to very low levels is expected on 20-27 August.

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 on 08, 5-15, 18-22, 25-27 August due to recurrent CH HSS activity. Normal to moderate levels are expected for the remainder of the forecast period.

Geomagnetic field activity is expected to be at unsettled to active levels on 04-05, 10-11, 15-16, 24-25 August with G1 (Minor) storm levels likely on 03 August due to recurrent CH HSS activity. A CME associated with the eruptive filament from 28 July is likely to arrive early on 02 August causing unsettled to G2 (Moderate) storm levels. Quiet to unsettled conditions are expected for the remainder of the period.



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
25 July	74	0	0	B1.3	1	0	0	0	0	0	0	0
26 July	74	0	0	A7.8	0	0	0	0	0	0	0	0
27 July	72	0	0	A5.5	0	0	0	0	0	0	0	0
28 July	70	13	10	A5.0	0	0	0	0	0	0	0	0
29 July	71	13	10	A5.9	0	0	0	0	0	0	0	0
30 July	71	13	10	A5.2	0	0	0	1	0	0	0	0
31 July	72	12	10	A5.4	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	>0.6 MeV	>2MeV	>4 MeV
	25 July	6.2e+05	1.3e+04	3.1e+03	1.1e+07	
26 July	2.7e+05	1.3e+04	3.2e+03	3.3e+07		
27 July	2.7e+05	1.3e+04	3.1e+03	6.3e+07		
28 July	1.8e+05	1.3e+04	3.2e+03	3.3e+06		
29 July	4.4e+05	1.4e+04	3.3e+03	9.2e+06		
30 July	4.0e+05	1.4e+04	3.2e+03	3.9e+07		
31 July	3.3e+05	1.4e+04	3.6e+03	5.2e+07		

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	25 July	15	4-4-3-2-3-3-2-2	55	3-4-7-6-6-6-2-2	18
26 July	7	2-2-1-1-3-2-2-1	4	1-1-1-0-3-2-0-0	5	1-2-1-1-2-1-1-1
27 July	4	1-1-0-1-2-1-1-2	2	2-1-0-0-1-0-0-0	4	1-1-0-0-1-0-1-2
28 July	13	2-4-3-2-2-2-3-3	27	2-4-3-4-4-5-5-3	15	3-4-3-2-2-3-4-3
29 July	16	4-4-3-3-2-3-3-1	21	3-5-4-5-3-2-2-1	14	3-4-3-3-2-3-3-1
30 July	7	3-2-1-1-3-2-1-1	5	2-2-1-3-1-1-0-1	6	3-2-1-1-1-1-1-1
31 July	2	1-0-0-1-2-1-1-0	3	2-0-0-2-1-1-0-0	6	2-0-1-1-1-1-1-0

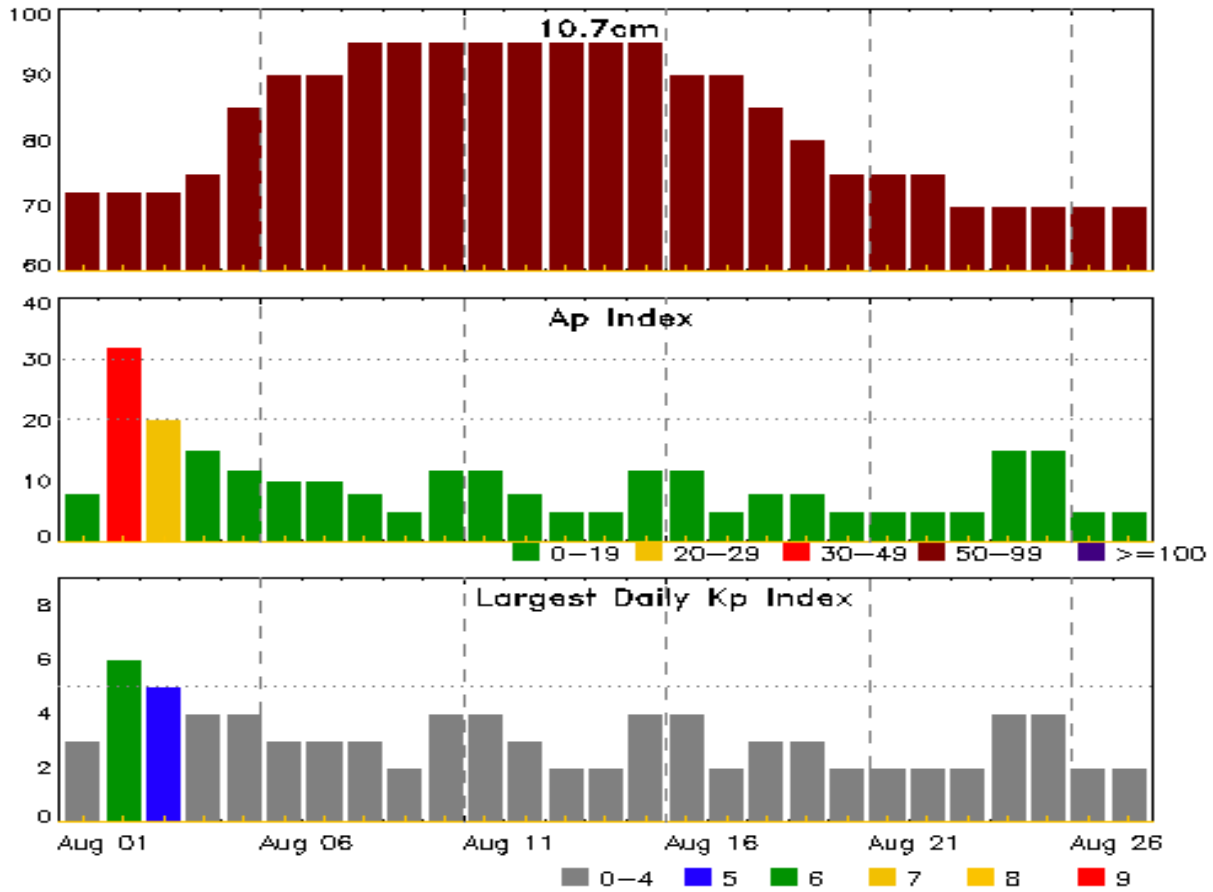


Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
25 Jul 0904	WARNING: Geomagnetic K = 4	25/0905 - 1500
25 Jul 1029	SUMMARY: 10cm Radio Burst	25/0903 - 0903
25 Jul 1423	EXTENDED WARNING: Geomagnetic K = 4	25/0905 - 2100
25 Jul 1502	ALERT: Geomagnetic K = 4	25/1459
27 Jul 1349	ALERT: Electron 2MeV Integral Flux >= 1000pfu	27/1340
28 Jul 0033	WARNING: Geomagnetic K = 4	28/0033 - 0600
28 Jul 0531	EXTENDED WARNING: Geomagnetic K = 4	28/0033 - 1200
28 Jul 0601	ALERT: Geomagnetic K = 4	28/0559
28 Jul 1832	WARNING: Geomagnetic K = 4	28/1831 - 29/1000
28 Jul 1851	ALERT: Geomagnetic K = 4	28/1851
29 Jul 0959	EXTENDED WARNING: Geomagnetic K = 4	28/1831 - 29/1300
30 Jul 1618	ALERT: Electron 2MeV Integral Flux >= 1000pfu	30/1600
30 Jul 2017	WATCH: Geomagnetic Storm Category G2 predicted	
31 Jul 1356	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	30/1600
31 Jul 1912	WATCH: Geomagnetic Storm Category G2 predicted	



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
01 Aug	72	8	3	15 Aug	95	12	4
02	72	32	6	16	90	12	4
03	72	20	5	17	90	5	2
04	75	15	4	18	85	8	3
05	85	12	4	19	80	8	3
06	90	10	3	20	75	5	2
07	90	10	3	21	75	5	2
08	95	8	3	22	75	5	2
09	95	5	2	23	70	5	2
10	95	12	4	24	70	15	4
11	95	12	4	25	70	15	4
12	95	8	3	26	70	5	2
13	95	5	2	27	70	5	2
14	95	5	2				



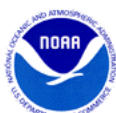
Energetic Events

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	Optical			Rgn #
	Begin	Max	End		Imp/ Brtns	Location Lat CMD	Rgn #	
25 Jul	0651	0657	0701	B3.6				2567
25 Jul	0859	0909	0926	C1.8				2567
25 Jul	1846	1853	1901	B2.9				2567
26 Jul	0208	0214	0219	B2.2				
26 Jul	0243	0313	0328	B3.9				
26 Jul	0434	0438	0443	B2.4				
26 Jul	0507	0512	0521	B2.0				
26 Jul	0619	0626	0645	B3.0				
26 Jul	0737	0741	0743	B2.2				
26 Jul	0846	0856	0911	B2.5				
26 Jul	1309	1319	1335	B4.6				
26 Jul	1523	1535	1605	B9.3				
26 Jul	1708	1722	1745	B4.5				
28 Jul	1344	1348	1351	B1.1				
30 Jul	0920	0934	0941	B5.3	SF	S16E13		
31 Jul	2125	2140	2156	B2.9				



Region Summary

Date	Location		Sunspot Characteristics					Flares															
	Lat	CMD	Helio Lon	Area 10 ⁶ hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical											
									C	M	X	S	1	2	3	4							
Region 2567																							
15 Jul	N05E28		166	190	6	Dac	13	BGD	1				8										
16 Jul	N04E15		166	200	8	Dsc	10	BG	11				12										
17 Jul	N05E02		165	330	8	Dhi	14	BG	1				2										
18 Jul	N05W11		165	330	8	Dki	15	B															
19 Jul	N05W24		165	390	7	Dki	14	BG					1										
20 Jul	N05W37		165	510	7	Dki	16	B	6				8										
21 Jul	N05W52		166	380	9	Dki	12	BG	8	2			8	1									
22 Jul	N06W66		167	330	8	Dko	12	B	3				4										
23 Jul	N05W80		168	210	8	Dao	10	B	6	3			10							1			
24 Jul	N05W92		167	150	6	Dao	6	B	9	2			2										
									45	7	0		55	1	0	1	0						

Crossed West Limb.

Absolute heliographic longitude: 165

Region 2568

15 Jul	S15E39		155	20	3	Dro	2	B														
16 Jul	S16E24		157	10	3	Bxo	2	B														
17 Jul	S13E10		157	0		Axx	1	A														
18 Jul	S13W04		158	plage																		
19 Jul	S13W18		159	plage																		
20 Jul	S13W32		160	plage																		
21 Jul	S13W46		160	plage																		
22 Jul	S13W60		161	plage																		
23 Jul	S13W74		162	plage																		
24 Jul	S13W88		163	plage																		
									0	0	0		0	0	0	0	0	0				

Crossed West Limb.

Absolute heliographic longitude: 158

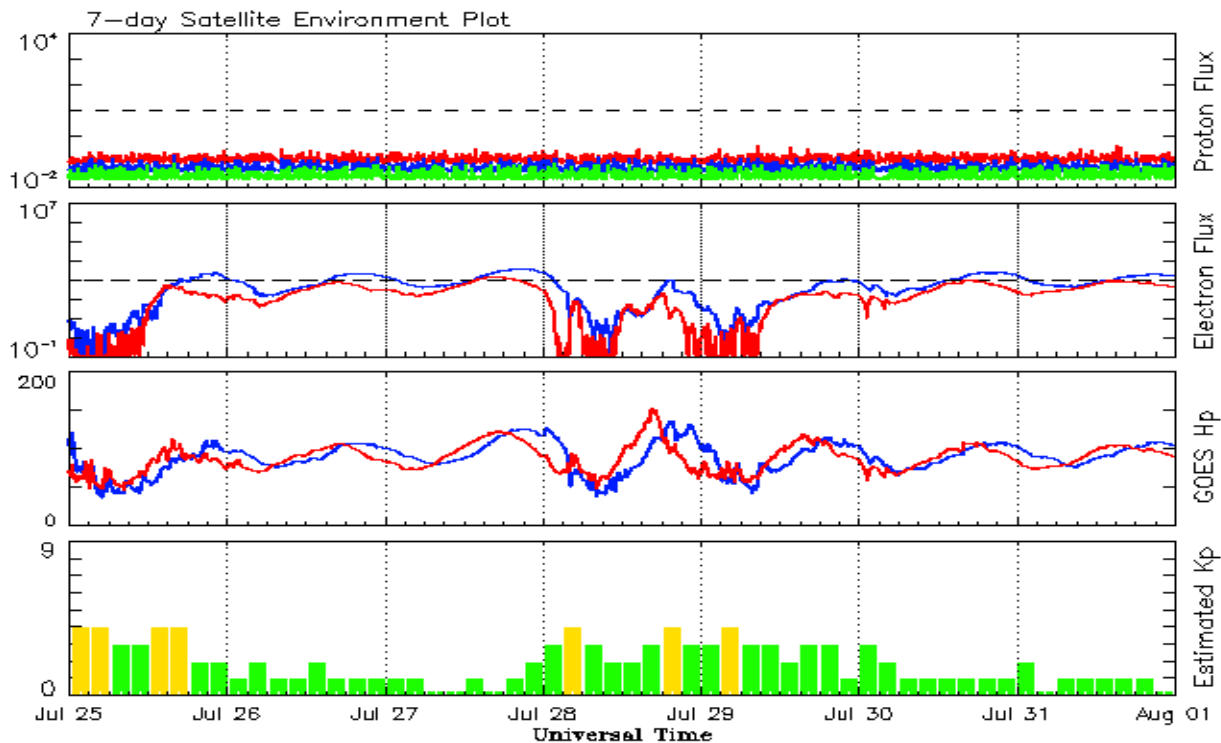


Recent Solar Indices (preliminary)
Observed monthly mean values

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		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					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 25 July 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.

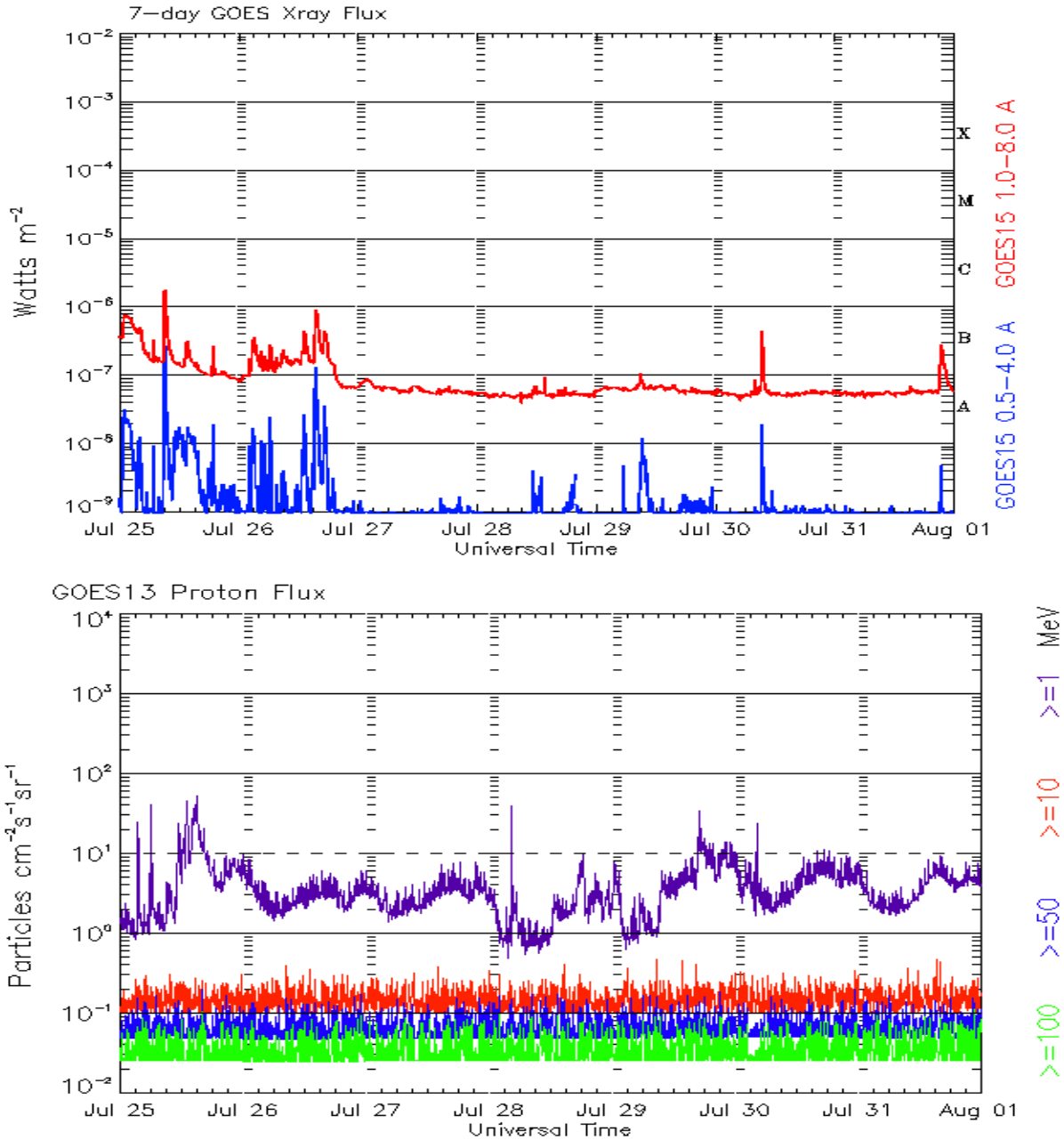
The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

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 25 July 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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