

Space Weather Highlights
26 August - 01 September 2019

SWPC PRF 2296
02 September 2019

Solar activity was at very low levels. New Region 2748 (N14, L=205, class/area Bxo/010 on 01 Sep) emerged on the disk, but remained quiet and stable. No Earth-directed CMEs were observed.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at moderate levels on 26 Aug, normal levels on 27-30 Aug, high levels on 31 Aug and very high levels on 01 Sep. Electron flux reached a maximum of 53,007 pfu at 01/2015 UTC.

Geomagnetic field activity ranged from quiet to unsettled levels on 26-27 Aug due to influence from a weak, negative polarity CH HSS. Quiet conditions persisted from late on 27 Aug through midday on 30 Aug. From midday on 30 Aug through 01 Sep, field activity increased to unsettled to G1 (minor) and G2 (moderate) levels as Earth came under the influence of a large, recurrent positive polarity CH HSS. 30 Aug saw a SSBC from a negative to a positive sector in advance of a CIR, all preceding the CH HSS. 31 Aug and 01 Sep observed active to G1 and G2 storm conditions. Wind speeds averaged about 750 km/s during this time frame with a peak of 835 km/s observed early on 01 Sep.

Space Weather Outlook
02 September - 28 September 2019

Solar activity is expected to be at very 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 high to very high levels on 02-13 Sep and again on 27-28 Sep. Normal to moderate levels are expected on 14-26 Sep.

Geomagnetic field activity is expected to be at G1 (minor) storm levels on 02 Sep and G1 (minor) to G2 (moderate) storm levels on 27-28 Sep due to positive polarity CH HSS influence. Unsettled levels are expected on 03, 07-08, 23, and 26 Sep due to recurrent CH HSS effects.



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
26 August	67	0	0	A6.0	0	0	0	0	0	0	0	0
27 August	66	0	0	A6.0	0	0	0	0	0	0	0	0
28 August	66	0	0	A6.1	0	0	0	0	0	0	0	0
29 August	66	0	0	A6.1	0	0	0	0	0	0	0	0
30 August	67	0	0	A6.0	0	0	0	0	0	0	0	0
31 August	66	0	0	A6.1	0	0	0	0	0	0	0	0
01 September	67	12	10	A6.3	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
26 August		9.7e+05	2.2e+04	4.1e+03		1.0e+07
27 August		4.8e+05	2.1e+04	3.6e+03		2.9e+06
28 August		2.1e+05	2.1e+04	3.5e+03		3.0e+06
29 August		3.5e+05	2.1e+04	3.7e+03		4.0e+06
30 August		5.9e+05	2.1e+04	3.8e+03		3.9e+06
31 August		2.6e+06	2.0e+04	3.5e+03		1.0e+08
01 September		4.0e+06	2.0e+04	3.6e+03		8.0e+08

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
26 August	6	1-1-1-2-2-2-2-2	8	0-0-1-5-2-0-1-0	6	2-1-1-2-1-1-1-2
27 August	10	3-3-2-2-2-2-3-2	17	3-2-2-5-5-2-1-1	10	3-3-2-3-2-2-2-2
28 August	5	2-2-1-2-2-2-1-0	3	2-1-2-1-0-0-0-0	5	2-2-2-1-1-1-0-1
29 August	4	1-0-0-2-2-1-2-1	2	1-0-0-0-1-1-1-0	3	1-0-0-1-1-1-1-1
30 August	10	2-1-2-2-3-2-3-3	12	1-1-2-3-4-3-3-2	10	2-1-1-1-3-3-3-3
31 August	29	4-5-4-4-5-3-3-4	59	4-5-5-7-7-4-3-4	38	4-5-4-5-6-4-4-4
01 September	33	4-5-4-4-5-3-4-5	86	4-5-7-8-7-5-4-3	39	5-5-5-5-6-4-5-5



Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
27 Aug 0534	WARNING: Geomagnetic K = 4	27/0535 - 0900
28 Aug 1835	WATCH: Geomagnetic Storm Category G1 predicted	
29 Aug 1947	WATCH: Geomagnetic Storm Category G2 predicted	
30 Aug 2035	WARNING: Geomagnetic K = 4	30/2035 - 31/0600
31 Aug 0137	ALERT: Geomagnetic K = 4	31/0130
31 Aug 0243	EXTENDED WARNING: Geomagnetic K = 4	30/2035 - 31/1800
31 Aug 0244	WARNING: Geomagnetic K = 5	31/0244 - 1200
31 Aug 0549	ALERT: Geomagnetic K = 5	31/0546
31 Aug 1016	ALERT: Geomagnetic K = 5	31/1015
31 Aug 1026	EXTENDED WARNING: Geomagnetic K = 4	30/2035 - 01/0600
31 Aug 1026	EXTENDED WARNING: Geomagnetic K = 5	31/0244 - 2100
31 Aug 1026	WARNING: Geomagnetic K = 6	31/1025 - 1500
31 Aug 1201	ALERT: Geomagnetic K = 5	31/1159
31 Aug 1228	ALERT: Geomagnetic K = 5	31/1228
31 Aug 1421	ALERT: Geomagnetic K = 6	31/1420
31 Aug 1421	EXTENDED WARNING: Geomagnetic K = 6	31/1025 - 2100
31 Aug 1559	ALERT: Electron 2MeV Integral Flux ≥ 1000 pfu	31/1540
31 Aug 2049	EXTENDED WARNING: Geomagnetic K = 4	30/2035 - 01/1800
31 Aug 2049	EXTENDED WARNING: Geomagnetic K = 5	31/0244 - 01/0900
01 Sep 0301	ALERT: Geomagnetic K = 5	01/0259
01 Sep 0450	ALERT: Geomagnetic K = 5	01/0450
01 Sep 0729	ALERT: Geomagnetic K = 5	01/0729
01 Sep 0729	EXTENDED WARNING: Geomagnetic K = 5	31/0244 - 01/1500
01 Sep 0941	ALERT: Geomagnetic K = 5	01/0942
01 Sep 1006	CONTINUED ALERT: Electron 2MeV Integral Flux ≥ 1000 pfu	31/1540
01 Sep 1337	ALERT: Geomagnetic K = 5	01/1337
01 Sep 1401	EXTENDED WARNING: Geomagnetic K = 4	30/2035 - 02/0600
01 Sep 1401	EXTENDED WARNING: Geomagnetic K = 5	31/0244 - 01/2359

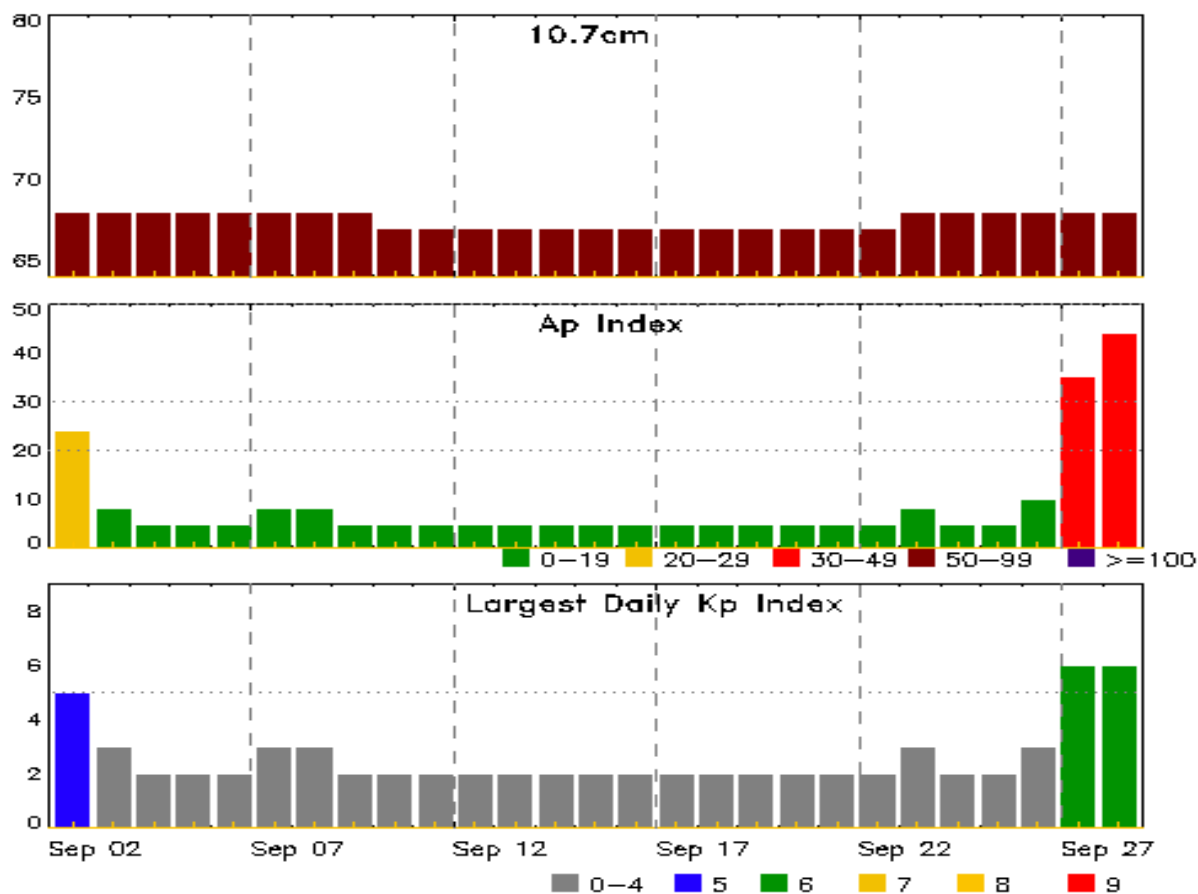


Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
01 Sep 1401	WARNING: Geomagnetic K = 6	01/1359 - 2100
01 Sep 1509	ALERT: Geomagnetic K = 6	01/1459
01 Sep 2051	ALERT: Geomagnetic K = 5	01/2050
01 Sep 2109	EXTENDED WARNING: Geomagnetic K = 4	30/2035 - 02/1500
01 Sep 2109	EXTENDED WARNING: Geomagnetic K = 5	31/0244 - 02/1200



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
02 Sep	68	24	5	16 Sep	67	5	2
03	68	8	3	17	67	5	2
04	68	5	2	18	67	5	2
05	68	5	2	19	67	5	2
06	68	5	2	20	67	5	2
07	68	8	3	21	67	5	2
08	68	8	3	22	67	5	2
09	68	5	2	23	68	8	3
10	67	5	2	24	68	5	2
11	67	5	2	25	68	5	2
12	67	5	2	26	68	10	3
13	67	5	2	27	68	35	6
14	67	5	2	28	68	44	6
15	67	5	2				

Energetic Events

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

No Events Observed

Flare List

Date	Time			X-ray	Optical		
	Begin	Max	End		Imp/	Location	Rgn
				Class	Brtns	Lat CMD	#
26 Aug	0300	0301	0302	A1.1			



Region Summary

Location		Sunspot Characteristics					Flares							
Date	Lat CMD	Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical			
	Lon	10 ⁻⁶ hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4

Region 2748

01 Sep	N14E22	205	10	3	Bxo	2	B								
								0	0	0	0	0	0	0	0

Still on Disk.

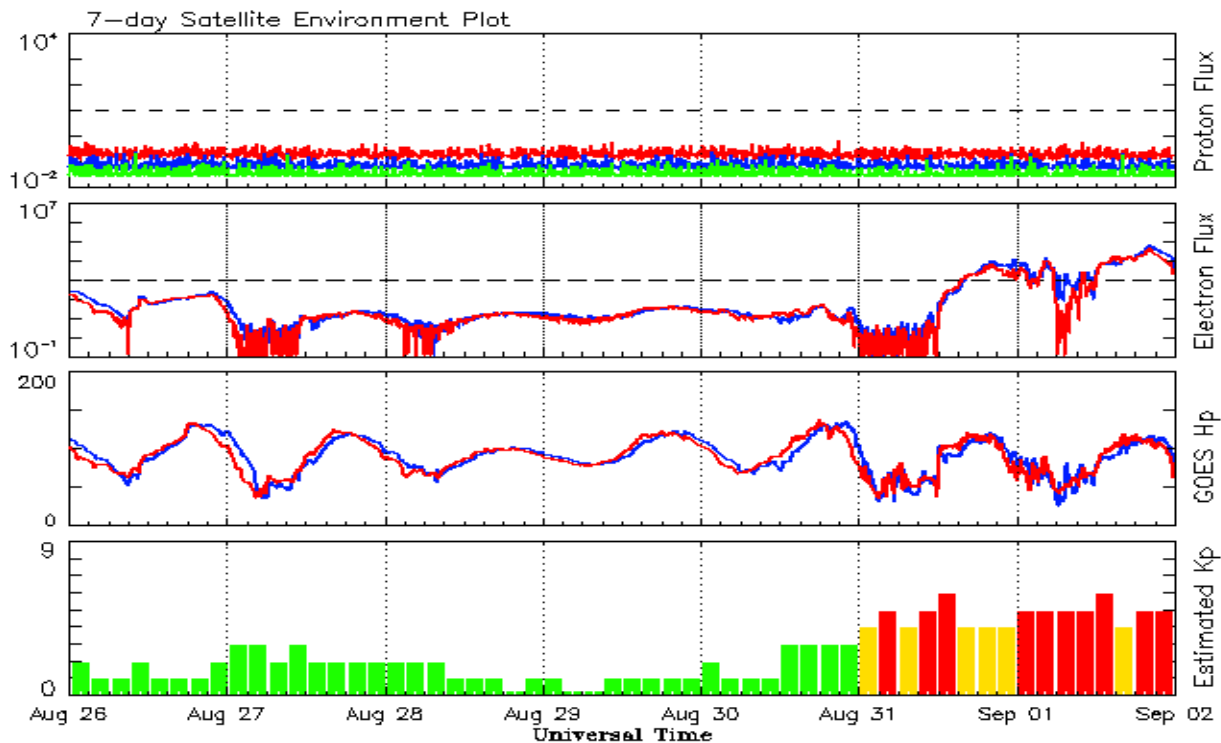
Absolute heliographic longitude: 205

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
2017									
September	42.2	26.2	0.62	18.6	11.0	92.0	75.9	19	10.3
October	16.0	7.9	0.49	16.8	10.0	76.4	75.1	11	9.8
November	7.7	3.4	0.44	15.7	9.2	72.1	74.6	11	9.5
December	7.6	4.9	0.64	15.7	9.1	71.5	74.4	8	9.4
2018									
January	7.8	4.1	0.51	15.0	8.5	70.0	74.0	6	9.3
February	16.0	6.4	0.40	13.7	7.6	72.0	73.3	7	9.1
March	6.0	1.5	0.25	11.5	5.9	68.4	71.9	8	8.6
April	7.0	5.3	0.76	9.6	4.7	70.0	70.6	7	8.0
May	15.0	7.9	0.53	9.2	4.5	70.9	70.2	8	7.6
June	19.7	9.4	0.48	9.1	4.3	72.5	70.0	7	7.4
July	1.3	1.0	0.77	9.4	4.2	69.7	70.0	6	7.3
August	10.0	5.2	0.53	9.0	4.0	69.1	70.0	10	7.3
September	5.7	2.0	0.35	8.7	3.9	68.3	70.1	9	7.3
October	6.9	2.9	0.42	9.2	4.1	69.5	70.3	7	7.1
November	7.3	2.9	0.48	9.5	4.0	68.9	70.4	6	7.0
December	5.6	1.9	0.34	9.3	3.6	70.0	70.3	7	6.9
2019									
January	16.0	4.6	0.29	9.0	3.2	71.6	70.0	6	6.8
February		0.5		8.7	3.0	70.6	69.8	7	6.7
March	14.8	5.6	0.39			71.5		6	
April	11.5	5.5	0.48			72.4		6	
May	18.1	6.1	0.34			71.3		7	
June	11.6	0.7	0.06			68.1		5	
July	1.6	0.5	0.31			67.1		6	
August	2.5	0.4	0.16			67.0		7	

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 26 August 2019*

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.

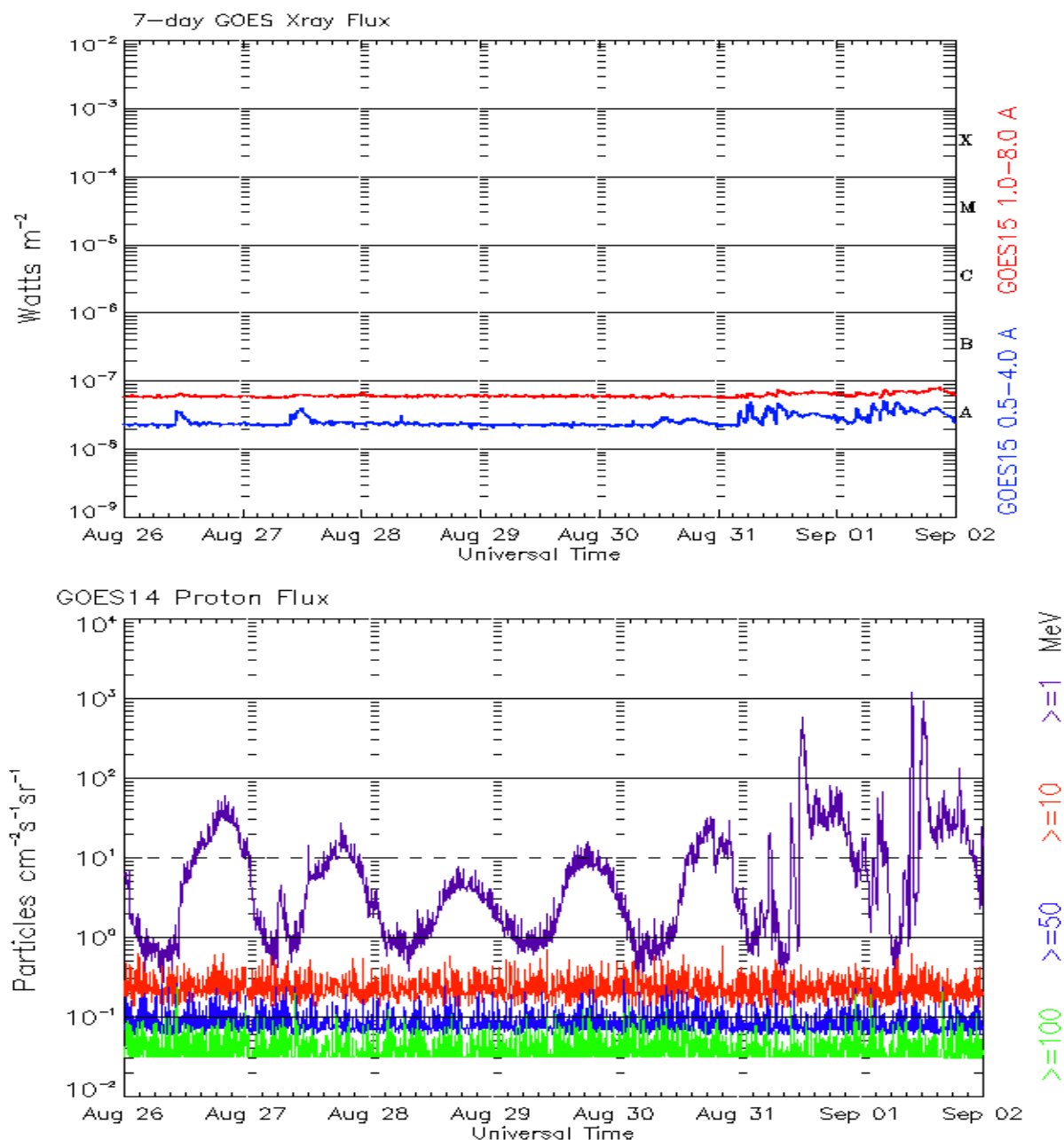
The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

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 26 August 2019*

The x-ray plots contains five-minute averages x-ray flux (Watt/m^2) 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 integral flux units (pfu = protons/ cm^2 -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

The Weekly has been published continuously since 1951 and is available online since 1997.

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<http://spaceweather.gov/SolarCycle/> -- Solar Cycle Progression web site

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