

Solar activity was at very low levels throughout the reporting period. Region 2744 (S27, Lo=209, class/area=Bxo/020 on 07 Jul) decayed to played by 08 Jul. A coronal dimming was observed in SDO/AIA 193 beginning around 14/0030 UTC from near the vicinity of old Region 2744 (S27W46). A subsequent CME signature associated with the event was observed in SOHO/LASCO C2 imagery beginning at 14//0236 UTC. The slow-moving, narrow and faint signature from the SW limb was modeled and the resulting WSA-Enlil output suggested no Earth-directed component was present.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal background levels on 08-09 Jul. An increase to moderate to high levels, in response to activity from a negative polarity CH HSS, was observed on 10 Jul and persisted through 14 Jul.

Geomagnetic field activity ranged from quiet to G1 (Minor) geomagnetic storm levels. An abrupt enhancement from a possible transient was observed at 08/1829 UTC. Total field increase from 4 to 10 nT and solar wind speeds increased from 300 km/s to a brief peak of 400 km/s resulting in an isolated period of active conditions. Late on 09 Jul, the onset of a positive polarity CH HSS increased wind speeds to a peak of 663 km/s and total field to 13 nT. G1 storm conditions followed a period of sustained southward Bz with values reaching as far south as -11 nT at 09/1845 UTC. A final period of G1 storm conditions was observed early on 10 Jul as influence from the CH HSS persisted. Quiet to unsettled levels on 11 Jul transitioned to quiet through the end of the reporting period as the solar wind returned to nominal levels.

## **Space Weather Outlook**

### **15 July - 10 August 2019**

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

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to range from normal background to high levels. High levels are expected from 15-18 Jul and 06-10 Aug; moderate levels are expected on 19-21 Jul; the remainder of the outlook period is expected to be at normal background levels. All enhancements in electron flux are expected due to the anticipation of multiple, recurrent CH HSSs.

Geomagnetic field activity is expected to range from quiet to active levels. Active levels are expected on 15-16 Jul and 05-06 Aug; unsettled levels are expected on 17 Jul, 28 Jul, 04 Aug and 07 Aug; the remainder of the outlook period is expected to be at quiet levels. All increases in geomagnetic activity are due to the anticipation of multiple, recurrent CH HSSs.



### *Daily Solar Data*

Date	Radio	Sun	Sunspot	X-ray		Flares							
	Flux	spot	Area	Background		X-ray			Optical				
	10.7cm	No.	(10 <sup>-6</sup> hemi.)	Flux		C	M	X	S	1	2	3	4
08 July	67	0	0	A6.9	0	0	0	0	0	0	0	0	0
09 July	68	0	0	A6.7	0	0	0	0	0	0	0	0	0
10 July	68	0	0	A7.1	0	0	0	0	0	0	0	0	0
11 July	67	0	0	A7.2	0	0	0	0	0	0	0	0	0
12 July	67	0	0	A7.1	0	0	0	0	0	0	0	0	0
13 July	66	0	0	A6.8	0	0	0	0	0	0	0	0	0
14 July	67	0	0	A6.7	0	0	0	0	0	0	0	0	0

### *Daily Particle Data*

Date	Proton Fluence (protons/cm <sup>2</sup> -day -sr)			Electron Fluence (electrons/cm <sup>2</sup> -day -sr)		
	>1 MeV	>10 MeV	>100 MeV	>0.6 MeV	>2MeV	>4 MeV
08 July	1.0e+05	2.1e+04	4.1e+03		2.0e+06	
09 July	2.5e+05	2.0e+04	3.6e+03		2.0e+06	
10 July	9.3e+05	2.0e+04	3.4e+03		2.1e+08	
11 July	4.4e+05	2.0e+04	3.5e+03		2.3e+08	
12 July	2.9e+05	2.0e+04	4.0e+03		2.8e+08	
13 July	4.1e+05	2.0e+04	3.7e+03		2.0e+08	
14 July	4.4e+05	2.1e+04	3.7e+03		1.6e+08	

### *Daily Geomagnetic Data*

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
08 July	7	2-2-0-2-2-0-3-3	4	1-2-1-1-0-0-2-2	9	3-2-1-1-1-0-4-3
09 July	16	3-3-3-3-2-3-4-3	19	2-3-4-4-5-2-3-1	17	3-2-2-2-2-3-5-4
10 July	13	2-3-5-3-2-1-1-2	41	2-4-7-6-5-3-2-2	15	2-4-5-3-2-2-1-2
11 July	9	3-3-3-1-2-1-1-2	18	2-3-6-4-2-1-1-1	8	3-2-3-2-1-1-1-1
12 July	5	1-2-2-2-2-0-1-1	22	0-2-3-5-3-1-2-6	5	1-2-2-2-1-1-1-1
13 July	6	0-1-1-2-3-2-2-2	7	1-1-2-3-2-3-1-1	6	0-1-1-2-2-2-2-2
14 July	6	2-1-1-1-2-1-2-3	5	2-1-1-1-1-1-2-2	7	2-1-1-1-1-1-1-2

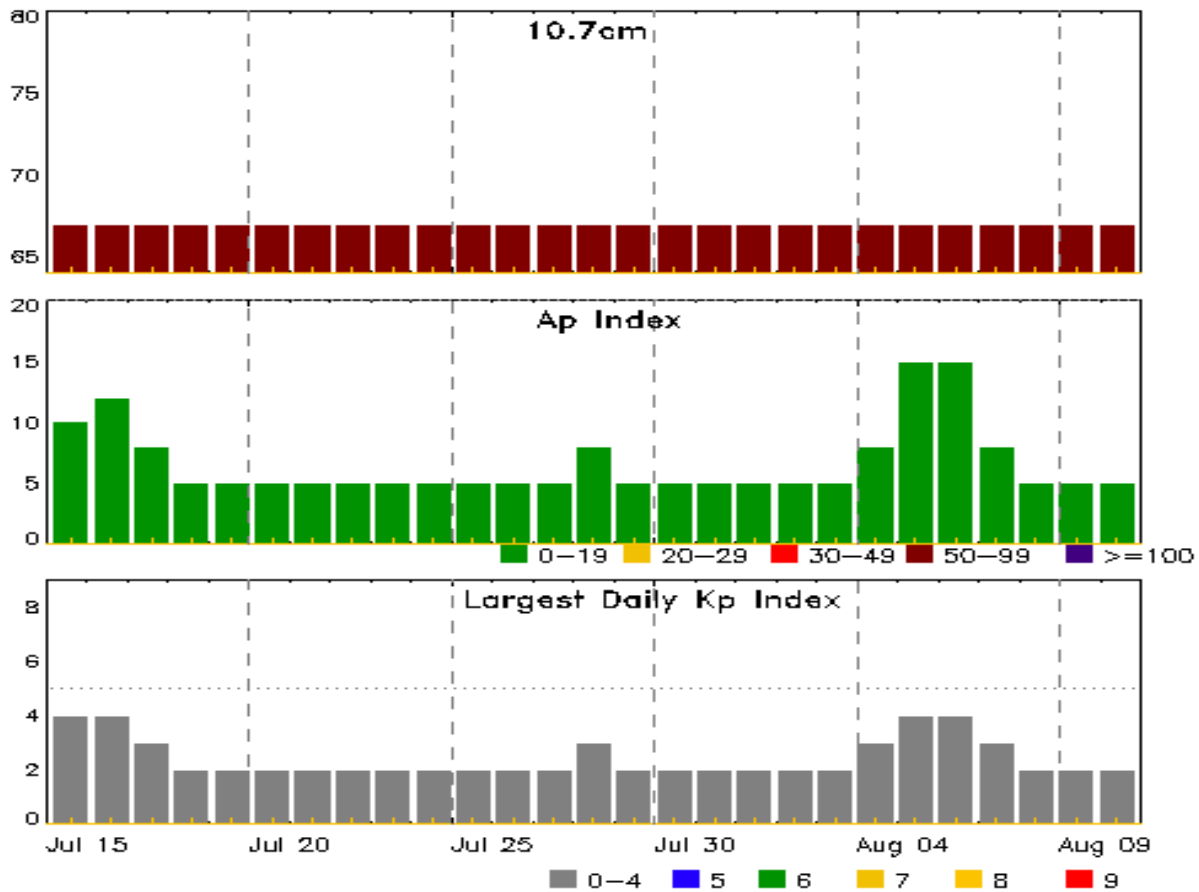


### *Alerts and Warnings Issued*

<b>Date &amp; Time of Issue UTC</b>	<b>Type of Alert or Warning</b>	<b>Date &amp; Time of Event UTC</b>
08 Jul 0719	SUMMARY: 10cm Radio Burst	08/0603 - 0605
08 Jul 1953	WARNING: Geomagnetic K = 4	08/1953 - 2359
08 Jul 2118	ALERT: Geomagnetic K = 4	08/2059
08 Jul 2340	WARNING: Geomagnetic K = 5	08/2339 - 09/0600
08 Jul 2349	EXTENDED WARNING: Geomagnetic K = 4	08/1953 - 09/0600
09 Jul 1828	WARNING: Geomagnetic K = 4	09/1830 - 10/0300
09 Jul 2009	ALERT: Geomagnetic K = 4	09/2008
09 Jul 2020	WARNING: Geomagnetic K = 5	09/2020 - 2359
09 Jul 2029	ALERT: Geomagnetic K = 5	09/2028
10 Jul 0254	EXTENDED WARNING: Geomagnetic K = 4	09/1830 - 10/1200
10 Jul 0522	WARNING: Geomagnetic K = 5	10/0521 - 1200
10 Jul 0727	ALERT: Geomagnetic K = 5	10/0726
10 Jul 1132	EXTENDED WARNING: Geomagnetic K = 4	09/1830 - 10/1800
10 Jul 1239	ALERT: Electron 2MeV Integral Flux $\geq 1000$ pfu	10/1230
11 Jul 0828	WARNING: Geomagnetic K = 4	11/0830 - 1500
11 Jul 0941	CONTINUED ALERT: Electron 2MeV Integral Flux $\geq 1000$ pfu	10/1230
12 Jul 1041	CONTINUED ALERT: Electron 2MeV Integral Flux $\geq 1000$ pfu	10/1230
13 Jul 1046	CONTINUED ALERT: Electron 2MeV Integral Flux $\geq 1000$ pfu	10/1230
14 Jul 1106	CONTINUED ALERT: Electron 2MeV Integral Flux $\geq 1000$ pfu	10/1230



## 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
15 Jul	67	10	4	29 Jul	67	5	2
16	67	12	4	30	67	5	2
17	67	8	3	31	67	5	2
18	67	5	2	01 Aug	67	5	2
19	67	5	2	02	67	5	2
20	67	5	2	03	67	5	2
21	67	5	2	04	67	8	3
22	67	5	2	05	67	15	4
23	67	5	2	06	67	15	4
24	67	5	2	07	67	8	3
25	67	5	2	08	67	5	2
26	67	5	2	09	67	5	2
27	67	5	2	10	67	5	2
28	67	8	3				

### ***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 Class	Optical		
	Begin	Max	End		Imp/	Location	Rgn
					Brtns	Lat CMD	#
No Flares Observed							

**No Flares Observed**



## *Region Summary*

Location		Sunspot Characteristics						Flares							
Date	Lat CMD	Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
		Lon	10 <sup>-6</sup> hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4
		<i>Region 2744</i>													
07 Jul	S27E38	209	20	4	Bxo	2	B								
08 Jul	S27E24	210	plage												
09 Jul	S27E10	211	plage												
10 Jul	S27W04	211	plage												
11 Jul	S27W18	212	plage												
12 Jul	S27W32	213	plage												
13 Jul	S27W46	214	plage												
14 Jul	S27W60	214	plage												
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 211

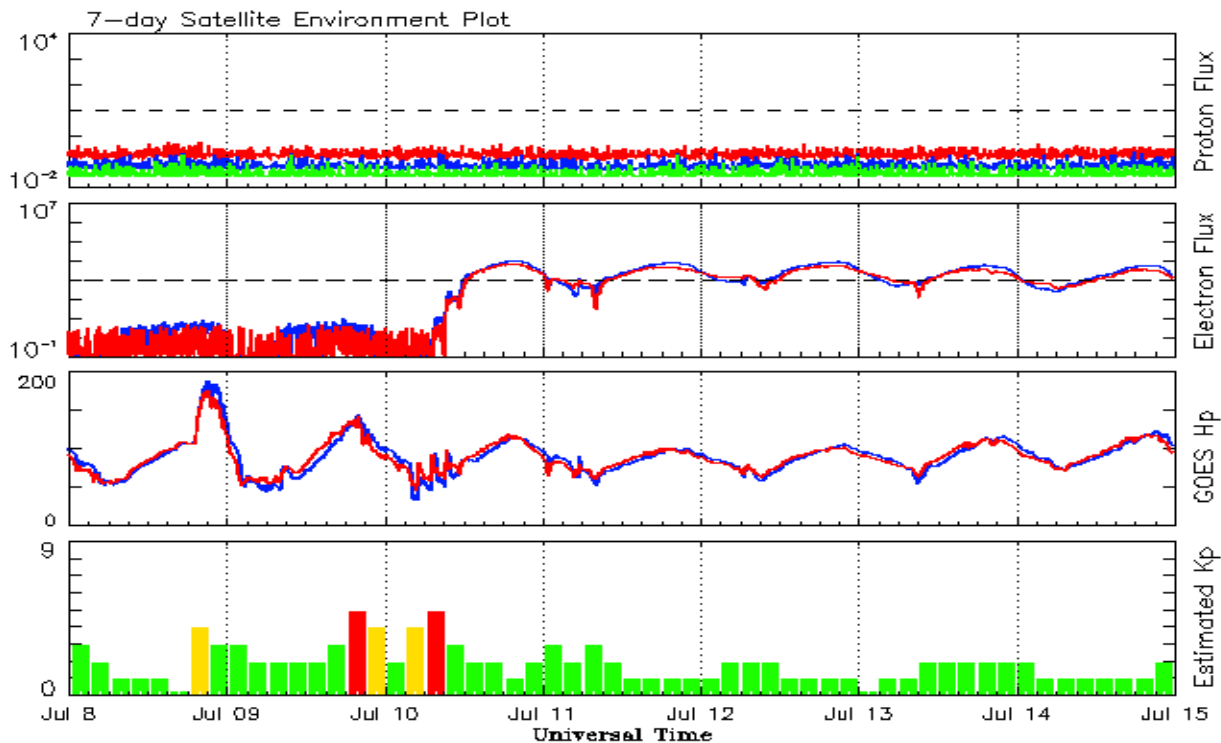


**Recent Solar Indices (preliminary)**  
**Observed monthly mean values**

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
<b>2017</b>									
July	18.8	10.7	0.59	20.8	12.6	77.7	76.8	9	11.0
August	25.0	19.6	0.80	19.7	11.8	77.9	76.3	12	10.7
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
<b>2018</b>									
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
<b>2019</b>									
January	16.0	4.6	0.29			71.6		6	
February		0.5				70.6		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	

**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 08 July 2019*

The proton flux plot contains the five-minute averaged integral proton flux (protons/cm<sup>2</sup>-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.

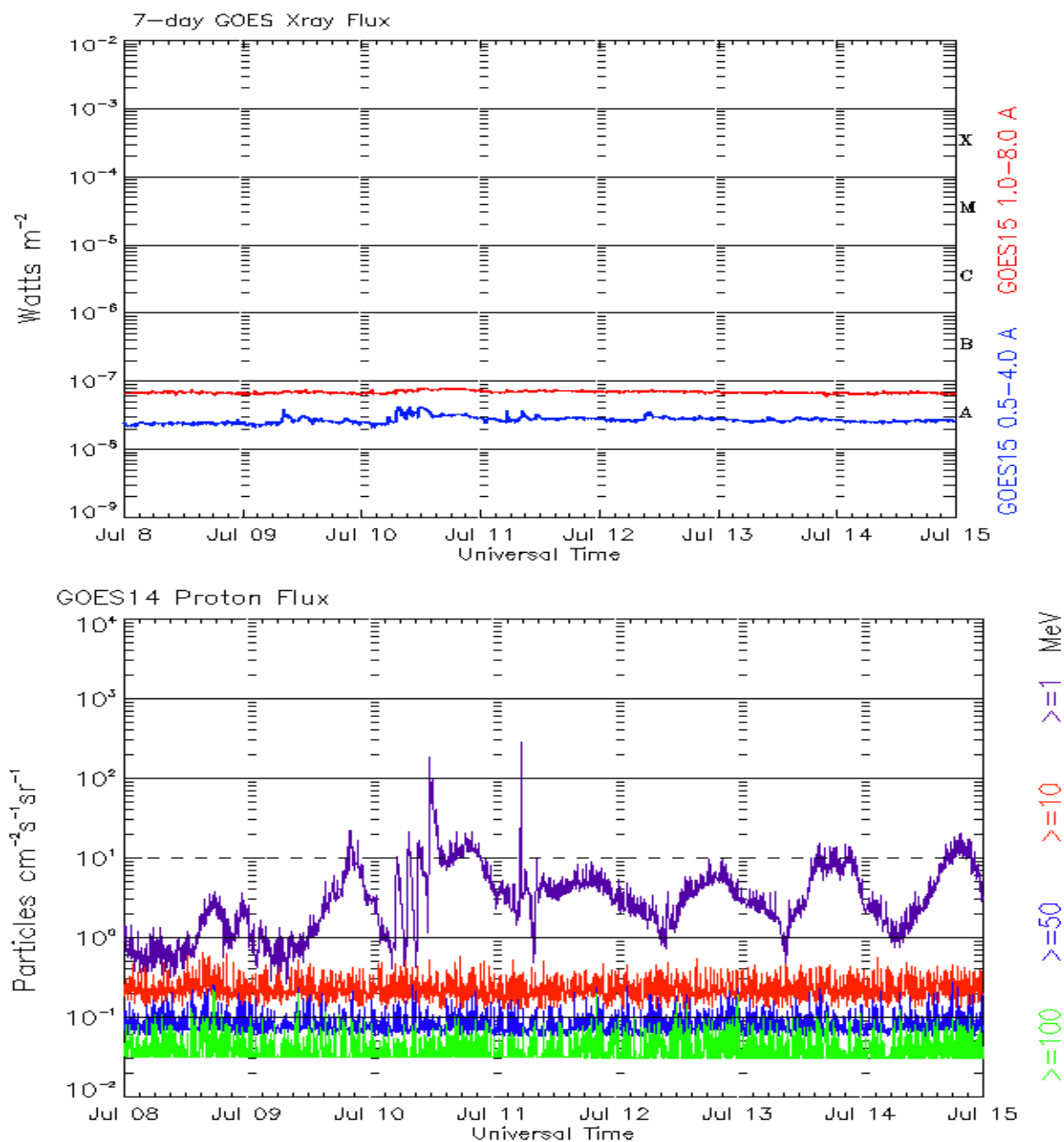
The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm<sup>2</sup>-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

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 08 July 2019*

The x-ray plots contains five-minute averages x-ray flux ( $\text{Watt/m}^2$ ) 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/ $\text{cm}^2$  -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.



## ***Preliminary Report and Forecast of Solar Geophysical Data (The Weekly)***

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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](mailto:SWPC.Webmaster@noaa.gov)

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

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