

**Space Weather Highlights**  
**08 October - 14 October 2018**

**SWPC PRF 2250**  
**15 October 2018**

Solar activity was very low this period. Regions 2724 (S08, L=126, class/area, Hrx/20 on 12 Oct) and 2725 (S11, L=113, class/area, Axx/10 on 14 Oct) were the only numbered sunspots on the visible disk but were quiet and stable throughout the period. No Earth-directed CMEs were observed during the summary period.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit reached high levels on 08-13 Oct then decreased to moderate levels on 14 Oct.

Geomagnetic field activity reached G1 (Minor) geomagnetic storm levels on 10 and 13 Oct, active conditions on 08-09 Oct, unsettled levels on 11 Oct, and quiet conditions on 12 and 14 Oct due to CH HSS influence.

**Space Weather Outlook**  
**15 October - 10 November 2018**

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

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to reach high levels on 15-25 Oct and 04-09 Nov with moderate flux levels expected throughout the remainder of the period.

Geomagnetic field activity is expected to reach G1 (Minor) geomagnetic storm levels on 19 Oct and 03-04 Nov with active levels expected on 18 Oct and 05-06 Nov due to the influence of multiple, recurrent CH HSSs.



### ***Daily Solar Data***

Date	Radio Flux 10.7cm	Sun spot No.	Sunspot Area (10 <sup>-6</sup> hemi.)	X-ray Background Flux	Flares							
					X-ray			Optical				
					C	M	X	S	1	2	3	4
08 October	69	0	0	A0.0	0	0	0	0	0	0	0	0
09 October	70	0	0	A0.0	0	0	0	0	0	0	0	0
10 October	70	0	0	A0.0	0	0	0	0	0	0	0	0
11 October	71	0	0	A0.0	0	0	0	0	0	0	0	0
12 October	72	11	20	A0.0	0	0	0	1	0	0	0	0
13 October	72	22	20	A0.0	0	0	0	1	0	0	0	0
14 October	72	22	20	A0.0	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 October		3.4e+06	1.5e+04	3.2e+03		2.4e+08
09 October		4.3e+06	1.7e+04	3.6e+03		1.0e+09
10 October		2.8e+06	1.6e+04	3.6e+03		8.9e+08
11 October		1.7e+06	1.6e+04	3.6e+03		1.1e+09
12 October		1.5e+06	1.6e+04	3.8e+03		1.8e+09
13 October		1.5e+06	1.7e+04	3.5e+03		8.7e+08
14 October		3.8e+05	1.6e+04	3.3e+03		5.6e+06

### ***Daily Geomagnetic Data***

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
08 October	16	4-4-3-3-3-1-2	53	3-5-6-6-7-5-2-1	21	4-4-4-3-4-3-2-2
09 October	14	2-3-3-3-3-3-3	39	2-3-5-6-6-5-3-3	17	3-3-3-4-3-4-3-3
10 October	12	3-1-1-2-3-3-4-2	33	2-1-1-6-6-5-4-3	18	4-1-1-2-3-3-5-3
11 October	7	3-2-2-1-2-1-2-1	13	2-2-4-3-4-2-2-1	9	3-3-3-2-2-2-2-1
12 October	4	1-2-2-1-1-1-1-1	10	1-1-3-5-2-1-0-1	5	1-2-2-1-1-1-1-1
13 October	12	1-2-1-1-2-4-3-4	15	1-1-1-0-1-6-3-3	14	1-3-1-1-2-5-4-4
14 October	4	1-1-1-1-2-2-1-1	8	2-1-1-4-3-1-0-1	7	2-1-1-2-2-2-1-2



### *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 Oct 0004	ALERT: Geomagnetic K = 5	07/2359
08 Oct 0855	EXTENDED WARNING: Geomagnetic K = 5	07/1555 - 08/2100
08 Oct 0856	EXTENDED WARNING: Geomagnetic K = 4	07/1100 - 08/2359
08 Oct 1348	ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	08/1345
09 Oct 0730	WARNING: Geomagnetic K = 4	09/0730 - 1500
09 Oct 0926	CONTINUED ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	08/1345
09 Oct 1200	ALERT: Geomagnetic K = 4	09/1159
09 Oct 1602	WARNING: Geomagnetic K = 4	09/1600 - 2300
09 Oct 1630	ALERT: Geomagnetic K = 4	09/1630
10 Oct 0148	WARNING: Geomagnetic K = 4	10/0148 - 0600
10 Oct 0302	ALERT: Geomagnetic K = 4	10/0259
10 Oct 0859	CONTINUED ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	08/1345
10 Oct 1229	WARNING: Geomagnetic K = 4	10/1230 - 1800
10 Oct 1343	ALERT: Geomagnetic K = 4	10/1342
10 Oct 1759	EXTENDED WARNING: Geomagnetic K = 4	10/1230 - 2300
10 Oct 2023	WARNING: Geomagnetic K = 5	10/2022 - 2300
10 Oct 2032	ALERT: Geomagnetic K = 5	10/2022
11 Oct 0138	WARNING: Geomagnetic K = 4	11/0140 - 0600
11 Oct 0859	CONTINUED ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	08/1345
12 Oct 0239	ALERT: Type II Radio Emission	12/0152
12 Oct 0900	CONTINUED ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	08/1345
13 Oct 0900	CONTINUED ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	08/1345
13 Oct 1655	WARNING: Geomagnetic K = 4	13/1655 - 2359
13 Oct 1710	ALERT: Geomagnetic K = 4	13/1709
13 Oct 1716	WARNING: Geomagnetic K = 5	13/1716 - 2359
13 Oct 1757	ALERT: Geomagnetic K = 5	13/1756

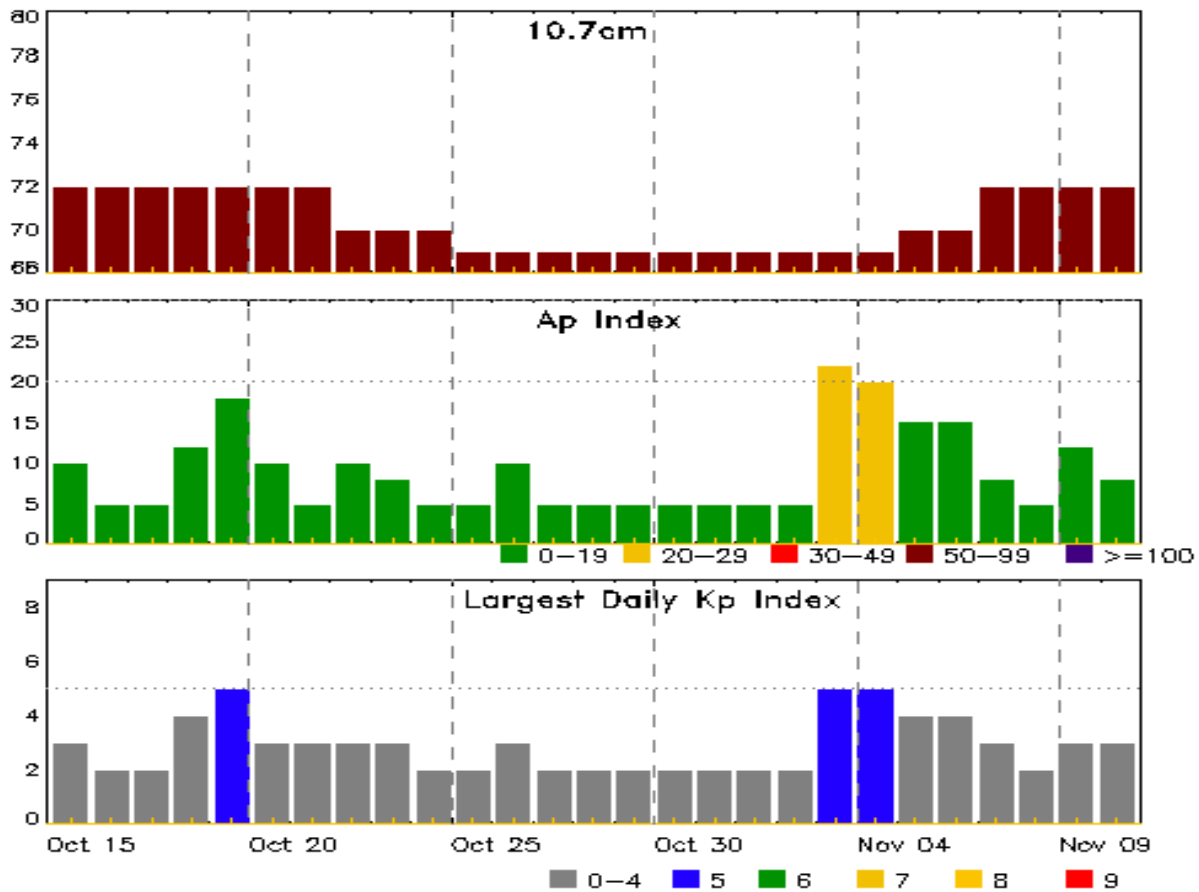


### *Alerts and Warnings Issued*

<b>Date &amp; Time of Issue UTC</b>	<b>Type of Alert or Warning</b>	<b>Date &amp; Time of Event UTC</b>
13 Oct 1828	WATCH: Geomagnetic Storm Category G1 predicted	
13 Oct 2347	EXTENDED WARNING: Geomagnetic K = 5	13/1716 - 14/0600
13 Oct 2347	EXTENDED WARNING: Geomagnetic K = 4	13/1655 - 14/1200



## 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
15 Oct	72	10	3	29 Oct	69	5	2
16	72	5	2	30	69	5	2
17	72	5	2	31	69	5	2
18	72	12	4	01 Nov	69	5	2
19	72	18	5	02	69	5	2
20	72	10	3	03	69	22	5
21	72	5	3	04	69	20	5
22	70	10	3	05	70	15	4
23	70	8	3	06	70	15	4
24	70	5	2	07	72	8	3
25	69	5	2	08	72	5	2
26	69	10	3	09	72	12	3
27	69	5	2	10	72	8	3
28	69	5	2				

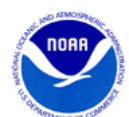
### ***Energetic Events***

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

**No Events Observed**

### ***Flare List***

Date	Time			X-ray Class	Optical		
	Begin	Max	End		Imp/ Brtns	Location Lat CMD	Rgn #
10 Oct	0504	0508	0509	A1.8			
10 Oct	0815	0822	0831	B1.7			2724
12 Oct	0143	0150	0156	B2.1			2724
12 Oct	1404	1408	1413	B7.1	SF	S06E61	2724
13 Oct	1328	1334	1342	B2.3	SF	S11E55	2724



## ***Region Summary***

Sunspot Characteristics and Flares															
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

### ***Region 2724***

12 Oct	S08E57	126	20	1	Hrx	1	A				1				
13 Oct	S08E40	130	10	2	Hsx	1	A				1				
14 Oct	S07E27	130	10	1	Axx	1	A								
								0	0	0	2	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 130

### ***Region 2725***

13 Oct	S10E59	111	10	1	Axx	1	A								
14 Oct	S11E44	113	10	1	Axx	1	A								
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 113



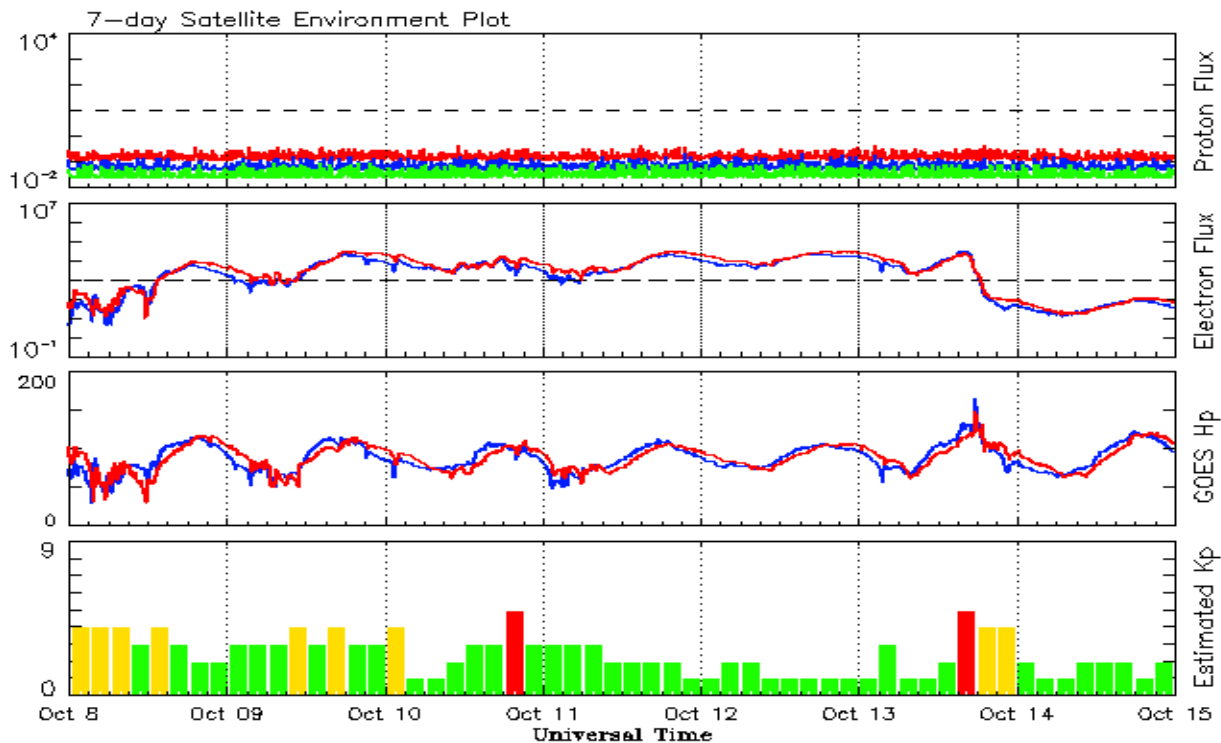
**Recent Solar Indices (preliminary)**  
**Observed monthly mean values**

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>2016</b>									
October	30.0	20.0	0.67	31.1	18.9	86.1	82.5	16	11.6
November	22.4	12.8	0.57	29.4	17.9	78.7	81.1	10	11.6
December	17.6	11.1	0.64	28.1	17.1	75.1	80.0	10	11.4
<b>2017</b>									
January	28.1	15.7	0.55	27.3	16.7	77.4	79.4	10	11.3
February	22.0	15.8	0.71	25.5	15.9	76.9	78.7	10	11.3
March	25.4	10.6	0.42	24.6	15.4	74.6	78.6	15	11.5
April	30.4	19.4	0.64	24.3	14.9	80.9	78.4	13	11.5
May	18.1	11.3	0.62	23.1	14.0	73.5	77.7	9	11.3
June	18.0	11.5	0.64	22.0	13.3	74.8	77.3	7	11.3
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			70.0		7	
May	15.0	7.9	0.53			70.9		8	
June	19.7	9.4	0.48			72.5		7	
July	1.3	1.0	0.77			69.7		6	
August	10.0	5.3	0.53			69.1		10	
September	5.7	2.0	0.35			68.3		9	

**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 October 2018*

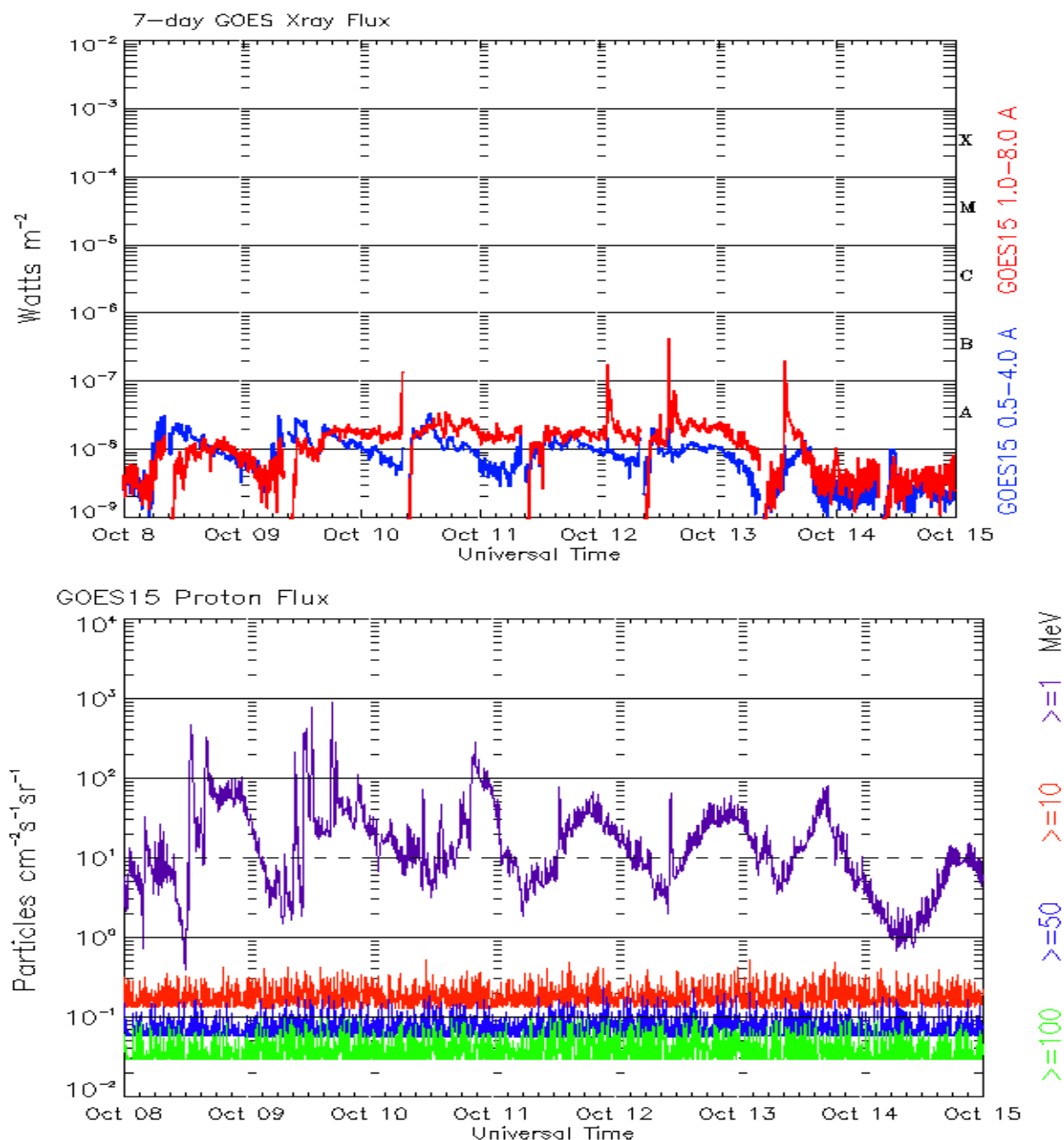
The proton flux plot contains the five-minute averaged integral proton flux (protons/cm<sup>2</sup>-sec -sr) as measured by the SWPC Primary GOES satellite, near West 75, for each of three energy thresholds: greater than 10, 50, and 100 MeV.

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 October 2018*

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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