

**Space Weather Highlights**  
**08 April - 14 April 2019**

**SWPC PRF 2276**  
**15 April 2019**

Solar activity was very low throughout the period. Region 2738 (N06, L=297, class/area Cho/300 on 12 Apr) produced numerous B-class flare activity and low frequency radio burst activity. No Earth-directed CMEs were observed.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit reached high levels throughout the period.

Geomagnetic field activity was at quiet to unsettled levels on 08-13 April due to negative polarity CH HSS influence. Isolated active levels were observed early on 08-10 April. Quiet levels were observed on 14 April.

**Space Weather Outlook**  
**15 April - 11 May 2019**

Solar activity is expected to be at predominately very low levels throughout the outlook period. A slight chance for low level activity is possible through 24 April from Region 2738 and again from 04-11 May upon the return of old Region 2738 (N06, L=297).

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to reach high levels from 15-18 April and again from 02-11 May due to CH HSS influence. Normal to moderate levels are expected for the remainder of the outlook period.

Geomagnetic field activity is expected to reach unsettled levels on 24-25, 27-28 and 30 April and 01-02 and 05-07 May, all due to negative polarity CH HSS influence. Quiet conditions are expected throughout the remainder of the outlook period.



### *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 April	79	12	250	A6.0	0	0	0	2	0	0	0	0	0
09 April	79	12	300	A6.0	0	0	0	1	0	0	0	0	0
10 April	78	13	350	A2.2	0	0	0	0	0	0	0	0	0
11 April	79	13	260	A4.1	0	0	0	0	0	0	0	0	0
12 April	77	14	300	A2.4	0	0	0	1	0	0	0	0	0
13 April	78	14	300	A2.8	0	0	0	0	0	0	0	0	0
14 April	75	11	250	A0.0	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 April	4.7e+05	1.8e+04	3.6e+03		1.1e+08	
09 April	9.6e+05	1.8e+04	4.0e+03		1.3e+08	
10 April	5.4e+05	1.9e+04	3.5e+03		2.5e+07	
11 April	5.2e+05	1.8e+04	3.4e+03		9.0e+07	
12 April	3.9e+05	1.7e+04	3.8e+03		9.9e+07	
13 April	5.9e+05	1.7e+04	3.5e+03		1.7e+08	
14 April	6.1e+05	1.8e+04	3.7e+03		1.9e+08	

### *Daily Geomagnetic Data*

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
08 April	12	2-4-3-2-3-2-2-2	24	2-4-4-4-6-3-2-1	13	3-4-3-2-3-3-2-2
09 April	11	4-2-3-3-2-1-1-2	14	2-2-4-4-3-3-2-2	11	4-2-3-3-2-2-2-2
10 April	10	3-3-3-1-3-2-2-1	19	4-4-4-2-4-4-2-1	14	4-4-3-1-2-3-3-2
11 April	6	1-2-3-2-2-2-1-0	11	2-2-2-4-3-3-1-1	7	2-3-2-2-2-2-1-1
12 April	7	3-2-1-1-2-2-2-2	14	2-2-3-3-5-2-2-2	9	3-2-2-1-2-1-2-3
13 April	7	3-3-1-1-2-1-1-1	4	1-3-2-0-1-0-1-1	8	3-3-2-1-1-1-2-1
14 April	3	0-2-2-0-1-1-0-1	3	1-1-3-1-0-0-0-0	2	0-2-2-1-0-1-0-1

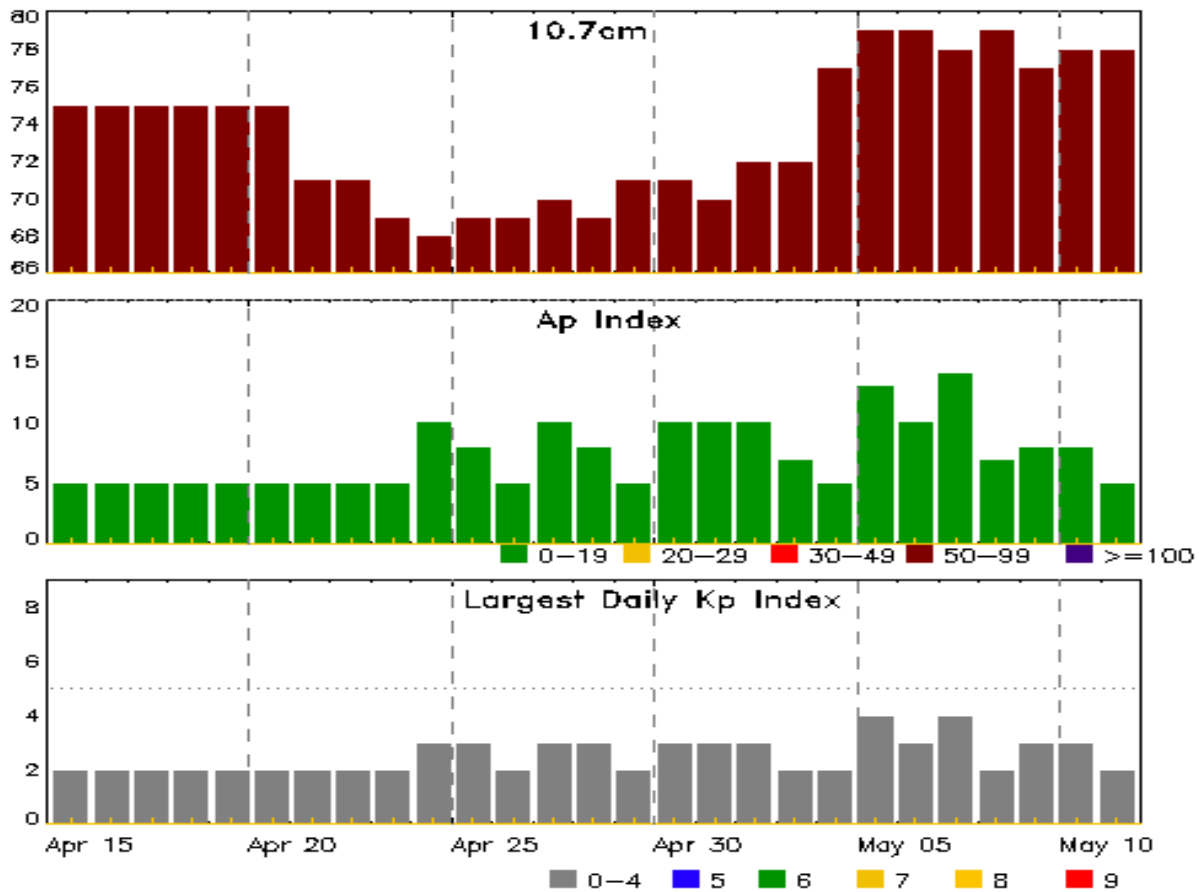


### *Alerts and Warnings Issued*

<b>Date &amp; Time of Issue UTC</b>	<b>Type of Alert or Warning</b>	<b>Date &amp; Time of Event UTC</b>
08 Apr 0438	WARNING: Geomagnetic K = 4	08/0440 - 1200
08 Apr 0600	ALERT: Geomagnetic K = 4	08/0559
08 Apr 0720	ALERT: Type II Radio Emission	08/0437
08 Apr 1351	WARNING: Geomagnetic K = 4	08/1350 - 2359
08 Apr 1606	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	05/1400
09 Apr 0234	WARNING: Geomagnetic K = 4	09/0234 - 1200
09 Apr 0245	ALERT: Geomagnetic K = 4	09/0240
09 Apr 0905	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	05/1400
10 Apr 0233	WARNING: Geomagnetic K = 4	10/0234 - 0900
10 Apr 0302	ALERT: Geomagnetic K = 4	10/0259
10 Apr 1804	WARNING: Geomagnetic K = 4	10/1800 - 11/0600
11 Apr 1506	ALERT: Electron 2MeV Integral Flux >= 1000pfu	11/1450
12 Apr 1440	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	11/1450
13 Apr 0052	WARNING: Geomagnetic K = 4	13/0051 - 1200
13 Apr 1106	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	11/1450
14 Apr 0900	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	11/1450



## 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 Apr	75	5	2	29 Apr	71	5	2
16	75	5	2	30	71	10	3
17	75	5	2	01 May	70	10	3
18	75	5	2	02	72	10	3
19	75	5	2	03	72	7	2
20	75	5	2	04	77	5	2
21	71	5	2	05	79	13	4
22	71	5	2	06	79	10	3
23	69	5	2	07	78	14	4
24	68	10	3	08	79	7	2
25	69	8	3	09	77	8	3
26	69	5	2	10	78	8	3
27	70	10	3	11	78	5	2
28	69	8	3				

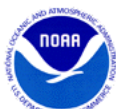
### ***Energetic Events***

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

**No Events Observed**

### ***Flare List***

Date	Time			X-ray Class	Optical		
	Begin	Max	End		Imp/ Brtns	Location Lat CMD	Rgn #
08 Apr	0615	0625	0635	B2.7			2738
08 Apr	0949	0952	0954	B1.0			2738
08 Apr	1355	1400	1408	B5.6	SF	N06E68	2738
08 Apr	1550	1553	1557	B2.6	SF	N06E68	2738
08 Apr	1601	1613	1617	B3.3			2738
08 Apr	2220	2225	2229	B1.7			2738
09 Apr	0021	0027	0030		SF	N06E68	2738
09 Apr	0517	0525	0533	B3.3			2738
09 Apr	2322	2326	2331	B1.3			2738
09 Apr	2344	2351	2358	B2.0			2738
10 Apr	0202	0208	0215	B1.3			2738
10 Apr	0459	0524	0601	B2.0			
10 Apr	1651	1711	1734	B2.1			2738
11 Apr	1712	1723	1735	B1.2			2738
12 Apr	0920	0927	0932	B3.6	SF	N09E17	2738
12 Apr	1119	1122	1127	B1.7			2738
12 Apr	1129	1137	1147	B7.1			2738
13 Apr	0224	0228	0231	B1.3			2738
13 Apr	0345	0349	0353	B1.0			2738
14 Apr	1859	1902	1904	B1.4			2738
14 Apr	2044	2047	2049	B1.3			2738
14 Apr	2108	2111	2114	B1.4			2738



## Region Summary

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

### Region 2737

31 Mar	N12E43	59	10	33	Bxo	4	B								
01 Apr	N12E29	61	30	6	Cro	7	B								
02 Apr	N12E14	63	40	8	Cao	8	B								
03 Apr	N13E02	61	10	6	Bxo	7	B								
04 Apr	N13W12	61	plage												
05 Apr	N13W26	63	plage												
06 Apr	N11W37	61	plage												
07 Apr	N11W51	62	plage												
08 Apr	N11W65	62	plage												
09 Apr	N11W79	63	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.

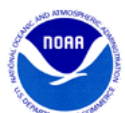
Absolute heliographic longitude: 61

### Region 2738

07 Apr	N06E72	298	300	3	Hsx	1	A								
08 Apr	N06E60	297	250	3	Hhx	2	A				2				
09 Apr	N06E46	298	300	4	Cho	2	B				1				
10 Apr	N06E33	298	350	4	Cho	3	B								
11 Apr	N06E20	298	260	4	Hhx	3	A								
12 Apr	N06E07	297	300	5	Cho	4	B				1				
13 Apr	N06W06	297	300	5	Cho	4	B								
14 Apr	N06W19	297	250	6	Hhx	1	A								
								0	0	0	4	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 297

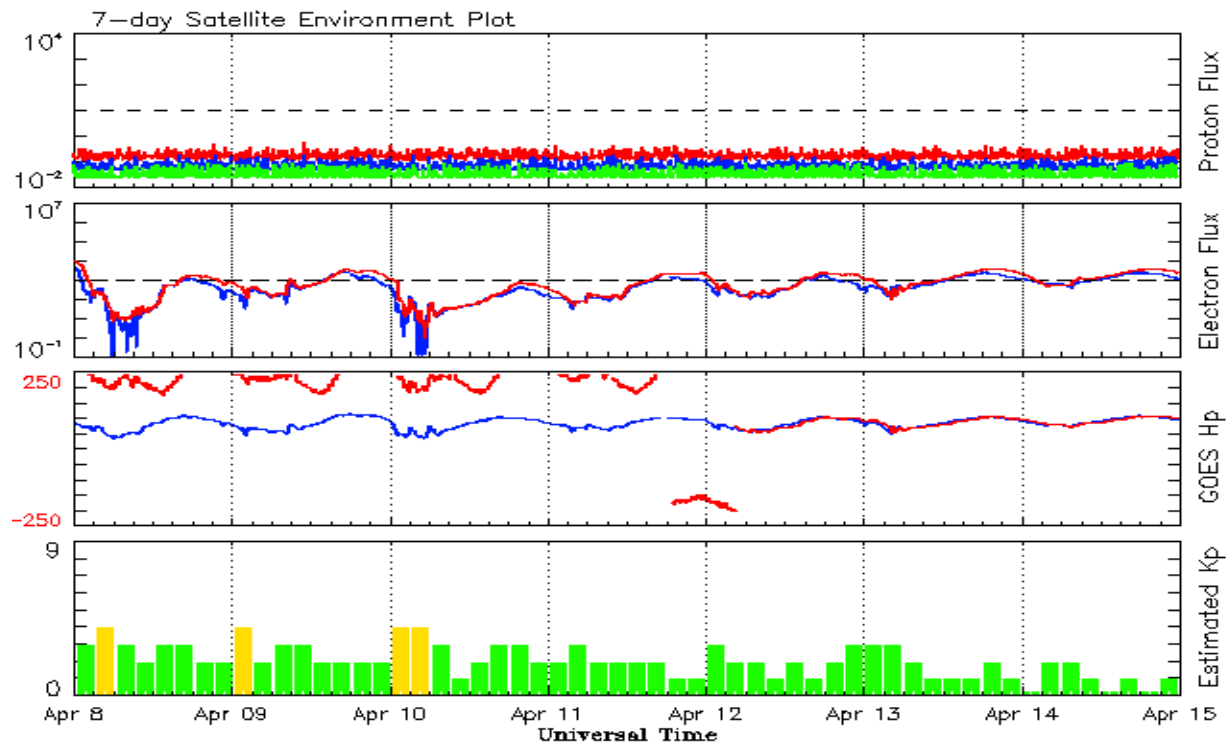


**Recent Solar Indices (preliminary)**  
**Observed monthly mean values**

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>									
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	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	4.3	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	4.0	68.3	70.1	9	7.3
October	6.9	2.9	0.42			69.5		7	
November	7.3	2.9	0.48			68.9		6	
December	5.6	1.9	0.34			70.0		7	
<b>2019</b>									
January	16.0	4.7	0.29			71.6		6	
February		0.5				70.6		7	
March	14.8	5.7	0.39			71.5		6	

**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 April 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.

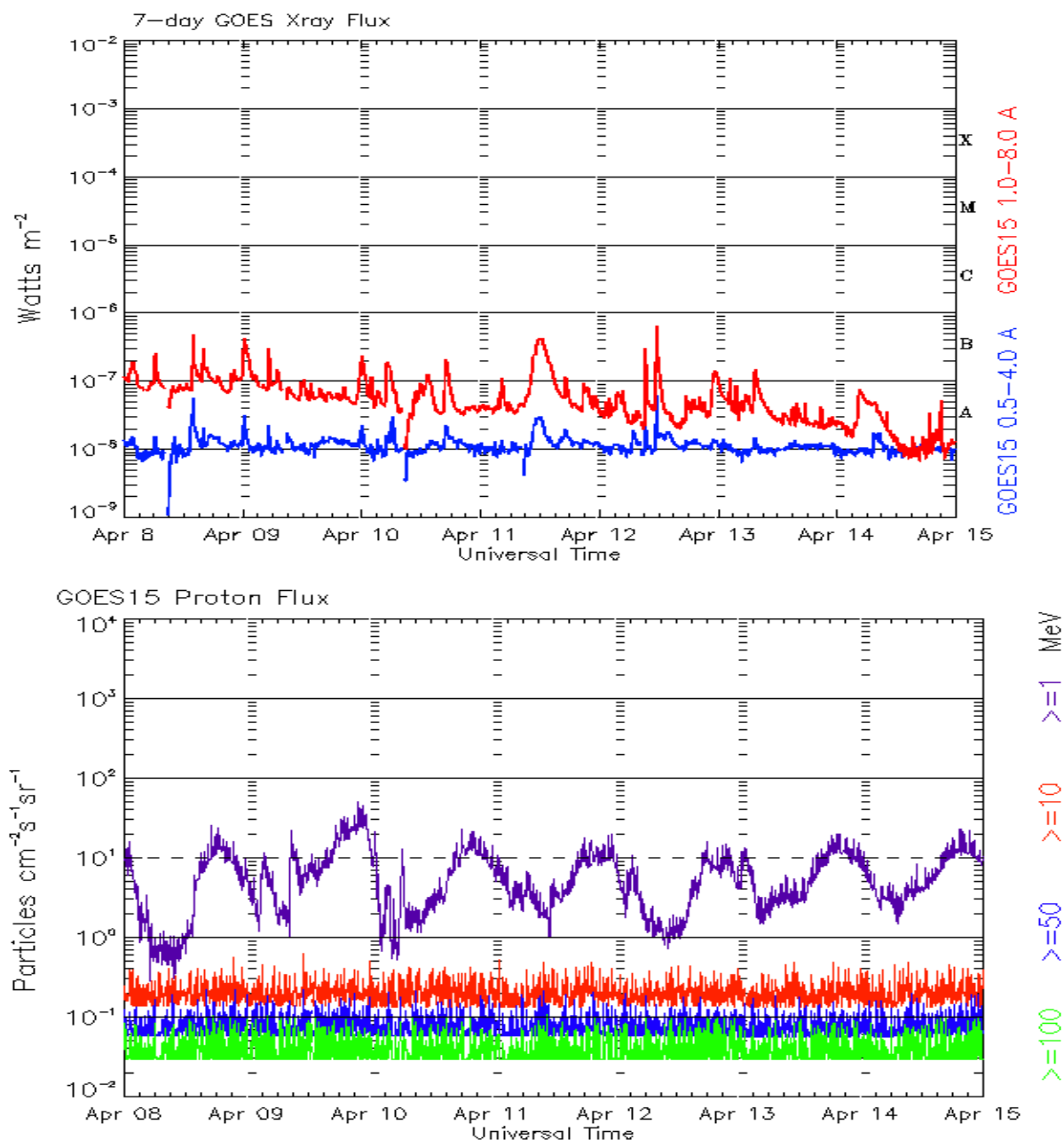
The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm<sup>2</sup>-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

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. Hp 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 April 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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<http://spaceweather.gov/ftpmenu/> -- Some content as ascii text

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