

**Space Weather Highlights**  
**23 October - 29 October 2017**

**SWPC PRF 2200**  
**30 October 2017**

Solar activity was at very low levels. The largest and only event of the period was a B1 flare at 27/0044 UTC from Region 2686 (N13, L=108, class/area Hax/030 on 27 Oct). No Earth-directed coronal mass ejections were observed during the period.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit reached moderate levels on 23 Oct with high levels on 24-29 Oct. The largest flux of the period was 3,103 pfu observed at 29/1510 UTC.

Geomagnetic field activity ranged from quiet to G1 (Minor) storm levels. The period began under nominal solar wind conditions with wind speeds ranging between 330 to 415 km/s and total field measurements under 7 nT. The geomagnetic field was at quiet to unsettled levels on 23 Oct. At 24/0730 UTC, wind speeds began to increase and total field became enhanced due to the arrival of a corotating interaction region (CIR) in advance of a recurrent, positive polarity coronal hole high speed stream (CH HSS). Wind speed increase to a period high of 675 km/s at 25/1945, total field achieved a max of 15 nT at 24/1140 UTC and the Bz component of the interplanetary magnetic field dropped to a low of -10 nT at 24/1017 UTC as a result of this feature. The geomagnetic field responded with quiet to G1 (Minor) storm levels on 24-25 Oct and quiet to active levels on 26 Oct. The remainder of the period was indicative of waning CH HSS influence with decreasing wind speeds and a less enhanced total field. Quiet to unsettled conditions were observed on 27 Oct and quiet conditions prevailed on 28-29 Oct.

**Space Weather Outlook**  
**30 October - 25 November 2017**

Solar activity is expected to be at very low levels with a slight chance for C-class flares on 30 Oct - 04 Nov and 15-25 Nov due to flare potential from Regions 2685 (S09, L=131, class/area Hax/070 on 22 Oct) and 2686. Very low levels are expected on 05-14 Nov.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is likely to be at high levels on 30 Oct - 01 Nov, 03-06, 08-15, 17-18, and 21-25 Nov with very high levels on 11-14 Nov due to CH HSS influence.

Geomagnetic field activity is expected to be at unsettled to active levels on 02-05, 07-12, 15-17, 20-22 Nov, with G1 (Minor) storm levels likely on 07-11, 20-22 Nov and G2 (Moderate) levels likely on 09 Nov due to recurrent CH HSS effects.



### *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
23 October	78	23	90	A7.3	0	0	0	0	0	0	0	0
24 October	78	23	90	A7.1	0	0	0	0	0	0	0	0
25 October	79	24	70	A7.7	0	0	0	0	0	0	0	0
26 October	77	23	50	A7.5	0	0	0	0	0	0	0	0
27 October	76	23	60	A6.6	0	0	0	0	0	0	0	0
28 October	75	22	20	A6.0	0	0	0	0	0	0	0	0
29 October	75	23	20	A5.8	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
	23 October		2.3e+07	1.4e+04	3.4e+03	
24 October		7.6e+07	1.4e+04	3.2e+03		2.8e+07
25 October		1.1e+07	1.4e+04	3.1e+03		3.5e+07
26 October		2.9e+08	1.5e+04	3.4e+03		7.2e+07
27 October		2.1e+07	1.5e+04	3.6e+03		7.5e+07
28 October		5.9e+06	1.4e+04	3.5e+03		1.1e+08
29 October		1.8e+08	1.4e+04	3.3e+03		1.5e+08

### *Daily Geomagnetic Data*

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	23 October	3	2-0-1-1-1-1-1-1	7	1-1-2-4-3-0-0-0	6
24 October	13	1-2-2-2-4-3-2-4	28	1-0-2-4-6-6-3-3	18	2-1-2-3-4-5-3-4
25 October	15	3-4-4-3-2-2-2-3	35	4-4-7-5-3-2-2-2	21	4-4-5-3-2-3-3-4
26 October	16	4-2-4-4-3-3-2-1	41	2-2-5-6-6-6-3-2	20	4-2-4-4-4-4-3-1
27 October	4	2-2-1-1-1-0-2-1	4	1-1-1-3-1-0-1-1	5	3-1-1-1-0-0-2-2
28 October	5	1-2-2-2-1-1-1-1	13	1-1-5-5-1-0-0-0	6	2-2-2-2-1-1-1-1
29 October	3	1-2-0-1-2-1-1-0	2	1-1-1-2-1-0-0-0	4	1-2-1-1-1-1-1-0

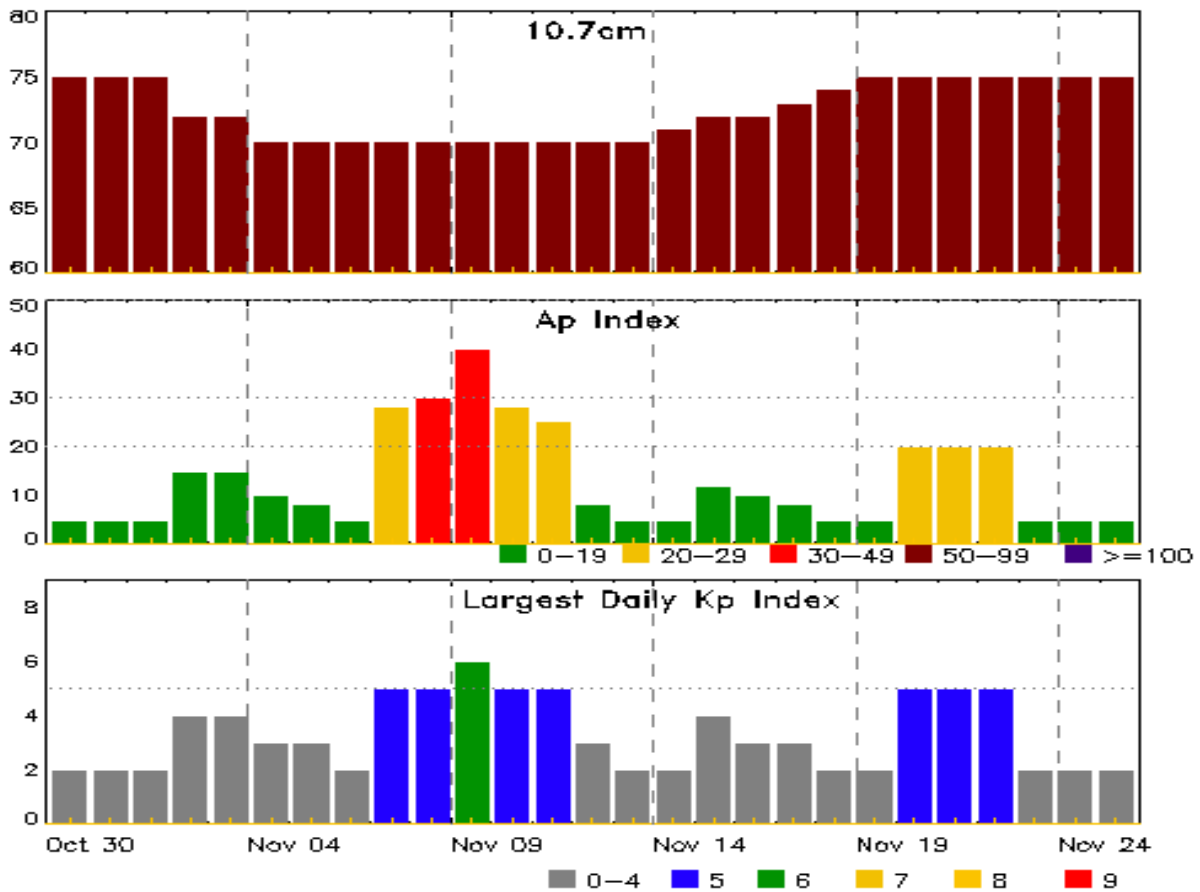


## *Alerts and Warnings Issued*

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
23 Oct 2017	WATCH: Geomagnetic Storm Category G2 predicted	
24 Oct 1217	WARNING: Geomagnetic K = 4	24/1216 - 1600
24 Oct 1254	ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	24/1245
24 Oct 1436	ALERT: Geomagnetic K = 4	24/1435
24 Oct 1438	EXTENDED WARNING: Geomagnetic K = 4	24/1216 - 2300
24 Oct 1439	WARNING: Geomagnetic K = 5	24/1438 - 2100
24 Oct 1800	ALERT: Geomagnetic K = 5	24/1759
24 Oct 2045	EXTENDED WARNING: Geomagnetic K = 4	24/1216 - 25/1200
24 Oct 2046	EXTENDED WARNING: Geomagnetic K = 5	24/1438 - 25/0600
25 Oct 0800	WARNING: Geomagnetic K = 5	25/0800 - 1500
25 Oct 0856	EXTENDED WARNING: Geomagnetic K = 4	24/1216 - 25/1800
25 Oct 0859	ALERT: Geomagnetic K = 5	25/0859
25 Oct 1752	CONTINUED ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	24/1245
25 Oct 1755	EXTENDED WARNING: Geomagnetic K = 4	24/1216 - 26/0600
26 Oct 0555	EXTENDED WARNING: Geomagnetic K = 4	24/1216 - 26/1200
26 Oct 0851	CONTINUED ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	24/1245
26 Oct 1114	EXTENDED WARNING: Geomagnetic K = 4	24/1216 - 26/1800
26 Oct 1253	WARNING: Geomagnetic K = 5	26/1253 - 2100
26 Oct 1255	EXTENDED WARNING: Geomagnetic K = 4	24/1216 - 27/0600
27 Oct 1336	CONTINUED ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	24/1245
28 Oct 0926	CONTINUED ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	24/1245
29 Oct 0746	CONTINUED ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	24/1245



## 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
30 Oct	75	5	2	13 Nov	70	5	2
31	75	5	2	14	71	5	2
01 Nov	75	5	2	15	72	12	4
02	72	15	4	16	72	10	3
03	72	15	4	17	73	8	3
04	70	10	3	18	74	5	2
05	70	8	3	19	75	5	2
06	70	5	2	20	75	20	5
07	70	28	5	21	75	20	5
08	70	30	5	22	75	20	5
09	70	40	6	23	75	5	2
10	70	28	5	24	75	5	2
11	70	25	5	25	75	5	2
12	70	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 #	245	2695	II	IV

**No Events Observed**

### ***Flare List***

Date	Time			X-ray Class	Optical			Rgn #
	Begin	Max	End		Imp/ Brtns	Location Lat CMD	Rgn #	
27 Oct	0036	0044	0050	B1.8				2686



## Region Summary

Date	Location		Sunspot Characteristics					Flares															
	Lat CMD	Lon	Helio 10 <sup>-6</sup> hemi.	Area	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical											
									C	M	X	S	1	2	3	4							
<b>Region 2685</b>																							
20 Oct	S10E85	129	plage									1											
21 Oct	S11E74	128	50	2	Hax	1	A																
22 Oct	S09E58	131	70	2	Hax	3	A																
23 Oct	S09E45	130	60	2	Hax	1	A																
24 Oct	S09E31	131	60	2	Hsx	1	A																
25 Oct	S09E17	132	50	2	Hsx	2	A																
26 Oct	S09E04	132	30	1	Hsx	1	A																
27 Oct	S09W09	132	30	1	Hrx	1	A																
28 Oct	S08W22	131	10	1	Hrx	1	A																
29 Oct	S09W34	130	10	1	Axx	1	A																
												0	1	0	0	0	0	0	0	0	0		

Still on Disk.

Absolute heliographic longitude: 132

### Region 2686

23 Oct	N12E67	108	30	2	Hax	2	A														
24 Oct	N12E53	109	30	2	Hax	2	A														
25 Oct	N12E39	110	20	1	Hsx	2	A														
26 Oct	N12E27	109	20	1	Hrx	2	A														
27 Oct	N13E15	108	30	2	Hax	2	A														
28 Oct	N13E02	108	10	1	Hrx	1	A														
29 Oct	N13W12	108	10	1	Hrx	2	A														
												0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 108

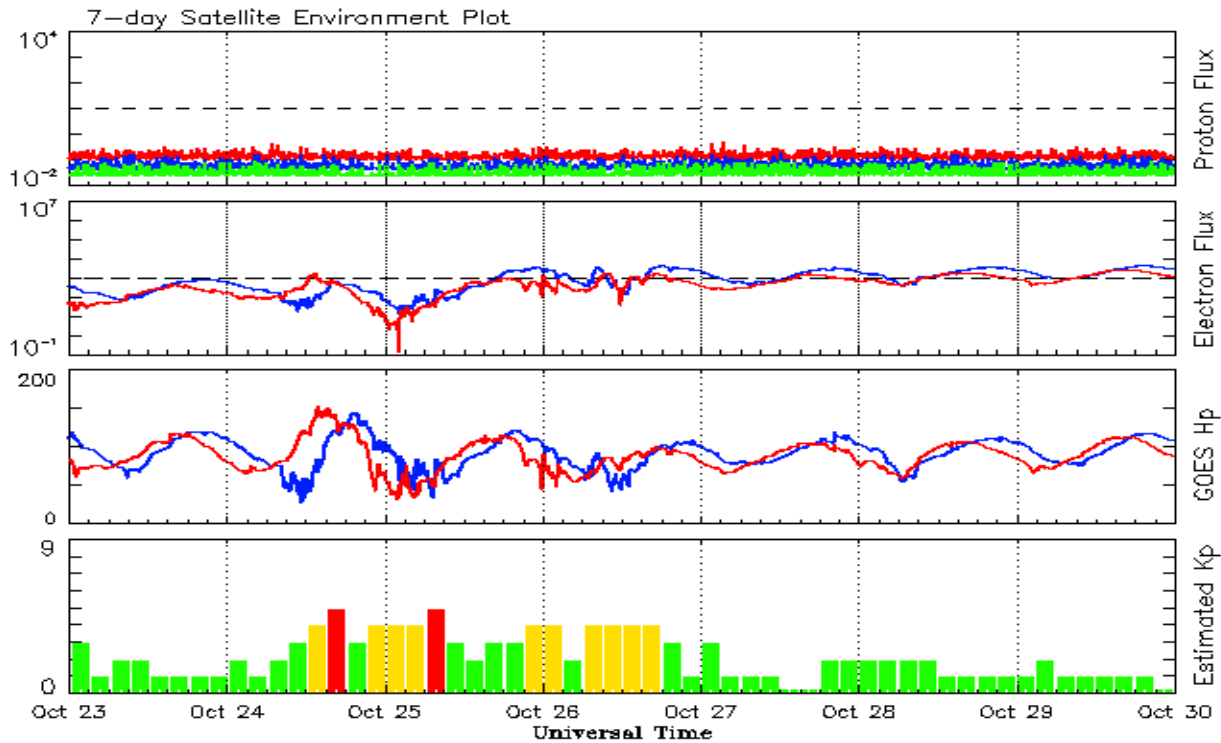


**Recent Solar Indices (preliminary)**  
**Observed monthly mean values**

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>2015</b>									
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	36.7	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
<b>2016</b>									
January	50.4	34.2	0.67	51.4	32.6	103.5	99.9	10	12.3
February	56.0	33.8	0.61	49.6	31.5	103.5	98.1	10	12.0
March	40.9	32.5	0.80	47.7	30.2	91.6	96.6	11	11.8
April	39.2	22.7	0.58	45.0	28.7	93.4	95.3	10	11.8
May	48.9	30.9	0.64	42.1	26.9	93.1	93.2	12	11.7
June	19.3	12.3	0.65	39.0	24.9	81.9	90.4	9	11.4
July	36.8	19.4	0.53	36.5	23.1	85.9	87.7	10	11.2
August	50.4	30.1	0.60	34.2	21.6	85.0	85.5	10	11.2
September	37.4	26.8	0.72	32.1	19.9	87.8	83.7	16	11.3
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	15.5	74.6	78.6	15	11.5
April	30.4	19.4	0.64			80.9		13	
May	18.1	11.3	0.62			73.5		9	
June	18.0	11.5	0.64			74.8		7	
July	18.8	11.0	0.59			77.7		9	
August	25.0	19.9	0.80			77.9		12	
September	42.2	26.2	0.62			92.0		19	

**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 23 October 2017*

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.

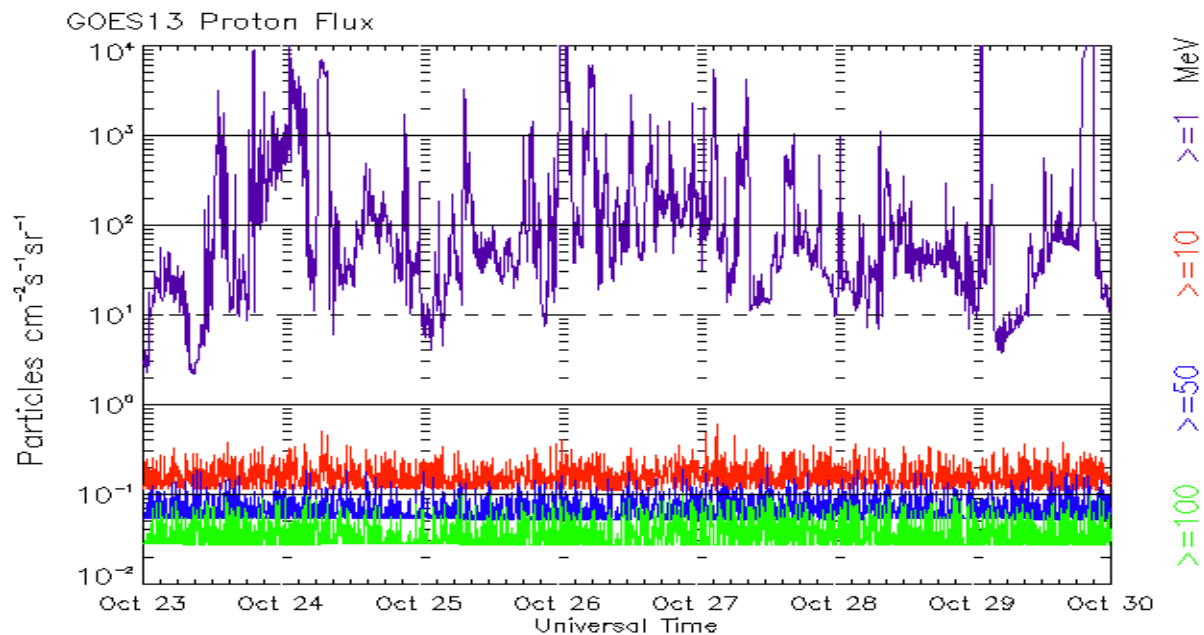
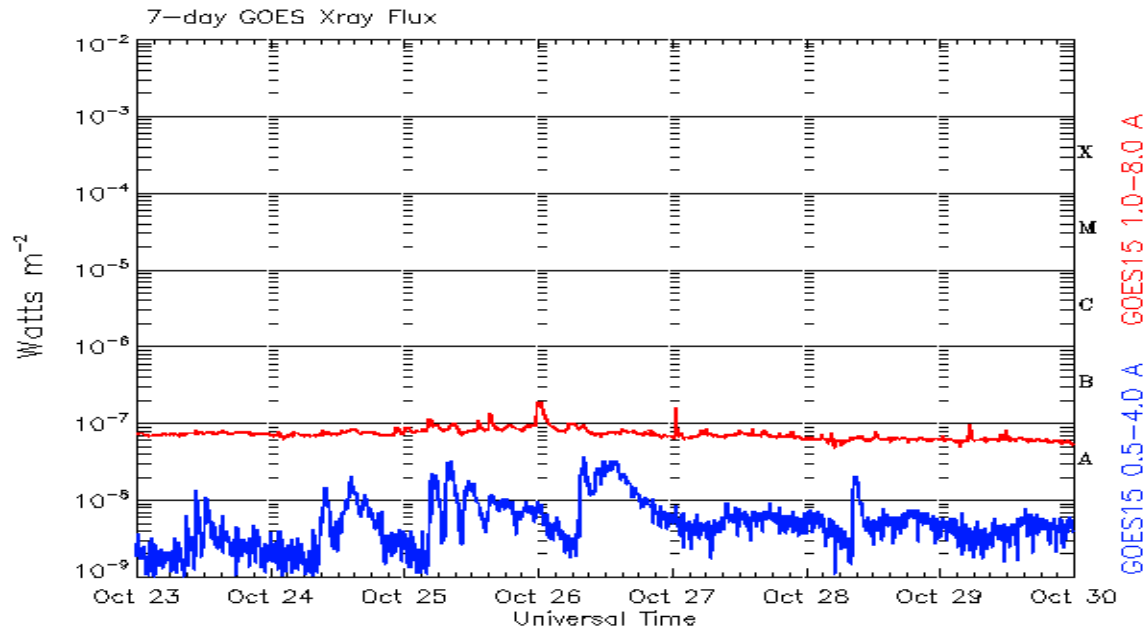
The Hp plot contains the five minute averaged Hp magnetic field component in nanoteslas (nT) as by the SWPC Primary GOES satellite. The Hp component is parallel to the spin axis of the satellite, which is nearly parallel to the Earth's rotation axis.

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 23 October 2017*

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 intergral 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.



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

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U.S. Department of Commerce  
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325 Broadway, Boulder CO 80305

**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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