

Solar activity was at very low levels. Region 2698 (N13, L=108, class/area Cao/060 on 26 Nov), the only spotted region on the disk, was quiet throughout the period. A filament structure, located in the NE quadrant, was observed erupting beginning at about 25/0445 UTC. A subsequent CME was observed in LASCO C2 imagery lifting off the E limb, first visible at 25/0712 UTC. Analysis, and follow-on WSA-Enlil model output, suggested the CME has a potential glancing blow at Earth early to midday on 29 Nov.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at high levels on 20 Nov and again on 22-24 Nov. Moderate levels were observed on 21 Nov and again on 25-26 Nov. A maximum flux of 4,658 pfu was observed at 23/1555 UTC.

Geomagnetic field activity ranged from quiet to minor storm (G1-Minor) levels. The period began with quiet conditions through most of 20 Nov. Late on 20 Nov, activity levels increased to unsettled to active and persisted through 21 Nov into early 22 Nov. G1 geomagnetic storm levels were also observed early on 21 Nov. This increase in activity was due to effects from a recurrent, positive polarity CH HSS. Solar wind speeds reached a peak of near 625 km/s at about 21/1500 UTC, total field hit a maximum of 14 nT early on 21 Nov, while the Bz component reached a maximum southward extent of -12 nT at 21/0400 UTC.

The remainder of the period witnessed a slow, gradual decrease in wind speeds to finish the summary period near 350 km/s. The geomagnetic field responded with mostly quiet to unsettled levels through the remainder of the summary period.

Space Weather Outlook

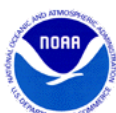
27 November - 23 December 2017

Solar activity is expected to be at very low levels 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 30 Nov - 02 Dec, 06-10 Dec, 12-17 Dec and 19-21 Dec due to recurrent CH HSS influence. Normal to moderate levels are expected for the remainder of the outlook period.

Geomagnetic field activity is expected to be at unsettled to active levels on 27-30 Nov due to negative polarity CH HSS effects. Isolated G1 (Minor) storm conditions are likely on 29 Nov due to effects from the 25 Nov CME. Unsettled to active levels are expected on 04-08 Dec, 11-14 Dec and again on 17-21 Dec due to recurrent CH HSS effects. In addition, G1 (Minor) geomagnetic storm levels are likely on 04-07 Dec and 18 Dec with G2 (Moderate) levels likely on 04-06 Dec, all due to 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
20 November	74	0	0	A5.2	0	0	0	0	0	0	0	0
21 November	73	0	0	A5.2	0	0	0	0	0	0	0	0
22 November	73	0	0	A5.2	0	0	0	0	0	0	0	0
23 November	72	0	0	A5.0	0	0	0	0	0	0	0	0
24 November	74	0	0	A4.8	0	0	0	0	0	0	0	0
25 November	74	13	20	A5.4	0	0	0	0	0	0	0	0
26 November	76	15	60	A5.9	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
	20 November		2.9e+06	1.6e+04	3.8e+03	
21 November		2.8e+07	1.5e+04	3.5e+03		4.7e+06
22 November		2.6e+07	1.6e+04	3.6e+03		9.0e+07
23 November		1.6e+07	1.6e+04	3.9e+03		1.6e+08
24 November		6.0e+06	1.6e+04	4.2e+03		7.8e+07
25 November		1.6e+07	1.5e+04	3.3e+03		1.3e+07
26 November		3.9e+06	1.6e+04	3.9e+03		1.9e+07

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	20 November	7	1-0-0-0-1-2-3-4	2	0-0-0-1-0-0-2-1	8
21 November	16	3-4-4-3-2-2-3-3	33	2-5-6-5-4-4-3-3	28	4-5-5-4-3-3-4-4
22 November	7	2-2-2-2-2-1-2-2	25	2-2-5-5-5-4-2-2	10	3-3-2-2-3-2-3-2
23 November	7	2-1-2-3-2-1-1-2	13	0-0-3-4-5-2-1-1	9	2-1-3-3-2-2-2-3
24 November	8	2-2-3-0-1-1-3-3	6	2-2-2-2-0-0-2-3	10	3-2-2-1-0-0-3-3
25 November	4	3-2-1-1-0-0-0-0	5	3-1-2-3-0-0-0-0	7	4-3-2-1-0-1-1-0
26 November	2	0-1-0-0-1-1-2-1	1	0-0-0-1-1-0-0-0	2	0-0-1-1-1-1-1-1

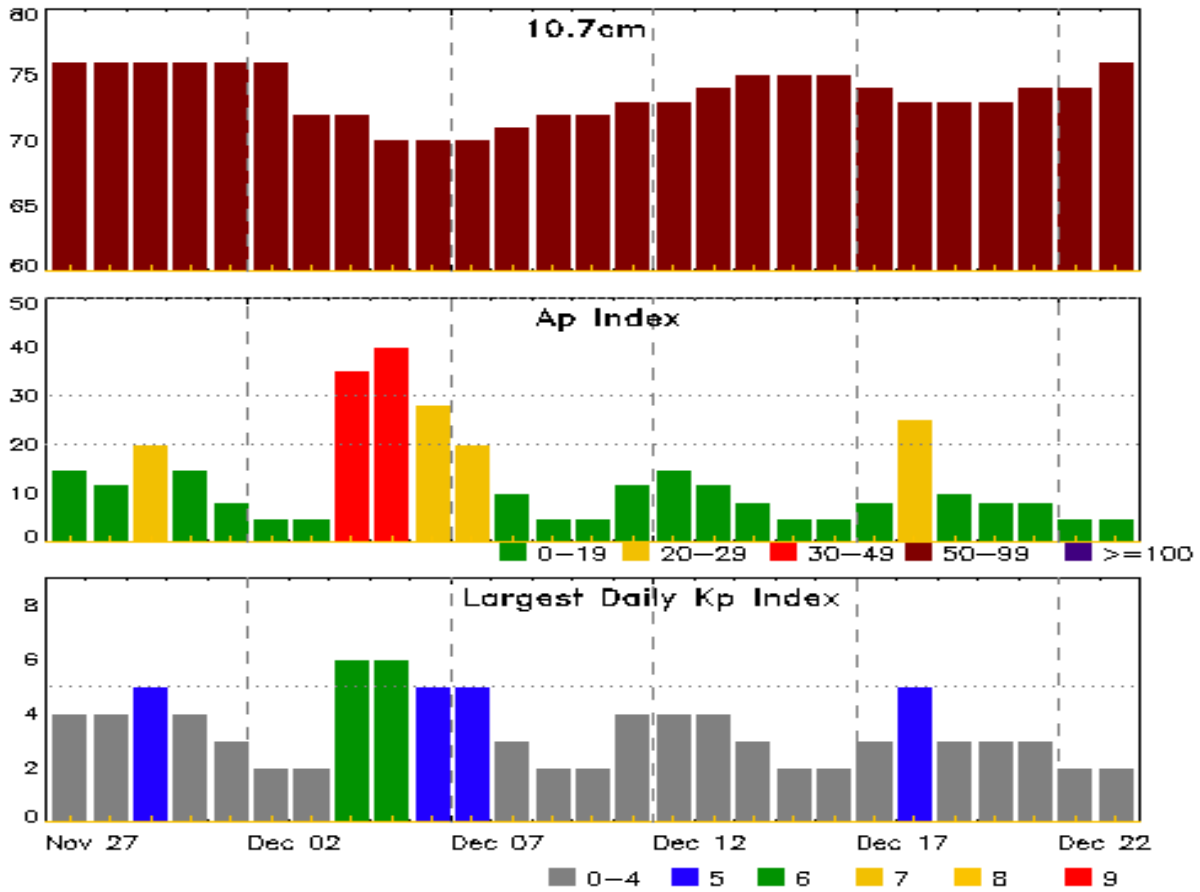


Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
20 Nov 1301	WARNING: Geomagnetic K = 4	20/1300 - 2100
20 Nov 1330	CANCELLATION: Geomagnetic K = 4	
20 Nov 1413	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	17/1150
20 Nov 2318	WARNING: Geomagnetic K = 4	20/2320 - 21/0600
20 Nov 2340	ALERT: Geomagnetic K = 4	20/2340
21 Nov 0434	WARNING: Geomagnetic K = 5	21/0432 - 1200
21 Nov 0434	EXTENDED WARNING: Geomagnetic K = 4	20/2320 - 21/1500
21 Nov 0531	ALERT: Geomagnetic K = 5	21/0530
21 Nov 0825	ALERT: Geomagnetic K = 5	21/0825
21 Nov 1148	EXTENDED WARNING: Geomagnetic K = 5	21/0432 - 1800
21 Nov 1148	EXTENDED WARNING: Geomagnetic K = 4	20/2320 - 21/2359
21 Nov 2240	EXTENDED WARNING: Geomagnetic K = 5	21/0432 - 22/0600
21 Nov 2242	CANCELLATION: Geomagnetic K = 5	
21 Nov 2243	EXTENDED WARNING: Geomagnetic K = 4	20/2320 - 22/0600
22 Nov 1037	ALERT: Electron 2MeV Integral Flux >= 1000pfu	22/1020
23 Nov 0935	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	22/1020
24 Nov 1120	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	22/1020
25 Nov 0127	WARNING: Geomagnetic K = 4	25/0127 - 0900
25 Nov 0305	ALERT: Geomagnetic K = 4	25/0259
26 Nov 2200	WATCH: Geomagnetic Storm Category G1 predicted	



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
27 Nov	76	15	4	11 Dec	73	12	4
28	76	12	4	12	73	15	4
29	76	20	5	13	74	12	4
30	76	15	4	14	75	8	3
01 Dec	76	8	3	15	75	5	2
02	76	5	2	16	75	5	2
03	72	5	2	17	74	8	3
04	72	35	6	18	73	25	5
05	70	40	6	19	73	10	3
06	70	28	5	20	73	8	3
07	70	20	5	21	74	8	3
08	71	10	3	22	74	5	2
09	72	5	2	23	76	5	2
10	72	5	2				



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		
21 Nov	0158	0203	0210	B1.7			2688	
23 Nov	0906	0914	0922	B1.7			2687	
25 Nov	0521	0746	0954	B1.6				



Region Summary

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

Region 2687

14 Nov	S08E64	181	50	7	Cao	4	B										
15 Nov	S07E55	177	90	8	Cao	4	B										
16 Nov	S08E39	180	90	12	Cao	5	B										
17 Nov	S08E31	175	60	4	Hax	4	A										
18 Nov	S09E18	175	30	2	Hrx	4	A										
19 Nov	S09E04	175	plage														
20 Nov	S09W10	176	plage														
21 Nov	S09W24	177	plage														
22 Nov	S09W38	178	plage														
23 Nov	S09W52	179	plage														
24 Nov	S09W66	180	plage														
25 Nov	S09W80	180	plage														
									0	0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 175

Region 2688

17 Nov	N11W32	238	10	4	Bxo	2	B										
18 Nov	N11W45	238	plage														
19 Nov	N11W59	238	plage														
20 Nov	N11W73	239	plage														
21 Nov	N11W87	240	plage														
									0	0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 238

Region 2689

25 Nov	N13W08	108	20	5	Cso	3	B										
26 Nov	N13W21	108	60	6	Cao	5	B										
									0	0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 108

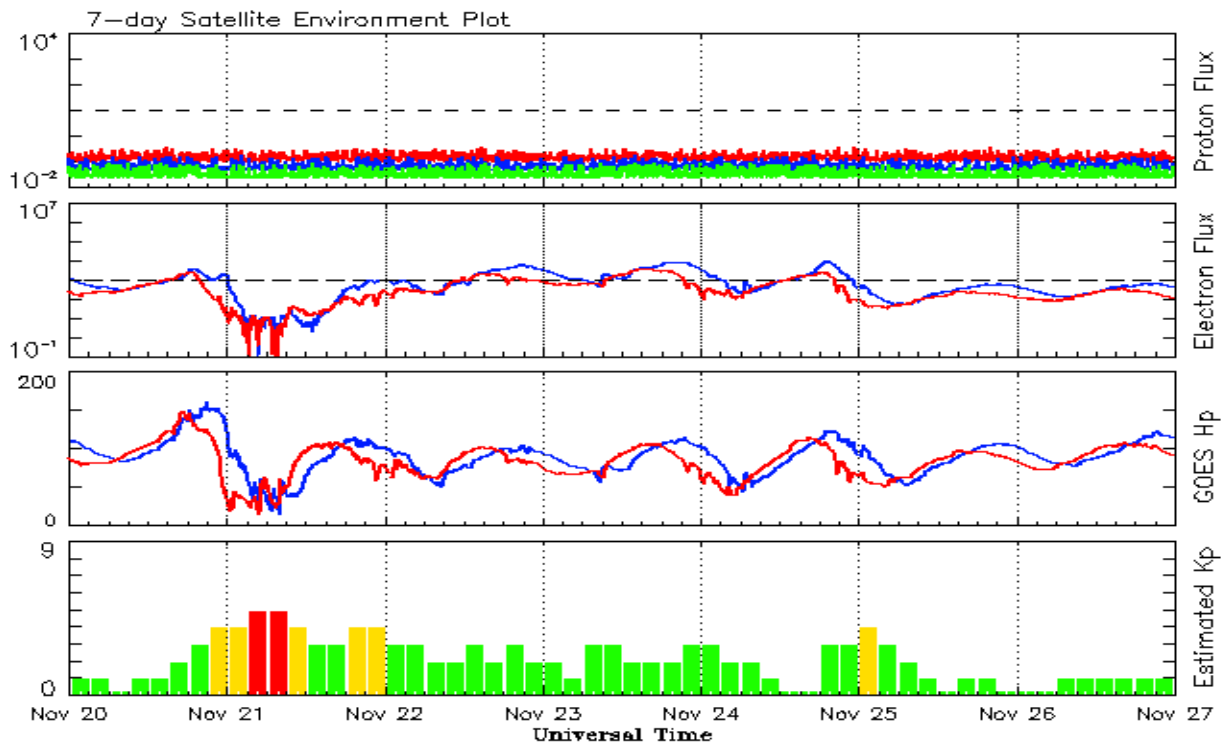


Recent Solar Indices (preliminary)
Observed monthly mean values

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
2015									
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
2016									
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
2017									
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	24.3	14.9	80.9	78.4	13	11.5
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	
October	16.0	7.9	0.49			76.4		11	

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 20 November 2017*

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.

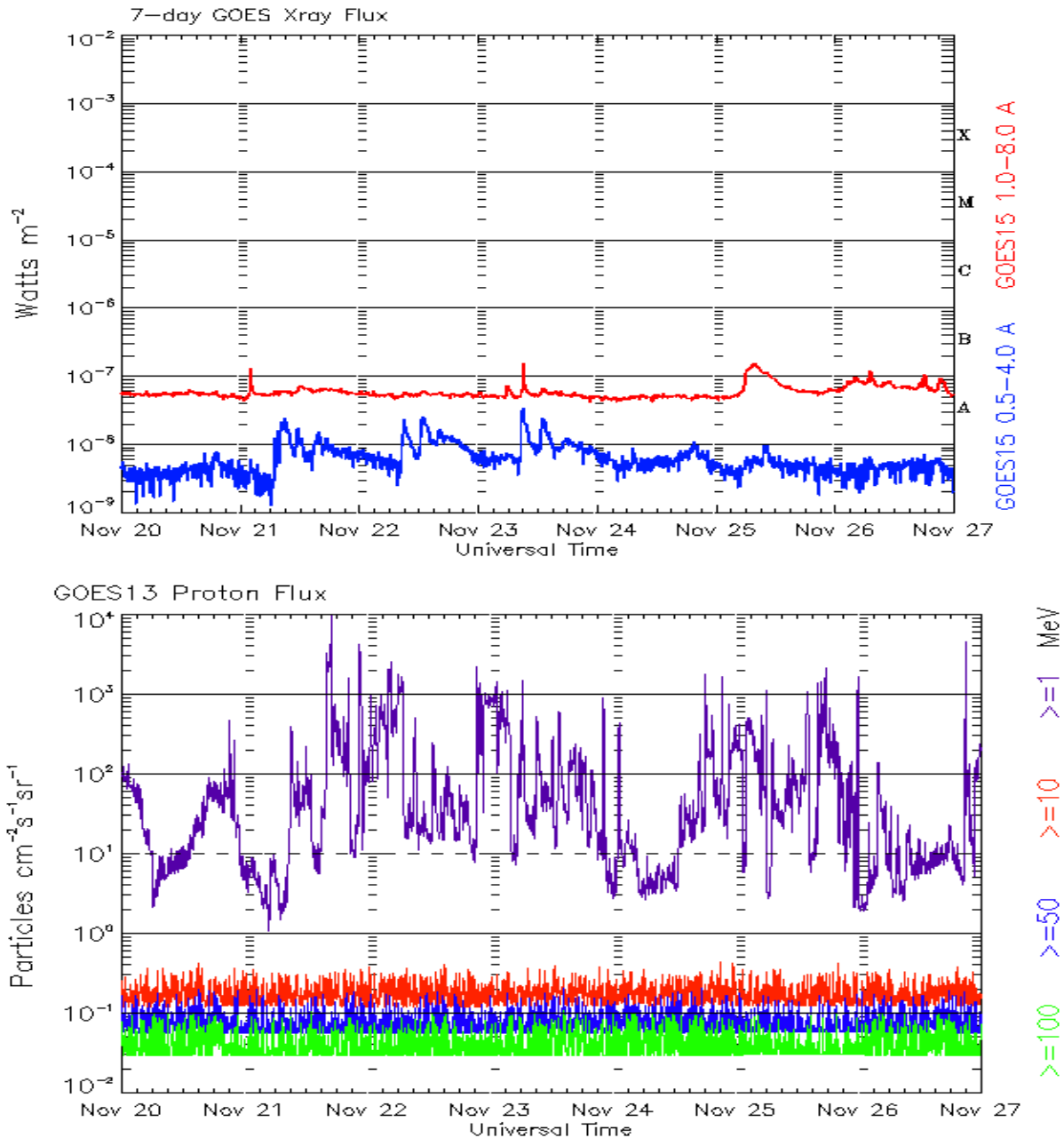
The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

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 20 November 2017*

The x-ray plots contains five-minute averages x-ray flux (Watt/m²) 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/cm² -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

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