

Space Weather Highlights
04 December - 10 December 2017

SWPC PRF 2206
11 December 2017

Solar activity was at very low levels. Regions 2690 (N07, L=332, class/area Bxo/010 on 06 Dec) and 2691 (S03, L=221, class/area Axx/010 on 10 Dec) were both relatively quiet and stable throughout the period. No Earth-directed CMEs were observed.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at moderate levels on 04-05 Dec and increased to high levels on 06-10 Dec following CH HSS influence.

Geomagnetic field activity was at quiet to active levels on 04-06 Dec with G1 (Minor) storm conditions observed on 05 Dec due to influence from a positive polarity CH HSS. Quiet to unsettled conditions were observed on 07 Dec as CH HSS effects waned. Quiet conditions prevailed for the remainder of the period.

Space Weather Outlook
11 December - 06 January 2018

Solar activity is expected to be at very low levels throughout the 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 11 Dec, 13-17 Dec, 19-21 Dec and 02-06 Jan following recurrent CH HSS events. Normal to moderate levels are expected at all other times during the period.

Geomagnetic field activity is expected to be at quiet to active levels on 11-13 Dec, decreasing to quiet to unsettled levels on 14 Dec due to positive polarity CH HSS effects. Quiet conditions are expected on 15-16 Dec. Unsettled to active conditions are expected on 17-21 Dec, with G1 (Minor) storm levels on 18 Dec due to recurrent positive polarity CH HSS influence. Quiet conditions are anticipated from 22-26 Dec, followed by unsettled to active levels on 27-28 Dec due to negative polarity CH HSS effects. A return to quiet conditions is expected on 29-30 Dec. Predominately unsettled to active conditions are expected on 31 Dec-03 Jan, with G1 (Minor) levels likely on 01 Jan, due to effects from a recurrent positive polarity CH HSS. Quiet conditions are expected for the remainder of the period.



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
04 December	68	0	0	A3.1	0	0	0	0	0	0	0	0
05 December	68	0	0	A3.1	0	0	0	0	0	0	0	0
06 December	68	13	10	A3.3	0	0	0	0	0	0	0	0
07 December	68	11	10	A3.5	0	0	0	0	0	0	0	0
08 December	70	0	0	A3.3	0	0	0	0	0	0	0	0
09 December	71	0	0	A3.7	0	0	0	0	0	0	0	0
10 December	72	11	10	A4.5	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
	04 December		9.9e+06	1.6e+04	4.1e+03	4.6e+06
05 December		1.0e+08	1.7e+04	3.7e+03	5.3e+06	
06 December		4.2e+07	1.5e+04	3.5e+03	7.3e+07	
07 December		3.2e+08	1.5e+04	3.7e+03	1.3e+08	
08 December		1.3e+07	1.5e+04	3.6e+03	1.4e+08	
09 December		2.1e+07	1.6e+04	3.8e+03	1.4e+08	
10 December		1.4e+08	1.8e+04	4.1e+03	1.3e+08	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	04 December	6	0-0-2-2-2-3-2-2	15	0-0-1-3-5-3-4-3	11
05 December	21	3-3-4-4-4-4-3-3	55	3-2-5-7-7-5-4-3	29	4-3-4-5-5-4-4-4
06 December	13	3-4-3-2-2-2-3-2	22	2-4-4-5-4-4-2-1	16	3-4-3-2-3-3-3-2
07 December	9	2-2-2-1-3-3-2-2	12	1-1-3-1-5-3-2-1	10	2-3-2-1-3-3-2-2
08 December	4	1-1-2-1-1-1-1-1	8	2-1-2-3-4-1-0-0	5	2-2-2-1-2-1-1-1
09 December	3	1-1-0-0-1-2-1-1	2	0-0-0-1-2-2-0-0	4	1-1-1-1-1-1-1-0
10 December	2	0-0-2-0-1-0-0-1	2	0-0-2-0-2-0-0-1	2	0-0-1-0-1-1-0-1

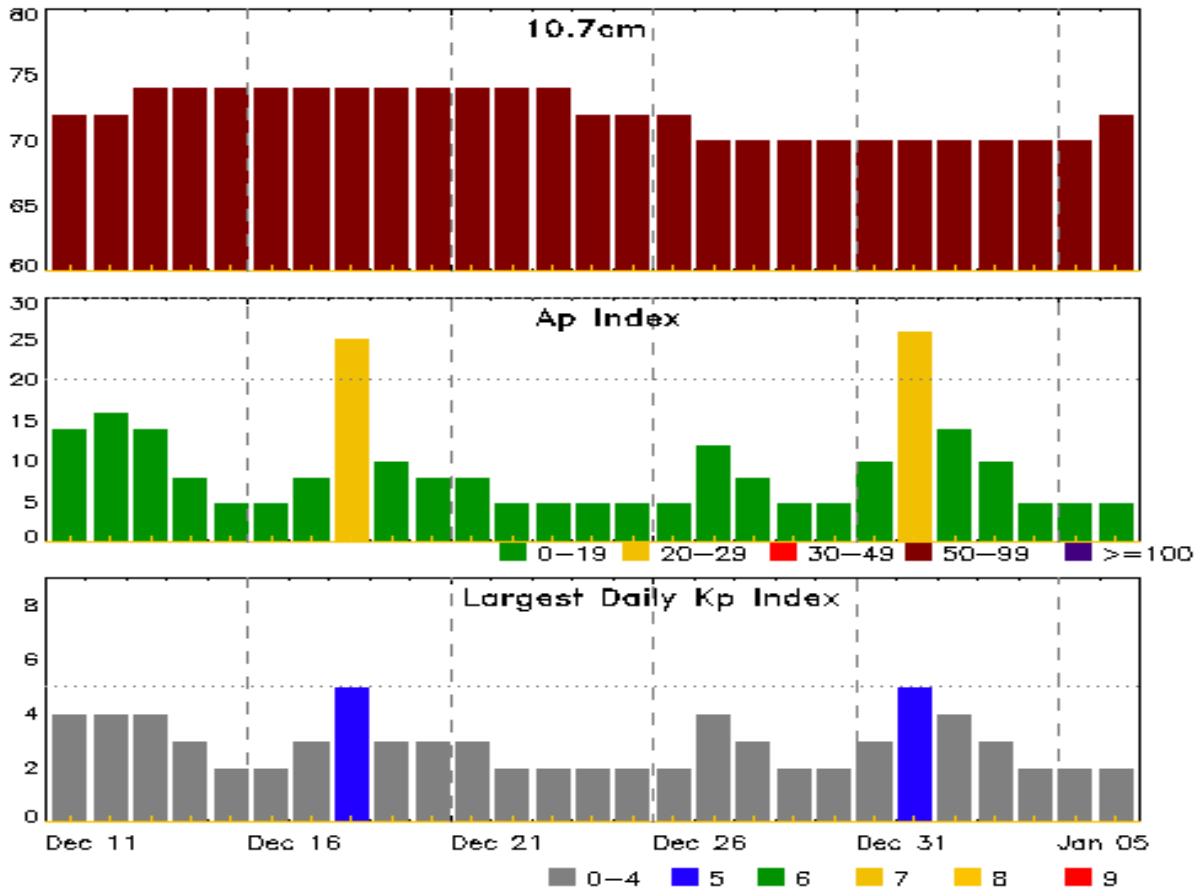


Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
04 Dec 0521	WARNING: Geomagnetic K = 4	04/0520 - 1500
04 Dec 1620	WARNING: Geomagnetic K = 4	04/1620 - 05/0600
04 Dec 1801	ALERT: Geomagnetic K = 4	04/1759
05 Dec 0550	EXTENDED WARNING: Geomagnetic K = 4	04/1620 - 05/1500
05 Dec 0818	WARNING: Geomagnetic K = 5	05/0818 - 1500
05 Dec 1017	ALERT: Geomagnetic K = 5	05/1017
05 Dec 1408	ALERT: Geomagnetic K = 5	05/1407
05 Dec 1417	WARNING: Geomagnetic K = 6	05/1420 - 2100
05 Dec 1417	EXTENDED WARNING: Geomagnetic K = 4	04/1620 - 06/0900
05 Dec 1417	EXTENDED WARNING: Geomagnetic K = 5	05/0818 - 06/0300
06 Dec 1359	ALERT: Electron 2MeV Integral Flux \geq 1000pfu	06/1340
06 Dec 1917	WARNING: Geomagnetic K = 4	06/1920 - 2359
07 Dec 0831	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	06/1340
08 Dec 0856	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	06/1340
09 Dec 0751	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	06/1340
10 Dec 0500	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	06/1340



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
11 Dec	72	14	4	25 Dec	72	5	2
12	72	16	4	26	72	5	2
13	74	14	4	27	70	12	4
14	74	8	3	28	70	8	3
15	74	5	2	29	70	5	2
16	74	5	2	30	70	5	2
17	74	8	3	31	70	10	3
18	74	25	5	01 Jan	70	26	5
19	74	10	3	02	70	14	4
20	74	8	3	03	70	10	3
21	74	8	3	04	70	5	2
22	74	5	2	05	70	5	2
23	74	5	2	06	72	5	2
24	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 #	Radio Flux 245	Radio Flux 2695	Intensity II

No Events Observed

Flare List

Date	Time			X-ray Class	Optical			Rgn #
	Begin	Max	End		Imp/ Brtns	Location Lat CMD		
07 Dec	0320	0323	0328	B1.0				2690
10 Dec	1046	1054	1113	B1.5				



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 2690

06 Dec	N07W17	332	10	2	Bxo	3	B										
07 Dec	N06W32	334	10	1	Axx	1	A										
08 Dec	N06W46	335	plage														
09 Dec	N06W59	335	plage														
10 Dec	N06W72	335	plage														
									0	0	0	0	0	0	0	0	0

Still on Disk.

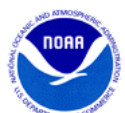
Absolute heliographic longitude: 332

Region 2691

10 Dec	S03E42	221	10	1	Axx	1	A										
									0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 221

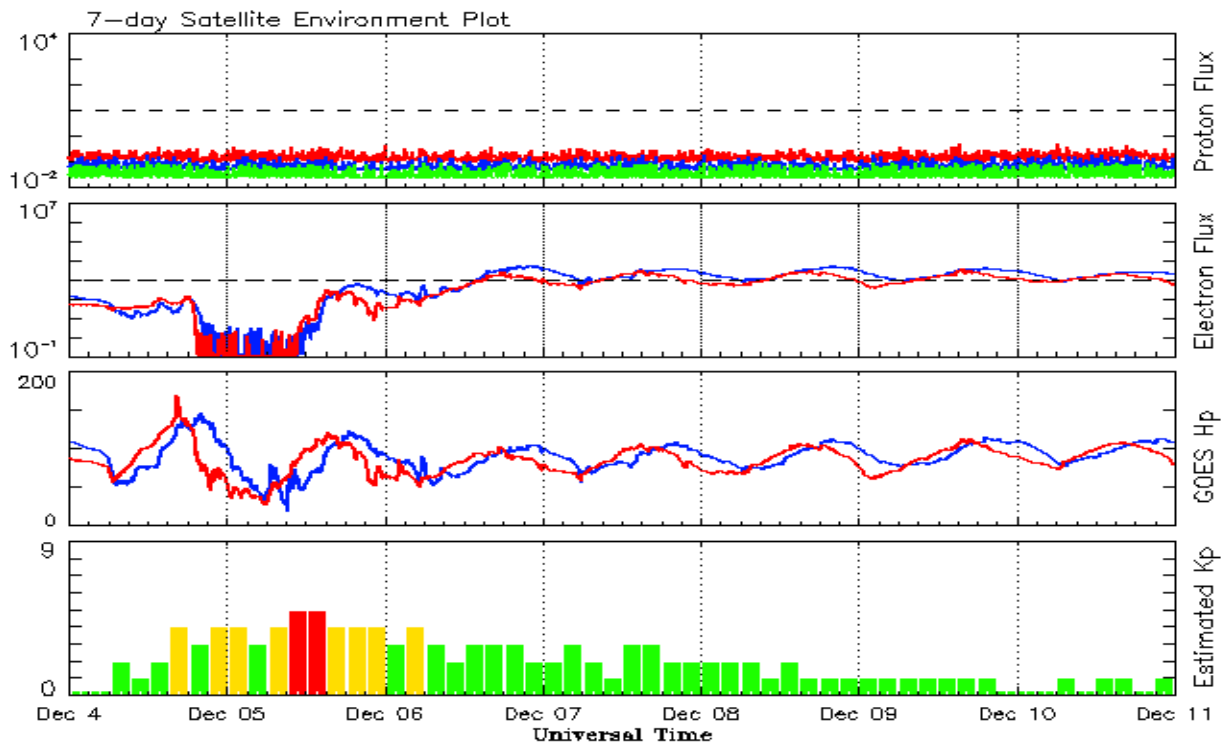


Recent Solar Indices (preliminary)
Observed monthly mean values

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									
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	23.1	14.0	73.5	77.7	9	11.3
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	
November	7.7	3.4	0.44			72.1		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 04 December 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.

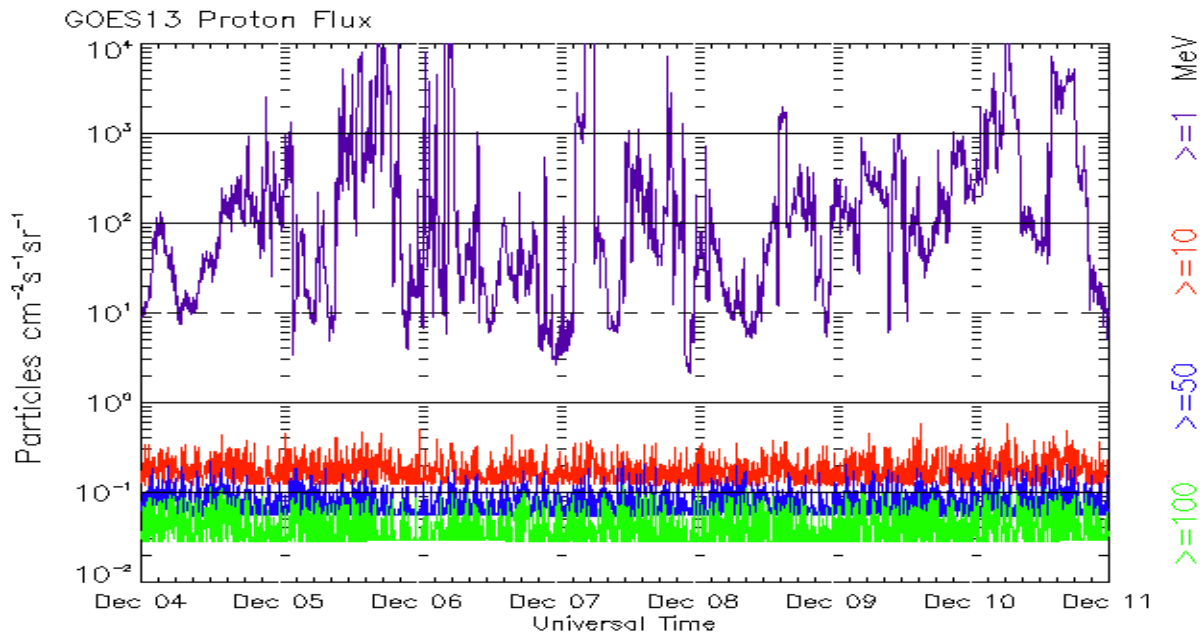
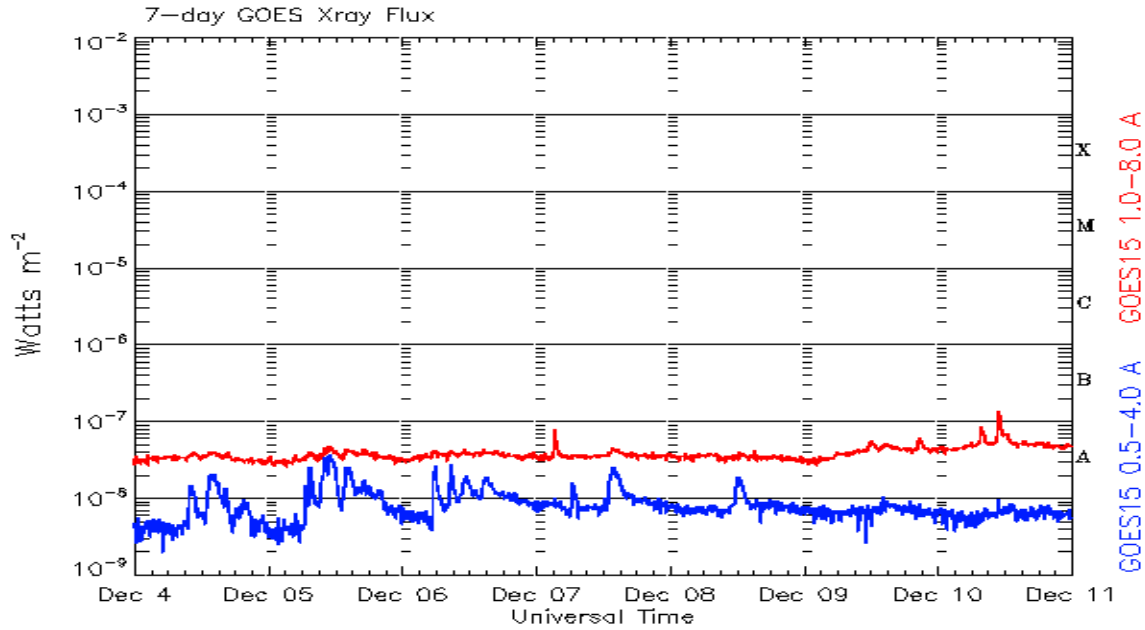
The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

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 04 December 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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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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