

Space Weather Highlights
25 December - 31 December 2017

SWPC PRF 2209
01 January 2018

Solar activity was very low throughout the period. Region 2692 (N18, L=087, class/area=Eai/160 on 24 Dec) was the only numbered active region this period, but the region was without sunspots and unproductive through most of the week. No Earth-directed CMEs were observed this period.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit reached high levels on 27 and 29 Dec with moderate levels observed through the remainder of the period.

Geomagnetic field activity reached active levels on 26 Dec due to the influence of a negative polarity CH HSS. Quiet and quiet to unsettled levels were observed throughout the rest of the week.

Space Weather Outlook
01 January - 27 January 2018

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 02-06, 14-19, and 23-24 Jan. Moderate flux levels are expected through the rest of the outlook period.

Geomagnetic field activity is likely to reach G1 (Minor) geomagnetic storm levels on 01 and 13 Jan, with active periods likely on 02, 08, 14, 20 and 27 Jan, due to the effects of multiple, recurrent CH HSSs. Quiet and quiet to unsettled geomagnetic field activity is expected throughout the remainder of the outlook 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
25 December	76	17	100	A5.4	0	0	0	0	0	0	0	0
26 December	72	14	30	A5.0	0	0	0	0	0	0	0	0
27 December	71	11	10	A4.8	0	0	0	0	0	0	0	0
28 December	71	0	0	A4.5	0	0	0	0	0	0	0	0
29 December	72	0	0	A4.4	0	0	0	0	0	0	0	0
30 December	70	0	0	A4.0	0	0	0	0	0	0	0	0
31 December	71	0	0	A3.8	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
	25 December		6.1e+05	1.5e+04	3.6e+03	5.1e+06
26 December		6.5e+05	1.6e+04	3.5e+03	1.8e+07	
27 December		6.0e+05	1.6e+04	3.2e+03	5.1e+07	
28 December		3.0e+05	1.6e+04	3.7e+03	3.3e+07	
29 December		3.6e+05	1.6e+04	3.8e+03	4.0e+07	
30 December		4.3e+05	1.5e+04	3.5e+03	3.0e+07	
31 December		7.7e+05	1.6e+04	3.7e+03	2.6e+07	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	25 December	9	3-1-3-3-1-1-2-2	10	2-1-4-3-1-3-2-1	10
26 December	8	2-2-1-2-1-1-3-3	11	1-3-1-4-2-2-3-2	11	3-3-1-2-1-1-4-3
27 December	6	2-2-2-1-1-2-1-2	8	2-1-1-3-2-3-1-2	7	2-3-2-1-1-2-2-2
28 December	2	0-0-2-1-1-1-0-1	4	0-0-2-2-2-2-0-0	5	1-1-2-1-2-2-1-2
29 December	3	1-1-0-1-1-1-2-1	2	0-0-0-1-1-1-1-2	4	1-1-0-1-1-1-2-1
30 December	2	0-2-0-0-1-1-1-1	1	0-0-0-0-1-1-0-0	3	1-1-1-0-1-1-1-2
31 December	2	0-1-0-0-0-1-2-1	2	0-0-0-0-1-1-1-1	3	1-0-0-0-0-1-2-2

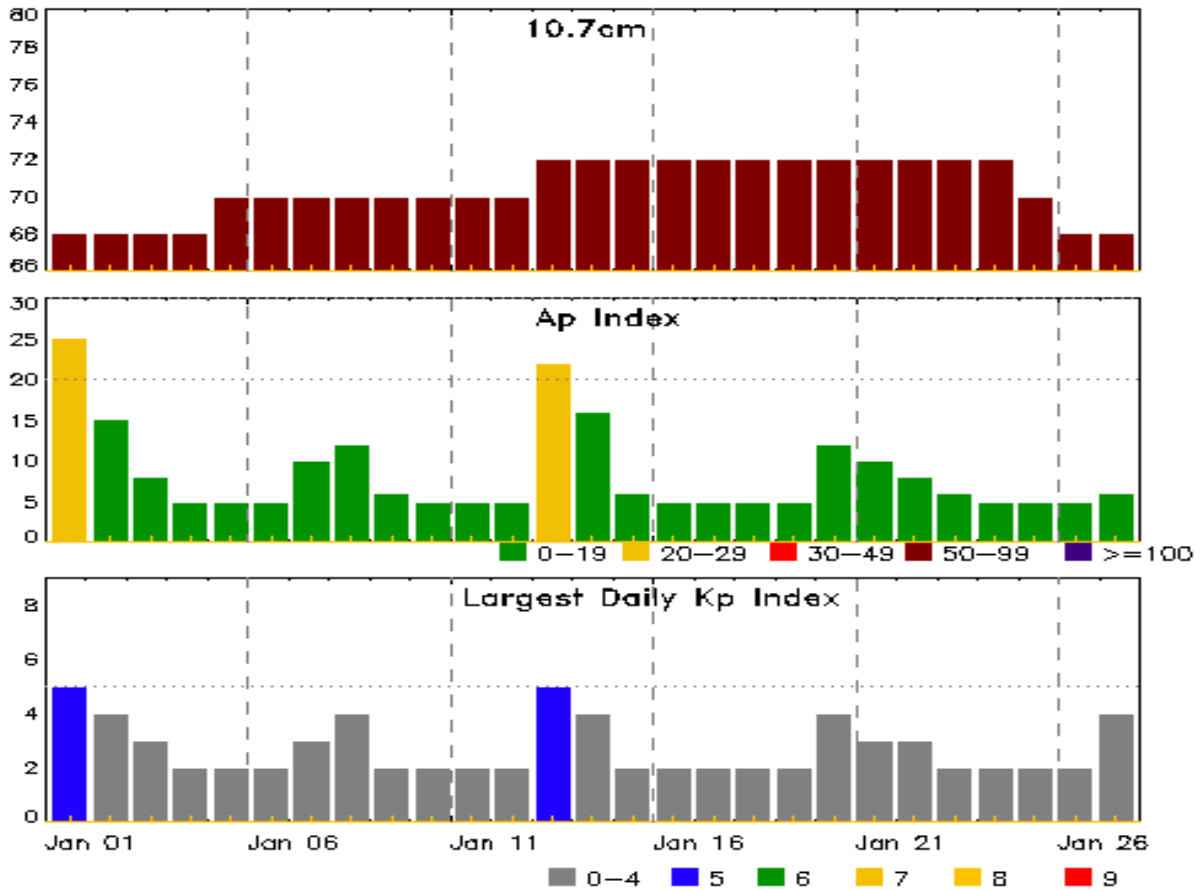


Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
26 Dec 1958	WARNING: Geomagnetic K = 4	26/1958 - 2359
26 Dec 2005	ALERT: Geomagnetic K = 4	26/2005
26 Dec 2324	EXTENDED WARNING: Geomagnetic K = 4	26/1958 - 27/0600
27 Dec 1600	ALERT: Electron 2MeV Integral Flux \geq 1000pfu	27/1545
29 Dec 1803	ALERT: Electron 2MeV Integral Flux \geq 1000pfu	29/1745
29 Dec 1854	WATCH: Geomagnetic Storm Category G1 predicted	
31 Dec 2011	WARNING: Geomagnetic K = 4	31/2010 - 01/0600



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
01 Jan	68	25	5	15 Jan	72	6	2
02	68	15	4	16	72	5	2
03	68	8	3	17	72	5	2
04	68	5	2	18	72	5	2
05	70	5	2	19	72	5	2
06	70	5	2	20	72	12	4
07	70	10	3	21	72	10	3
08	70	12	4	22	72	8	3
09	70	6	2	23	72	6	2
10	70	5	2	24	72	5	2
11	70	5	2	25	70	5	2
12	70	5	2	26	68	5	2
13	72	22	5	27	68	6	4
14	72	16	4				



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		
25 Dec	0711	0716	0728	B1.6			2692	
28 Dec	2225	2229	2233	B8.3			2692	
29 Dec	0114	0119	0121	B1.1				



Region Summary

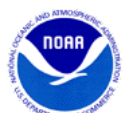
Date	Location		Sunspot Characteristics				Flares								
	Lat CMD	Lon	Helio 10 ⁻⁶ hemi.	Area	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical			
									C	M	X	S	1	2	3

Region 2692

20 Dec	N16E45	86	70	4	Cao	6	B											
21 Dec	N18E30	88	70	8	Dao	8	B											
22 Dec	N18E16	89	70	8	Dao	8	B											
23 Dec	N18E03	87	90	10	Dao	12	B					1						
24 Dec	N18W09	87	160	12	Eai	12	B											
25 Dec	N18W23	88	100	11	Eao	7	B											
26 Dec	N18W35	87	30	6	Cro	4	B											
27 Dec	N17W46	85	10	1	Axx	1	A											
28 Dec	N17W60	86	plage															
29 Dec	N17W74	86	plage															
30 Dec	N17W88	87	plage															
										0	0	0	1	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 87

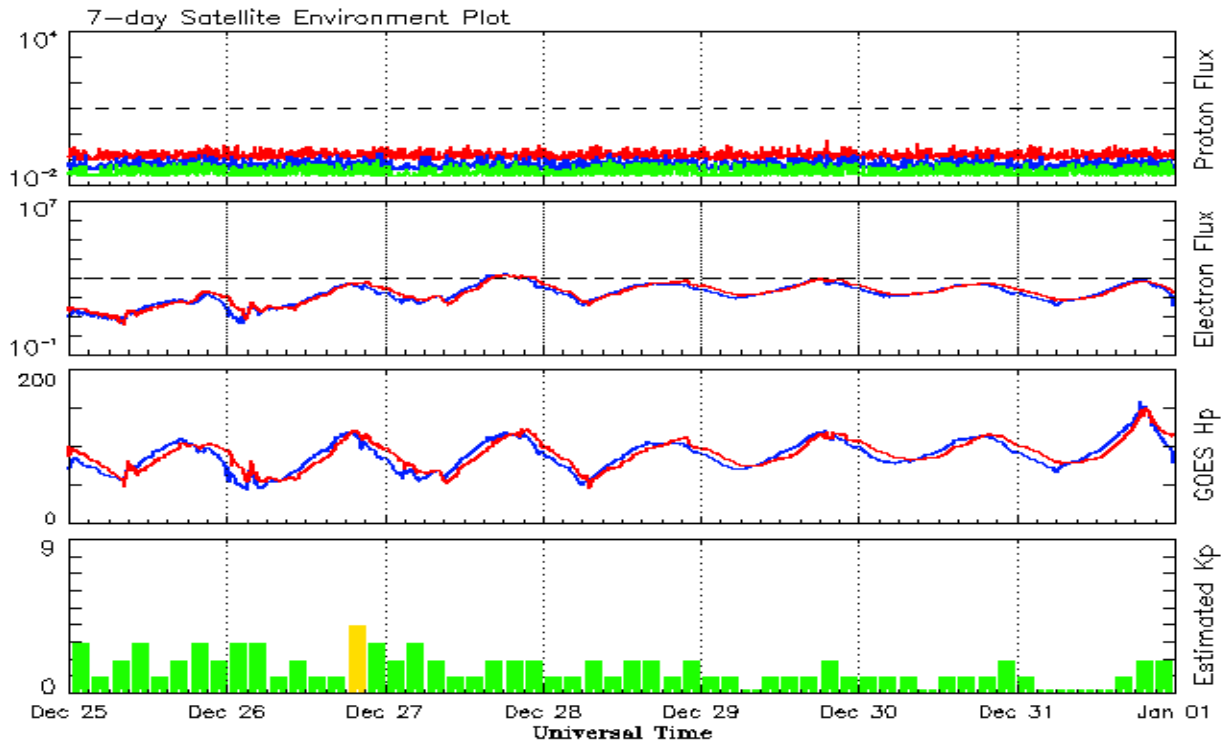


Recent Solar Indices (preliminary)
Observed monthly mean values

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	
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	22.0		74.8	77.3	7	11.3	
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		
December	7.6					71.5		8		

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 25 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.

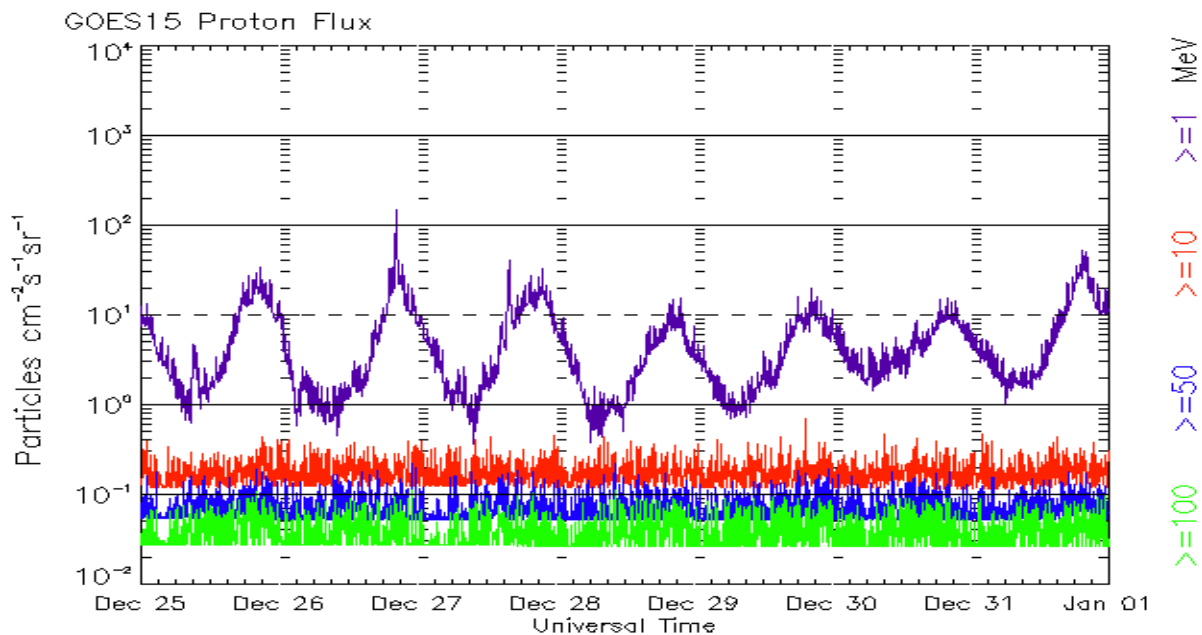
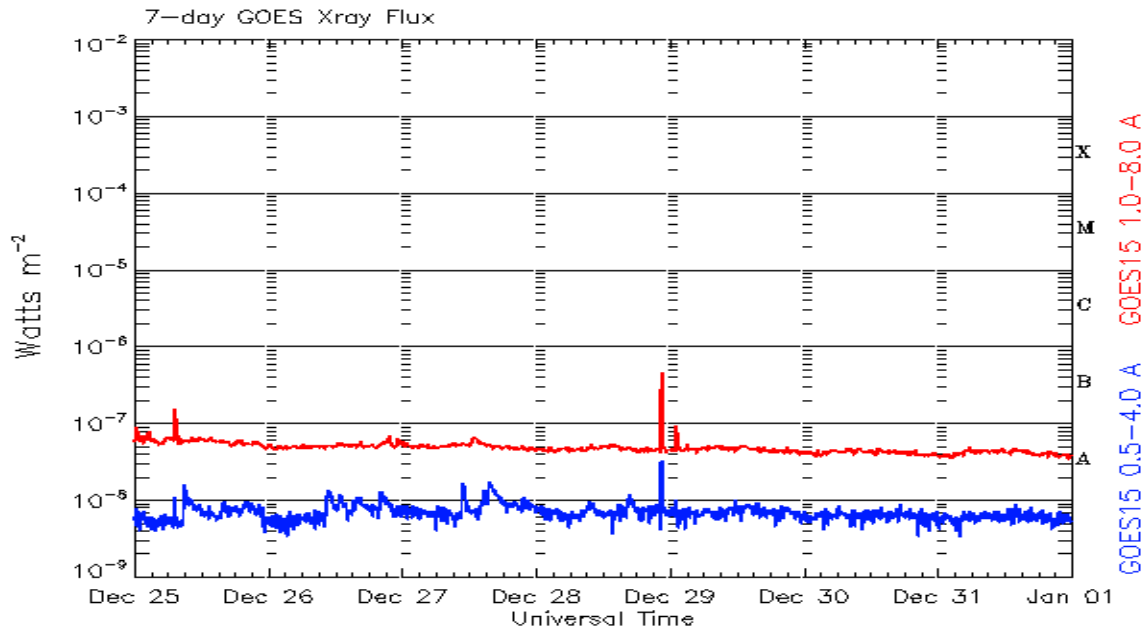
The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

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.

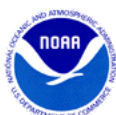




*Weekly GOES Satellite X-ray and Proton Plots
Week Beginning 25 December 2017*

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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