

Space Weather Highlights
21 January - 27 January 2019

SWPC PRF 2265
28 January 2019

Solar activity was at low levels due to a C5 X-ray flare observed at 26/1322 UTC from Region 2733 (N05, L=261, class/area Dso/090 on 27 Jan). Region 2733 emerged on the disk on 22 Jan as a C group, and slowly grew in area and spot count through 27 Jan. The region produced numerous B-class flares in addition to the lone C-class flare. 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 normal levels on 21-24 Jan, increasing to moderate to high levels due to CH HSS effects.

Geomagnetic field activity was at predominately quiet to active levels with an isolated G1 (Minor) storm interval. The period began with quiet conditions under a nominal solar wind regime. An enhancement in solar wind parameters was observed beginning early on 23 Jan through midday 26 Jan with an increase in total field to a peak of 11 nT late on 25 Jan and a noticeable southward turning of the Bz component to -8 nT midday on 23 Jan. Wind speeds increased from about 340 km/s to peak at about 640 km/s midday on 24 Jan. During this time frame, the geomagnetic field responded with mostly unsettled to active levels, with an isolated G1 (Minor) storm interval observed late on 24 Jan. By late on 26 Jan through 27 Jan, quiet levels were observed under a mostly nominal wind regime.

Space Weather Outlook
28 January - 23 February 2019

Solar activity is expected to be at very low levels, with a chance for low levels through 31 Jan due to the presence of Region 2733. Very low levels are expected from 01-23 Feb. However, a chance for low levels exists upon the return of old Region 2733 on or about 12 Feb.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at moderate to high levels on 28 Jan - 11 Feb and again on 21-23 Feb due to CH HSS influence. Mostly normal levels are expected on 12-20 Feb.

Geomagnetic field activity is expected to be at unsettled to active levels on 31 Jan - 02 Feb and 19-22 Feb with G1 (Minor) storm conditions likely on 01 Feb and 20 Feb, all due to recurrent CH HSS influence. Mostly quiet conditions are expected for 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 ⁻⁶ hemi.)	Flux		C	M	X	S	1	2	3	4
21 January	70	0	0	A0.0	0	0	0	0	0	0	0	0	0
22 January	71	18	20	A1.6	0	0	0	0	0	0	0	0	0
23 January	72	19	30	A1.9	0	0	0	0	0	0	0	0	0
24 January	72	19	30	A2.3	0	0	0	0	0	0	0	0	0
25 January	75	27	50	A4.5	0	0	0	0	0	0	0	0	0
26 January	77	26	80	A5.9	1	0	0	1	0	0	0	0	0
27 January	74	22	90	A3.5	0	0	0	1	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
21 January	5.7e+05	1.7e+04	3.9e+03	1.1e+06		
22 January	4.4e+05	1.7e+04	3.9e+03	7.6e+05		
23 January	1.3e+06	1.8e+04	3.9e+03	3.2e+05		
24 January	8.1e+05	1.7e+04	4.0e+03	4.0e+05		
25 January	2.6e+06	1.6e+04	3.6e+03	3.4e+07		
26 January	1.3e+06	1.6e+04	3.7e+03	7.9e+07		
27 January	1.3e+06	1.6e+04	3.8e+03	7.3e+07		

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
21 January	2	1-0-0-0-1-1-1-1	1	0-0-0-1-0-1-0-0	4	1-0-0-1-1-1-2-2
22 January	2	0-1-0-0-1-1-1-2	1	0-0-0-0-1-0-0-1	3	1-1-0-0-1-1-2-2
23 January	10	2-2-2-2-2-2-2-4	19	2-2-2-5-5-4-1-1	13	3-3-2-3-3-3-2-4
24 January	13	3-3-3-1-2-2-3-4	11	3-2-3-2-2-2-3-3	19	4-3-4-2-1-3-4-5
25 January	10	2-2-3-3-3-2-2-2	19	2-2-4-4-5-4-2-1	13	3-2-3-3-3-3-2-2
26 January	5	1-2-2-1-2-2-1-0	15	1-1-3-4-4-5-0-0	7	1-2-2-1-3-3-1-0
27 January	3	1-1-1-1-1-1-1-1	3	0-0-0-3-2-0-1-0	9	2-1-1-1-1-1-1-1

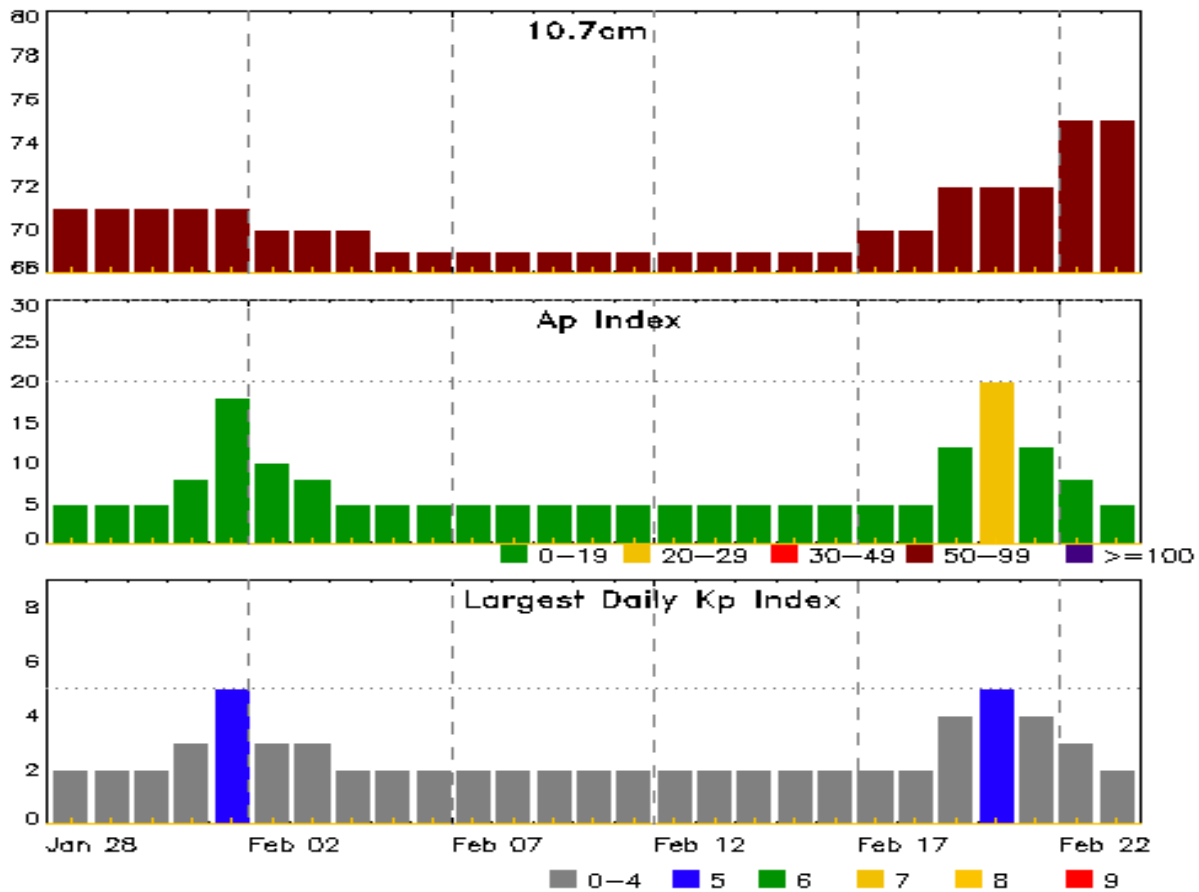


Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
21 Jan 1956	WATCH: Geomagnetic Storm Category G1 predicted	
23 Jan 2325	WARNING: Geomagnetic K = 4	23/2325 - 24/0900
23 Jan 2335	ALERT: Geomagnetic K = 4	23/2335
24 Jan 0821	EXTENDED WARNING: Geomagnetic K = 4	23/2325 - 24/2359
24 Jan 2141	WARNING: Geomagnetic K = 5	24/2145 - 2359
24 Jan 2247	EXTENDED WARNING: Geomagnetic K = 4	23/2325 - 25/1200
25 Jan 0003	ALERT: Geomagnetic K = 5	24/2359
25 Jan 1158	EXTENDED WARNING: Geomagnetic K = 4	23/2325 - 25/1800
25 Jan 1741	ALERT: Electron 2MeV Integral Flux \geq 1000pfu	25/1730
26 Jan 1456	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	25/1730
27 Jan 1316	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	25/1730



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
28 Jan	71	5	2	11 Feb	69	5	2
29	71	5	2	12	69	5	2
30	71	5	2	13	69	5	2
31	71	8	3	14	69	5	2
01 Feb	71	18	5	15	69	5	2
02	70	10	3	16	69	5	2
03	70	8	3	17	70	5	2
04	70	5	2	18	70	5	2
05	69	5	2	19	72	12	4
06	69	5	2	20	72	20	5
07	69	5	2	21	72	12	4
08	69	5	2	22	75	8	3
09	69	5	2	23	75	5	2
10	69	5	2				

Energetic Events

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

No Events Observed

Flare List

Date	Time			X-ray Class	Optical		Rgn #
	Begin	Max	End		Imp/ Brtns	Location Lat CMD	
23 Jan	2145	2149	2152	B1.2			2733
24 Jan	1855	1858	1900	B1.0			2733
25 Jan	0106	0111	0116	B1.7			2733
25 Jan	0207	0224	0227	B1.4			2733
25 Jan	0405	0411	0423	B6.9			2733
25 Jan	0829	0835	0841	B2.3			2733
25 Jan	1603	1611	1622	B2.3			2733
25 Jan	2113	2127	2135	B4.6			2733
26 Jan	0334	0349	0354	B1.5			2733
26 Jan	0636	0647	0651	B2.2			2733
26 Jan	0752	0801	0807	B1.2			2733
26 Jan	0810	0813	0817	B1.3			2733
26 Jan	1312	1322	1334	C5.0			2733
26 Jan	1551	1555	1558	B2.9			2733
26 Jan	1614	1628	1635	B8.6	SF	N06W25	2733
26 Jan	1849	1913	1920	B1.9			2733
26 Jan	2341	2344	2348	B1.1			2733
27 Jan	1325	1325	1327		SF	N06W44	2733



Region Summary

Location		Sunspot Characteristics						Flares							
Date	Lat CMD	Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
		Lon	10 ⁻⁶ hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4
Region 2733															
22 Jan	N06E22	257	20	4	Cro	8	B								
23 Jan	N06E08	258	30	5	Cro	9	B								
24 Jan	N06W07	259	30	8	Dro	9	B								
25 Jan	N06W20	259	50	9	Dri	17	B								
26 Jan	N06W34	260	80	10	Dsi	16	B	1			1				
27 Jan	N05W48	261	90	10	Dso	12	B				1				
								1	0	0	2	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 259

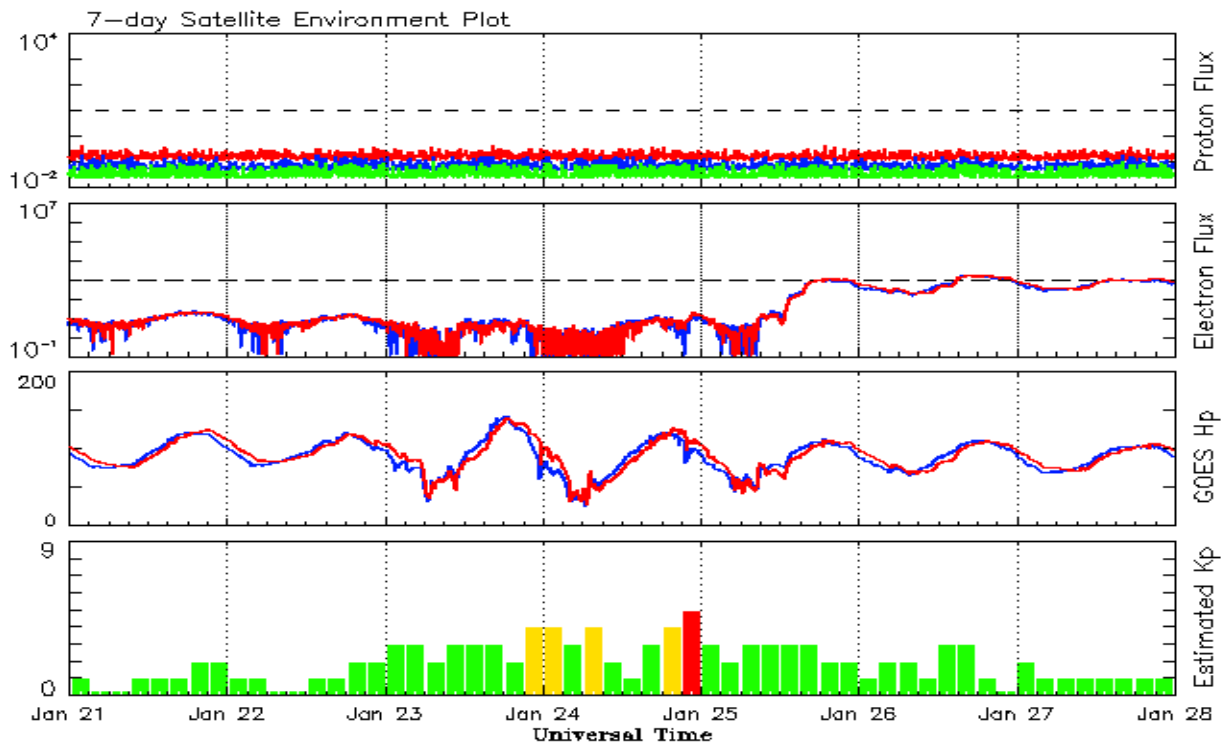


Recent Solar Indices (preliminary)
Observed monthly mean values

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
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	15.4	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	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
2018									
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	4.4	72.5	70.0	7	7.4
July	1.3	1.0	0.77			69.7		6	
August	10.0	5.2	0.53			69.1		10	
September	5.7	2.0	0.35			68.3		9	
October	6.9	2.9	0.42			69.5		7	
November	7.3	3.5	0.48			68.9		6	
December	5.6	1.9	0.34			70.0		7	

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 21 January 2019*

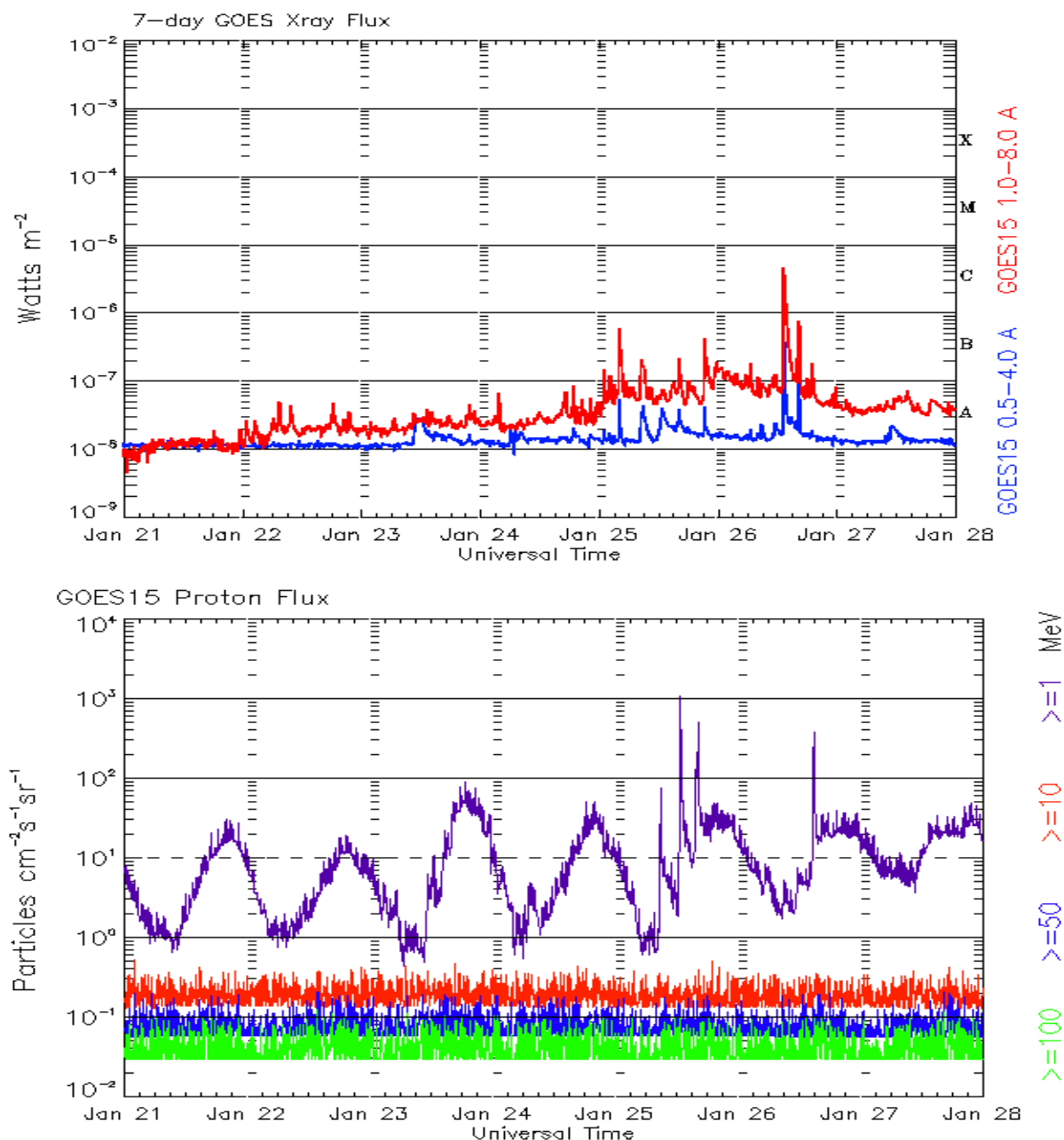
The proton flux plot contains the five-minute averaged integral proton flux (protons/cm²-sec -sr) as measured by the SWPC Primary GOES satellite, near West 75, for each of three energy thresholds: greater than 10, 50, and 100 MeV.

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 21 January 2019*

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.



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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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