Space Weather Highlights **SWPC PRF 2568**
11 November - 17 November 2024 **18 November 2024**

Solar activity ranged from low to moderate levels this period. R1 (Minor) radio blackouts were observed on 11 Nov, 13 Nov and 15-16 Nov. Regions 3889 (S09, L=006, class/area Fki/540 on 15 Nov) and 3893 (S19, L=289, class/area Cso/050 on 15 Nov) produced a majority of the activity this period. The largest flare of the period was an M1.7 event observed on 13/1708 UTC from Region 3889. During the period, a total of 33 C-class and 7 M-class flares were observed.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal to moderate levels.

Geomagnetic field activity ranged from quiet to active levels. Unsettled to active levels were observed on 11 Nov and 13-17 Nov, all associated with positive polarity coronal hole high speed streams (CH HSSs). During the period, solar wind parameters were at mostly nominal levels through early on 14 Nov. Early on 14 Nov, total field increased to 14 nT, while the Bz component dropped to -13 nT. Wind speeds increased from about 305 km/s to a peak of about 460 km/s by late on 15 Nov. Wind speeds ended the period near 310 km/s. The phi angle was in a predominately positive sector throughout the period.

Space Weather Outlook
18 November - 14 December 2024

Solar activity is expected to be at low to moderate levels (R1/R2 - Minor/Moderate), with a chance for high levels (R3 - Strong) from 18 Nov - 14 Dec. The disk is expected to feature numerous complex regions throughout the outlook period.

No proton events are expected at geosynchronous orbit. However, there is a chance for proton activity following significant solar flare activity during the outlook period.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at normal to moderate levels.

Geomagnetic field activity is likely to be at unsettled to active periods on 18 Nov, 20 Nov, 25-27 Nov, 30 Nov-03 Dec, 06-08 Dec and 11-14 Dec, all due to the influence from recurrent CH HSS effects. Mostly quiet periods are likely on 19 Nov, 21-24 Nov, 28-29 Nov, 04-05 Dec and 09-10 Dec.

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
11 November	182	138	1180	C1.3	3	2	0	3	3	0	0	0
12 November	172	116	620	C1.3	8	0	0	6	0	0	0	0
13 November	150	109	600	C1.0	9	2	0	3	1	0	0	0
14 November	147	96	530	C1.0	6	0	0	1	0	0	0	0
15 November	149	71	630	C1.4	3	2	0	3	0	0	0	0
16 November	140	71	540	C1.4	8	1	0	1	1	0	0	0
17 November	146	117	655	C1.0	5	0	0	2	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	>2MeV
11 November	8.8e+04	1.4e+04	8.2e+06
12 November	4.8e+04	1.4e+04	1.6e+07
13 November	7.3e+05	1.4e+04	1.8e+07
14 November	2.0e+05	1.5e+04	3.8e+06
15 November	8.6e+04	1.5e+04	5.0e+06
16 November	5.6e+04	1.5e+04	1.1e+07
17 November	7.2e+04	1.5e+04	1.7e+07

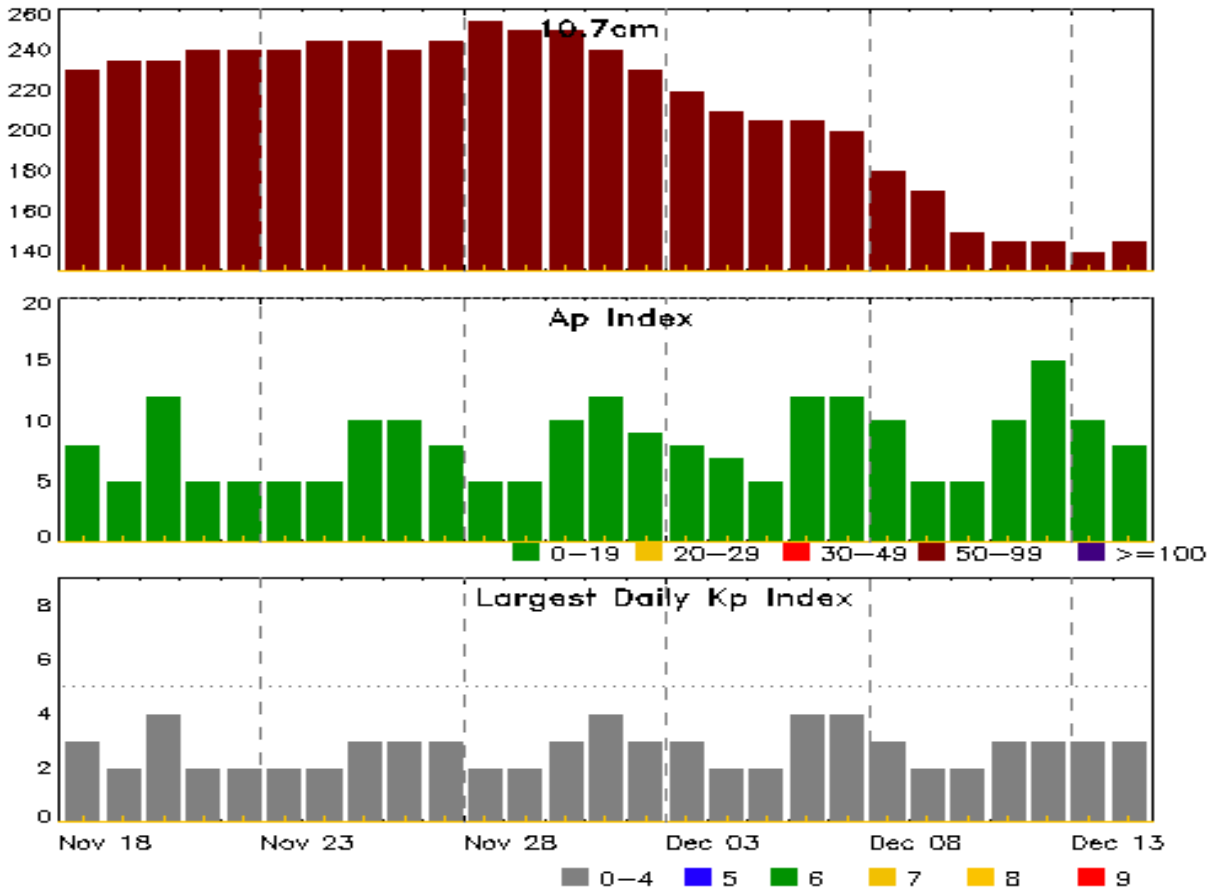
Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
11 November	7	2-1-3-2-2-2-1-1	23	1-1-6-5-4-3-2-1	10	2-2-4-3-2-3-2-1
12 November	4	2-1-2-1-2-1-1-0	5	0-1-3-1-1-3-1-0	5	2-1-2-1-1-2-1-1
13 November	5	2-2-0-0-3-1-1-1	13	1-1-0-4-5-3-2-1	7	3-2-0-1-3-1-2-1
14 November	10	0-3-2-1-3-2-2-4	14	0-2-1-3-4-4-3-3	11	1-3-1-1-2-3-3-4
15 November	10	3-3-3-2-2-2-2-2	22	2-3-4-4-4-5-3-2	13	3-4-3-2-3-3-3-2
16 November	8	3-3-3-2-2-1-0-1	9	3-2-4-3-2-1-0-0	8	4-3-3-2-2-1-0-1
17 November	6	0-3-2-2-2-1-1-1	14	0-1-2-5-5-1-1-0	4	1-3-2-2-3-1-1-1

Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
14 Nov 0542	WARNING: Geomagnetic K = 4	14/0540 - 1800
14 Nov 1738	EXTENDED WARNING: Geomagnetic K = 4	14/0540 - 15/0900
16 Nov 0245	WARNING: Geomagnetic K = 4	16/0245 - 17/1200
16 Nov 0259	ALERT: Geomagnetic K = 4	
16 Nov 1204	CANCELLATION: Geomagnetic K = 4	

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
18 Nov	230	8	3	02 Dec	230	9	3
19	235	5	2	03	220	8	3
20	235	12	4	04	210	7	2
21	240	5	2	05	205	5	2
22	240	5	2	06	205	12	4
23	240	5	2	07	200	12	4
24	245	5	2	08	180	10	3
25	245	10	3	09	170	5	2
26	240	10	3	10	150	5	2
27	245	8	3	11	145	10	3
28	255	5	2	12	145	15	3
29	250	5	2	13	140	10	3
30	250	10	3	14	145	8	3
01 Dec	240	12	4				

Energetic Events

	Time			X-ray		Optical Information			Peak Radio Flux		Sweep Freq Intensity	
Date	Begin	Max	Half Max	Class	Integ Flux	Imp/ Brtns	Location Lat	CMD	Rgn #	245	2695	II	IV
11 Nov	0507		0526	0536	M1.1	0.003	1N		S08E17	3889			
11 Nov	0536		0543	0552	M1.4	0.013				3889			
13 Nov	0011		0022	0032	M1.0	0.007	1F		S12E02	3889			
13 Nov	1657		1708	1717	M1.7	0.011				3889			
15 Nov	B0138		U0146	B0208	M1.1	0.012				3893			
15 Nov	1205		1218	1226	M1.0	0.008	SF		S20E43	3893			
16 Nov	0126		0137	0141	M1.6	0.004	1N		S10W39	3889	120		

Flare List

	Time			Optical			
Date	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
11 Nov	0357	0407	0425	C7.9	1F	S08E17	3889
11 Nov	0504	0538	0614	M1.1	1N	S08E17	3889
11 Nov	0536	0543	0552	M1.4			3889
11 Nov	0902	0917	0925		SF	S13W18	3890
11 Nov	1336	U1337	A1358		SF	S07E16	3889
11 Nov	1419	1428	1438	C4.4	1F	S07E16	3889
11 Nov	1639	1647	1654	C2.3	SF	S07E09	3889
12 Nov	0117	0125	0138	C2.7	SF	S07E09	3889
12 Nov	0213	0223	0241	C2.5			3889
12 Nov	0430	0437	0453	C2.8	SF	S09E11	3889
12 Nov	0740	0758	0815	C4.2	SF	S04W45	3884
12 Nov	1046	1050	1057	C2.1	SF	S09E10	3889
12 Nov	1109	1120	1130	C4.1	SF	S09E10	3889
12 Nov	1247	1401	1439	C8.2			
12 Nov	1401	1401	1404		SF	S08E01	3889
12 Nov	2112	2119	2123	C1.7			3890
13 Nov	0011	0022	0032	M1.0	1F	S12E02	3889
13 Nov	0125	0131	0143	C2.2			3889
13 Nov	0233	0241	0250	C1.8			3889
13 Nov	0704	0708	0715	C2.1			3889
13 Nov	0715	0723	0727	C2.0			3889
13 Nov	0727	0731	0736	C2.2			3889
13 Nov	1257	1312	1321	C5.7			3889
13 Nov	1321	1328	1333	C4.5			3889

Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
13 Nov	1449	1458	1503	C1.9	SF	S06W14	3889
13 Nov	1504	1504	1507		SF	S06W13	3889
13 Nov	1657	1708	1717	M1.7			3889
13 Nov	2245	2259	2314	C3.2	SF	S08W59	3886
14 Nov	0755	0803	0825	C1.7			3889
14 Nov	0825	0855	0858	C2.0			3889
14 Nov	0858	0913	0925	C2.9			
14 Nov	1145	1153	1158	C2.7			3889
14 Nov	1239	1246	1251	C2.8			3891
14 Nov	1529	1538	1544	C2.8	SF	S08W24	3889
15 Nov	B0138	U0146	B0208	M1.1			3893
15 Nov	0814	0817	0827		SF	S10W24	3889
15 Nov	1205	1218	1226	M1.0	SF	S20E43	3893
15 Nov	1655	1706	1711	C2.7			3892
15 Nov	1832	1842	1847	C2.2			3892
15 Nov	1859	1900	1903		SF	S17W44	3891
15 Nov	2227	2234	2239	C2.1			3889
16 Nov	0003	0013	0017	C2.9			3892
16 Nov	0126	0137	0141	M1.6	1N	S10W39	3889
16 Nov	0723	0728	0737	C2.5			3889
16 Nov	1603	1610	1616	C1.9			
16 Nov	1650	1657	1702	C1.9			
16 Nov	1818	1832	1843	C2.9			
16 Nov	2017	2028	2033	C3.0			
16 Nov	2145	2202	2220	C3.1	SF	S09W51	3889
16 Nov	2301	2307	2315	C1.9			3889
17 Nov	0446	0455	0509	C1.7			3889
17 Nov	1038	1059	1132	C5.3			
17 Nov	1132	1137	1142	C4.5	SF	S10W45	3889
17 Nov	1427	1428	1441		SF	S14E63	
17 Nov	1939	1943	1947	C1.8			
17 Nov	2303	2313	2337	C2.0			3889

Region Summary

	Location		Sunspot Characteristics					Flares							
		Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
Date	Lat CMD	Lon	10^{-6} hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4
			Region 3879												
29 Oct	N14E74	113	450	5	Hkx	1	A								
30 Oct	N15E60	114	450	5	Hhx	1	A								
31 Oct	N15E50	111	570	4	Hhx	1	A								
01 Nov	N15E36	111	480	5	Hhx	1	A				1				
02 Nov	N15E23	111	500	5	Hhx	1	A								
03 Nov	N15E10	111	500	6	Hhx	1	A								
04 Nov	N15W04	112	500	6	Hhx	1	A								
05 Nov	N15W17	112	440	5	Hhx	1	A								
06 Nov	N16W30	112	440	5	Hhx	1	A								
07 Nov	N15W44	112	450	6	Cho	3	B								
08 Nov	N15W58	113	450	5	Hhx	2	A								
09 Nov	N15W72	114	430	5	Hhx	2	A								
10 Nov	N15W86	115	430	5	Hhx	2	A								
11 Nov	N16W95	111	300	5	Hhx	1	A								
								0	0	0	1	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 112

			Region 3880												
31 Oct	S13E55	106	10	1	Axx	1	A								
01 Nov	S13E41	106	10	1	Axx	2	A								
02 Nov	S14E30	104	20	3	Bxo	4	B								
03 Nov	S14E16	105	plage												
04 Nov	S14E02	106	plage												
05 Nov	S14W12	107	plage												
06 Nov	S14W26	108	plage												
07 Nov	S14W40	108	plage												
08 Nov	S14W54	109	plage												
09 Nov	S14W68	110	plage												
10 Nov	S14W82	111	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 106

Region Summary - continued

	Location		Sunspot Characteristics					Flares							
		Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
Date	Lat CMD	Lon	10^{-6} hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4
		Region 3883													
02 Nov	S06E66	68	60	7	Cao	6	B								
03 Nov	S06E51	70	160	12	Eai	20	BGD	1	1		4				
04 Nov	S06E37	71	260	12	Eki	30	GD	2	9		6				
05 Nov	S06E21	68	270	13	Eki	22	BGD	5	3		4	1	1		
06 Nov	S06E07	75	360	14	Ekc	24	BGD	4	4	1	5				
07 Nov	S07W07	75	400	16	Fkc	23	BGD	1	3		6	3			
08 Nov	S06W21	76	420	16	Fkc	35	BD	6	1		6	1			
09 Nov	S06W35	77	380	16	Fki	30	BGD	4			6				
10 Nov	S06W49	78	360	16	Fki	20	BG								
11 Nov	S06W61	77	240	16	Fao	7	BG								
12 Nov	S06W74	76	140	14	Eao	4	B								
13 Nov	S05W91	80	90	3	Hsx	1	A								
								23	21	1	37	5	1	0	0

Crossed West Limb.
Absolute heliographic longitude: 75

		Region 3884													
02 Nov	S06E76	58	60	2	Hsx	1	A								
03 Nov	S06E65	56	70	3	Cso	2	B								
04 Nov	S07E51	57	50	2	Cso	2	B								
05 Nov	S07E39	56	60	1	Hsx	1	A								
06 Nov	S07E25	57	50	2	Hsx	1	A				1				
07 Nov	S07E11	56	40	1	Hsx	1	A								
08 Nov	S07W03	58	20	1	Hsx	1	A								
09 Nov	S07W17	59	20	1	Hsx	1	A								
10 Nov	S07W31	60	20	1	Hsx	1	A	1							
11 Nov	S07W42	58	20	3	Cro	3	B								
12 Nov	S07W56	58	10	1	Axx	1	A	1			1				
13 Nov	S07W69	58	10	3	Axx	2	A								
14 Nov	S07W83	59	plage												
								2	0	0	2	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 58

Region Summary - continued

	Location		Sunspot Characteristics					Flares							
		Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
Date	Lat CMD	Lon	10^{-6} hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4
			Region 3886												
03 Nov	S05E76	45	90	6	Dao	2	B								
04 Nov	S05E62	46	150	11	Eao	12	BG	1	1						
05 Nov	S07E51	44	250	12	Eki	24	BG	1			2				
06 Nov	S08E37	45	320	12	Eki	28	BG								
07 Nov	S08E23	45	370	17	Fki	36	BGD	2			1				
08 Nov	S08E09	46	170	14	Eai	32	B	3			5				
09 Nov	S06W05	47	110	14	Eai	18	B	2			7	1			
10 Nov	S06W19	48	100	14	Eao	12	B				1	1			
11 Nov	S06W31	47	100	13	Cso	12	B								
12 Nov	S07W43	45	10	3	Bxo	2	B								
13 Nov	S07W62	51	10	3	Hrx	2	A	1			1				
14 Nov	S07W76	52	10	1	Axx	1	A								
								10	1	0	17	2	0	0	0

Died on Disk.
Absolute heliographic longitude: 47

			Region 3889												
06 Nov	S10E80	1	plage					2	8						
07 Nov	S10E66	2	250	13	Ekc	10	BD	2	4						
08 Nov	S10E52	3	400	13	Eko	18	BGD	3			1				
09 Nov	S10E38	4	450	14	Eko	20	BGD	2	1		7	1			
10 Nov	S10E24	5	480	19	Fko	20	BGD	4	3		4	2	2		
11 Nov	S10E11	5	460	17	Fki	25	BGD	3	2		2	3			
12 Nov	S09W02	4	420	18	Fki	30	BGD	5			5				
13 Nov	S10W15	4	430	18	Fki	26	BGD	8	2		2	1			
14 Nov	S09W29	5	430	19	Fki	25	BGD	4			1				
15 Nov	S09W43	6	540	19	Fki	20	BGD	1			1				
16 Nov	S09W57	7	450	19	Fko	12	BGD	3	1		1	1			
17 Nov	S09W71	8	430	21	Fko	12	BG	3			1				
								40	21	0	25	8	2	0	0

Still on Disk.
Absolute heliographic longitude: 4

Region Summary - continued

	Location		Sunspot Characteristics					Flares							
		Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
Date	Lat CMD	Lon	10^{-6} hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4
			Region 3890												
09 Nov	S13E02	44	60	8	Cro	18	B								
10 Nov	S13W12	42	30	6	Bxo	6	B	1							
11 Nov	S13W28	44	10	6	Bxo	5	B				1				
12 Nov	S12W40	42	10	3	Bxo	3	B	1							
13 Nov	S12W54	43	plage												
14 Nov	S12W68	44	plage												
15 Nov	S12W82	45	plage												
								2	0	0	1	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 44

			Region 3891												
11 Nov	S15E02	14	30	3	Cro	3	B								
12 Nov	S15W12	14	10	1	Axx	1	A								
13 Nov	S15W28	17	0	1	Axx	1	A								
14 Nov	S15W42	18	plage					1							
15 Nov	S15W56	19	plage								1				
16 Nov	S15W70	20	plage												
17 Nov	S15W84	21	plage												
								1	0	0	1	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 14

			Region 3892												
11 Nov	S11E25	351	20	5	Dro	2	B								
12 Nov	S11E11	351	20	5	Cro	5	B								
13 Nov	S11W01	350	30	6	Cro	6	B								
14 Nov	S11W15	351	20	2	Bxo	4	B								
15 Nov	S11W29	352	10	2	Bxo	2	B	2							
16 Nov	S11W43	353	10	1	Axx	1	A	1							
17 Nov	S11W57	354	plage												
								3	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 350

Region Summary - continued

	Location		Sunspot Characteristics					Flares							
		Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
Date	Lat CMD	Lon	10^{-6} hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4
			Region 3893												
13 Nov	S19E62	287	30	1	Hsx	1	A								
14 Nov	S19E48	288	40	3	Cso	4	B								
15 Nov	S19E34	289	50	3	Cso	4	B		2		1				
16 Nov	S19E20	290	50	3	Cso	2	B								
17 Nov	S19E06	291	30	2	Hsx	1	A								
								0	2	0	1	0	0	0	0
Still on Disk. Absolute heliographic longitude: 291															
			Region 3894												
14 Nov	N24E44	292	30	6	Bxo	12	B								
15 Nov	N24E30	293	30	7	Cro	5	B								
16 Nov	N23E16	294	10	6	Cro	2	B								
17 Nov	N21E02	295	10	1	Axx	1	A								
								0	0	0	0	0	0	0	0
Still on Disk. Absolute heliographic longitude: 295															
			Region 3895												
16 Nov	S03W35	345	20	3	Cro	4	B								
17 Nov	S03W49	346	5	1	Axx	1	A								
								0	0	0	0	0	0	0	0
Still on Disk. Absolute heliographic longitude: 345															
			Region 3896												
17 Nov	N05W04	301	50	3	Cao	5	B								
								0	0	0	0	0	0	0	0
Still on Disk. Absolute heliographic longitude: 301															
			Region 3897												
17 Nov	S12W47	344	70	5	Cao	9	B								
								0	0	0	0	0	0	0	0
Still on Disk. Absolute heliographic longitude: 344															

Region Summary - continued

	Location		Sunspot Characteristics					Flares							
		Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
Date	Lat CMD	Lon	10^{-6} hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4
		Region 3898													
17 Nov	S15E19	278	50	6	Cao	5	B	0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 278

		Region 3899													
17 Nov	S13E60	237	10	5	Bxo	3	B	0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 237

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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