Space Weather Highlights **SWPC PRF 2517**
20 November - 26 November 2023 **27 November 2023**

Solar activity ranged from low to moderate levels. Low levels were observed on 21-22 and 25-26 November. Moderate (R1-minor) levels were observed on 20 and 23-24 November. During the period, a total of 55 C-class and 4 M-class flares were observed from 13 different regions. Region 3492 (N19, L=345, class/area Ehi/380 on 24 Nov) was the most active region producing 23 C-class and 1 M-class flare.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at low to moderate levels during the period.

Geomagnetic field activity was at mostly quiet to unsettled levels on 20 and 23-24 November. Active, minor storm (G1-minor) and moderate (G2-moderate) levels were observed on 21-22 and 25-26 November. Quiet to minor storm levels were observed on 21-22 November due to positive polarity CH HSS influence. Minor to moderate storm levels were observed on 25 November due to CME and positive polarity CH HSS influence.

Space Weather Outlook
27 November - 23 December 2023

Solar activity is expected to be at very low to low levels on 02-12 December, with a chance for moderate (R1-minor) levels on 27-30 November, 01 December and 13-23 December.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to reach moderate to high levels on 30 November, 01-04 December and 07-09 December due to CH HSS influence.

Geomagnetic field activity is expected to be at unsettled to active levels on 27-28 November, 05-07 and 12-13 December. Unsettled to G1 (minor) levels are possible on 18-20 and 22-23 December. All activity is due to a variety of positive or negative polarity CH HSS influence.

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	157	127	770	C1.5	14	1	0	3	1	0	0	0
21 November	172	138	810	C1.7	12	0	0	7	0	0	0	0
22 November	190	174	880	C2.7	3	0	0	12	0	0	0	0
23 November	194	176	1560	C2.3	10	2	0	3	0	0	0	0
24 November	178	184	1590	C1.2	7	1	0	9	2	0	0	0
25 November	176	179	1400	C1.1	3	0	0	3	0	0	0	0
26 November	180	169	1220	C1.0	5	0	0	4	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
20 November	3.2e+05	1.8e+04	7.2e+06
21 November	5.7e+05	1.8e+04	1.8e+06
22 November	1.7e+05	1.8e+04	3.4e+06
23 November	2.3e+04	1.9e+04	2.6e+07
24 November	1.5e+05	1.9e+04	3.7e+07
25 November	9.6e+05	1.8e+04	1.9e+06
26 November	1.2e+05	1.8e+04	1.5e+06

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
20 November	4	1-1-1-1-1-2-2-1	4	0-0-3-2-1-1-0-0	5	1-1-2-2-2-1-1-1
21 November	15	1-2-4-3-4-3-2-3	31	0-1-5-3-6-6-2-3	18	1-2-4-3-4-4-3-4
22 November	17	3-3-4-4-3-3-3-2	60	3-6-7-6-5-6-4-2	30	4-5-5-4-3-4-4-3
23 November	4	2-2-2-1-1-1-0-1	8	1-1-4-3-3-1-0-0	7	3-2-3-1-2-1-1-1
24 November	5	1-2-1-1-2-1-1-2	6	0-1-0-1-3-3-2-2	7	2-2-1-1-2-2-2-3
25 November	18	2-2-3-3-4-4-4-3	61	2-2-7-6-6-6-6-3	38	3-3-5-5-5-5-6-4
26 November	0	4-2-2-0-0-0-0-0	12	3-1-4-4-3-1-1-1	27	4-2-3-2-2-1-1-2

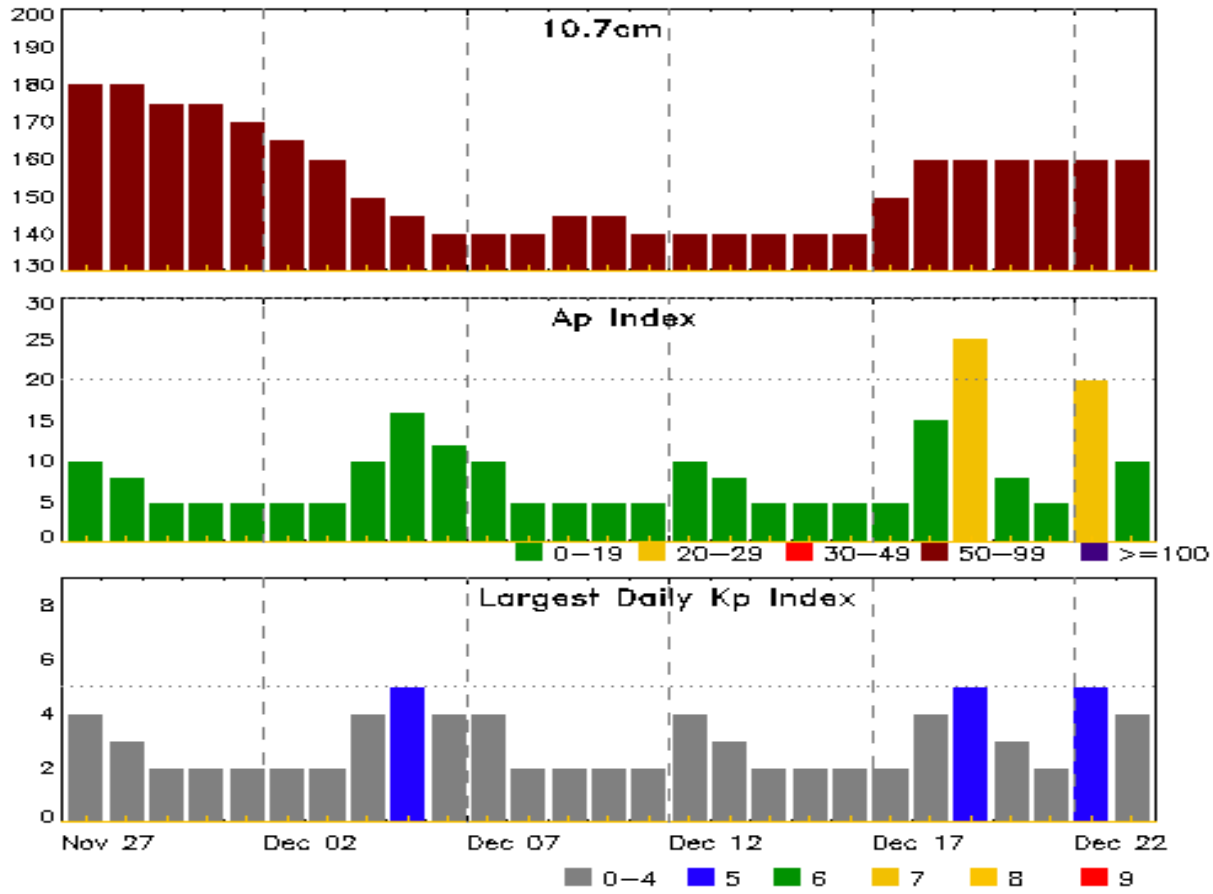
Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
20 Nov 1711	CANCELLATION: Geomagnetic Storm Category G1 predicted	
21 Nov 0635	WARNING: Geomagnetic K = 4	21/0635 - 1200
21 Nov 0840	ALERT: Geomagnetic K = 4	
21 Nov 0852	WARNING: Geomagnetic K = 5	21/0851 - 1200
21 Nov 1154	EXTENDED WARNING: Geomagnetic K = 4	21/0635 - 1800
21 Nov 1658	EXTENDED WARNING: Geomagnetic K = 4	21/0635 - 22/0600
22 Nov 0153	EXTENDED WARNING: Geomagnetic K = 4	21/0635 - 22/1200
22 Nov 0449	WARNING: Geomagnetic K = 5	22/0448 - 1200
22 Nov 0601	ALERT: Geomagnetic K = 5	
22 Nov 0826	ALERT: Geomagnetic K = 5	
22 Nov 1147	EXTENDED WARNING: Geomagnetic K = 4	21/0635 - 22/2359
22 Nov 1148	EXTENDED WARNING: Geomagnetic K = 5	22/0448 - 1800
22 Nov 2356	EXTENDED WARNING: Geomagnetic K = 4	21/0635 - 23/0600
24 Nov 2056	WATCH: Geomagnetic Storm Category G1 predicted	
25 Nov 0423	WARNING: Geomagnetic K = 4	25/0422 - 1800
25 Nov 0814	WARNING: Geomagnetic Sudden Impulse expected	25/0824 - 0854
25 Nov 0818	WARNING: Geomagnetic K = 5	25/0824 - 1500
25 Nov 0843	ALERT: Geomagnetic K = 4	
25 Nov 0852	SUMMARY: Geomagnetic Sudden Impulse	25/0835
25 Nov 0901	ALERT: Geomagnetic K = 5	
25 Nov 1203	ALERT: Geomagnetic K = 5	
25 Nov 1327	ALERT: Geomagnetic K = 5	
25 Nov 1450	EXTENDED WARNING: Geomagnetic K = 4	25/0422 - 2359
25 Nov 1452	EXTENDED WARNING: Geomagnetic K = 5	25/0824 - 2100
25 Nov 1736	ALERT: Geomagnetic K = 5	
25 Nov 1928	ALERT: Geomagnetic K = 5	
25 Nov 2006	EXTENDED WARNING: Geomagnetic K = 4	25/0422 - 26/1200
25 Nov 2006	EXTENDED WARNING: Geomagnetic K = 5	25/0824 - 26/0600

Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
25 Nov 2006	ALERT: Geomagnetic K = 6	
25 Nov 2006	WARNING: Geomagnetic K = 6	25/2003 - 2359
26 Nov 0809	ALERT: Type II Radio Emission	26/0747
26 Nov 0826	ALERT: Type IV Radio Emission	26/0752
26 Nov 1155	EXTENDED WARNING: Geomagnetic K = 4	25/0422 - 26/1800

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	180	10	4	11 Dec	140	5	2
28	180	8	3	12	140	10	4
29	175	5	2	13	140	8	3
30	175	5	2	14	140	5	2
01 Dec	170	5	2	15	140	5	2
02	165	5	2	16	140	5	2
03	160	5	2	17	150	5	2
04	150	10	4	18	160	15	4
05	145	16	5	19	160	25	5
06	140	12	4	20	160	8	3
07	140	10	4	21	160	5	2
08	140	5	2	22	160	20	5
09	145	5	2	23	160	10	4
10	145	5	2				

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
20 Nov	0854	0903	0912	M1.2	0.007					3492			
23 Nov	0259	0338	0405	M1.4	0.003						110		
23 Nov	1425	1437	1442	M1.0	0.006					3490	2500		
24 Nov	0917	0933	0943	M1.1	0.011	1F	S16	W02	3499				

Flare List

	Time				Optical			
Date	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
20 Nov	0308	0311	0318	C2.9			3491
20 Nov	0703	0706	0710	C3.8			3492
20 Nov	0720	0733	0736	C3.8			3492
20 Nov	0736	0742	0747	C3.3			3492
20 Nov	0830	0836	0842	C2.1			3492
20 Nov	0854	0903	0912	M1.2			3492
20 Nov	0918	0925	0930	C4.8			3492
20 Nov	1009	1014	1022	C5.0	SF	N27E68	3492
20 Nov	1223	1231	1239	C8.0			3492
20 Nov	1302	1312	1320	C2.7			3489
20 Nov	1358	1407	1413	C3.5			3492
20 Nov	1620	1623	1628	C2.1			3492
20 Nov	2008	2236	A2305		1F	N19E68	3492
20 Nov	2047	2057	2103	C2.8	SF	S13E34	3489
20 Nov	2103	2110	2114	C2.7			3492
20 Nov	2312	2313	2315		SF	N20E63	3492
20 Nov	2335	2342	2358	C3.1			3492
21 Nov	0107	0118	0126	C6.3			3493
21 Nov	0338	0345	0400	C6.6	SF	S16E32	3489
21 Nov	0529	0542	0553	C2.7			3492
21 Nov	0705	0713	0722	C3.7	SF	N16E63	3492
21 Nov	1106	1110	1114	C3.2			3492
21 Nov	1331	1336	1341	C3.5			3492
21 Nov	1348	1352	1358	C7.7			3492
21 Nov	1431	1436	1444	C3.9			3489
21 Nov	1614	1621	1630	C2.7	SF	N17E58	3492
21 Nov	1744	1854	2029		SF	N17E58	3492

Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
21 Nov	2030	2043	2055		SF	N16E55	3492
21 Nov	2126	2126	2130		SF	N24E48	3495
21 Nov	2231	2240	2245	C2.6			3497
21 Nov	2312	2319	2322	C2.8			3495
21 Nov	2333	2340	2347	C4.4			3495
21 Nov	2337	2338	2342		SF	N23E44	3495
22 Nov	0104	0111	0116	C7.5	SF	N21E48	3495
22 Nov	0151	0151	0158		SF	N15E53	3492
22 Nov	B0446	0446	0448		SF	N21E46	3495
22 Nov	0526	0528	0530		SF	N21E43	3495
22 Nov	0617	0628	0637	C8.9	SF	N13E51	3492
22 Nov	0918	0945	0950		SF	N13E49	3492
22 Nov	1418	1421	1433		SF	N14E46	3492
22 Nov	1442	1446	1517		SF	N14E46	3492
22 Nov	1633	1635	1641		SF	S17E14	3489
22 Nov	1636	1638	1701		SF	N13E45	3492
22 Nov	1641	1642	1644		SF	N21E40	3495
22 Nov	1753	1754	1757		SF	N22E41	3495
22 Nov	2354	0003	0014	C6.3			3491
23 Nov	0259	0338	0405	M1.4			
23 Nov	0538	0544	0548	C7.8	SF	N19E35	3492
23 Nov	0706	0714	0732	C6.8	SF	N15E34	3492
23 Nov	1235	1246	1258	C5.3			3490
23 Nov	1258	1315	1327	C6.2			
23 Nov	1425	1437	1442	M1.0			3490
23 Nov	1515	1521	1526	C3.8			3494
23 Nov	1532	1538	1542	C5.9	SN	N21E17	3497
23 Nov	1819	1828	1834	C2.6			3502
23 Nov	1834	1841	1845	C3.3			3492
23 Nov	2034	2039	2043	C9.1			3490
23 Nov	2057	2105	2109	C4.0			3490
24 Nov	0110	0116	0120	C2.0			3492
24 Nov	0301	0303	0307	C2.2			3490
24 Nov	0531	0541	0558	C3.3			3492
24 Nov	0632	0702	0708	C3.3	SF	N25E13	3495
24 Nov	B0850	U0853	0854		SF	N17E19	3492
24 Nov	B0855	0855	0911		SF	N13E21	3502
24 Nov	0917	0933	0943	M1.1	1F	S16W02	3499

Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
24 Nov	B0949	U0951	1010		SF	N25E14	3495
24 Nov	B0950	U1017	A1032		SF	S14E35	3494
24 Nov	B0950	U0950	1011		SF	S12E27	3493
24 Nov	1011	1019	1025	C2.5			3494
24 Nov	1034	1042	1049	C7.5	1F	S15E34	3494
24 Nov	2202	2219	2248	C5.5			3490
24 Nov	2210	2213	2306		SF	N26E07	3495
24 Nov	2213	2213	2220		SF	N22E01	3490
24 Nov	2312	2318	2320		SF	N26E07	3495
25 Nov	0913	0918	0923	C2.1			3499
25 Nov	1356	1439	1451	C4.4			3503
25 Nov	1704	1711	1717	C1.5	SF	N21W12	3490
25 Nov	1802	1802	1803		SF	N21W10	3490
25 Nov	1826	1827	1833		SF	N20W10	3490
26 Nov	0319	0325	0332	C1.4			3490
26 Nov	0738	0743	0751	C3.6	SF	N19W17	3490
26 Nov	1252	1257	1305	C2.7			3500
26 Nov	1544	1551	1557	C1.3			3502
26 Nov	1600	1607	1619	C1.8	SF	S19E28	3500
26 Nov	1721	1721	1723		SF	S15W45	3489
26 Nov	2036	2038	2046		SF	N20W26	3490

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 3488												
14 Nov	N29E76	51	30	1	Hrx	1	A								
15 Nov	N29E63	51	10	1	Axx	1	A								
16 Nov	N31E52	51	plage												
17 Nov	N31E38	49	plage												
18 Nov	N31E24	50	plage												
19 Nov	N31E10	51	plage												
20 Nov	N31W04	52	plage												
21 Nov	N31W18	53	plage												
22 Nov	N31W32	53	plage												
23 Nov	N31W46	54	plage												
24 Nov	N31W60	55	plage												
25 Nov	N31W74	56	plage												
26 Nov	N31W88	57	plage												
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 52

			Region 3489												
17 Nov	S15E71	15	60	2	Cao	2	B	2							
18 Nov	S15E58	15	180	4	Dao	3	B	1							
19 Nov	S15E45	16	220	11	Eac	12	B	3			4				
20 Nov	S16E32	14	230	6	Dai	20	BD	2			1				
21 Nov	S16E18	16	220	7	Dac	14	B	2			1				
22 Nov	S16E04	17	220	7	Cai	14	B				1				
23 Nov	S14W09	16	120	5	Cai	7	B								
24 Nov	S15W23	18	60	4	Cai	6	B								
25 Nov	S15W36	18	30	3	Hrx	3	A								
26 Nov	S14W50	18	10	2	Axx	3	A				1				
								10	0	0	8	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 17

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 3490												
18 Nov	N18E69	344	80	5	Dao	5	B	3	3						
19 Nov	N23E65	355	150	13	Eac	8	B	6							
20 Nov	N17E47	240	40	1	Hax	1	A								
21 Nov	N20E36	358	120	6	Cao	4	B								
22 Nov	N20E22	359	150	6	Dac	9	BG								
23 Nov	N21E11	356	160	7	Dac	10	BGD	3	1						
24 Nov	N20W03	358	180	6	Dai	6	BD	2			1				
25 Nov	N21W16	358	110	4	Cao	6	B	1			3				
26 Nov	N22W27	356	90	3	Cai	6	B	2			2				
								17	4	0	6	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 358

			Region 3491												
19 Nov	N11E68	353	30	2	Hsx	1	A	1			1				
20 Nov	N13E55	351	40	1	Hsx	1	A	1							
21 Nov	N13E41	353	40	1	Hsx	1	A								
22 Nov	N13E27	354	40	1	Hsx	1	A	1							
23 Nov	N11E18	351	60	1	Hsx	2	A								
24 Nov	N10E04	351	60	2	Hax	2	A								
25 Nov	N10W09	351	30	1	Hrx	2	A								
26 Nov	N11W23	352	plage												
								3	0	0	1	0	0	0	0

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Absolute heliographic longitude: 351

			Region 3492												
20 Nov	N18E64	343	280	8	Dhi	7	BG	11	1		1	1			
21 Nov	N18E50	345	280	10	Dki	14	BG	6			4				
22 Nov	N18E36	345	310	14	Ekc	33	BG	1			6				
23 Nov	N19E24	343	320	14	Ekc	26	BG	3			2				
24 Nov	N19E11	345	380	13	Ehi	21	BG	2			1				
25 Nov	N19W03	345	240	11	Csi	11	B								
26 Nov	N19W18	347	210	7	Hax	9	A								
								23	1	0	14	1	0	0	0

Still on Disk.
Absolute heliographic longitude: 345

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 3493												
20 Nov	S12E69	338	30	1	Hax	1	A								
21 Nov	S12E55	339	30	2	Hsx	1	A	1							
22 Nov	S12E43	338	40	5	Cso	3	B								
23 Nov	S12E32	335	70	3	Cso	2	B								
24 Nov	S13E17	338	80	4	Cso	2	B				1				
25 Nov	S13E05	337	90	3	Hsx	4	A								
26 Nov	S13W07	336	100	3	Cso	4	B								
								1	0	0	1	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 337

			Region 3494												
20 Nov	S15E78	330	30	1	Hax	1	A								
21 Nov	S16E64	330	30	2	Hsx	1	A								
22 Nov	S16E50	331	30	2	Hsx	12	A								
23 Nov	S17E37	330	50	1	Hax	1	A	1							
24 Nov	S18E23	332	60	2	Hsx	1	A	2			1	1			
25 Nov	S18E09	333	60	2	Hsx	2	A								
26 Nov	S17W03	332	70	2	Hsx	1	A								
								3	0	0	1	1	0	0	0

Still on Disk.
Absolute heliographic longitude: 332

			Region 3495												
20 Nov	N27E59	348	30	1	Hrx	2	A								
21 Nov	N27E45	349	30	1	Hrx	2	A	2			2				
22 Nov	N27E31	350	30	1	Hrx	2	A	1			5				
23 Nov	N25E18	349	10	2	Axx	1	A								
24 Nov	N25E06	349	10	2	Axx	2	A	1			4				
25 Nov	N25W09	351	plage												
26 Nov	N25W23	352	plage												
								4	0	0	11	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 349

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 3496												
20 Nov	N09E36	12	10	4	Bxo	3	B								
21 Nov	N09E22	12	10	4	Bxo	3	B								
22 Nov	N09E08	13	10	4	Bxo	2	B								
23 Nov	N09W06	14	plage												
24 Nov	N09W20	15	plage												
25 Nov	N09W34	16	plage												
26 Nov	N09W48	17	plage												
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 14

			Region 3497												
20 Nov	N16E50	357	80	1	Hsx	1	A								
21 Nov	N16E36	359	plage					1							
22 Nov	N16E22	359	plage												
23 Nov	N16E08	360	plage					1			1				
24 Nov	N17W06	360	plage												
25 Nov	N17W20	2	plage												
26 Nov	N17W34	3	plage												
								2	0	0	1	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 360

			Region 3498												
21 Nov	S11W26	60	50	5	Cao	8	B								
22 Nov	S11W40	61	50	5	Dao	8	B								
23 Nov	S12W65	64	40	8	Cao	4	B								
24 Nov	S12W67	62	20	8	Hsx	1	A								
25 Nov	S11W87	69	30	1	Hrx	1	A								
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 60

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 3499												
23 Nov	S18E04	3	90	6	Dsi	6	B								
24 Nov	S17W09	4	60	6	Dao	9	B		1			1			
25 Nov	S17W25	7	60	7	Cai	8	B	1							
26 Nov	S17W37	6	60	8	Cai	9	BG								
								1	1	0	0	1	0	0	0

Still on Disk.
Absolute heliographic longitude: 3

			Region 3500												
23 Nov	S18E65	302	520	7	Dko	6	BGD								
24 Nov	S19E50	305	530	9	Dkc	6	BGD								
25 Nov	S18E36	306	560	8	Dkc	13	BGD								
26 Nov	S19E23	306	470	6	Dkc	10	BGD	2			1				
								2	0	0	1	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 306

			Region 3501												
23 Nov	S10E73	295	120	2	Hsx	1	A								
24 Nov	S09E58	297	60	2	Hsx	1	A								
25 Nov	S09E44	298	60	2	Hsx	1	A								
26 Nov	S09E32	297	60	2	Hsx	1	A								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 297

			Region 3502												
23 Nov	N14E27	342	plage					1							
24 Nov	N14E13	342	90	6	Dai	7	B				1				
25 Nov	N14W01	343	110	8	Cao	6	B								
26 Nov	N15W14	343	100	8	Cao	7	B	1							
								2	0	0	1	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 343

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 3503													
25 Nov	N21E58	284	20	2	Cro	2	B	1							
26 Nov	N21E45	284	20	1	Cro	5	B								
								1	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 284

		Region 3504													
26 Nov	N14W65	33	30	1	Dro	4	B								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 33

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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