Space Weather Highlights **SWPC PRF 2612**
15 September - 21 September 2025 **22 September 2025**

Solar activity reached R1 (Minor) levels at 19/2141 UTC due to an impulsive M1.5/3n flare observed from Region 4216 (N10, L=246, class/area Dai/210). Low activity levels were observed on 15-18 Sep and 20-21 Sep. No significant CME activity was observed.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at high levels from 16-21 Sep with a maximum flux of 6,210 pfu observed at 18/1655 UTC. Normal to moderate levels were observed on 15 Sep.

Geomagnetic field activity was at G1 (minor) levels on 15-16 Sep and at G3 (Strong) levels on 15 Sep due to CIR/ negative polarity CH HSS onset with possible influence from the 11 Sep CME. Quiet to unsettled levels were observed on 17 Sep as the negative polarity CH HSS waned. Quiet levels were observed on 18-21 Sep.

Space Weather Outlook
22 September - 18 October 2025

Solar activity is expected to be at low levels with a chance for isolated M-class flares 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 be at high levels on 22-24 Sep, 30 Sep and 01 Oct, 06 -11 Oct and 13-18 Oct. Normal to moderate levels are expected for the remainder of the outlook period.

Geomagnetic field activity is expected to be at G1 (Minor) storm levels on 22 Sep due to influences from a negative polarity CH HSS. Unsettled to active levels are likely on 23 Sep. Unsettled to active levels are likely on 29-30 Sep, 03-07 Oct, 11-13 Oct and 18 Oct due to recurrent CH HSS influences. Quiet to unsettled levels are likely for the remaining days in 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
15 September	130	110	610	B9.8	9	0	0	1	0	0	0	0
16 September	135	130	540	B8.5	6	0	0	4	0	0	0	0
17 September	147	119	750	B8.9	5	0	0	4	0	0	0	0
18 September	150	119	900	B8.6	6	0	0	3	0	0	0	0
19 September	160	158	870	C1.1	4	1	0	2	0	0	1	0
20 September	166	155	1020	B9.4	5	0	0	0	0	0	0	0
21 September	176	157	1100	C1.2	10	0	0	3	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
15 September	1.6e+06	1.5e+04	1.1e+07
16 September	1.6e+07	1.8e+04	1.0e+08
17 September	2.2e+06	1.8e+04	1.8e+08
18 September	2.0e+06	1.8e+04	2.9e+08
19 September	1.6e+06	1.6e+04	2.9e+08
20 September	5.0e+06	1.6e+04	2.4e+08
21 September	7.6e+06	1.6e+04	1.4e+08

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
15 September	34	6-5-4-4-5-3-3-3	60	4-5-7-6-6-5-4-4	48	7-5-5-5-5-4-4-4
16 September	17	5-3-3-3-3-2-2-3	38	4-3-6-5-6-4-3-3	21	5-4-4-4-4-2-2-3
17 September	10	2-2-3-3-3-1-2-2	17	3-2-4-5-3-2-2-2	12	2-3-3-3-2-1-2-3
18 September	6	1-2-1-1-3-2-2-1	10	2-1-3-4-3-2-0-1	6	2-2-2-2-2-2-1-1
19 September	7	0-0-0-1-5-1-1-0	1	0-0-0-1-0-0-1-0	3	1-1-1-1-2-0-1-1
20 September	5	1-2-2-2-2-1-1-1	4	1-0-3-2-0-0-0-1	5	2-2-2-1-1-0-0-1
21 September	6	1-1-1-1-2-3-2-1	3	1-0-1-2-1-1-1-0	6	2-1-2-1-2-2-1-1

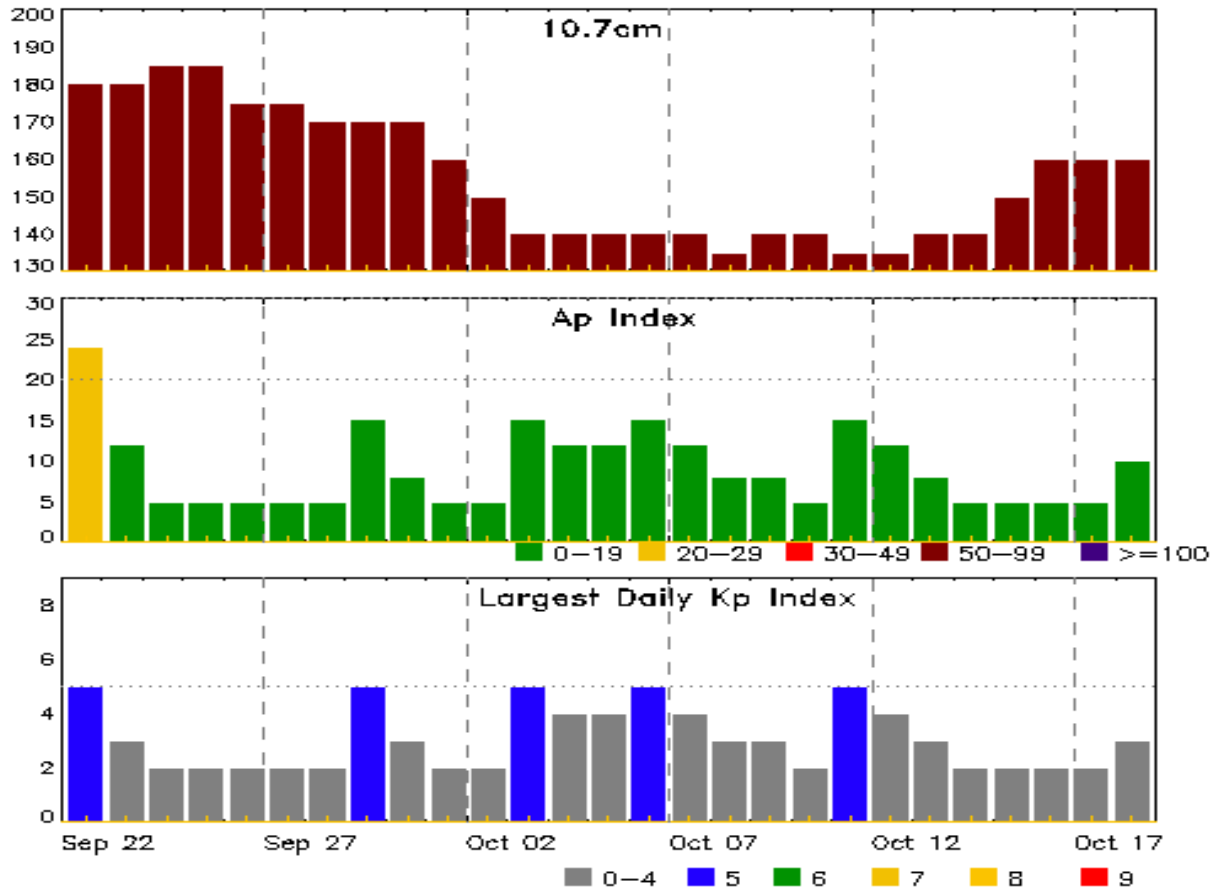
Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
15 Sep 0055	WARNING: Geomagnetic K = 6	15/0055 - 0900
15 Sep 0210	ALERT: Geomagnetic K = 6	
15 Sep 0255	WARNING: Geomagnetic K>= 7	15/0254 - 0900
15 Sep 0259	ALERT: Geomagnetic K = 7	
15 Sep 0332	ALERT: Geomagnetic K = 5	
15 Sep 0806	ALERT: Geomagnetic K = 5	
15 Sep 0854	EXTENDED WARNING: Geomagnetic K = 4	14/2015 - 15/2359
15 Sep 0854	EXTENDED WARNING: Geomagnetic K = 6	15/0055 - 1500
15 Sep 0854	EXTENDED WARNING: Geomagnetic K = 5	14/2330 - 15/1800
15 Sep 1159	ALERT: Geomagnetic K = 5	
15 Sep 1256	ALERT: Geomagnetic K = 5	
15 Sep 1449	EXTENDED WARNING: Geomagnetic K = 5	14/2330 - 15/2359
15 Sep 1449	EXTENDED WARNING: Geomagnetic K = 6	15/0055 - 2100
15 Sep 2058	WATCH: Geomagnetic Storm Category G1 predicted	
15 Sep 2205	EXTENDED WARNING: Geomagnetic K = 5	14/2330 - 16/1200
15 Sep 2241	EXTENDED WARNING: Geomagnetic K = 4	14/2015 - 16/1200
16 Sep 0239	ALERT: Geomagnetic K = 5	
16 Sep 1120	ALERT: Electron 2MeV Integral Flux >= 1000pfu	16/1100
16 Sep 1155	EXTENDED WARNING: Geomagnetic K = 4	14/2015 - 16/2100
16 Sep 2040	EXTENDED WARNING: Geomagnetic K = 4	14/2015 - 17/1500
17 Sep 0459	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	16/1100
17 Sep 1455	EXTENDED WARNING: Geomagnetic K = 4	14/2015 - 2100
18 Sep 0459	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	16/1100
19 Sep 0459	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	16/1100
19 Sep 1603	WATCH: Geomagnetic Storm Category G1 predicted	
20 Sep 0500	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	16/1100
21 Sep 0500	CONTINUED ALERT:	16/1100

Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
-	Electron 2MeV Integral Flux >= 1000pfu	-

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
22 Sep	180	24	5	06 Oct	140	15	5
23	180	12	3	07	140	12	4
24	185	5	2	08	135	8	3
25	185	5	2	09	140	8	3
26	175	5	2	10	140	5	2
27	175	5	2	11	135	15	5
28	170	5	2	12	135	12	4
29	170	15	5	13	140	8	3
30	170	8	3	14	140	5	2
01 Oct	160	5	2	15	150	5	2
02	150	5	2	16	160	5	2
03	140	15	5	17	160	5	2
04	140	12	4	18	160	10	3
05	140	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
19 Sep		2122	2141	2156	M1.5		0.022		4216			

Flare List

	Time				Optical		
Date	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
15 Sep	0130	0138	0148	C1.7			4217
15 Sep	0702	0709	0721	C1.6			4217
15 Sep	0814	0821	0828	C2.1			4217
15 Sep	0952	0955	1000	C2.1	SF	N13E28	4216
15 Sep	1132	1139	1145	C1.4			4213
15 Sep	1310	1317	1322	C1.6			4213
15 Sep	1823	1831	1846	C3.5			4213
15 Sep	2054	2101	2104	C1.3			4217
15 Sep	2104	2108	2110	C1.4			4217
16 Sep	0254	0304	0309	C1.8			4217
16 Sep	0446	0458	0509	C2.5			4217
16 Sep	1049	1100	1110	C1.7			4223
16 Sep	1110	1128	1134	C1.8			4223
16 Sep	1154	1158	1201	C3.5	SF	S17E20	4220
16 Sep	1312	1313	1323		SF	S17E20	4220
16 Sep	1728	1730	1757		SF	N10E19	4216
16 Sep	1800	1805	1822		SF	N10E19	4216
16 Sep	2153	2202	2208	C1.6			
17 Sep	1136	1137	1140		SF	N10E03	4216
17 Sep	1213	1219	1221	C1.7	SF	N10E03	4216
17 Sep	1523	U1524	A1539		SF	S17E05	4220
17 Sep	1535	1541	1543	C2.3			4216
17 Sep	2048	2050	2101		SF	N10W01	4216
17 Sep	2232	2238	2242	C1.4			4220
17 Sep	2242	2247	2251	C1.6			4220
17 Sep	2355	0004	0013	C2.8			4217
18 Sep	0134	0138	0140	C1.7	SF	S18W00	4220
18 Sep	1439	1447	1457	C1.8			4020
18 Sep	1534	1541	1546	C3.6	SF	S19W08	4220
18 Sep	1616	1619	1713		SF	N15E49	4225

Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
18 Sep	2108	2114	2118	C1.4			4220
18 Sep	2203	2210	2213	C2.0			4220
18 Sep	2228	2241	2256	C2.9			4223
19 Sep	0649	0705	0725	C2.9	SF	S16E20	4217
19 Sep	1249	1258	1306	C1.9	SF	N24W62	4219
19 Sep	1637	1644	1652	C1.9			4223
19 Sep	2049	2112	2120	C5.8	3N	N09W25	4216
19 Sep	2122	2141	2156	M1.5			4216
20 Sep	0434	0452	0521	C2.6			4219
20 Sep	0702	0708	0718	C1.5			4216
20 Sep	0841	0848	0859	C1.3			4216
20 Sep	1530	1533	1536	C1.6			4220
20 Sep	1957	2011	2034	C3.4			4220
21 Sep	0437	0507	0545	C2.4			4217
21 Sep	0527	0533	0549	C2.8			4220
21 Sep	0633	0647	0708	C2.1			4220
21 Sep	0717	0727	0740	C1.7			
21 Sep	0953	1001	1006	C1.6			4217
21 Sep	1155	1203	1220	C1.6			4228
21 Sep	1442	1445	1449	C2.1	SF	S16W14	4217
21 Sep	1701	1708	1714	C2.3			4220
21 Sep	1733	1743	1750	C3.3			4224
21 Sep	2021	2022	2030		SF	S16W18	4217
21 Sep	2104	2116	2120	C6.6	SF	S17W09	4223

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 2417												
12 Sep	N23W48	333	10	1	Hrx	1	A								
13 Sep	N25W62	334	plage												
14 Sep	N25W76	334	plage												
15 Sep	N25W90	335	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 333

			Region 4211												
02 Sep	S13E71	11	70	3	Hsx	1	A								
03 Sep	S14E56	12	210	2	Hsx	1	A	3			2				
04 Sep	S13E43	12	150	3	Hsx	1	A	1							
05 Sep	S14E30	12	160	2	Hsx	1	A								
06 Sep	S14E17	12	160	3	Hsx	1	A								
07 Sep	S14E03	13	160	2	Hsx	1	A				1				
08 Sep	S14W08	10	110	3	Hsx	1	A	1							
09 Sep	S14W22	11	110	3	Hsx	1	A								
10 Sep	S14W36	12	110	3	Hsx	1	A								
11 Sep	S14W50	13	110	3	Hsx	1	A								
12 Sep	S14W64	14	120	3	Hsx	1	A								
13 Sep	S14W77	13	90	2	Hsx	1	A	1							
14 Sep	S14W90	13	80	2	Hsx	1	A								
								6	0	0	3	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 13

			Region 4213												
06 Sep	S13E28	1	20	4	Cro	4	B				2				
07 Sep	S13E15	1	220	7	Dao	8	B	4			8	1			
08 Sep	S14E02	360	210	8	Dai	14	BG	3			5				
09 Sep	S14W12	1	220	9	Dai	10	BG								
10 Sep	S14W27	3	230	10	Dai	13	BG								
11 Sep	S15W39	2	200	10	Dao	6	B	1			1				
12 Sep	S15W53	3	150	10	Dao	5	B	1							
13 Sep	S14W66	2	100	7	Dao	7	B								
14 Sep	S14W79	2	90	8	Dao	6	B								
								9	0	0	16	1	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 360

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 4215												
10 Sep	N23W29	4	10	1	Hrx	1	A				1				
11 Sep	N24W41	4	10	2	Bxo	3	B								
12 Sep	N24W55	5	10	2	Bxo	2	B								
13 Sep	N24W69	5	plage												
14 Sep	N24W83	6	plage												
								0	0	0	1	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 4

			Region 4216												
11 Sep	N09E77	246	100	8	Dso	3	B	2							
12 Sep	N10E63	247	190	9	Dsc	8	B								
13 Sep	N10E52	244	180	6	Dai	5	B								
14 Sep	N10E35	248	180	6	Dai	10	B	3			1				
15 Sep	N10E24	246	210	9	Dai	11	B	1			1				
16 Sep	N10E09	248	190	7	Cai	8	B				2				
17 Sep	N10W04	247	200	7	Cai	17	BG	2			3				
18 Sep	N10W17	247	180	9	Csi	13	BG								
19 Sep	N10W31	248	80	5	Csi	11	BG	1	1					1	
20 Sep	N10W45	249	90	5	Cso	6	BG	2							
21 Sep	N11W59	250	70	5	Cso	7	BG								
								11	1	0	7	0	0	1	0

Still on Disk.
Absolute heliographic longitude: 247

			Region 4217												
14 Sep	S15E70	213	90	5	Hsx	1	A	5			2				
15 Sep	S17E58	212	200	10	Dao	6	B	5							
16 Sep	S16E47	210	180	12	Eao	8	B	2							
17 Sep	S17E36	208	200	12	Eao	12	B	1							
18 Sep	S17E21	209	200	12	Eao	6	B								
19 Sep	S17E07	210	220	11	Eao	8	B	1			1				
20 Sep	S15W06	210	230	12	Eao	9	B								
21 Sep	S17W19	210	210	13	Eao	10	B	3			2				
								17	0	0	5	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 210

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 4218												
14 Sep	N15W73	356	30	7	Cao	7	B								
15 Sep	N14W86	356	60	8	Dso	4	B								
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 356

			Region 4219												
15 Sep	N26W16	286	20	3	Cro	6	B								
16 Sep	N26W30	287	10	5	Bxo	3	B								
17 Sep	N26W42	286	plage												
18 Sep	N25W56	286	10	1	Axx	1	A								
19 Sep	N24W69	286	10	1	Cro	1	B	1			1				
20 Sep	N24W84	288	10	1	Axx	1	A	1							
								2	0	0	1	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 286

			Region 4220												
15 Sep	S18E28	242	10	4	Bxo	4	B								
16 Sep	S18E14	243	20	6	Cro	7	B	1			2				
17 Sep	S18W01	245	80	5	Dai	18	B	2			1				
18 Sep	S18W15	245	250	9	Dki	20	BG	4			2				
19 Sep	S18W28	245	240	9	Dai	21	BG								
20 Sep	S19W41	245	290	9	Dhi	19	BG	2							
21 Sep	S18W55	246	300	12	Eki	20	BG	3							
								12	0	0	5	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 245

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 4221												
15 Sep	N04E57	213	20	4	Cro	3	B								
16 Sep	N04E44	213	50	6	Cso	3	B								
17 Sep	N04E29	215	110	7	Dso	6	B								
18 Sep	N04E17	213	70	8	Cao	3	B								
19 Sep	N04E03	214	70	8	Dso	8	B								
20 Sep	N03W11	215	60	5	Cso	3	B								
21 Sep	N04W25	216	90	5	Cso	4	B								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 214

			Region 4222												
16 Sep	N13E22	235	10	2	Axx	3	A								
17 Sep	N13E08	236	plage												
18 Sep	N13W06	236	plage												
19 Sep	N13W21	238	10	2	Axx	2	A								
20 Sep	N13W35	239	plage												
21 Sep	N13W49	240	plage												
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 236

			Region 4223												
16 Sep	S17E63	194	20	3	Cro	3	B	2							
17 Sep	S16E50	194	40	3	Cao	5	B								
18 Sep	S16E36	194	50	3	Cao	5	B	1							
19 Sep	S16E21	196	40	6	Cao	8	B	1							
20 Sep	S15E07	196	40	1	Cao	4	B								
21 Sep	S17W07	198	10	1	Axx	1	A	1			1				
								5	0	0	1	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 196

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 4224												
16 Sep	S09E44	213	10	3	Bxo	4	B								
17 Sep	S09E30	214	plage												
18 Sep	S09E16	214	plage												
19 Sep	S13E15	212	20	5	Cao	6	B								
20 Sep	S13E11	193	30	4	Cao	4	B								
21 Sep	S13W08	199	50	6	Dai	7	BG	1							
								1	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 199

			Region 4225												
16 Sep	N10E81	176	50	2	Hsx	1	A								
17 Sep	N10E68	176	120	3	Hsx	1	A								
18 Sep	N10E53	177	140	3	Hsx	1	A				1				
19 Sep	N09E41	176	180	4	Cso	3	B								
20 Sep	N10E27	176	210	4	Cao	4	B								
21 Sep	N09E14	177	220	5	Dao	4	B								
								0	0	0	1	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 177

			Region 4226												
20 Sep	S11E67	137	30	1	Cso	2	B								
21 Sep	S09E56	135	60	3	Dso	1	B								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 135

			Region 4227												
20 Sep	S17E67	137	30	1	Cao	3	B								
21 Sep	S19E53	138	80	4	Cao	2	B								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 138

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 4228													
21 Sep	N04E66	125	10	1	Hsx	1	A	1							
								1	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 125

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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