

Space Weather Highlights
14 August - 20 August 2023

SWPC PRF 2503
21 August 2023

Solar activity was at low levels with only C-class flares. The largest of these C-class flares was a C8.9 that occurred on 15 Aug at 2110 UTC from Region 3405 (N10, L=181, Dso/Beta as on 16 Aug). Other notable activity included a type II radio sweep on 20 Aug at 0626 UTC with an estimated speed of 488 Km/s. This event was associated with a C3.7/SF flare at 20/0626 UTC from Region 3409 (N22, L=252, Bxo/Beta on 21 Aug).

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit, as measured by the GOES-16 satellite, reached high levels on 14 Aug with a peak flux of 1,250 pfu observed at 1330 UTC. Normal to moderate levels were observed 15-20 Aug.

Geomagnetic field activity was at quiet levels 14-15 and 17-18 Aug. Unsettled levels were reached on 16 Aug likely in response to weak transient influence coupled with a CIR. Unsettled levels were reached again 19-20 Aug due to negative polarity CH HSS effects.

Space Weather Outlook
21 August - 16 September 2023

Solar activity is expected to be low with a slight chance for M-class flare activity through 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 normal to moderate levels 21 Aug - 06 Sep and 11-16 Sep. High levels are expected 07-10 Sep in response to recurrent CH HSS influence.

Geomagnetic field activity is expected to be quiet 26 Aug - 05 Sep and 09-13 Sep. Unsettled levels are expected 21-25 Aug, 06-08 Sep and 15-16 Sep due to recurrent CH HSS effects. Active conditions are expected 14 Sep due to a recurrent CIR ahead of CH HSS onset.



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
14 August	154	85	650	B8.9	3	0	0	3	0	0	0	0
15 August	158	107	530	B9.1	7	0	0	16	0	0	0	0
16 August	160	140	830	B8.6	7	0	0	5	0	0	0	0
17 August	152	135	700	B8.0	10	0	0	7	0	0	0	0
18 August	151	112	570	B6.8	4	0	0	8	0	0	0	0
19 August	151	104	470	B6.6	3	0	0	2	0	0	0	0
20 August	146	93	490	B7.0	4	0	0	1	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
	14 August	1.2e+05	1.9e+04
15 August	1.4e+05	1.9e+04	2.2e+07
16 August	3.0e+05	1.9e+04	1.2e+07
17 August	1.5e+05	2.0e+04	1.3e+06
18 August	2.8e+05	1.9e+04	1.5e+06
19 August	9.6e+04	1.8e+04	2.7e+06
20 August	4.8e+04	1.8e+04	1.3e+06

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	14 August	6	1-1-1-2-3-1-2-1	3	1-2-0-0-2-1-1-0	5
15 August	7	1-1-1-3-3-1-2-1	2	1-1-0-1-0-0-1-0	4	1-1-1-1-2-1-1-2
16 August	10	1-2-1-3-3-4-2-1	8	0-1-2-2-2-4-2-1	8	2-1-1-2-3-3-2-2
17 August	10	3-2-3-2-3-2-2-2	7	2-2-3-1-3-1-1-1	8	3-2-3-1-2-2-2-2
18 August	14	2-3-3-4-3-2-2-3	19	2-3-5-5-3-2-2-2	11	2-3-3-3-2-2-2-3
19 August	8	2-2-1-2-2-2-3-2	8	2-1-1-3-3-1-3-1	8	2-1-1-2-2-1-3-2
20 August	12	3-3-1-3-3-2-2-3	7	2-2-1-3-1-1-2-2	18	3-3-2-3-2-2-2-3

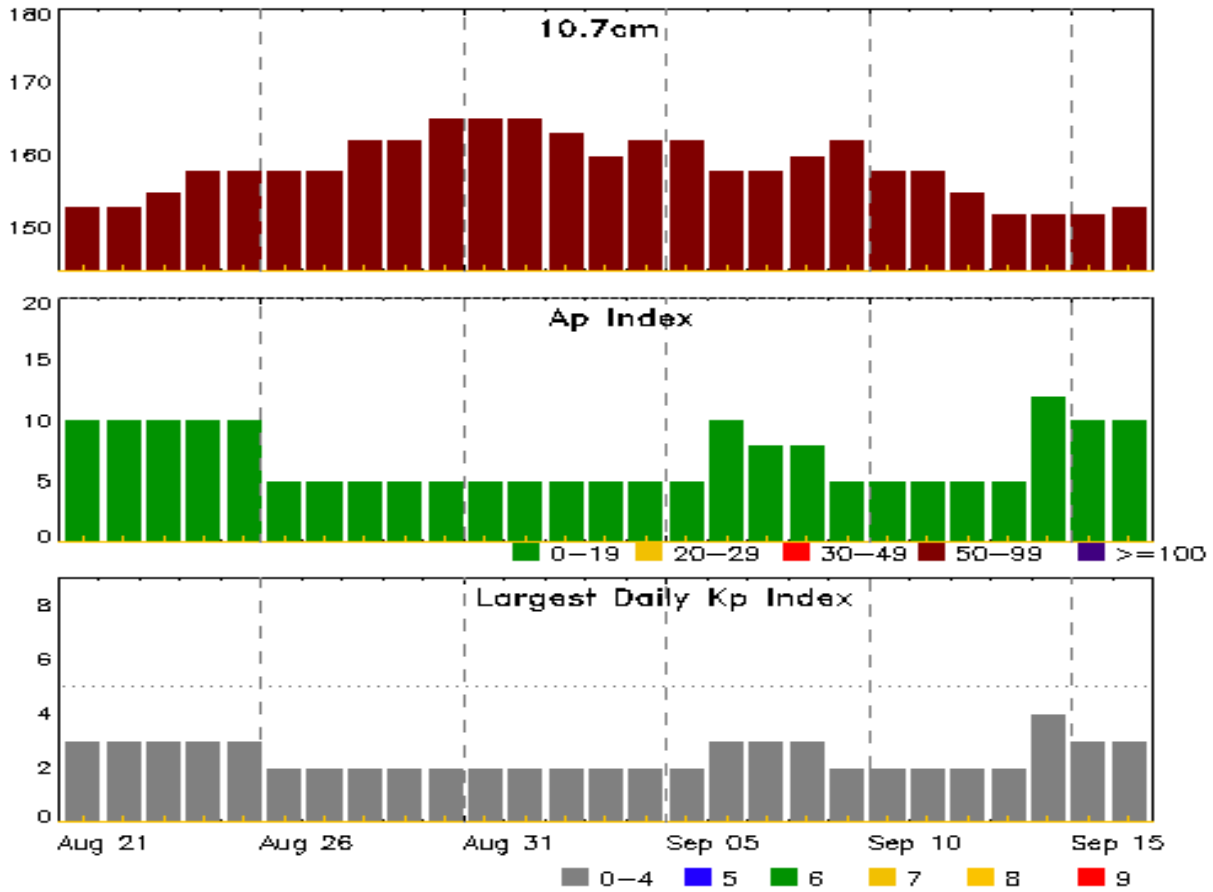


Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
14 Aug 1217	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	09/1530
16 Aug 1733	WARNING: Geomagnetic K = 4	16/1729 - 17/0300
17 Aug 0259	ALERT: Type II Radio Emission	17/0229
17 Aug 1256	ALERT: Type II Radio Emission	17/1235
18 Aug 0250	WARNING: Geomagnetic K = 4	18/0250 - 1500
19 Aug 2052	WARNING: Geomagnetic K = 4	19/2052 - 20/1200
20 Aug 0724	ALERT: Type II Radio Emission	20/0626



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
21 Aug	153	10	3	04 Sep	162	5	2
22	153	10	3	05	162	5	2
23	155	10	3	06	158	10	3
24	158	10	3	07	158	8	3
25	158	10	3	08	160	8	3
26	158	5	2	09	162	5	2
27	158	5	2	10	158	5	2
28	162	5	2	11	158	5	2
29	162	5	2	12	155	5	2
30	165	5	2	13	152	5	2
31	165	5	2	14	152	12	4
01 Sep	165	5	2	15	152	10	3
02	163	5	2	16	153	10	3
03	160	5	2				



Energetic Events

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

No Events Observed

Flare List

Date	Time			X-ray Class	Imp/ Brtns	Optical Location Lat CMD	Rgn #
	Begin	Max	End				
14 Aug	0234	0242	0250	C1.8			
14 Aug	0823	0825	0829		SF	N18W80	3396
14 Aug	1147	1152	1201		SF	N14W64	
14 Aug	1743	1750	1757	C1.5			3395
14 Aug	2030	2110	2138	C8.9	SF	N13E81	3405
15 Aug	0127	0137	0145	C2.1	SF	N21E32	
15 Aug	0217	0217	0222		SF	N24E17	3403
15 Aug	0305	0310	0320	C2.3			
15 Aug	0324	0331	0337	C2.0			
15 Aug	0517	0517	0520		SF	N12W69	3395
15 Aug	0641	0657	0711	C4.1	SF	N12W80	3395
15 Aug	0940	0942	0948		SF	N24E27	
15 Aug	1000	1000	1011		SF	N25E26	
15 Aug	1110	1116	1122	C1.3	SF	N11E70	3405
15 Aug	1125	1133	1141	C2.9	SF	N10E72	3405
15 Aug	1211	1217	1231		SF	N19W51	3397
15 Aug	1217	1224	1231		SF	N11E70	3405
15 Aug	1237	1243	1245		SF	N19W51	3397
15 Aug	1251	1251	1257		SF	N19W51	3397
15 Aug	1524	1529	1540		SF	N25E23	3407
15 Aug	1531	1545	1552		SF	S17E28	3407
15 Aug	1918	1930	1934		SF	N26E09	3403
15 Aug	2142	2152	2211	C2.3	SF	N10E63	3405
16 Aug	0104	0118	0130	C1.9			3403
16 Aug	0132	0143	0154	C2.0			3403
16 Aug	0253	0304	0315	C1.7			3403
16 Aug	0736	0747	0756	C1.8	SF	N09E60	3405
16 Aug	0758	0801	0813		SF	N25E01	3403
16 Aug	0941	0949	1003	C1.4	SF	N25E00	3403
16 Aug	1018	1030	1045	C1.8	SF	N26W01	3403
16 Aug	1337	1357	1421	C3.3			3395



Flare List

Date	Time			X-ray Class	Imp/ Brtns	Optical		Rgn #
	Begin	Max	End			Location Lat CMD		
16 Aug	2110	2115	2138		SF	S05E38		3404
17 Aug	0219	0246	0332	C3.6				3394
17 Aug	0542	0543	0548		SF	N21W20		3409
17 Aug	0614	0614	0622		SF	N25W18		3409
17 Aug	0727	0736	0750	C1.7	SF	N26W20		3409
17 Aug	0817	0833	0849	C2.3				
17 Aug	1214	1240	1306	C5.1	SF	N19W80		3397
17 Aug	1308	1311	1313		SF	N19W80		3397
17 Aug	1411	1420	1424	C3.5				
17 Aug	1518	1525	1530	C1.2	SF	N11E52		3405
17 Aug	1629	1634	1639	C1.2				
17 Aug	1716	1729	1746	C2.2				3397
17 Aug	1828	1836	1840	C1.2				
17 Aug	2332	2340	2349	C1.3	SF	N22W27		3403
18 Aug	0240	0252	0303	C3.1	SF	N11E50		3405
18 Aug	0737	0752	0838		SF	S16W52		3399
18 Aug	1030	1048	1108	C1.7	SF	N20W36		3409
18 Aug	1234	1234	1238		SF	S15W56		3399
18 Aug	1331	1335	1350		SF	S17W55		3399
18 Aug	1719	1719	1725		SF	S15W60		3399
18 Aug	1750	1751	1759		SF	N23W16		
18 Aug	1909	1930	1949	C3.7	SF	N19W43		3409
18 Aug	2117	2135	2158	C3.0				3409
19 Aug	0640	0648	0652	C5.8	SF	S16W68		3410
19 Aug	1803	1903	1934	C1.5				3403
19 Aug	2053	2059	2105	C1.5	SF	N24W46		3403
20 Aug	0608	0626	0644	C3.7	SF	N21W60		3409
20 Aug	1221	1232	1238	C3.3				3410
20 Aug	1844	1856	1902	C2.0				
20 Aug	1922	1946	2007	C3.0				



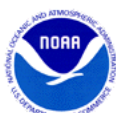
Region Summary

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	4							
Region 3394																							
03 Aug	S22E61	345	130	3	Hsx	2	A	2															
04 Aug	S22E50	343	160	4	Cso	4	B	1					3										
05 Aug	S22E36	344	150	4	Hsx	2	A						1										
06 Aug	S22E23	344	160	7	Cso	4	B						1										
07 Aug	S23E11	341	140	5	Cso	3	B																
08 Aug	S23W03	344	90	4	Cso	3	B	1															
09 Aug	S22W15	342	270	7	Dho	11	BG	2					2										
10 Aug	S24W28	342	240	5	Cso	6	B	3					2										
11 Aug	S23W43	344	210	5	Cso	5	B	1															
12 Aug	S22W55	342	230	4	Cso	2	B																
13 Aug	S23W67	341	120	3	Hsx	1	A	1															
14 Aug	S24W81	342	150	3	Hsx	1	A																
								11	0	0		9	0	0	0	0	0						

Crossed West Limb.
Absolute heliographic longitude: 344

Region 3395																							
03 Aug	N15E75	331	60	2	Hsx	1	A																
04 Aug	N13E67	326	80	7	Dso	2	B																
05 Aug	N13E52	328	120	6	Dso	4	B						1										
06 Aug	N14E39	327	90	7	Cso	4	B																
07 Aug	N14E25	328	50	5	Cao	3	B																
08 Aug	N14E11	330	30	9	Cao	6	B																
09 Aug	N13W03	330	110	8	Dsi	15	BG																
10 Aug	N13W18	332	130	7	Dsi	11	BG	3					2	1									
11 Aug	N13W31	332	130	8	Dsi	19	BG	9					6										
12 Aug	N13W44	331	180	6	Dai	10	BD	8					8	1									
13 Aug	N13W57	331	100	6	Dso	9	BD	1					3										
14 Aug	N11W70	331	100	6	Dao	5	B	1															
15 Aug	N12W87	334	10	8	Axx	2	A	1					2										
								23	0	0		22	2	0	0	0	0						

Crossed West Limb.
Absolute heliographic longitude: 330



Region Summary - continued

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	4							
Region 3396																							
07 Aug	N19E06	347	20	3	Bxo	2	B																
08 Aug	N19W08	348	5	1	Axx	4	A																
09 Aug	N19W22	349	plage																				
10 Aug	N19W36	350	plage																				
11 Aug	N19W50	351	plage																				
12 Aug	N19W64	351	plage																				
13 Aug	N19W78	352	plage																				
													0	0	0	0	0	0	0	0	0		

Crossed West Limb.
 Absolute heliographic longitude: 347

Region 3397																							
07 Aug	N18E47	306	20	1	Hsx	1	A																
08 Aug	N18E33	307	20	1	Hsx	1	A																
09 Aug	N19E22	304	10	1	Axx	1	A						1										
10 Aug	N20E08	306	10		Axx	1	A																
11 Aug	N19W05	306	20	4	Cso	5	B																
12 Aug	N19W18	305	40	4	Cso	8	B	2				5	1										
13 Aug	N19W31	305	120	7	Dao	10	B					1											
14 Aug	N17W44	304	90	6	Dao	6	B																
15 Aug	N18W58	305	60	7	Dso	2	B					3											
16 Aug	N16W70	304	90	5	Dso	2	B																
17 Aug	N17W83	304	20	8	Cao	2	B	2				2											
													4	0	0	12	1	0	0	0			

Crossed West Limb.
 Absolute heliographic longitude: 306



Region Summary - continued

Date	Location		Sunspot Characteristics					Flares															
	Lat	CMD	Helio Lon	Area 10 ⁶ hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical											
									C	M	X	S	1	2	3	4							
Region 3399																							
09 Aug	S15E37		289	20	1	Axx	2	A					1										
10 Aug	S15E24		290	10	3	Bxo	3	B															
11 Aug	S15E08		293	10	1	Axx	1	A															
12 Aug	S15W06		293	plage																			
13 Aug	S15W20		294	plage																			
14 Aug	S15W34		295	plage																			
15 Aug	S15W48		296	plage																			
16 Aug	S15W62		297	plage																			
17 Aug	S15W76		297	plage																			
18 Aug	S15W90		298	plage									4										
									0	0	0		5	0	0	0	0						

Crossed West Limb.
Absolute heliographic longitude: 293

Region 3400																							
11 Aug	S14W05		306	10	1	Axx	1	A															
12 Aug	S14W20		307	plage									1										
13 Aug	S14W34		308	plage																			
14 Aug	S14W48		309	plage																			
15 Aug	S14W62		310	plage																			
16 Aug	S14W76		311	plage																			
17 Aug	S14W90		311	plage																			
									0	0	0		1	0	0	0	0						

Crossed West Limb.
Absolute heliographic longitude: 306

Region 3401																							
11 Aug	N25W44		345	10	3	Bxo	3	B															
12 Aug	N25W59		346	10	1	Axx	1	A															
13 Aug	N25W73		347	plage																			
14 Aug	N25W87		348	plage																			
									0	0	0		0	0	0	0	0						

Crossed West Limb.
Absolute heliographic longitude: 345



Region Summary - continued

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 3402

13 Aug	S18W47	321	10	1	Axx	1	A											
14 Aug	S18W61	321	plage															
15 Aug	S18W75	323	plage															
16 Aug	S18W89	324	plage															
									0	0	0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 321

Region 3403

13 Aug	N26E32	242	50	5	Cao	7	B	1										
14 Aug	N26E18	242	130	6	Dao	10	B											
15 Aug	N26E05	242	200	7	Dao	18	B					2						
16 Aug	N22W09	243	260	8	Dko	12	B	5				3						
17 Aug	N25W22	243	180	10	Dai	16	B	1				1						
18 Aug	N26W35	243	160	10	Dai	12	B											
19 Aug	N27W48	242	120	10	Dsi	8	B	2				1						
20 Aug	N27W61	242	120	10	Cso	7	B											
								9	0	0	7	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 242

Region 3404

13 Aug	S08E74	200	60	2	Hax	1	A											
14 Aug	S07E59	201	60	2	Hax	2	A											
15 Aug	S07E45	201	60	7	Cao	3	B											
16 Aug	S11E34	199	50	1	Hsx	2	A					1						
17 Aug	S09E20	201	30	2	Cao	3	B											
18 Aug	S10E07	201	10	1	Hax	1	A											
19 Aug	S10W07	201	10	1	Hrx	1	A											
20 Aug	S10W20	201	0		Axx	1	A											
								0	0	0	1	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 201



Region Summary - continued

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	4							
Region 3405																							
14 Aug	N11E75	186	120	2	Hsx	1	A	1				1											
15 Aug	N10E65	181	160	9	Dso	3	B	3				4											
16 Aug	N10E51	182	180	16	Fso	5	B	1				1											
17 Aug	N11E38	183	160	13	Eso	4	B	1				1											
18 Aug	N11E25	183	140	14	Eso	6	B	1				1											
19 Aug	N09E11	183	100	12	Cso	2	B																
20 Aug	N09W04	185	90	6	Cso	2	B																
								7	0	0	8	0	0	0	0	0							

Still on Disk.

Absolute heliographic longitude: 185

Region 3406																							
15 Aug	S17W18	265	10	2	Bxo	3	B																
16 Aug	S18W32	266	10	4	Bxo	4	B																
17 Aug	S18W45	266	plage																				
18 Aug	S17W62	269	plage																				
19 Aug	S16W76	270	plage																				
20 Aug	S16W90	272	plage																				
								0	0	0	0	0	0	0	0	0	0						

Still on Disk.

Absolute heliographic longitude: 265

Region 3407																							
15 Aug	S18E22	224	30	4	Cro	6	B					2											
16 Aug	S22E09	225	190	6	Dso	7	B																
17 Aug	S18W04	225	200	7	Dsi	8	B																
18 Aug	S18W13	223	140	6	Dso	5	B																
19 Aug	S18W32	226	110	6	Dao	4	B																
20 Aug	S18W45	226	180	6	Dai	8	B																
								0	0	0	2	0	0	0	0	0							

Still on Disk.

Absolute heliographic longitude: 225



Region Summary - continued

Date	Location		Sunspot Characteristics				Flares											
	Lat CMD	Helio Lon	Area 10 ⁶ hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical							
								C	M	X	S	1	2	3	4			
Region 3408																		
16 Aug	S18W03	237	10	3	Bxo	5	B											
17 Aug	S18W18	239	10	2	Bxo	3	B											
18 Aug	S18W32	240	plage															
19 Aug	S18W46	241	plage															
20 Aug	S18W60	242	plage															
									0	0	0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 237

Region 3409																		
16 Aug	N21W17	251	30	4	Cro	9	B											
17 Aug	N21W30	251	20	3	Cro	7	B	1			3							
18 Aug	N20W42	250	20	4	Bxo	5	B	3			2							
19 Aug	N22W56	250	30	5	Cro	5	B											
20 Aug	N22W70	252	10	4	Bxo	3	B	1			1							
								5	0	0	6	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 251

Region 3410																		
16 Aug	S30W34	269	10	4	Bxo	4	B											
17 Aug	S30W48	269	10	1	Axx	1	A											
18 Aug	S30W62	270	10	1	Axx	1	A											
19 Aug	S30W75	270	10	1	Axx	1	A	1			1							
20 Aug	S30W89	271	plage					1										
								2	0	0	1	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 269

Region 3411																		
17 Aug	N14E54	167	70	2	Hsx	1	A											
18 Aug	N15E35	173	30	2	Hsx	1	A											
19 Aug	N13E22	171	50	4	Hsx	2	A											
20 Aug	N13E10	171	50	2	Hsx	1	A											
								0	0	0	0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 171



Region Summary - continued

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	4				
Region 3412																				
18 Aug	N32E72	136	60	2	Hsx	1	A													
19 Aug	N30E58	136	40	1	Hsx	1	A													
20 Aug	N30E44	137	40	2	Hsx	1	A													
									0	0	0	0	0	0	0	0	0	0		

Still on Disk.

Absolute heliographic longitude: 137



Preliminary Report and Forecast of Solar Geophysical Data (The Weekly)

Published every Monday by the Space Weather Prediction Center.

U.S. Department of Commerce
NOAA / National Weather Service
Space Weather Prediction Center
325 Broadway, Boulder CO 80305

Notice: The 27-day Outlook, Satellite Environment, X-ray and Proton plots have been redesigned. Comments and suggestions are welcome SWPC.Webmaster@noaa.gov

The Weekly has been published continuously since 1951 and is available online since 1997.

<https://www.swpc.noaa.gov/products/weekly-highlights-and-27-day-forecast> --

Current

<ftp://ftp.swpc.noaa.gov/pub/warehouse> -- Online archive from 1997

<https://www.ngdc.noaa.gov/stp/satellite/goes-r.html> -- NCEI GOES data
textarchive

<https://www.swpc.noaa.gov/products/solar-cycle-progression> -- Solar Cycle
Progression web site

<https://www.swpc.noaa.gov/content/contact-us> -- Contact and Copyright
information

https://www.swpc.noaa.gov/sites/default/files/images/u2/Usr_guide.pdf -- User
Guide

