Space Weather Highlights
31 January - 06 February 2022

SWPC PRF 2423
07 February 2022

Solar activity was at low levels with many C-class flares observed. The largest flare of the period was a C9 at 01/2236 UTC from Region 2939 (S16, L=32, class/area Dho/300 on 02 Feb). Region 2939 also produced a long-duration C3/Sf flare at 06/1341 UTC. Filament structure suspended above the region, approximately 10 degrees long and centered near S20W05 at the time of the event, lifted-off during the flare. The event was subsequently detected in LASCO C2 beginning at around 06/1436 UTC, and is predicted to hit Earth. Initial analysis determined 10 Feb to be the likely timing to arrive at Earth. Regions 2936 (N17, L=116, class/area Ehi/750 on 31 Jan) 2940 (N17, L=35, class/area Dao/320 no 02 Feb), and 2941 (N24, L=340, class/area Eho/300 on 05 Feb) also contributed several C-class flares each.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit reached high levels on 31 Jan, 01 Feb due to influences from a CH HSS. High levels were also observed on 04-06 Feb due to influences from a CME. Normal to moderate levels were observed on 02-03 Feb.

Geomagnetic field activity reached G1 (Minor) storm levels on 03-04 Feb due to impacts from a CME that left the Sun on 29 Jan. Active levels were reached late on 01 Feb and 02 Feb due to arrival of the aforementioned CME. Active levels were also reached early on 06 Feb due to influences from a negative polarity CH HSS. Quiet to unsettled levels were observed on 31 Jan and 05 Feb.

Space Weather Outlook
07 February - 05 March 2022

Solar activity is expected to be at low levels, with a slight chance for M-class flares on 07-11 Feb due to the flare potential of Regions 2940 and 2941. Very low to low levels are expected on 12 Feb - 05 Mar.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to reach high levels on 07-20 Feb, and 27 Feb - 05 Mar due to recurrent CH HSS influences. Normal to moderate levels are expected on 21- 26 Feb.

Geomagnetic field activity is expected to be at G1 (Minor) storm levels on 10-11 Feb due to the anticipated arrival of an assymetric full halo CME that left the Sun on 06 Feb. G1 levels are also expected on 13-14 Feb due to recurrent CH HSS influences. Active levels are expected on 18, 25 Feb, and 03, 05 Mar due to recurrent CH HSS influences. Quiet to unsettled levels are expected on the remaining days in the highlight 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
31 January	130	100	1320	B6.1	7	0	0	12	0	0	0	0
01 February	129	88	1720	B7.6	11	0	0	1	0	0	0	0
02 February	128	75	1400	B7.9	10	0	0	5	0	0	0	0
03 February	127	84	1280	B6.7	10	0	0	3	0	0	0	0
04 February	130	87	1180	B6.4	8	0	0	2	0	0	0	0
05 February	126	91	1180	B5.9	8	0	0	1	0	0	0	0
06 February	124	83	740	B6.0	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
31 January	7.7e+05	4.7e+04	7.9e+07
01 February	1.1e+05	4.5e+04	7.1e+07
02 February	3.3e+05	4.1e+04	1.1e+07
03 February	3.1e+05	4.2e+04	7.2e+06
04 February	2.7e+05	4.1e+04	4.3e+07
05 February	8.3e+04	4.1e+04	9.0e+07
06 February	5.7e+04	4.1e+04	1.8e+08

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
31 January	8	2-3-2-3-2-2-1-1	30	2-3-5-6-4-5-2-2	10	3-3-2-3-2-2-2-2
01 February	5	1-2-0-1-1-1-1-3	5	0-1-1-2-3-1-0-2	7	2-2-1-1-2-1-1-4
02 February	9	3-3-1-0-2-4-1-1	9	2-0-0-0-3-5-1-0	12	4-3-1-1-2-4-2-1
03 February	18	2-4-5-4-3-2-2-2	48	1-2-6-7-6-5-3-2	27	2-4-5-5-4-3-3-3
04 February	18	4-3-3-3-3-4-3-3	61	3-5-6-6-6-6-6-4	32	4-4-3-4-4-5-5-4
05 February	10	3-3-1-3-2-2-2-2	17	3-2-3-5-3-3-3-2	12	3-3-2-3-3-3-3-2
06 February	12	3-3-3-3-3-2-2-2	19	2-3-3-5-5-1-2-2	27	4-3-3-3-3-2-2-3

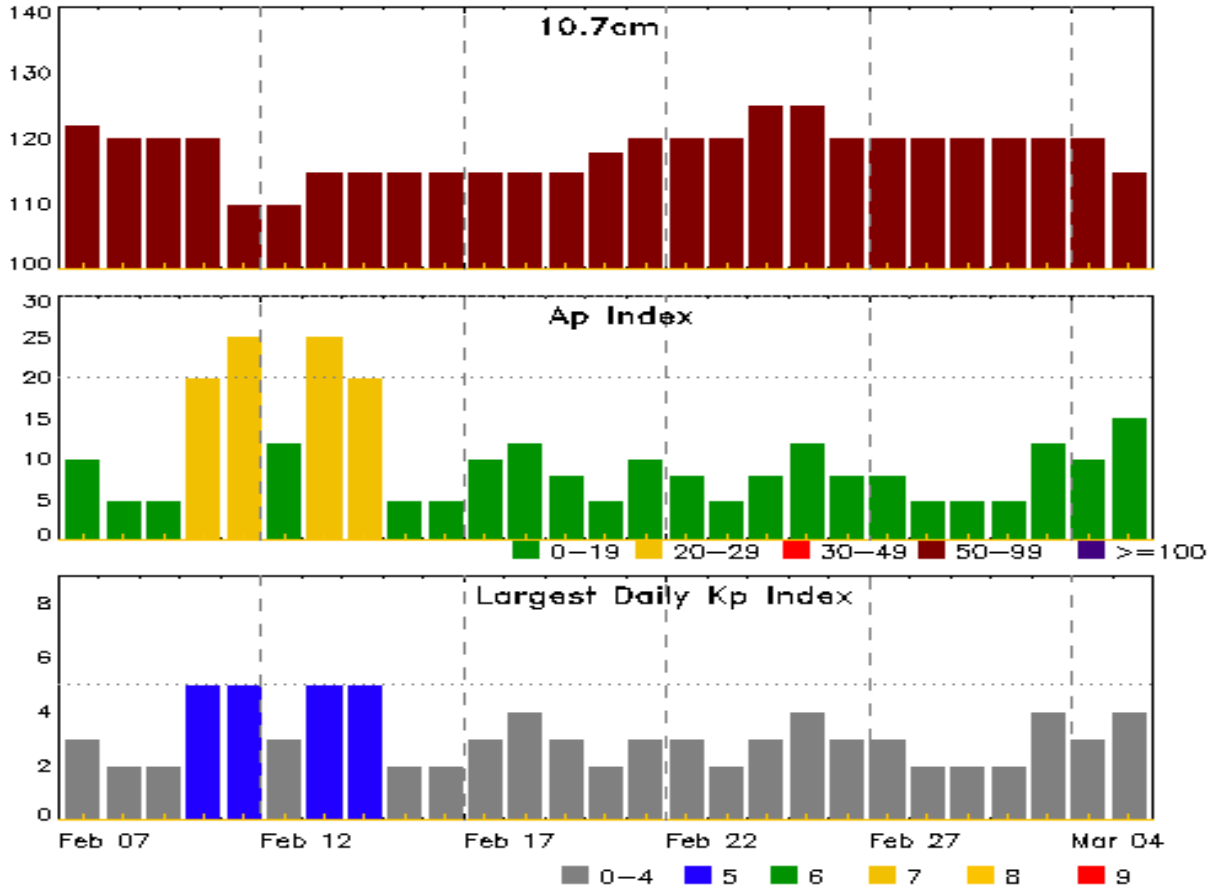
Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
31 Jan 0957	WARNING: Geomagnetic K = 4	31/0956 - 1500
31 Jan 1132	ALERT: Electron 2MeV Integral Flux >= 1000pfu	31/1110
31 Jan 1954	WATCH: Geomagnetic Storm Category G2 predicted	
01 Feb 1338	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	31/1110
01 Feb 2144	WARNING: Geomagnetic Sudden Impulse expected	01/2145 - 2315
01 Feb 2146	WARNING: Geomagnetic K = 4	01/2145 - 02/1200
01 Feb 2224	WARNING: Geomagnetic K = 5	01/2230 - 02/0600
01 Feb 2238	SUMMARY: Geomagnetic Sudden Impulse	01/2221
02 Feb 0000	ALERT: Geomagnetic K = 4	01/2359
02 Feb 1156	EXTENDED WARNING: Geomagnetic K = 4	01/2145 - 02/1500
02 Feb 1449	EXTENDED WARNING: Geomagnetic K = 4	01/2145 - 02/2100
02 Feb 1914	CANCELLATION: Geomagnetic Storm Category G2 predicted	
03 Feb 0330	WARNING: Geomagnetic K = 4	03/0330 - 0900
03 Feb 0346	ALERT: Geomagnetic K = 4	03/0345
03 Feb 0554	WARNING: Geomagnetic K = 5	03/0555 - 0900
03 Feb 0554	EXTENDED WARNING: Geomagnetic K = 4	03/0330 - 1200
03 Feb 0845	EXTENDED WARNING: Geomagnetic K = 4	03/0330 - 1800
03 Feb 0846	EXTENDED WARNING: Geomagnetic K = 5	03/0555 - 1500
03 Feb 0850	ALERT: Geomagnetic K = 5	03/0846
03 Feb 1428	EXTENDED WARNING: Geomagnetic K = 5	03/0555 - 2100
03 Feb 1512	EXTENDED WARNING: Geomagnetic K = 4	03/0330 - 04/0600
04 Feb 0232	WARNING: Geomagnetic K = 5	04/0232 - 0600
04 Feb 0239	EXTENDED WARNING: Geomagnetic K = 4	03/0330 - 04/1200
04 Feb 1050	EXTENDED WARNING: Geomagnetic K = 4	03/0330 - 04/1800
04 Feb 1347	ALERT: Electron 2MeV Integral Flux >= 1000pfu	04/1310
04 Feb 1548	WARNING: Geomagnetic K = 5	04/1548 - 2100
04 Feb 1610	ALERT: Geomagnetic K = 5	04/1605
04 Feb 1711	EXTENDED WARNING: Geomagnetic K = 4	03/0330 - 05/0600

Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
04 Feb 2059	EXTENDED WARNING: Geomagnetic K = 5	04/1548 - 05/0300
05 Feb 1251	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	04/1310
06 Feb 0056	WARNING: Geomagnetic K = 4	06/0055 - 0600
06 Feb 0201	ALERT: Geomagnetic K = 4	06/0152
06 Feb 0500	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	04/1310
06 Feb 0539	EXTENDED WARNING: Geomagnetic K = 4	06/0055 - 1200

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
07 Feb	122	10	3	21 Feb	120	10	3
08	120	5	2	22	120	8	3
09	120	5	2	23	120	5	2
10	120	20	5	24	125	8	3
11	110	25	5	25	125	12	4
12	110	12	3	26	120	8	3
13	115	25	5	27	120	8	3
14	115	20	5	28	120	5	2
15	115	5	2	01 Mar	120	5	2
16	115	5	2	02	120	5	2
17	115	10	3	03	120	12	4
18	115	12	4	04	120	10	3
19	115	8	3	05	115	15	4
20	118	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

No Events Observed

Flare List

	Time				Optical		
Date	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
31 Jan	0019	0023	0037	C1.6			2940
31 Jan	0208	0216	0221	C1.4	SF	N16W02	2936
31 Jan	0324	0352	0359	C2.7	SF	N16E69	2940
31 Jan	0432	0432	0451	C1.0	SF	N18E82	2940
31 Jan	0512	0524	0526		SF	N17E80	2940
31 Jan	B0837	0842	0844		SF	N18E78	2940
31 Jan	0910	0917	0921	B9.7			
31 Jan	1046	1055	1105	C1.1			2940
31 Jan	1135	1136	1139		SF	N17E69	2940
31 Jan	1146	1147	1148		SF	N18E70	2940
31 Jan	1222	1223	1224		SF	N18E69	2940
31 Jan	1225	1226	1227		SF	N18E69	2940
31 Jan	1526	1529	1533		SF	N16E67	2940
31 Jan	1734	1738	1739		SF	N16E66	2940
31 Jan	1953	2009	2017	C1.9	SF	N16E64	2940
31 Jan	2153	2159	2202	C1.8	SF	N15E64	2940
31 Jan	2325	2334	2343	C1.2			2940
01 Feb	0232	0234	0235		SF	N16W15	2936
01 Feb	0248	0257	0309	C1.2			2936
01 Feb	0707	0714	0726	C1.8			2940
01 Feb	0843	0850	0854	C1.6			2940
01 Feb	1014	1027	1033	C2.4			
01 Feb	1155	1205	1211	C2.3			
01 Feb	1305	1311	1315	C2.2			
01 Feb	1510	1527	1541	C6.5			
01 Feb	1726	1733	1738	C1.0			
01 Feb	1911	1916	1920	C1.2			
01 Feb	1938	1944	1951	B9.3			
01 Feb	2007	2011	2017	B9.0			
01 Feb	2058	2108	2115	C1.4			2940
01 Feb	2221	2236	2244	C9.0			2939

Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
02 Feb	0200	0207	0215	C2.3	SF	N16W28	2936
02 Feb	0304	0310	0311		SF	N16W28	2936
02 Feb	0330	0338	0347	C1.3			2940
02 Feb	0427	0443	0456	C2.7			2940
02 Feb	0516	0533	0603	C3.3			2936
02 Feb	0530	0530	0534		SF	N18E52	2940
02 Feb	0556	0558	0606		SF	N16W28	2936
02 Feb	0951	1004	1014	C5.5	SF	N19E46	2940
02 Feb	1539	1550	1601	C2.1			2940
02 Feb	1626	1638	1648	C2.0			
02 Feb	1742	1747	1759	C1.1			2940
02 Feb	1843	1853	1902	C1.5			2940
02 Feb	2137	2149	2158	C1.3			2940
03 Feb	0056	0102	0109	C1.0			2936
03 Feb	0423	0424	0425		SF	N15W57	2936
03 Feb	0522	0533	0548	C1.5			2936
03 Feb	0721	0728	0734	C1.5			
03 Feb	0828	0834	0839	C1.7			2936
03 Feb	1014	1022	1029	B9.6			2936
03 Feb	1109	1117	1121	C1.9	SF	N16W60	2936
03 Feb	1344	1358	1419	C1.5			2940
03 Feb	1632	1640	1646	B9.7			2936
03 Feb	1844	1850	1858	B9.1			2941
03 Feb	1924	1931	1934	C1.0			2936
03 Feb	1934	1940	1944	C1.1			2936
03 Feb	2037	2043	2048	C1.3	SN	N17W63	2936
03 Feb	2329	2343	2349	C2.2			2936
04 Feb	0237	0242	0249	C1.4			2941
04 Feb	0329	0337	0353	C1.4			2936
04 Feb	0556	0606	0614	C2.8	SF	N18W76	2936
04 Feb	1055	1104	1111	C2.2			2936
04 Feb	1539	1551	1557	C5.8	SF	N18W85	2936
04 Feb	1925	1931	1937	C1.2			
04 Feb	2020	2026	2031	C1.1			2939
04 Feb	2142	2157	2202	C2.6			2936
05 Feb	0547	0557	0605	C1.8			2936
05 Feb	0800	0805	0810	C1.3			2936
05 Feb	1655	1710	1727	C2.1			2936

Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
05 Feb	1820	1827	1830	C1.3			2936
05 Feb	1830	1834	1838	C1.2			
05 Feb	2207	2213	2217	C1.0			2941
05 Feb	2259	2306	2310	C1.1			2941
05 Feb	2344	2348	2352	C1.3	SF	N23E46	2941
06 Feb	0055	0100	0104	C1.9			2936
06 Feb	0115	0124	0132	C1.4			2936
06 Feb	0830	0837	0844	B7.8			2938
06 Feb	1115	1124	1133	C1.2			
06 Feb	1252	1341	1441	C3.1	SF	S20W07	2939
06 Feb	2321	2328	2336	B7.7			

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 2934												
20 Jan	S24E69	170	90	2	Hsx	1	A								
21 Jan	S24E54	172	140	2	Hsx	1	A								
22 Jan	S25E41	172	140	2	Hsx	1	A								
23 Jan	S25E28	172	140	2	Hsx	1	A								
24 Jan	S25E15	172	140	2	Hsx	1	A								
25 Jan	S25E01	172	120	2	Hsx	1	A								
26 Jan	S24W12	171	100	2	Hsx	1	A								
27 Jan	S24W24	170	120	2	Hsx	1	A								
28 Jan	S24W35	169	50	2	Hsx	1	A								
29 Jan	S26W49	170	60	2	Hsx	1	A								
30 Jan	S26W62	169	70	2	Hsx	1	A								
31 Jan	S25W77	171	110	3	Hsx	1	A								
01 Feb	S23W91	172	120	1	Hsx	1	A								
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 172

			Region 2935												
24 Jan	N26E05	181	30	3	Cro	5	B								
25 Jan	N27W08	181	30	3	Cro	4	B	1							
26 Jan	N27W21	180	10	6	Bxo	2	B								
27 Jan	N27W28	177	10	9	Bxo	3	B								
28 Jan	N28W44	178	50	4	Cro	3	B								
29 Jan	N27W58	179	40	5	Cro	4	B								
30 Jan	N27W72	179	20	3	Bxo	2	B								
31 Jan	N27W86	180	10	3	Bxo	3	B								
								1	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 181

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 2936												
25 Jan	N14E59	113	30	8	Cro	5	B	1							
26 Jan	N15E47	112	100	4	Dsi	8	B								
27 Jan	N16E33	113	110	8	Dai	18	B	1			1				
28 Jan	N17E23	111	400	9	Dkc	18	B	9			7				
29 Jan	N17E05	116	640	10	Dkc	26	B	13	2		13				
30 Jan	N17W09	115	720	12	Ehc	23	B	8			4				
31 Jan	N16W22	116	750	12	Ehi	22	B	1			1				
01 Feb	N16W35	116	670	11	Eki	9	B	1			1				
02 Feb	N17W49	117	760	10	Dki	12	B	2			3				
03 Feb	N17W62	117	650	11	Eki	12	B	8			3				
04 Feb	N17W75	117	500	12	Eko	6	B	5			2				
05 Feb	N17W88	117	450	12	Eko	6	B	4							
								53	2	0	35	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 116

			Region 2937												
25 Jan	S19E15	157	10	3	Cro	3	B								
26 Jan	S20E01	158	90	5	Dao	8	B								
27 Jan	S19W13	159	30	5	Cro	10	B								
28 Jan	S19W25	159	30	5	Bxo	3	B								
29 Jan	S20W39	160	20	3	Bxo	3	B								
30 Jan	S20W53	160	plage												
31 Jan	S20W67	161	plage												
01 Feb	S20W81	162	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 158

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 2938												
26 Jan	N18E68	92	10	2	Bxo	2	B								
27 Jan	N17E56	90	10	8	Bxo	3	B				1				
28 Jan	N19E48	86	10	4	Bxo	2	B								
29 Jan	N19E34	87	plage												
30 Jan	N18E14	93	plage												
31 Jan	N18W01	95	10	1	Axx	2	A								
01 Feb	N18W20	95	20	2	Cro	3	B								
02 Feb	N16W29	95	20	8	Cro	4	B								
03 Feb	N14W48	103	10	1	Hrx	1	A								
04 Feb	N15W61	103	30	6	Cro	4	B								
05 Feb	N16W71	100	30	5	Cro	4	B								
06 Feb	N19W85	100	30	4	Bxo	4	B								
								0	0	0	1	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 95

			Region 2939												
29 Jan	S15E84	37	plage					2							
30 Jan	S15E70	37	120	5	Cso	4	B								
31 Jan	S15E62	34	280	5	Dho	7	B								
01 Feb	S15E47	34	500	5	Dho	7	B	1							
02 Feb	S16E34	28	300	6	Dho	3	B								
03 Feb	S16E22	33	260	9	Dho	4	B								
04 Feb	S16E10	32	220	9	Dso	4	B	1							
05 Feb	S17W03	32	200	6	Cso	4	B								
06 Feb	S16W20	35	200	5	Cso	4	B	1			1				
								5	0	0	1	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 32

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 2940												
30 Jan	S15E84	37	plage					4							
31 Jan	N17E61	34	160	4	Cso	5	B	6			11				
01 Feb	N22E46	35	410	5	Dki	18	B	3							
02 Feb	N18E33	34	320	10	Dao	16	BG	7			2				
03 Feb	N17E20	35	180	10	Cai	14	B	1							
04 Feb	N17E07	35	150	10	Dai	17	B								
05 Feb	N17W06	35	200	10	Dao	18	B								
06 Feb	N16W19	34	200	10	Dao	12	B								
								21	0	0	13	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 35

			Region 2941												
03 Feb	N25E71	344	180	6	Cao	3	B								
04 Feb	N25E61	341	280	12	Eho	6	B	1							
05 Feb	N24E48	341	300	12	Eho	9	B	3			1				
06 Feb	N24E35	340	290	11	Eho	10	B								
								4	0	0	1	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 340

			Region 2942												
06 Feb	S11W62	77	20	3	Bxo	3	B								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 77

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

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

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