Space Weather Highlights **SWPC PRF 1900**
23 January - 29 January 2012 **31 January 2012**

Solar activity ranged from low to high levels. Region 1402 (N28, L=214, class/area=Eko/630 on 17 January) produced a long duration M8/2b flare at 23/0359 UTC. Multiple radio emissions from 25 MHz to 15.4 GHz, including a 5100 sfu Tenflare, and a Type IV sweep were also observed. Finally, an approximately 1600 km/s asymmetric full-halo coronal mass ejection (CME) was seen in SOHO/LASCO C2 imagery beginning at 23/0412 UTC. Activity returned to low levels as Region 1402 made its way across the visible solar disk producing occasional low to mid level C-class flares. On 27 January, Region 1402 moved to N29W71 before producing an X1/1f flare at 27/1837 UTC. Radio phenomena, including a Type II (1523 km/s) and a Type IV radio sweep with an 810 sfu Tenflare accompanied this flare. An asymmetric halo CME was later observed in LASCO C2 coronagraph imagery with an estimated plane-of-sky speed near 2000 km/s. Region 1402 rotated off the west limb on 28 January. Region 1402’s counterpart, Region 1401 (N18, L=213, class/area=Eki/540 on 19 January) was the second largest and most magnetically complex (beta-gamma) region on the disk during the period. Region 1401 was only responsible for a couple of low level C-class flares during the period. Region 1401 decayed to spotless plage on 26 January.

Energetic proton flux levels reached strong levels during the period as two proton events energized the Earth's magnetosphere. The first event began minutes after the M8/2b flare on 23 January. The 10 MeV proton flux crossed the 10 pfu event threshold at 23/0530 UTC. The 10 MeV protons increased steadily to a peak flux of 6310 pfu at 24/1530 UTC, following the arrival of the interplanetary shock. This 10 MeV proton event ended at 27/1025 UTC when the enhancement dropped below the 10 pfu level. This 10 MeV proton event was the largest enhancement since Oct 29, 2003 (29,526 pfu) and the 11th largest since January, 1975. Also with this event, the 100 MeV proton flux exceeded the 1 pfu threshold. The 100 MeV flux began at 23/0445 UTC, increased to a peak of 2 pfu at 23/0750 UTC, then steadily declined until it dropped below the 1 pfu threshold at 23/2050 UTC. The second event began on 27 January, after the X1.7/1f flare. The 10 MeV proton flux crossed the 10 pfu event threshold at 27/1905 UTC. The 10 MeV protons increased steadily to a peak flux of 796 pfu at 28/0205 UTC. The 10 MeV proton event was still in progress at the time of this report. The associated 100 MeV event began at 27/1900 UTC, reached a maximum of 11 pfu at 27/2140 UTC and ended on 28/2120 UTC.

The greater than 2 MeV electron flux at geosynchronous orbit began at background levels, but increased to moderate levels late on 23 January. Values increased to high levels on 27-28 January, before decreasing to moderate levels through the end of the period.

Geomagnetic field activity ranged from quiet to minor storm levels at mid-latitudes and briefly reached severe storm conditions at high latitudes. The magnetic field was mostly quiet on 23 January with an isolated minor storm observed at high latitudes from waning effects from a CME. On 24-25 January, activity increased to isolated minor storms at low latitudes and severe storms at high latitudes, due to the arrival of a CME, associated with the 23 January M8/2b flare. An interplanetary shock was observed at the ACE spacecraft at 24/1431 UTC followed by a 37 nT increase in total field, as measured by the ACE spacecraft, at 24/1439 UTC. A corresponding

sudden impulse was observed in the Boulder magnetometer with a 22 nT deviation at 24/1504 UTC. Solar wind speed, as measured by the SOHO spacecraft, was approximately 750 km/s at the time of the shock passage before decreasing to approximately 650 km/s. The geomagnetic field decreased to predominantly quiet levels for the remainder of the period.

Space Weather Outlook
01 February - 27 February 2012

Solar activity is expected to be at very low to low levels from 01-09 February until old Regions 1401 and 1402 are due to return. Solar activity is expected to increase to low levels with a chance for M-class flares and a slight chance for X-class flares for the remainder of the period.

The greater than 10 MeV proton flux at geosynchronous orbit is expected to remain elevated from 01-02 February but below the 10 pfu threshold values. A return to background levels is expected from 03- 08 February. On 09 February, old Regions 1401 and 1402 are due to return to the visible disk. From 09 February until the end of the forecast period, there will be a slight chance for a proton event.

The greater than 2 MeV electrons at geosynchronous orbit are expected to be at normal to moderate levels for the entire forecast period.

The geomagnetic field is expected to be at predominantly quiet levels for the entire period. Quiet to unsettled levels are expected on days 03-04 February, 09 February, 12 February, and 23 February. This increased activity can be attributed to multiple, recurrent coronal hole, high speed wind streams.

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
23 January	144	108	740	B6.0	1	1	0	7	3	1	0	0
24 January	136	105	880	B5.8	3	0	0	5	0	0	0	0
25 January	126	68	350	B4.9	0	0	0	1	0	0	0	0
26 January	128	55	510	B7.3	7	0	0	1	0	0	0	0
27 January	142	39	290	B5.2	5	0	1	1	1	0	0	0
28 January	115	34	210	B5.9	1	0	0	0	0	0	0	0
29 January	110	74	290	B2.7	0	0	0	0	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	>100 MeV	>0.6 MeV	>2MeV	>4 MeV
23 January	2.7e+08	1.4e+08	9.1e+04		1.4e+07	
24 January	1.1e+09	2.1e+08	2.1e+04		2.5e+08	
25 January	2.6e+08	2.6e+07	2.7e+03		5.3e+07	
26 January	3.7e+07	4.3e+06	3.4e+03		1.6e+07	
27 January	1.6e+07	4.7e+06	1.6e+05		5.5e+07	
28 January	1.1e+08	4.8e+07	2.8e+05		7.1e+07	
29 January	5.4e+07	1.0e+07	2.1e+04		3.6e+07	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
23 January	7	4-3-2-1-1-1-0-0	12	5-3-3-2-1-1-0-1	9	4-3-2-1-1-1-1-1
24 January	13	3-2-1-1-2-4-4-3	29	4-3-3-4-2-6-5-3	17	3-2-1-1-1-4-5-3
25 January	17	3-4-3-5-3-2-1-2	38	4-3-5-7-4-4-3-2	14	3-4-3-4-3-2-2-2
26 January	5	2-1-1-2-2-2-1-1	13	2-1-3-4-2-4-2-2	6	2-1-2-2-1-2-2-1
27 January	6	1-1-3-2-2-1-2-0	16	1-1-5-3-4-3-2-2	7	1-2-3-2-2-1-2-0
28 January	6	2-2-1-1-2-2-1-2	4	1-1-1-1-2-0-1-2	5	2-2-1-0-1-1-2-2
29 January	5	2-2-1-1-1-2-2-0	6	3-2-2-2-1-1-1-0	5	2-2-1-1-0-0-1-1

Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
23 Jan 0350	ALERT: X-ray Flux exceeded M5	23/0348
23 Jan 0420	SUMMARY: 10cm Radio Burst	23/0344 - 0403
23 Jan 0451	WARNING: Proton 100MeV Integral Flux > 1pfu	23/0449 - 1649
23 Jan 0453	ALERT: Proton Event 100MeV Integral Flux > 1pfu	23/0449
23 Jan 0501	WARNING: Proton 10MeV Integral Flux > 10pfu	23/0500 - 1700
23 Jan 0546	ALERT: Proton Event 10MeV Integral Flux >= 10pfu	23/0530
23 Jan 0608	CANCELLATION: Geomagnetic K = 5	
23 Jan 0622	SUMMARY: X-ray Event exceeded M5	23/0338 - 0434
23 Jan 0644	ALERT: Proton Event 10MeV Integral Flux >= 100pfu	23/0630
23 Jan 0911	ALERT: Proton Event 10MeV Integral Flux >= 1000pfu	23/0855
23 Jan 1335	WATCH: Geomagnetic A >= 30	24/
23 Jan 1337	WATCH: Geomagnetic A >= 20	25/
23 Jan 1426	EXTENDED WARNING: Proton 10MeV Integral Flux > 10pfu	23/0500 - 24/1900
23 Jan 1633	EXTENDED WARNING: Proton 100MeV Integral Flux > 1pfu	23/0449 - 2100
23 Jan 2100	EXTENDED WARNING: Proton 100MeV Integral Flux > 1pfu	23/0449 - 24/0100
24 Jan 0134	SUMMARY: Proton Event 100MeV Integral Flux > 1pfu	23/0445 - 2050
24 Jan 0217	WARNING: Geomagnetic K = 4	24/0230 - 0800
24 Jan 0240	ALERT: Geomagnetic K = 4	24/0232
24 Jan 1437	WARNING: Geomagnetic Sudden Impulse expected	24/1440 - 1515
24 Jan 1439	WARNING: Geomagnetic K = 4	24/1440 - 25/0100
24 Jan 1444	WARNING: Geomagnetic K = 5	24/1445 - 25/0100
24 Jan 1508	SUMMARY: Geomagnetic Sudden Impulse	24/1504
24 Jan 1510	ALERT: Geomagnetic K = 4	24/1508
24 Jan 1858	EXTENDED WARNING: Proton 10MeV Integral Flux > 10pfu	23/0500 - 25/0100
24 Jan 1903	ALERT: Geomagnetic K = 5	24/1903

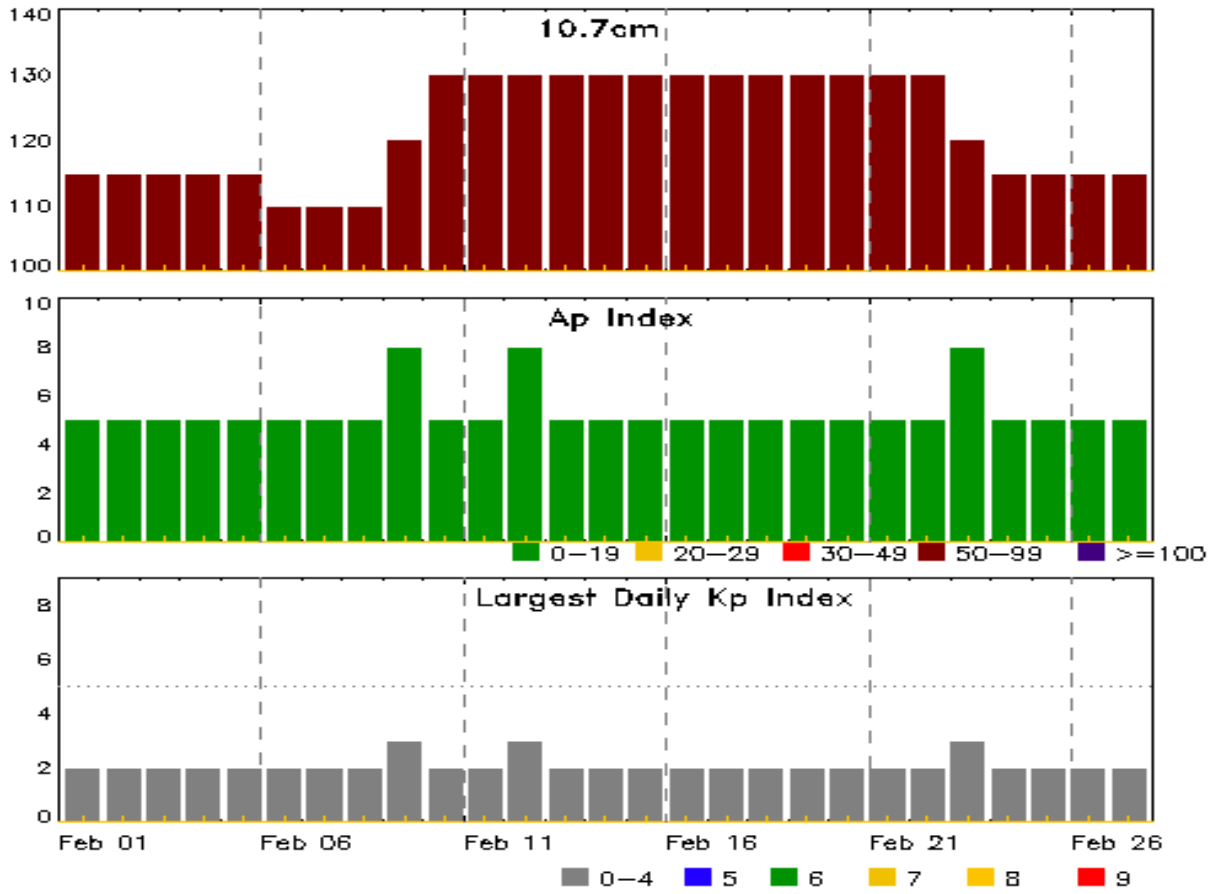
Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
24 Jan 1927	WARNING: Geomagnetic K = 6	24/1930 - 25/0100
25 Jan 0057	EXTENDED WARNING: Geomagnetic K = 4	24/1440 - 25/1000
25 Jan 0247	SUMMARY: Proton Event 10MeV Integral Flux >= 1000pfu	23/0855 - 24/2340
25 Jan 0844	WARNING: Geomagnetic K = 5	25/0845 - 1800
25 Jan 0956	EXTENDED WARNING: Geomagnetic K = 4	24/1440 - 25/2100
26 Jan 0357	SUMMARY: Proton Event 10MeV Integral Flux >= 100pfu	23/0630 - 25/2355
27 Jan 1348	SUMMARY: Proton Event 10MeV Integral Flux >= 10pfu	23/0530 - 27/1025
27 Jan 1550	ALERT: Electron 2MeV Integral Flux >= 1000pfu	27/1535
27 Jan 1819	ALERT: X-ray Flux exceeded M5	27/1819
27 Jan 1829	WARNING: Proton 10MeV Integral Flux > 10pfu	27/1826 - 28/1800
27 Jan 1856	WARNING: Proton 100MeV Integral Flux > 1pfu	27/1900 - 28/0700
27 Jan 1912	ALERT: Proton Event 100MeV Integral Flux > 1pfu	27/1900
27 Jan 1912	ALERT: Proton Event 10MeV Integral Flux >= 10pfu	27/1905
27 Jan 1940	ALERT: Type II Radio Emission	27/1810
27 Jan 1942	SUMMARY: 10cm Radio Burst	27/1809 - 1846
27 Jan 1944	ALERT: Type IV Radio Emission	27/1814
27 Jan 1946	SUMMARY: X-ray Event exceeded X1	27/1737 - 1856
27 Jan 2112	ALERT: Proton Event 10MeV Integral Flux >= 100pfu	27/2105
28 Jan 0634	EXTENDED WARNING: Proton 100MeV Integral Flux > 1pfu	27/1900 - 28/1630
28 Jan 1128	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	27/1535
28 Jan 1626	EXTENDED WARNING: Proton 100MeV Integral Flux > 1pfu	27/1900 - 28/2359
28 Jan 1629	EXTENDED WARNING: Proton 10MeV Integral Flux > 10pfu	27/1826 - 29/1800
29 Jan 0129	SUMMARY: Proton Event 100MeV Integral Flux > 1pfu	27/1900 - 28/2115
29 Jan 1731	SUMMARY: Proton Event 10MeV Integral Flux >= 100pfu	27/2105 - 29/1315

Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
29 Jan 1739	EXTENDED WARNING: Proton 10MeV Integral Flux > 10pfu	27/1826 - 30/1800

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
01 Feb	115	5	2	15 Feb	130	5	2
02	115	5	2	16	130	5	2
03	115	5	2	17	130	5	2
04	115	5	2	18	130	5	2
05	115	5	2	19	130	5	2
06	110	5	2	20	130	5	2
07	110	5	2	21	130	5	2
08	110	5	2	22	130	5	2
09	120	8	3	23	120	8	3
10	130	5	2	24	115	5	2
11	130	5	2	25	115	5	2
12	130	8	3	26	115	5	2
13	130	5	2	27	115	5	2
14	130	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
23 Jan	0338	0359	0434	M8.7	0.200	2B	N28W21	1402	4000	5100		2
27 Jan	1737	1837	1856	X1.7	0.320	1F	N27W71	1402	1100	810	3	2

Flare List

	Time				Optical		
Date	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
23 Jan	0142	0145	0151		SF	N29W20	1402
23 Jan	0152	0236	0242		SF	N29W20	1402
23 Jan	0244	0244	0254		1N	N28W20	1402
23 Jan	0256	0304	0322		1N	N28W20	1402
23 Jan	0256	0404	0553		2B	N28W21	1402
23 Jan	0301	0302	0316		SF	N18W25	1401
23 Jan	0325	0326	0330		SF	N18W25	1401
23 Jan	0338	0359	0434	M8.7			1402
23 Jan	0423	0424	0426		1F	N18W25	1401
23 Jan	0704	0706	0710		SF	N12W34	1401
23 Jan	0817	0820	0835		SF	N25W26	1402
23 Jan	1940	2011	2026	C1.4	SF	N18W33	1401
24 Jan	0119	0119	0123		SF	N33W31	1402
24 Jan	0334	0335	0337		SF	N19W33	1401
24 Jan	0429	0433	0437	C1.0			
24 Jan	0946	0953	0959	C2.5			1402
24 Jan	1657	1708	1710	C1.3			1401
24 Jan	2033	2034	2036		SF	N32W40	1402
24 Jan	2047	2048	2054		SF	N32W40	1402
24 Jan	2245	2247	2248		SF	N32W43	1402
25 Jan	1859	1859	1908		SF	N32W54	1402
26 Jan	0000	0005	0010	C1.5			1402
26 Jan	0026	0036	0059	C5.8			1402
26 Jan	0140	0149	0200	C7.9			1402
26 Jan	0358	0542	0703	C6.4			1402
26 Jan	1001	1011	1021	C2.7			
26 Jan	2038	2044	2051	C2.8	SF	N33W68	1402
26 Jan	2155	2202	2210	C1.8			
27 Jan	0111	0124	0132	C1.7			

Flare List

	Time			Optical			
Date	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
27 Jan	0401	0410	0426	C2.1			
27 Jan	0624	0642	0653	C5.5	SF	N31W74	1402
27 Jan	1158	1206	1216	C1.4			
27 Jan	1302	1305	1309	C1.0			
27 Jan	1737	1837	1856	X1.7	1F	N27W71	1402
28 Jan	1530	1534	1540	C1.0			1410

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 1396												
12 Jan	N25E32	287	10	3	Bxo	2	B								
13 Jan	N26E18	288	70	5	Dai	10	B				1				
14 Jan	N27E06	287	110	7	Dao	15	B	1			1				
15 Jan	N25W07	287	80	4	Dao	10	B								
16 Jan	N25W19	286	40	4	Dso	10	B								
17 Jan	N24W33	287	30	4	Dro	17	B								
18 Jan	N25W44	285	10	2	Bxo	4	B	1							
19 Jan	N25W58	286	plage					1			1				
20 Jan	N25W72	286	plage					1							
21 Jan	N25W86	287	plage												
								4	0	0	3	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 287

			Region 1397												
13 Jan	S20E28	277	40	3	Dao	4									
14 Jan	S20E14	278	30	5	Dao	4	B								
15 Jan	S20E02	278	15	5	Cao	3	B								
16 Jan	S20W12	279	plage												
17 Jan	S20W26	280	plage												
18 Jan	S20W40	281	plage												
19 Jan	S20W54	282	plage												
20 Jan	S20W68	282	plage												
21 Jan	S20W82	283	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 278

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 1399												
14 Jan	S24E69	224	30	3	Cao	4	B								
15 Jan	S23E54	225	20	1	Hax	2	A								
16 Jan	S22E43	224	20	1	Hsx	1	A								
17 Jan	S23E29	225	20	2	Hrx	1	A								
18 Jan	S23E17	224	20	1	Hsx	1	A								
19 Jan	S23E03	223	10	1	Axx	1	A								
20 Jan	S23W11	225	plage												
21 Jan	S23W25	226	plage												
22 Jan	S23W39	227	plage												
23 Jan	S23W53	228	plage												
24 Jan	S23W66	228	plage												
25 Jan	S23W80	229	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 223

			Region 1400												
14 Jan	S14W04	297	10	3	Cro	3	B								
15 Jan	S13W17	296	10	2	Cso	2	B								
16 Jan	S13W31	298	plage												
17 Jan	S13W45	299	plage												
18 Jan	S13W59	300	plage												
19 Jan	S13W73	301	plage												
20 Jan	S13W87	301	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 297

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 1401												
14 Jan	N15E73	215	40	2	Hsx	2	A	4	1						
15 Jan	N17E60	218	200	7	Dai	14	B	1			1				
16 Jan	N17E51	216	420	12	Eso	13	B	4			3				
17 Jan	N18E38	216	480	13	Ekc	18	BG	3	1		1	1			
18 Jan	N16E27	214	450	15	Ekc	18	BG	2	1			1			
19 Jan	N18E13	213	540	15	Eki	22	BG								
20 Jan	N16W00	213	380	15	Eki	19	B								
21 Jan	N17W12	213	350	15	Eki	19	B				1				
22 Jan	N16W26	213	260	15	Eki	21	BG	3			5	1			
23 Jan	N16W39	214	170	14	Eso	22	BG	1			4	1			
24 Jan	N16W52	214	170	14	Eso	22	BG	1			1				
25 Jan	N16W66	215	50	6	Cso	6	B								
26 Jan	N16W80	215	plage												
								19	3	0	16	4	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 213

			Region 1402												
14 Jan	N26E75	212	100	3	Hsx	3	A								
15 Jan	N27E64	215	270	6	Dho	7	B								
16 Jan	N28E53	214	480	7	Cko	6	B	1							
17 Jan	N28E40	214	630	11	Eko	7	BG				2				
18 Jan	N28E27	214	550	8	Dko	8	B				1				
19 Jan	N29E15	211	500	9	Dko	12	B		1		2		1		
20 Jan	N28E03	211	310	9	Dki	9	B								
21 Jan	N29W11	212	360	7	Dko	7	B	1			1				
22 Jan	N29W23	211	370	7	Dko	8	B				4				
23 Jan	N28W36	211	290	7	Cko	11	B		1		3	2	1		
24 Jan	N29W49	211	370	6	Dhi	12	B	1			4				
25 Jan	N26W60	209	200	7	Dai	6	BG				1				
26 Jan	N29W72	207	270	8	Dsc	9	B	5			1				
27 Jan	N29W88	210	60	6	Cso	3	B	1		1	1	1			
								9	2	1	20	3	2	0	0

Crossed West Limb.
Absolute heliographic longitude: 211

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 1403												
15 Jan	S19E29	250	10	2	Bxo	2	B								
16 Jan	S19E15	252	plage								1				
17 Jan	S19E02	252	10	3	Bxo	5	B								
18 Jan	S19W11	252	20	3	Cro	5	B								
19 Jan	S19W24	250	30	4	Cro	5	B								
20 Jan	S19W38	252	plage												
21 Jan	S19W52	253	plage												
22 Jan	S19W66	254	plage												
23 Jan	S19W80	255	plage												
								0	0	0	1	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 252

			Region 1404												
16 Jan	N12W29	296	30	3	Dso	3	B								
17 Jan	N11W42	296	10	3	Bxo	3	B								
18 Jan	N11W56	297	plage												
19 Jan	N11W70	298	plage												
20 Jan	N11W84	298	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 296

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 1405												
16 Jan	N13E65	202	20	2	Hsx	1	A								
17 Jan	N13E51	203	50	1	Hsx	1	A								
18 Jan	N11E39	202	40	2	Hsx	2	A								
19 Jan	N13E25	201	40	1	Hsx	1	A								
20 Jan	N11E13	200	30	1	Hsx	1	A								
21 Jan	N13E01	200	30	4	Cso	4	B								
22 Jan	N12W13	200	10	1	Axx	1	A								
23 Jan	N13W24	199	30	10	Cso	5	B								
24 Jan	N12W37	199	30	12	Cso	3	B								
25 Jan	N12W48	197	20	6	Cso	2	B								
26 Jan	N13W60	194	10	1	Axx	1	A								
27 Jan	N13W74	196	plage												
28 Jan	N13W88	197	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 200

			Region 1406												
17 Jan	S23W55	309	30	4	Dro	7	B								
18 Jan	S24W68	309	30	4	Cso	2	B								
19 Jan	S24W84	310	10	1	Axx	1	A								
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 309

			Region 1407												
18 Jan	N17E13	228	10	1	Bxo	2	B								
19 Jan	N17W00	227	10	4	Bxo	5	B								
20 Jan	N17W13	227	50	6	Dso	8	B								
21 Jan	N17W28	229	70	8	Dro	10	B								
22 Jan	N17W41	228	70	9	Dso	8	B				1				
23 Jan	N16W53	228	50	9	Dso	5	B								
24 Jan	N15W66	228	100	3	Cso	4	B								
25 Jan	N15W78	227	10	4	Bxo	2	B								
								0	0	0	1	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 227

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 1408												
21 Jan	N06E68	132	120	3	Hax	1	A								
22 Jan	N08E57	131	70	2	Hsx	2	A								
23 Jan	N08E44	131	100	3	Hsx	2	A								
24 Jan	N08E31	131	100	3	Hsx	2	A								
25 Jan	N08E17	132	70	2	Hsx	2	A								
26 Jan	N08E03	131	110	3	Cso	4	B								
27 Jan	N08W11	133	80	3	Cao	5	B								
28 Jan	N08W25	133	60	2	Hax	2	A								
29 Jan	N08W37	132	90	2	Hax	2	A								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 131

			Region 1409												
21 Jan	N16E50	150	0		Axx	1	A								
22 Jan	N19E40	147	10	2	Bxo	3	B								
23 Jan	N09E27	148	100	2	Cao	3	B								
24 Jan	N18E14	148	110	3	Hsx	2	A								
25 Jan	N18W00	149	plage												
26 Jan	N18W14	149	plage												
27 Jan	N18W28	150	plage												
28 Jan	N18W42	151	plage												
29 Jan	N18W56	152	plage												
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 149

			Region 1410												
26 Jan	N16E66	69	120	3	Hsx	1	A								
27 Jan	N16E52	70	150	3	Hsx	1	A								
28 Jan	N16E38	71	150	3	Hsx	1	A	1							
29 Jan	N19E37	59	160	6	Cso	4	B								
								1	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 59

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 1411													
28 Jan	S26E09	100	0		Axx	1	A								
29 Jan	S25W05	101	10	5	Bxo	6	B								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 101

		Region 1412													
29 Jan	S15W41	137	10	2	Bxo	4	B								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 137

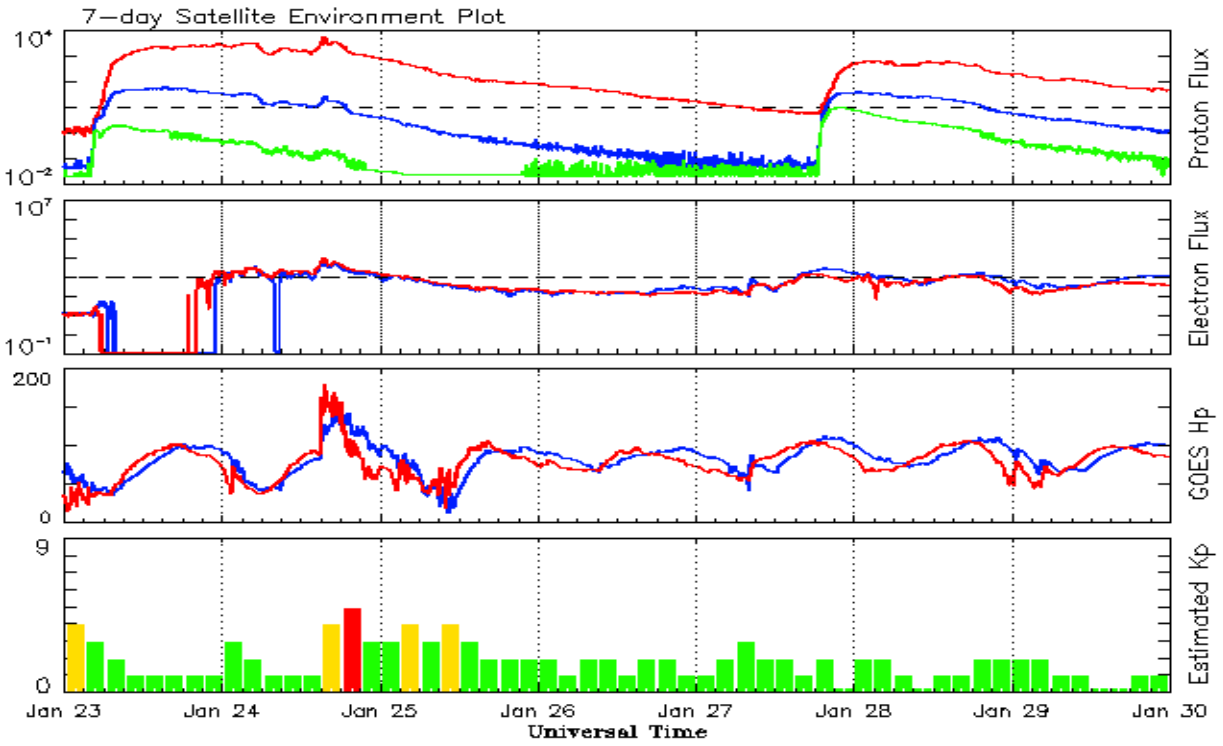
		Region 1413													
29 Jan	N08E38	58	20	3	Bxo	8	B								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 58

Recent Solar Indices (preliminary)
Observed monthly mean values

	Sunspot Numbers					Radio Flux		Geomagnetic	
	Observed values		Ratio	Smooth values		Penticton	Smooth	Planetary	Smooth
Month	SEC	RI	RI/SEC	SEC	RI	10.7 cm	Value	Ap	Value
				2010					
January	21.3	13.2	0.62	14.8	9.3	81.1	75.5	3	5.0
February	31.0	18.8	0.60	16.7	10.6	84.7	76.5	5	5.1
March	24.7	15.4	0.62	19.1	12.3	83.3	77.5	5	5.3
April	11.2	8.0	0.71	21.4	14.0	75.9	78.3	10	5.5
May	19.9	8.7	0.44	23.8	15.5	73.8	79.0	8	5.7
June	17.9	13.6	0.75	25.2	16.4	72.6	79.7	7	5.8
July	23.1	16.1	0.70	25.9	16.7	79.9	80.1	5	6.0
August	28.2	19.6	0.70	27.3	17.4	79.7	80.7	8	6.2
September	35.6	25.2	0.71	30.6	19.6	81.1	82.4	5	6.3
October	35.0	23.5	0.67	35.9	23.2	81.6	85.3	6	6.4
November	36.1	21.5	0.60	40.5	26.5	82.5	87.7	5	6.4
December	22.0	14.4	0.66	43.8	28.8	84.3	89.6	4	6.5
				2011					
January	32.1	18.8	0.59	47.2	30.9	83.7	91.2	6	6.7
February	53.2	29.6	0.55	50.6	33.4	94.5	92.7	6	6.8
March	81.0	55.8	0.69	55.2	36.9	115.3	95.8	7	7.2
April	81.7	54.4	0.67	61.5	41.8	112.6	100.4	9	7.5
May	61.4	41.5	0.68	69.0	47.6	95.9	105.6	9	7.5
June	55.5	37.0	0.67	76.5	53.2	95.8	110.9	8	7.4
July	67.0	43.9	0.66			94.2		9	
August	66.1	50.6	0.77			101.7		8	
September	106.4	78.0	0.73			134.5		13	
October	116.8	88.0	0.75			137.2		7	
November	133.1	96.7	0.73			153.1		3	
December	106.3	73.0	0.69			141.2		3	

Note: Values are final except for the most recent 6 months which are considered preliminary. Cycle 24 started in Dec 2008 with an RI=1.7.



Weekly Geosynchronous Satellite Environment Summary
Week Beginning 23 January 2012

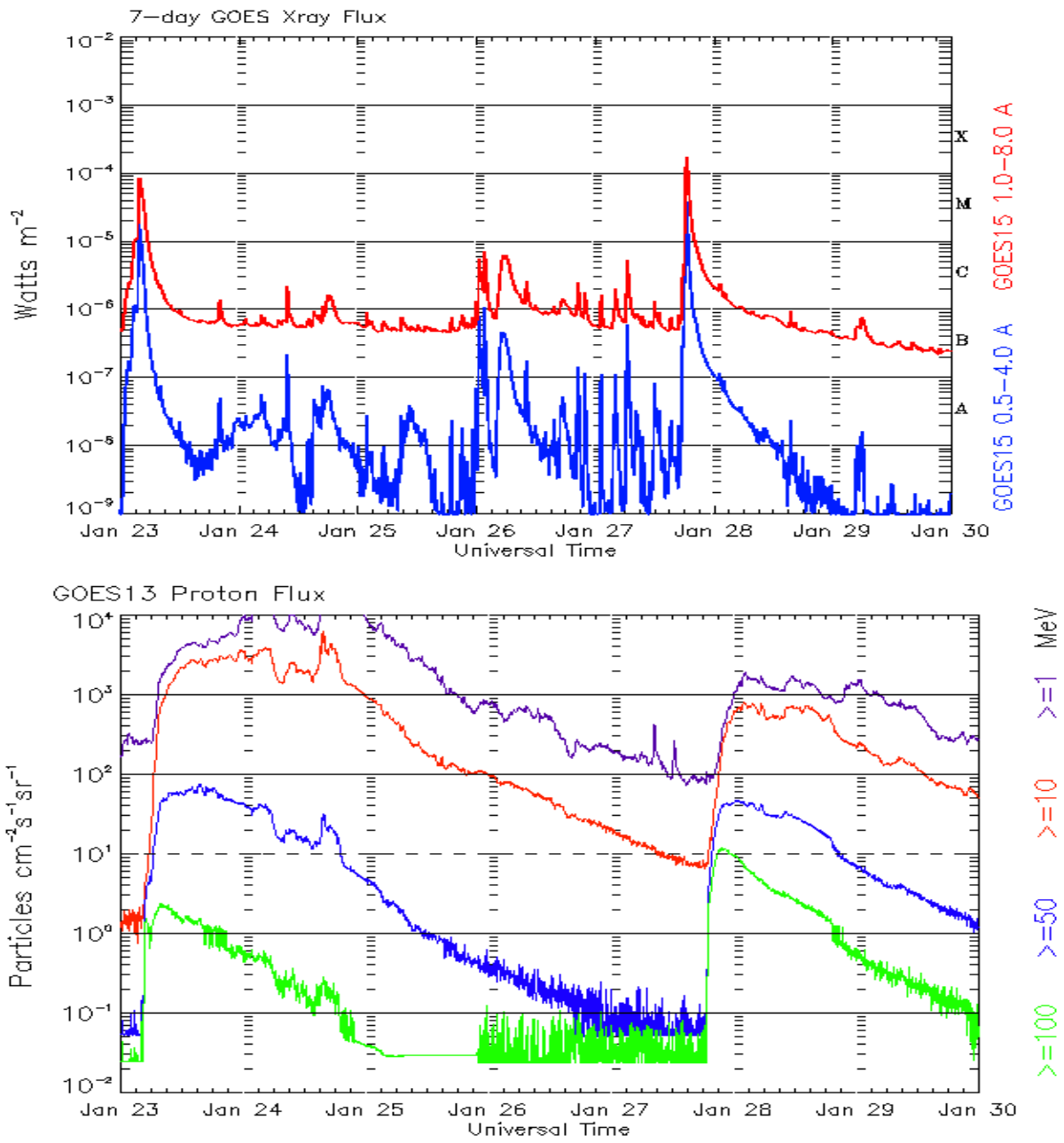
The proton flux plot contains the five-minute averaged integral proton flux (protons/cm^2-sec -sr) as measured by the SWPC Primary GOES satellite, near West 75, for each of three energy thresholds: greater than 10, 50, and 100 MeV.

The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm^2-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

The Hp plot contains the five minute averaged Hp magnetic field component in nanoteslas (nT) as by the SWPC Primary GOES satellite. The Hp component is parallel to the spin axis of the satellite, which is nearly parallel to the Earth's rotation axis.

The Estimated 3-hour Planetary Kp-index is derived at the NOAA Space Weather Prediction Center using data from the following ground-based magnetometers: Boulder, Colorado; Chambon la Foret, France; Fredericksburg, Virginia; Fresno, California; Hartland, UK; Newport, Washington; Sitka, Alaska. These data are made available thanks to the cooperative efforts between SWPC and data providers around the world, which currently includes the U.S. Geological Survey, the British Geological Survey, and the Institut de Physique du Globe de Paris.

The data included here are those now available in real time at the SWPC and are incomplete in that they do not include the full set of parameters and energy ranges known to cause satellite operating anomalies. The proton and electron fluxes and Kp are 'global' parameters that are applicable to a first order approximation over large areas. H parallel is subject to more localized phenomena and the measurements generally are applicable to within a few degrees of longitude of the measuring satellite.



Weekly GOES Satellite X-ray and Proton Plots
Week Beginning 23 January 2012

The x-ray plots contains five-minute averages x-ray flux (Watt/m^2) as measure by the SWPC primary GOES X-ray satellite, usually at West 105 longitude, in two wavelength bands, 0.05 - 0.4 and 0.1 - 0.8 nm. The letters A, B, C, M and X refer to x-ray event levels for the 0.1 - 0.8 nm band.

The proton plot contains the five-minute averaged intergral flux units (pfu = protons/cm^2 -sec -sr) as measured by the primary SWPC GOES Proton satellite for each of the energy thresholds: >1, >10, >30, and >100 MeV. The P10 event threshold is 10 pfu at greater than 10 MeV.

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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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