

Solar activity was low during most of the period with occasional low-level C-class flares. A long-duration C2 x-ray event was observed at 02/1524 UTC from just beyond the west limb. Associated with this event was a greater than 10 MeV proton flux enhancement at geosynchronous orbit (see below). Region 1390 (N08, L=122, class/area Dao/210 on 06 January) produced a C1 x-ray event at 05/0722 UTC with an associated Type II radio signature (695 km/s shock velocity). There were no Earth-directed CMEs observed during the period.

No proton events were observed at geosynchronous orbit. However, a greater than 10 MeV proton flux enhancement began late on 02 January and ended late on 03 January (peak flux 1 pfu at 03/0550 UTC). The enhancement was associated with the long-duration C2 x-ray event mentioned above.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal levels.

Geomagnetic field activity was at quiet to unsettled levels during the period. Brief minor storm periods occurred at high latitudes on 05 January associated with the onset of a coronal hole high-speed stream (CH HSS).

### **Space Weather Outlook** **11 January - 06 February 2012**

Solar activity is expected to be at low levels during the period with a slight chance for isolated M-class flare activity.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at normal levels during the period with a chance for moderate levels during 14 - 16 January and again on 30 January - 01 February.

Geomagnetic field activity is expected to be at quiet levels during 10 January. An increase to quiet to unsettled levels is expected on 11 - 12 January and 16 January due to recurrent CH HSS effects. Quiet conditions are expected during 17 - 27 January. An increase to quiet to unsettled levels is expected on 28 - 29 January due to another CH HSS. Quiet levels are expected from 30 January - 06 February.



### *Daily Solar Data*

Date	Radio Flux 10.7cm	Sun spot No.	Sunspot Area (10 <sup>-6</sup> hemi.)	X-ray Background Flux	Flares							
					X-ray			Optical				
					C	M	X	S	1	2	3	4
02 January	135	83	570	B4.1	3	0	0	2	0	0	0	0
03 January	135	95	650	B4.1	0	0	0	2	0	0	0	0
04 January	136	101	960	B3.9	2	0	0	1	0	0	0	0
05 January	141	99	890	B4.3	2	0	0	1	0	0	0	0
06 January	136	118	1000	B4.8	4	0	0	5	0	0	0	0
07 January	141	110	1000	B6.1	2	0	0	2	0	0	0	0
08 January	136	90	900	B6.1	7	0	0	4	0	0	0	0

### *Daily Particle Data*

Date	Proton Fluence (protons/cm <sup>2</sup> -day-sr)			Electron Fluence (electrons/cm <sup>2</sup> -day-sr)		
	>1 MeV	>10 MeV	>100 MeV	>0.6 MeV	>2MeV	>4 MeV
	02 January	4.2e+05	1.8e+04	3.0e+03		7.3e+05
03 January	7.2e+05	2.9e+04	2.9e+03		8.7e+05	
04 January	1.6e+05	1.3e+04	2.9e+03		1.4e+06	
05 January	2.4e+05	1.3e+04	3.0e+03		1.7e+06	
06 January	2.7e+05	1.3e+04	3.5e+03		1.3e+06	
07 January	1.2e+05	1.3e+04	3.3e+03		1.6e+06	
08 January	1.4e+05	1.3e+04	3.2e+03		5.8e+06	

### *Daily Geomagnetic Data*

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	02 January	4	0-0-1-1-2-2-2-2	2	0-0-1-0-1-0-1-1	5
03 January	9	3-3-2-1-2-3-1-1	12	2-4-3-4-0-3-1-0	7	3-3-2-2-0-1-1-1
04 January	3	1-1-0-0-2-2-1-1	0	0-0-0-0-1-0-0-0	3	1-0-0-0-1-1-1-1
05 January	6	1-1-1-1-3-2-2-1	9	0-0-1-3-5-1-1-0	5	1-1-1-0-3-2-2-1
06 January	6	1-1-1-2-2-2-2-2	3	0-0-0-3-1-1-1-1	5	1-1-0-1-1-2-2-2
07 January	5	2-1-1-1-2-1-2-2	7	2-1-2-3-2-3-0-1	5	2-1-1-1-1-1-1-2
08 January	5	1-2-2-1-2-2-1-1	3	1-1-2-0-1-1-1-0	4	1-2-1-0-1-1-2-1

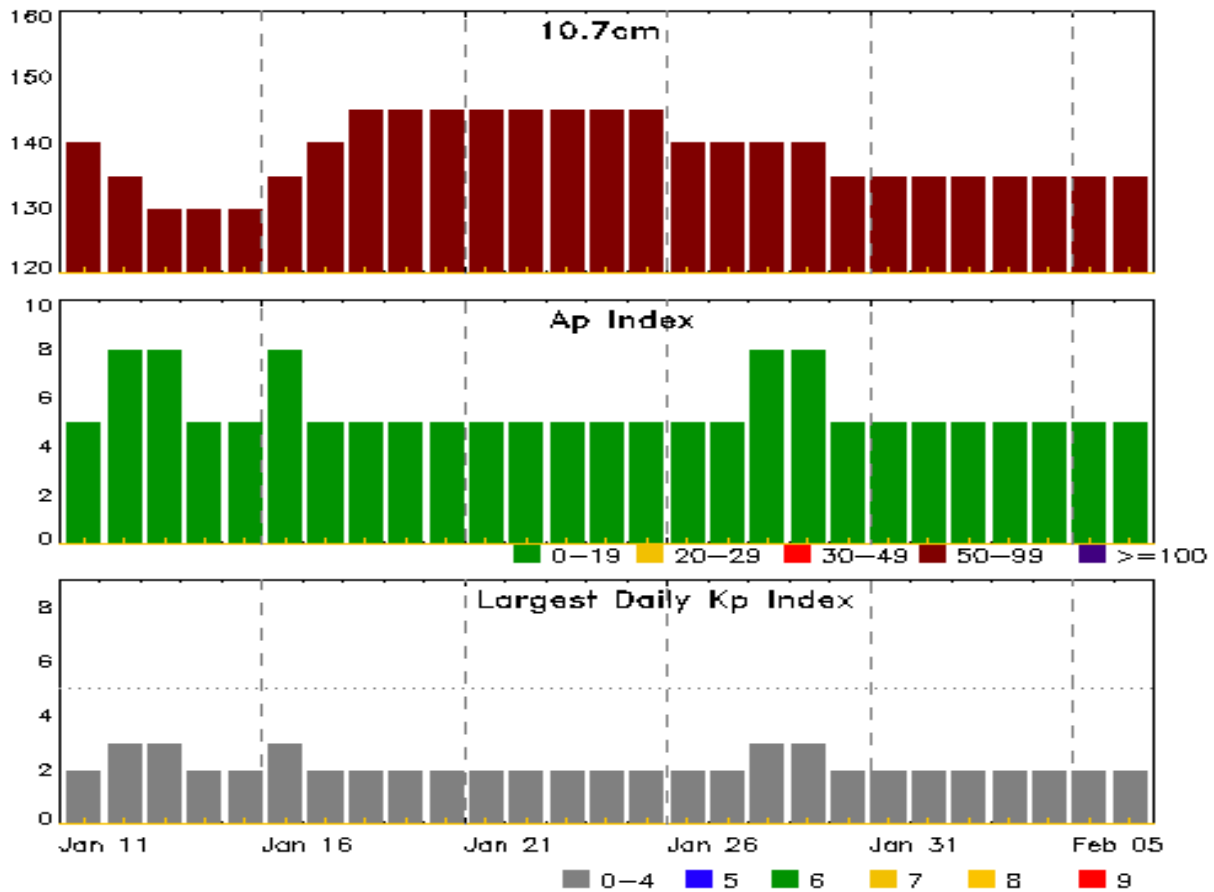


### *Alerts and Warnings Issued*

<b>Date &amp; Time of Issue UTC</b>	<b>Type of Alert or Warning</b>	<b>Date &amp; Time of Event UTC</b>
02 Jan 0121	WARNING: Geomagnetic Sudden Impulse expected	02/0155 - 0225
02 Jan 0207	CANCELLATION: Geomagnetic Sudden Impulse expected	
03 Jan 0504	WARNING: Geomagnetic K = 4	03/0503 - 1200
05 Jan 0802	ALERT: Type II Radio Emission	05/0711



## 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
11 Jan	140	5	2	25 Jan	145	5	2
12	135	8	3	26	140	5	2
13	130	8	3	27	140	5	2
14	130	5	2	28	140	8	3
15	130	5	2	29	140	8	3
16	135	8	3	30	135	5	2
17	140	5	2	31	135	5	2
18	145	5	2	01 Feb	135	5	2
19	145	5	2	02	135	5	2
20	145	5	2	03	135	5	2
21	145	5	2	04	135	5	2
22	145	5	2	05	135	5	2
23	145	5	2	06	135	5	2
24	145	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		Intensity	
									245	2695	II	IV

**No Events Observed**

## *Flare List*

Date	Time			X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
	Begin	Max	End				
02 Jan	0255	0300	0307	B7.6			
02 Jan	0519	0521	0525	C1.6	SF	S22E20	1389
02 Jan	0705	0724	0732	C1.5			1389
02 Jan	0756	0802	0809	B8.4			
02 Jan	0927	0930	0932	B6.1	SF	S28E21	1389
02 Jan	1111	1118	1126	B8.2			
02 Jan	1431	1524	1604	C2.4			
03 Jan	0331	0334	0338	B6.7			1389
03 Jan	0414	0419	0427	B8.0			1391
03 Jan	1959	2009	2025		SF	N11W41	1390
03 Jan	2050	2053	2055	B7.7	SF	S26E02	1389
04 Jan	0219	0222	0226	B6.4			1390
04 Jan	0252	0254	0301		SF	N10E66	1391
04 Jan	0857	0902	0905	C1.5			1392
04 Jan	1059	1106	1114	C1.3			1386
05 Jan	0701	0722	0743	C1.9			1390
05 Jan	1151	1238	1300	C2.1			1392
05 Jan	2041	2042	2047		SF	S13W82	1386
06 Jan	0604	0608	0611	C1.4	SF	S19W41	1389
06 Jan	1114	1125	1135	C2.2			1392
06 Jan	1703	1706	1709	B6.8			
06 Jan	1716	1719	1722	C1.4	SF	N11W82	1390
06 Jan	2029	2032	2038		SF	N20W28	1392
06 Jan	2042	2047	2103		SF	N18W13	1393
06 Jan	2354	0009	0023	C2.6	SF	N21W31	1392
07 Jan	0220	0230	0238	C1.1			
07 Jan	0439	0453	0507	C1.6			
07 Jan	1039	1042	1047	B9.9			1390
07 Jan	1727	1730	1746		SF	N16W25	1393
07 Jan	1948	1949	1958		SF	N16W25	1393
08 Jan	0209	0227	0246	C4.9			



## *Flare List*

Date	Time			X-ray Class	Imp/ Brtns	Optical		Rgn #
	Begin	Max	End			Location Lat CMD		
08 Jan	0321	0325	0329	C2.9	SF	N17W32	1393	
08 Jan	0433	0438	0449	C1.2				
08 Jan	0608	0613	0616	C1.9	SF	N16W33	1393	
08 Jan	1313	1319	1325	C1.8			1389	
08 Jan	1456	1500	1502	C1.3			1389	
08 Jan	1720	1726	1733	C1.4			1389	
08 Jan	1914	1918	1926	B9.2			1393	
08 Jan	2017	2022	2038	B7.6				
08 Jan	2256	2303	2331		SF	N17W41	1393	
08 Jan	2335	2336	2339		SF	N17W44	1393	



## Region Summary

Date	Location		Sunspot Characteristics				Flares															
	Lat CMD	Helio Lon	Area 10 <sup>6</sup> hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical											
								C	M	X	S	1	2	3	4							
<b>Region 1383</b>																						
19 Dec	N04E68	207	20		Hsx	1	A															
20 Dec	N03E53	208	40	2	Hsx	1	A															
21 Dec	N04E39	209	20	1	Hsx	1	A															
22 Dec	N03E25	209	20	1	Hrx	1	A															
23 Dec	N03E13	209	10	2	Axx	3	A															
24 Dec	N03W00	209	20	2	Cso	3	B															
25 Dec	N03W14	211	10	1	Hsx	1	A															
26 Dec	N04W26	210	10		Bxo	2	B															
27 Dec	N04W40	210	0	1	Axx	1	A															
28 Dec	N04W55	212	5	1	Bxo	3	B															
29 Dec	N04W68	212	5		Hrx	1	A															
30 Dec	N04W83	214	plage																			
									0	0	0	0	0	0	0	0	0	0	0	0		

Crossed West Limb.  
 Absolute heliographic longitude: 209

<b>Region 1384</b>																						
20 Dec	N12E61	201	90	4	Dao	4	B															
21 Dec	N14E52	196	210	8	Cao	7	B	5				1										
22 Dec	N12E37	198	300	9	Dko	17	B															
23 Dec	N13E25	197	500	10	Dho	12	B	1				1										
24 Dec	N13E12	197	480	11	Eho	13	B					1										
25 Dec	N13W00	197	330	10	Dhi	7	B															
26 Dec	N13W14	198	330	10	Dhi	10	B	1				1										
27 Dec	N12W27	197	350	9	Dho	9	B					1										
28 Dec	N12W42	198	350	8	Cko	10	B	1				2										
29 Dec	N12W55	199	340	7	Cko	5	B					1										
30 Dec	N12W70	200	310	4	Cho	3	B															
31 Dec	N11W83	200	250	3	Hhx	1	A															
									8	0	0	8	0	0	0	0	0	0	0	0		

Crossed West Limb.  
 Absolute heliographic longitude: 197



### *Region Summary - continued*

Date	Location		Sunspot Characteristics				Flares										
	Lat CMD	Lon	Helio 10 <sup>6</sup> hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical						
								C	M	X	S	1	2	3	4		
<b>Region 1385</b>																	
23 Dec	S31W02	224	30	4	Dso	7	B										
24 Dec	S32W16	225	10	6	Bxo	2	B										
25 Dec	S32W30	227	plage														
26 Dec	S34W41	225	10	4	Bxo	2	B										
27 Dec	S32W53	223	10	6	Bxo	2	B										
28 Dec	S32W67	224	plage														
29 Dec	S32W81	225	plage														
								0	0	0	0	0	0	0	0	0	

Crossed West Limb.  
Absolute heliographic longitude: 224

<b>Region 1386</b>																	
23 Dec	S16E72	150	30	1	Hsx	1	A										
24 Dec	S18E64	146	120	10	Dso	2	B	2				1					
25 Dec	S18E49	148	120	7	Dso	3	B										
26 Dec	S17E37	147	200	12	Esi	18	BG										
27 Dec	S18E22	148	200	9	Dai	12	BG	1					1				
28 Dec	S18E08	148	180	7	Dai	15	BG	1				1					
29 Dec	S17W05	149	140	8	Dsi	9	BG					1					
30 Dec	S18W18	148	100	11	Eso	12	B					2					
31 Dec	S18W32	149	70	4	Dso	3	B	1				1					
01 Jan	S18W44	149	60	2	Hsx	3	A										
02 Jan	S17W57	147	50	2	Hsx	1	A										
03 Jan	S18W69	147	70	3	Hsx	1	A										
04 Jan	S17W87	150	30	3	Hsx	1	A	1									
								6	0	0	6	1	0	0	0	0	

Crossed West Limb.  
Absolute heliographic longitude: 149

<b>Region 1387</b>																	
25 Dec	S22W28	225	30	4	Dao	3	B	4	1			3	1				
26 Dec	S22W42	226	130	7	Dai	17	BG	1	2			9	1				
27 Dec	S21W57	227	290	7	Dki	17	BG	4				8					
28 Dec	S21W70	226	290	10	Dki	14	BG	2				1					
29 Dec	S19W83	227	170	9	Dao	5	BG										
								11	3	0	21	2	0	0	0	0	

Crossed West Limb.  
Absolute heliographic longitude: 225





**Region Summary - continued**

Date	Location		Sunspot Characteristics				Flares																
	Lat CMD	Helio Lon	Area 10 <sup>6</sup> hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical												
								C	M	X	S	1	2	3	4								
<b>Region 1388</b>																							
27 Dec	S23E67	103	90	2	Hsx	1	A																
28 Dec	S24E55	102	100	2	Hsx	1	A																
29 Dec	S23E41	103	70	2	Hsx	1	A																
30 Dec	S23E29	102	60	3	Hsx	1	A																
31 Dec	S24E15	102	60	2	Hsx	1	A																
01 Jan	S24E02	102	80	2	Hsx	1	A																
02 Jan	S24W14	104	60	2	Hsx	1	A																
03 Jan	S23W24	101	60	5	Hsx	1	A																
04 Jan	S24W36	100	60	2	Cao	1	B																
05 Jan	S26W48	99	50	1	Hsx	1	A																
06 Jan	S26W61	99	60	2	Hsx	1	A																
07 Jan	S24W73	98	50	4	Cso	2	B																
08 Jan	S26W92	101	30	1	Hsx	1	A																
												0	0	0	0	0	0	0	0	0	0	0	

Still on Disk.  
 Absolute heliographic longitude: 102

<b>Region 1389</b>																							
28 Dec	S20E70	86	200	5	Dso	6	B	5				2	1										
29 Dec	S23E58	86	290	15	Eki	8	B	10	2			11	1										
30 Dec	S23E44	87	500	12	Ekc	15	BG	7	1			4											
31 Dec	S23E31	87	400	13	Ekc	9	BG		2			2	1										
01 Jan	S22E17	86	420	16	Fko	16	B	1				2											
02 Jan	S22E08	83	330	16	Fkc	21	BG	2				2											
03 Jan	S22W04	81	240	14	Eso	20	B					1											
04 Jan	S22W16	81	280	16	Fko	14	B																
05 Jan	S23W29	80	200	3	Cao	5	B																
06 Jan	S21W45	83	230	11	Cao	3	B	1				1											
07 Jan	S21W61	86	210	2	Hsx	1	A																
08 Jan	S20W75	86	180	4	Hsx	1	A	3															
								29	5	0		25	3	0	0	0	0	0	0	0	0	0	

Still on Disk.  
 Absolute heliographic longitude: 81



**Region Summary - continued**

Date	Location		Sunspot Characteristics				Flares										
	Lat CMD	Helio Lon	Area 10 <sup>6</sup> hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical						
								C	M	X	S	1	2	3	4		
<b>Region 1390</b>																	
28 Dec	N09E44	113	10	2	Bxo	3	B										
29 Dec	N08E29	115	10	5	Cao	6	B										
30 Dec	N09E14	116	40	7	Cso	8	B										
31 Dec	N09W00	117	10	10	Bxo	4	B										
01 Jan	N09W14	119	plage														
02 Jan	N10W29	120	10	5	Bxo	9	B										
03 Jan	N10W42	120	30	6	Dro	9	B					1					
04 Jan	N10W58	122	70	9	Cai	16	B										
05 Jan	N09W71	122	170	9	Dao	12	B	1									
06 Jan	N08W84	122	210	10	Dao	8	B	1				1					
								2	0	0		2	0	0	0	0	0

Crossed West Limb.  
Absolute heliographic longitude: 117

<b>Region 1391</b>																	
02 Jan	N13E81	10	120	9	Hsx	1	A										
03 Jan	N12E65	12	240	3	Hsx	1	A										
04 Jan	N12E54	10	510	8	Cho	4	B					1					
05 Jan	N13E40	11	420	9	Dho	10	B										
06 Jan	N13E28	10	420	10	Dki	19	B										
07 Jan	N13E14	10	370	9	Dko	12	B										
08 Jan	N13W00	10	300	10	Dko	12	B										
								0	0	0		1	0	0	0	0	0

Still on Disk.  
Absolute heliographic longitude: 10

<b>Region 1392</b>																	
03 Jan	N20E09	68	10	4	Bxo	3	B										
04 Jan	N20W04	69	10	6	Bxo	5	B	1									
05 Jan	N21W19	70	10	3	Bxo	2	B	1									
06 Jan	N19W32	70	40	6	Dao	8	B	2				2					
07 Jan	N19W46	71	50	7	Dao	5	B										
08 Jan	N19W58	69	20	3	Cso	2	B										
								4	0	0		2	0	0	0	0	0

Still on Disk.  
Absolute heliographic longitude: 69



**Region Summary - continued**

Date	Location		Sunspot Characteristics				Flares								
	Lat CMD	Lon	Helio 10 <sup>-6</sup> hemi.	Area	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical			
									C	M	X	S	1	2	3

**Region 1393**

05 Jan	N18W03	54	40	6	Dao	9	B											
06 Jan	N17W16	54	30	4	Cro	7	B					1						
07 Jan	N16W30	54	100	5	Dao	10	B					2						
08 Jan	N16W45	56	250	8	Dki	13	B	2				4						
								2	0	0		7	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 54

**Region 1394**

06 Jan	N18E42	356	10	6	Axx	2	A											
07 Jan	N18E26	358	10	3	Bxo	2	B											
08 Jan	N18E12	358	plage															
								0	0	0		0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 358

**Region 1395**

08 Jan	N22E59	312	120	3	Hsx	1	A											
								0	0	0		0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 312

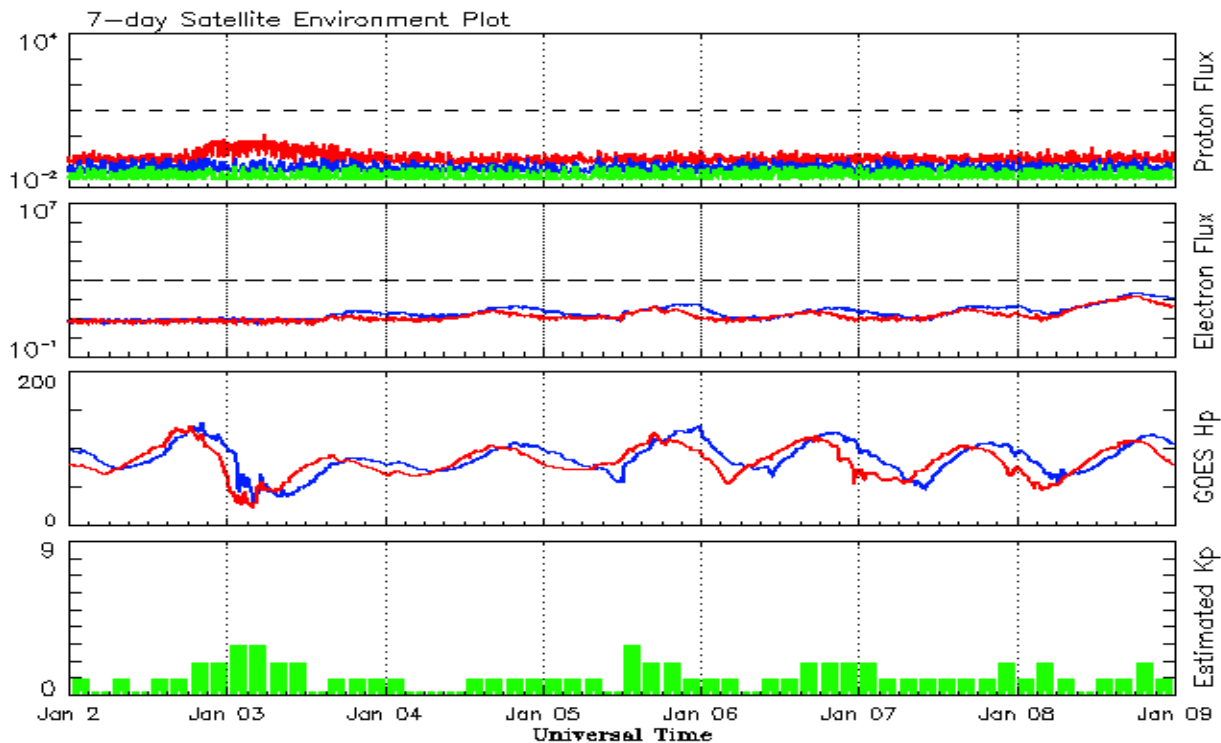


**Recent Solar Indices (preliminary)**  
**Observed monthly mean values**

Month	Sunspot Numbers					Radio Flux		Geomagnetic	
	Observed values		Ratio	Smooth values		Penticton	Smooth	Planetary	Smooth
	SEC	RI	RI/SEC	SEC	RI	10.7 cm	Value	Ap	Value
<b>2010</b>									
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
<b>2011</b>									
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	7.3
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		2	

**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 02 January 2012*

The proton flux plot contains the five-minute averaged integral proton flux (protons/cm<sup>2</sup>-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.

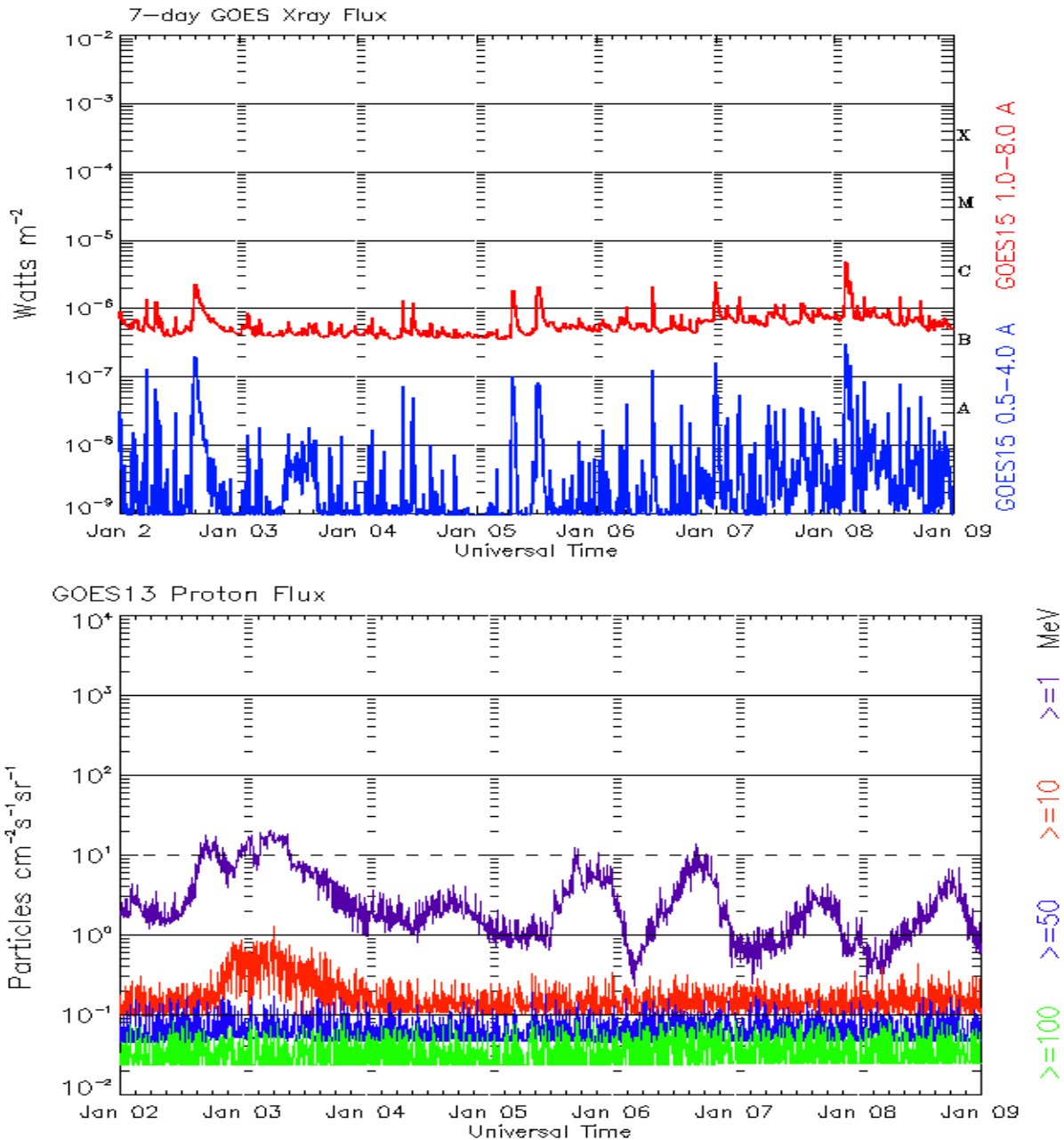
The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm<sup>2</sup>-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

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 02 January 2012*

The x-ray plots contains five-minute averages x-ray flux (Watt/m<sup>2</sup>) 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<sup>2</sup> -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.



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

Published every Tuesday 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

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