

Space Weather Highlights
09 January - 15 January 2012

SWPC PRF 1898
17 January 2012

Solar activity was at low to moderate levels. Activity was low during 09 - 13 January. Moderate levels were reached on 14 January due to an M1 flare at 14/1318 UTC from new Region 1401 (N17, L = 218, class/area Dai/200 on 15 January). Activity returned to low levels on 15 January. There were no Earth-directed CMEs during the period.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal to moderate levels during 09 - 12 January. Predominately normal levels were observed during 13 - 15 January.

Geomagnetic field activity was at mostly quiet levels during 09 - 12 January. Activity increased to quiet to unsettled levels on 13 January due to a coronal hole high-speed stream (CH HSS). Field activity decreased to quiet levels on 14 - 15 January.

Space Weather Outlook
18 January - 13 February 2012

Solar activity is expected to be at low levels with a chance for isolated M-class activity from Region 1401, 1402 (N27, L=215, class/area Dho/270 on 15 January) and old Region 1389 (S23, L=087), which is expected to return to the visible disk on 21 January.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at normal flux levels during 18 January - 03 February. Normal to moderate levels are expected from 04 - 07 February following a CH HSS. Normal levels are expected for the remainder of the period.

Geomagnetic field activity is expected to be quiet on 18 January. Conditions are expected to be at quiet to unsettled levels with a chance for isolated active periods on 19 - 20 January due to a CME observed early on 16 January. Mostly quiet conditions are expected to return from 21 January - 01 February. Quiet to unsettled conditions are expected from 02 - 04 February due to a recurrent CH HSS. Predominately quiet conditions are expected from 05 - 08 February. A second CH HSS is expected to become geoeffective on 09 February bringing quiet to unsettled conditions. Mostly quiet conditions are expected on 10 - 11 February before becoming quiet to unsettled for the duration of the period due to a third CH HSS.



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
09 January	142	90	1180	B4.8	4	0	0	8	0	0	0	0
10 January	129	63	980	B4.0	2	0	0	2	0	0	0	0
11 January	120	64	920	B5.4	5	0	0	2	1	0	0	0
12 January	117	57	380	B5.1	3	0	0	1	0	0	0	0
13 January	124	81	285	B4.9	1	0	0	2	0	0	0	0
14 January	132	145	510	B5.9	5	1	0	1	0	0	0	0
15 January	134	141	665	B6.2	5	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	>100 MeV	>0.6 MeV	>2MeV	>4 MeV
	09 January	1.9e+05	1.3e+04	3.1e+03		3.6e+06
10 January	2.8e+05	1.3e+04	3.1e+03		5.1e+06	
11 January	1.5e+05	1.3e+04	3.1e+03		7.4e+06	
12 January	6.8e+05	1.3e+04	3.2e+03		1.3e+07	
13 January	4.3e+05	1.3e+04	3.2e+03		3.8e+06	
14 January	2.8e+05	1.2e+04	3.1e+03		3.4e+06	
15 January	6.0e+05	1.3e+04	3.3e+03		3.9e+06	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	09 January	7	2-2-2-1-2-2-2-2	7	1-2-2-2-2-3-2-0	6
10 January	5	1-1-1-2-2-2-1-1	4	0-0-1-2-2-2-1-1	4	0-1-0-2-2-1-1-1
11 January	5	1-2-1-1-1-2-2-1	2	0-1-0-2-0-1-1-1	5	1-2-1-1-1-1-2-1
12 January	5	2-1-0-2-2-2-2-1	3	1-1-0-2-2-0-2-0	5	2-1-0-2-1-1-2-2
13 January	8	2-3-3-1-2-2-1-1	4	1-2-2-3-1-0-0-0	6	2-3-3-1-1-1-1-1
14 January	3	1-1-0-1-2-2-1-0	2	0-0-2-2-0-0-0-0	3	1-1-1-0-1-1-0-0
15 January	4	0-1-0-0-2-2-2-2	1	0-0-0-0-0-1-1-1	3	0-1-0-0-1-1-2-2

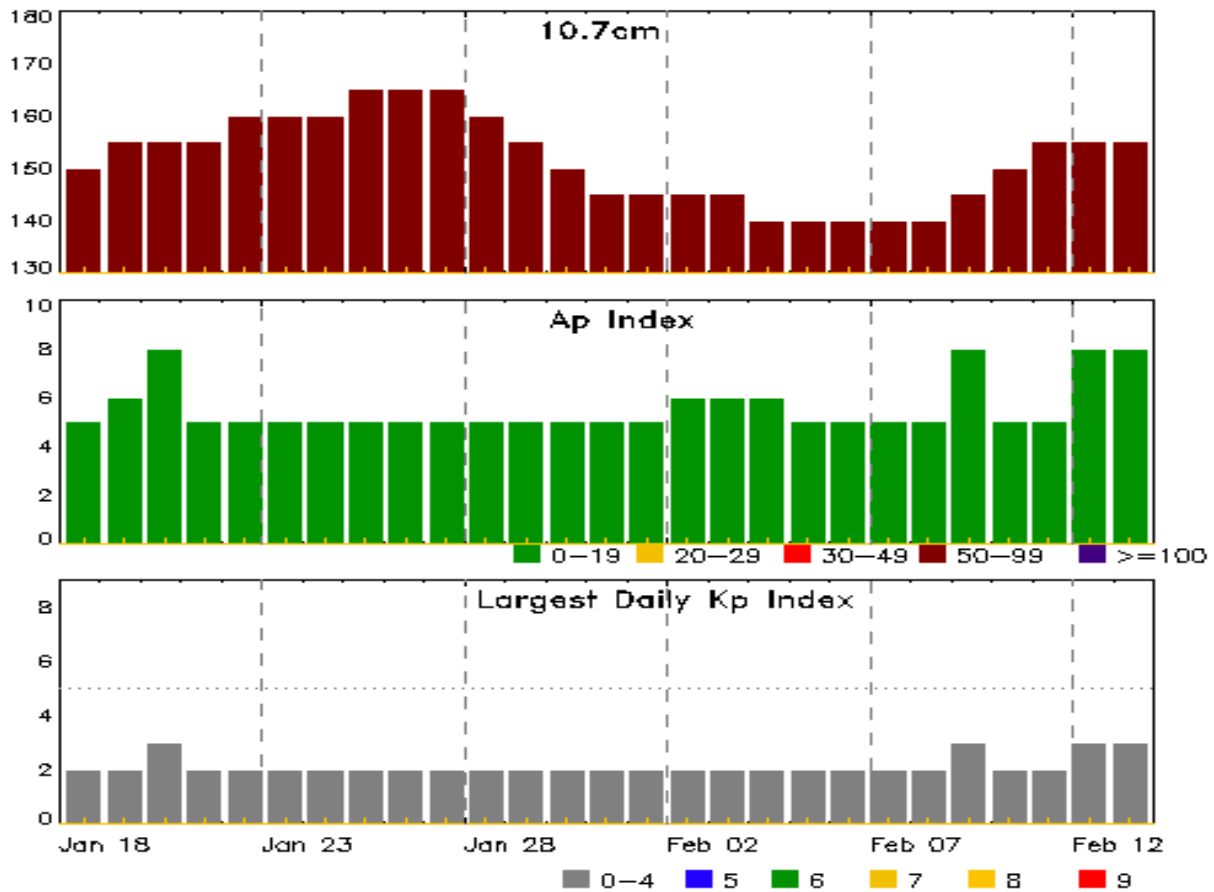


Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
No Alerts or Warnings Issued		



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
18 Jan	150	5	2	01 Feb	145	5	2
19	155	6	2	02	145	6	2
20	155	8	3	03	145	6	2
21	155	5	2	04	140	6	2
22	160	5	2	05	140	5	2
23	160	5	2	06	140	5	2
24	160	5	2	07	140	5	2
25	165	5	2	08	140	5	2
26	165	5	2	09	145	8	3
27	165	5	2	10	150	5	2
28	160	5	2	11	155	5	2
29	155	5	2	12	155	8	3
30	150	5	2	13	155	8	3
31	145	5	2				

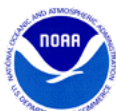


Energetic Events

Date	Time			X-ray		Optical Information			Peak		Sweep Freq	
	Begin	Max	Half Max	Class	Integ Flux	Imp/ Brtns	Location	Rgn #	245	2695	II	IV
14 Jan	1314	1318	1320	M1.4	0.003			1401				

Flare List

Date	Time			X-ray Class	Imp/ Brtns	Optical		Rgn #
	Begin	Max	End			Location	Lat CMD	
09 Jan	0002	0145	0253		SF	N17W45		1393
09 Jan	0255	0300	0316		SF	N16W45		1393
09 Jan	0323	0330	0351		SF	N16W45		1393
09 Jan	0352	0428	0459		SF	N46W16		1393
09 Jan	0500	0508	0527		SF	N16W47		1393
09 Jan	0606	0615	0624		SF	N15W48		1393
09 Jan	1031	1042	1047	C1.1				1393
09 Jan	1044	1044	1047		SF	N16W48		1393
09 Jan	1451	1456	1458	C1.4				1391
09 Jan	1715	1718	1721	C1.3				1391
09 Jan	2001	2013	2028	C2.6	SF	N16E50		1395
10 Jan	0149	0153	0156	C1.0	SF	N14W57		1393
10 Jan	0414	0418	0424	B7.1				1391
10 Jan	2234	2301	2312	C1.7	SF	N15W21		1391
11 Jan	0001	0011	0023	C2.2				1393
11 Jan	0140	0147	0155	C1.6				1395
11 Jan	0431	0446	0509	C3.7	1N	N17W71		1393
11 Jan	1104	1112	1119	C1.6	SF	N19E28		1395
11 Jan	1306	1311	1329	B7.6				1393
11 Jan	1448	1454	1509		SF	N10E56		
11 Jan	2045	2050	2054	C1.2				1393
12 Jan	0049	0058	0106	C1.5	SF	N19E19		1395
12 Jan	0212	0220	0228	B8.9				1393
12 Jan	0419	0423	0427	B9.0				1393
12 Jan	0754	1001	1216	C2.5				
12 Jan	1311	1323	1333	C3.3				1393
13 Jan	0601	0605	0608	C2.2	SF	N11W57		1391
13 Jan	0919	0923	0926	B8.2				
13 Jan	1654	1658	1720		SF	N24E24		1396
14 Jan	0319	0335	0403	C2.1	SF	N18E24		1396



Flare List

Date	Time			X-ray Class	Optical		Rgn #
	Begin	Max	End		Imp/ Brtns	Location Lat CMD	
14 Jan	1200	1209	1220	C4.1			1401
14 Jan	1314	1318	1320	M1.4			1401
14 Jan	1835	1840	1843	C2.8			1401
14 Jan	2141	2154	2210	C2.1			1401
14 Jan	2321	2325	2330	C1.1			1401
15 Jan	0123	0130	0138	C1.5			
15 Jan	0206	0209	0213	C2.3			1391
15 Jan	0248	0252	0259	C2.1			1401
15 Jan	0720	0720	0723		SF	N17E73	1401
15 Jan	1057	1101	1103	C1.0			
15 Jan	2356	2359	0005	C1.1			



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		
<i>Region 1388</i>																		
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	

Crossed West Limb.

Absolute heliographic longitude: 102

<i>Region 1389</i>																		
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									
09 Jan	S19W88		87	210	2	Hsx	1	A										
									29	5	0	25	3	0	0	0	0	

Crossed West Limb.

Absolute heliographic longitude: 81



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 1390																		
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	0

Crossed West Limb.

Absolute heliographic longitude: 117

Region 1391

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										
09 Jan	N12W12	11	280		10	Dsc	22	BG	2									
10 Jan	N12W25	11	270		10	Dki	22	B	1			1						
11 Jan	N12W37	10	270		12	Ekc	20	B										
12 Jan	N12W51	11	180		9	Cao	11	B										
13 Jan	N12W67	14	120		6	Dao	11	B	1			1						
14 Jan	N12W80	13	120		5	Dao	9	B										
									4	0	0	3	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 10



Region Summary - continued

Date	Location		Sunspot Characteristics					Flares									
	Lat	CMD	Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical					
			Lon	10 ⁻⁶ hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4	
Region 1392																	
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									
09 Jan	N18W68		66	10	1	Axx	1	A									
10 Jan	N18W82		68	plage													
									4	0	0	2	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 69

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					
09 Jan	N15W57		56	520	11	Eki	15	BG	1			7					
10 Jan	N17W70		56	530	12	Eki	8	BG	1			1					
11 Jan	N16W84		57	560	13	Eko	10	B	3				1				
									7	0	0	15	1	0	0	0	0

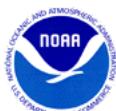
Crossed West Limb.

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													
09 Jan	N18W02		1	plage													
10 Jan	N18W16		2	plage													
11 Jan	N18W28		1	plage													
12 Jan	N18W42		2	plage													
13 Jan	N18W56		3	plage													
14 Jan	N18W70		3	plage													
15 Jan	N18W84		4	plage													
									0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 1



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 1395																		
08 Jan	N22E59	312	120	3	Hsx	1	A											
09 Jan	N22E48	311	160	2	Hsx	1	A	1				1						
10 Jan	N22E35	311	180	3	Cao	3	B											
11 Jan	N21E21	312	90	2	Hsx	4	A	2				1						
12 Jan	N21E07	313	70	1	Hsx	2	A	1				1						
13 Jan	N21W06	312	40	2	Hsx	2	A											
14 Jan	N21W18	311	20	2	Hsx	2	A											
15 Jan	N20W31	311	10	1	Hsx	2	A											
								4	0	0	3	0	0	0	0	0		

Still on Disk.

Absolute heliographic longitude: 312

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											
								1	0	0	2	0	0	0	0	0		

Still on Disk.

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											
								0	0	0	0	0	0	0	0	0		

Still on Disk.

Absolute heliographic longitude: 278

Region 1398																		
13 Jan	N13W08	314	15	3	Dao	4	B											
14 Jan	N14W22	315	50	6	Dao	13	B											
15 Jan	N12W36	315	50	6	Dao	9	B											
								0	0	0	0	0	0	0	0	0		

Still on Disk.

Absolute heliographic longitude: 314



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 1399

14 Jan	S24E69	224	30	3	Cao	4	B										
15 Jan	S23E54	225	20	1	Hax	2	A										
								0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 225

Region 1400

14 Jan	S14W04	297	10	3	Cro	3	B										
15 Jan	S13W17	296	10	2	Cso	2	B										
								0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 297

Region 1401

14 Jan	N15E73	215	40	2	Hsx	2	A	4	1								
15 Jan	N17E60	218	200	7	Dai	14	B	1			1						
								5	1	0	1	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 218

Region 1402

14 Jan	N26E75	212	100	3	Hsx	3	A										
15 Jan	N27E64	215	270	6	Dho	7	B										
								0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 215

Region 1403

15 Jan	S19E29	250	10	2	Bxo	2	B										
								0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 250

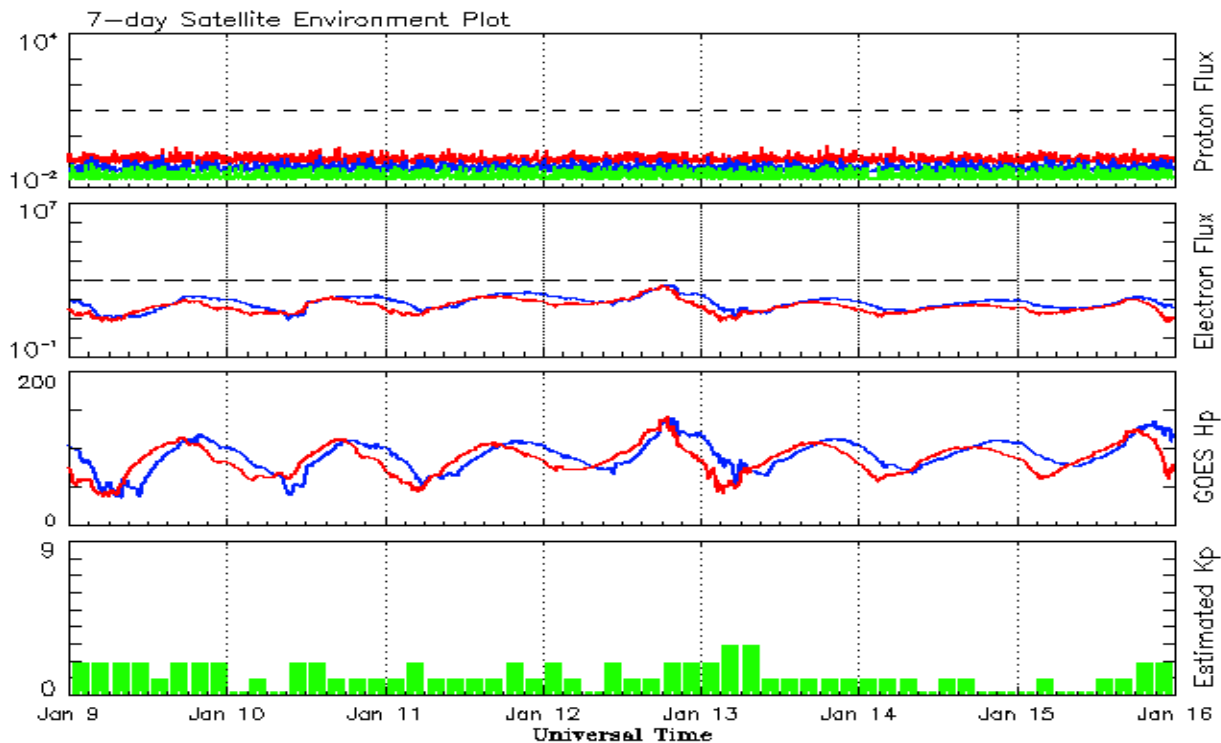


Recent Solar Indices (preliminary)
Observed monthly mean values

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
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 09 January 2012*

The proton flux plot contains the five-minute averaged integral proton flux (protons/cm²-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.

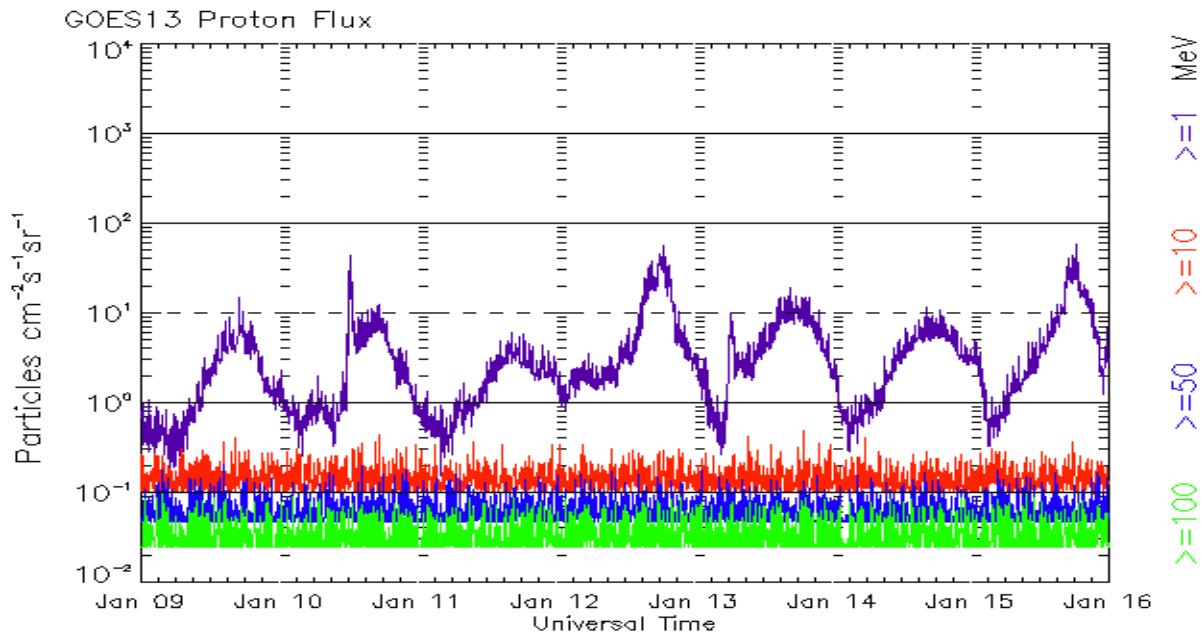
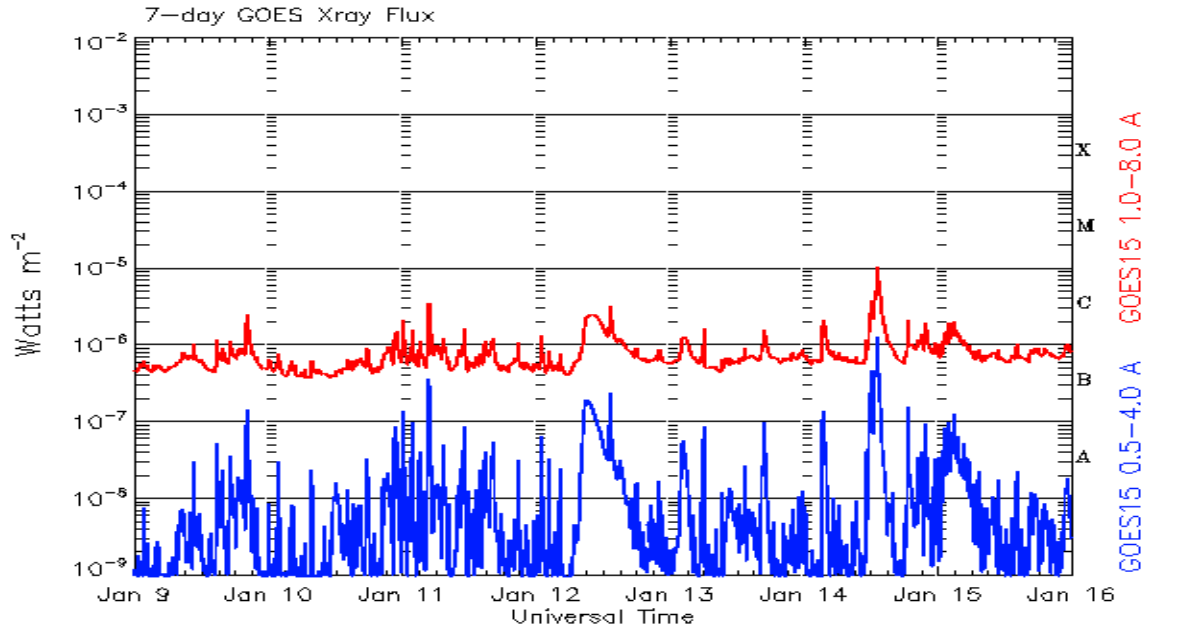
The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

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 09 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.



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

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

<http://spaceweather.gov/weekly/> -- Current and previous year

<http://spaceweather.gov/ftpmenu/warehouse.html> -- Online archive from 1997

<http://spaceweather.gov/ftpmenu/> -- Some content as ascii text

<http://spaceweather.gov/SolarCycle/> -- Solar Cycle Progression web site

<http://spaceweather.gov/contacts.html> -- Contact and Copyright information

http://spaceweather.gov/weekly/Usr_guide.pdf -- User Guide

