Space Weather Highlights **SWPC PRF 1896**
26 December - 01 January 2012 **03 January 2012**

Solar activity was at low to moderate levels. Activity was moderate on 26 December due to M-class flares from Region 1387 (S21, L = 227, class/area Dki/290 on 27 December), the largest being a M2/Sf event at 26/2030 UTC. Activity decreased to low levels during 27 - 28 December with most of the frequent C-class flares from Regions 1387 and 1389 (S23, L = 087, class/area Ekc/500 on 30 December). Activity returned to moderate levels during 29 - 31 December due to M-class flares from Region 1389. Activity decreased to low levels on 01 January with most of the flare activity from Region 1389.

No proton events were observed at geosynchronous orbit during the period. However, a greater than 10 MeV proton flux enhancement occurred during 25 - 26 December (peak flux 3 pfu at 26/0135 UTC) associated with a M4/1n flare at 25/1816 UTC from Region 1387.

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

The geomagnetic field was at quiet levels during 26 - 28 December. Activity increased to quiet to unsettled levels on 29 December due to weak CME passages associated with filament eruptions observed on 25 and 26 December. Field activity decreased to mostly quiet levels during 31 December - 01 January.

Space Weather Outlook
04 January - 30 January 2012

Solar activity is expected to be at low levels with a slight chance for isolated M-class 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 to moderate levels during 04 - 07 January. Normal flux levels are expected during 08 - 30 January.

The geomagnetic field is expected to be at quiet to unsettled levels during 04 - 06 January due to recurrent coronal hole high-speed stream effects. Predominantly quiet conditions are expected during 07 - 30 January.

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
26 December	146	110	800	B6.5	2	2	0	10	1	0	0	0
27 December	140	126	1030	B5.5	8	0	0	9	1	0	0	0
28 December	145	122	1135	B5.7	13	0	0	6	1	0	0	0
29 December	147	105	1025	B6.5	15	2	0	13	1	0	0	0
30 December	141	104	1180	B5.6	12	1	0	6	0	0	0	0
31 December	133	68	790	B3.8	1	2	0	3	1	0	0	0
01 January	130	61	810	B4.4	2	0	0	2	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
26 December	3.9e+05	8.3e+04	3.5e+03		9.9e+05	
27 December	3.7e+05	1.6e+04	3.1e+03		1.0e+06	
28 December	1.5e+06	1.3e+04	3.1e+03		1.2e+06	
29 December	6.6e+05	1.3e+04	3.0e+03		7.4e+05	
30 December	1.2e+06	1.5e+04	2.8e+03		7.2e+05	
31 December	4.1e+05	1.4e+04	3.0e+03		6.8e+05	
01 January	2.4e+05	1.3e+04	3.3e+03		7.0e+05	

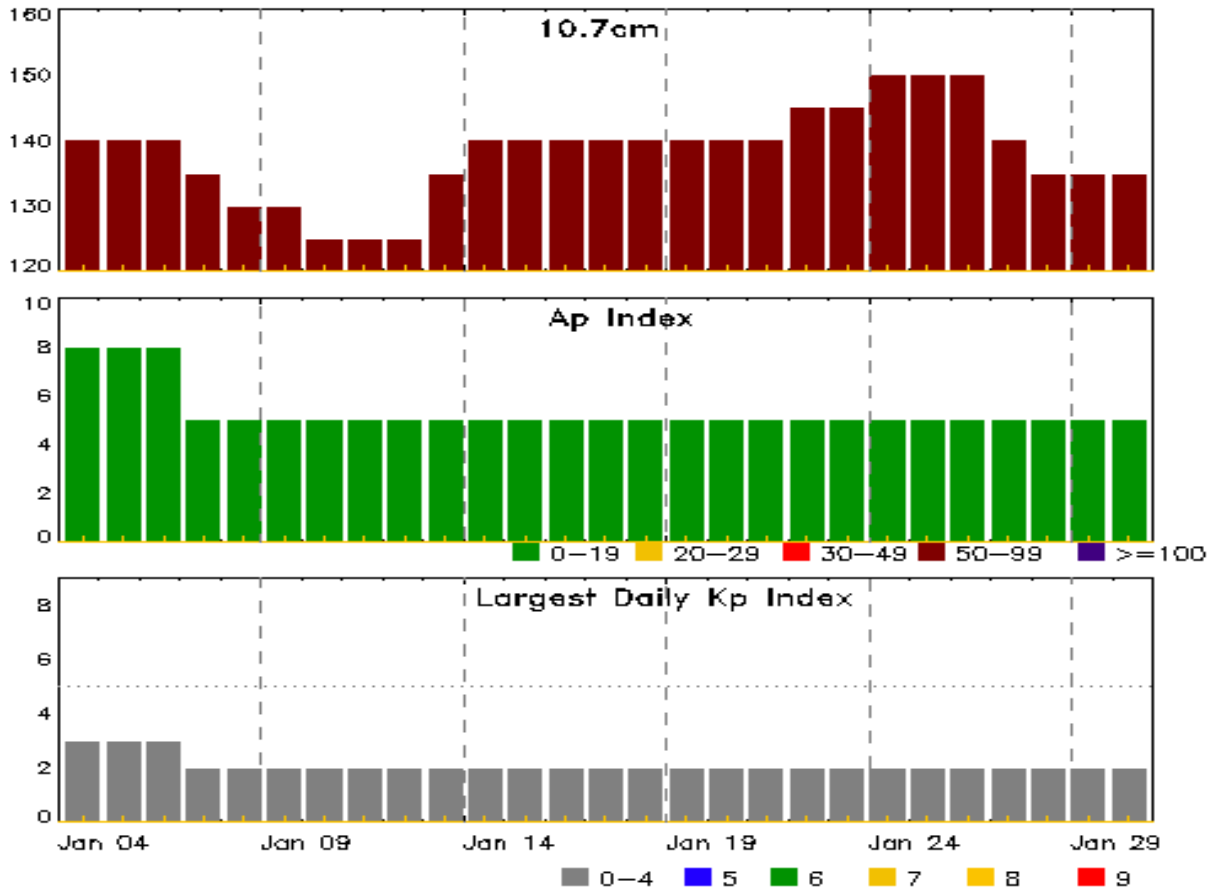
Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
26 December	2	0-0-0-0-2-1-2-0	0	0-0-0-0-0-0-0-0	1	0-0-0-0-0-0-0-0
27 December	2	0-0-0-0-2-2-1-0	0	0-0-0-0-0-0-0-0	0	0-0-0-0-0-0-0-0
28 December	4	0-1-0-1-2-2-2-1	0	0-0-0-0-0-1-0-0	2	0-0-0-0-1-2-1-0
29 December	7	0-2-2-3-2-2-2-2	3	0-0-2-2-2-0-1-1	6	0-1-2-3-1-1-1-1
30 December	5	0-1-1-1-2-2-2-2	2	0-0-0-0-0-2-2-1	4	0-1-0-0-1-2-1-1
31 December	5	1-1-1-2-2-2-1-1	5	1-1-3-3-0-0-0-0	3	1-0-0-1-0-0-0-1
01 January	4	1-1-1-1-2-2-1-1	3	1-0-0-1-3-0-0-0	3	1-0-0-0-1-1-0-0

Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
27 Dec 0438	SUMMARY: 10cm Radio Burst	27/0416 - 0421
27 Dec 1431	WATCH: Geomagnetic A >= 20	29/
28 Dec 1027	WARNING: Geomagnetic Sudden Impulse expected	28/1100 - 1200
28 Dec 1128	SUMMARY: Geomagnetic Sudden Impulse	28/1114
29 Dec 1038	WARNING: Geomagnetic K = 4	29/1037 - 1800
31 Dec 1348	SUMMARY: 10cm Radio Burst	31/1312 - 1313

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
04 Jan	140	8	3	18 Jan	140	5	2
05	140	8	3	19	140	5	2
06	140	8	3	20	140	5	2
07	135	5	2	21	140	5	2
08	130	5	2	22	145	5	2
09	130	5	2	23	145	5	2
10	125	5	2	24	150	5	2
11	125	5	2	25	150	5	2
12	125	5	2	26	150	5	2
13	135	5	2	27	140	5	2
14	140	5	2	28	135	5	2
15	140	5	2	29	135	5	2
16	140	5	2	30	135	5	2
17	140	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
26 Dec	0213	0227	0236	M1.5	0.012	1N	S21W33	1387	230			
26 Dec	2012	2030	2036	M2.3	0.022	SF	S21W42	1387	130			
29 Dec	1340	1350	1401	M1.9	0.015			1389				
29 Dec	2143	2151	2159	M2.0	0.012	SF	S27E65	1389				
30 Dec	0303	0309	0313	M1.2	0.004	SN	S27E64	1389				
31 Dec	1309	1315	1319	M2.4	0.007	SF	S25E44	1389		150		
31 Dec	1616	1626	1634	M1.5	0.009	1F	S26E42	1389				

Flare List

	Time			Optical			
Date	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
26 Dec	0213	0227	0236	M1.5	1N	S21W33	1387
26 Dec	0855	0855	0918		SF	S20W36	1387
26 Dec	0938	0948	0956	C2.8	SF	S22W34	1387
26 Dec	1123	1150	1218	C5.7	SF	N17W02	1384
26 Dec	1714	1717	1730		SF	S20W39	1387
26 Dec	1821	1822	1824		SF	S21W37	1387
26 Dec	1936	1936	1945		SF	S21W38	1387
26 Dec	2012	2030	2036	M2.3	SF	S21W42	1387
26 Dec	2233	2245	2258		SF	S21W42	1387
26 Dec	2302	2303	2307		SF	S21W41	1387
26 Dec	2315	2326	A2356		SF	S21W41	1387
27 Dec	0411	0422	0431	C8.9	1F	S17E32	1386
27 Dec	0705	0707	0714		SF	S20W45	1387
27 Dec	0801	0803	0811	C3.8	SF	S23W45	1387
27 Dec	0917	0923	0926	C4.0	SF	S22W46	1387
27 Dec	1159	1207	1234	C6.2	SF	S23W54	1387
27 Dec	1639	1639	1644		SF	S20W50	1387
27 Dec	1646	1648	1651		SF	S20W50	1387
27 Dec	1703	1705	1709		SF	S19W51	1387
27 Dec	1725	1730	1735	C1.5			
27 Dec	1831	1836	1843	C2.5	SF	S20W52	1387
27 Dec	1932	1936	1940	C1.7			
27 Dec	2125	2126	2130		SF	N12W26	1384
27 Dec	2146	2226	2249	C6.7			

Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
28 Dec	0014	0030	0040	C2.3			1387
28 Dec	0154	0208	0216	C2.1			1389
28 Dec	0330	0350	0410	C4.5			1389
28 Dec	0519	0528	0535	C2.6			1389
28 Dec	0608	0609	0618		SF	N13W35	1384
28 Dec	1048	1052	1058	B9.6			
28 Dec	1149	1153	1157	C1.1			
28 Dec	1209	1213	1218	B8.7			
28 Dec	1305	1310	1316	C2.0			
28 Dec	1417	1425	1428	C7.2	1F	S23E85	1389
28 Dec	1603	1610	1625	C3.1			
28 Dec	1636	1640	1644	C6.4	SF	S20W65	1387
28 Dec	1946	1951	1955	C1.3			
28 Dec	2018	2031	2040	C4.0	SF	S18E07	1386
28 Dec	2053	2107	2110	C2.3	SF	N14W44	1384
28 Dec	2121	2129	2136	C6.2	SF	S26E81	1389
28 Dec	2146	2148	2154		SF	S25E81	1389
28 Dec	2255	2258	2302	B8.6			
29 Dec	0316	0319	0326	C1.2			
29 Dec	0358	0405	0411	C3.0	SF	S26E72	1389
29 Dec	0516	0521	0532	C1.2			
29 Dec	0615	0621	0628	C3.0	SF	S27E76	1389
29 Dec	0652	0657	0700		SF	N13W50	1384
29 Dec	0712	0718	0722	C7.3	SF	S25E74	1389
29 Dec	0736	0737	0741		SF	S27E75	1389
29 Dec	0840	0848	0851	C5.4	SF	S27E72	1389
29 Dec	0942	0949	0954	C1.5			1389
29 Dec	1050	1054	1103	B8.9			
29 Dec	1137	1141	1146	C1.0			
29 Dec	1340	1350	1401	M1.9			1389
29 Dec	1449	1449	1457		1F	S25E69	1389
29 Dec	1458	1501	1510		SF	S25E71	1389
29 Dec	1614	1621	1634	C2.8	SF	S26E66	1389
29 Dec	1630	1633	1639		SF	S26E70	1389
29 Dec	1727	1732	1746	C2.9	SF	S27E71	1389
29 Dec	1813	1817	1823	C1.5			
29 Dec	1912	1914	1921	C2.3	SF	S27E70	1389
29 Dec	1945	1951	2000		SF	S19W05	1386

Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
29 Dec	2025	2032	2039	C2.3			1389
29 Dec	2053	2101	2114	C2.5			1389
29 Dec	2143	2151	2159	M2.0	SF	S27E65	1389
29 Dec	2341	2345	2352	C1.0			
30 Dec	0303	0309	0313	M1.2	SN	S27E64	1389
30 Dec	0350	0357	0402	C1.1			
30 Dec	0404	0436	0445	C1.9			
30 Dec	0503	0507	0511	C1.8			
30 Dec	0533	0539	0541		SF	S19W07	1386
30 Dec	0819	0825	0830	C3.4			1389
30 Dec	0959	1006	1010	C1.6			1389
30 Dec	1027	1032	1037	C8.4			1389
30 Dec	1152	1220	1233	C1.3			
30 Dec	1336	1341	1349	C1.8			1389
30 Dec	1816	1823	1842	C1.8	SF	S27E55	1389
30 Dec	1954	1958	2034		SF	S19W19	1386
30 Dec	2013	2024	2031	C4.4			
30 Dec	2056	2102	2119	C3.9	SF	S27E54	1389
30 Dec	2328	2333	2338	C1.6	SF	S23E47	1389
31 Dec	1309	1315	1319	M2.4	SF	S25E44	1389
31 Dec	1550	1553	1557	B7.2	SF	S26E41	1389
31 Dec	1616	1626	1634	M1.5	1F	S26E42	1389
31 Dec	1717	1731	1748	C1.2	SF	S18W30	1386
01 Jan	0445	0450	0457	B8.1			
01 Jan	0724	0734	0744	C3.2	SF	S26E34	1389
01 Jan	1322	1326	1333	B8.0			
01 Jan	1854	1859	1906	B8.9			
01 Jan	2004	2006	2009		SF	S22E25	1389
01 Jan	2328	2336	2346	C1.3			

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 1376												
13 Dec	N21E52	302	10	10	Bxo	3	B	1							
14 Dec	N20E39	301	10	5	Bxo	4	B								
15 Dec	N20E25	304	plage												
16 Dec	N20E11	304	plage												
17 Dec	N21W04	306	0		Axx	1	A	2			1				
18 Dec	N20W18	306	20	2	Dro	3	B	2			3				
19 Dec	N19W31	306	20	2	Cro	7	B								
20 Dec	N19W46	308	40	4	Dai	14	B	3			6				
21 Dec	N20W59	308	90	8	Dsi	11	B	5			7				
22 Dec	N18W72	308	440	10	Dko	13	B				1				
23 Dec	N16W84	308	330	8	Dko	7	B	1							
								14	0	0	18	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 306

			Region 1377												
14 Dec	N12E43	297	60	5	Dro	4	B								
15 Dec	N11E29	298	70	6	Dso	8	B								
16 Dec	N12E15	299	70	7	Dso	9	B								
17 Dec	N12E03	298	50	8	Dso	9	B								
18 Dec	N12W11	299	40	8	Dao	4	B								
19 Dec	N13W24	298	20	7	Cro	3	B								
20 Dec	N12W40	302	10	1	Bxo	3	B								
21 Dec	N12W54	303	plage												
22 Dec	N12W68	304	plage												
23 Dec	N12W82	305	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 298

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 1380													
17 Dec	S20E70	232	30	1	Hrx	1	A								
18 Dec	S20E55	233	30	2	Hrx	2	A								
19 Dec	S20E43	231	30	2	Cao	6	B								
20 Dec	S21E31	230	30	3	Cao	4	B								
21 Dec	S21E17	232	plage												
22 Dec	S21E03	233	plage												
23 Dec	S21W11	234	plage												
24 Dec	S21W25	235	plage												
25 Dec	S21W39	236	plage								2				
26 Dec	S21W53	237	plage												
27 Dec	S20W66	236	10	2	Bxo	3	B								
28 Dec	S20W80	237	plage												
								0	0	0	2	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 233

		Region 1381													
17 Dec	S18E37	265	plage					1							
18 Dec	S18E19	268	40	3	Dao	5	B								
19 Dec	S18E10	265	80	4	Dai	9	B								
20 Dec	S17W01	263	90	7	Dao	8	B	1							
21 Dec	S15W17	265	70	4	Cso	7	B				1				
22 Dec	S18W28	264	180	9	Dai	15	B	1			2				
23 Dec	S20W44	266	40	3	Dao	8	B								
24 Dec	S19W54	264	150	3	Hsx	2	A								
25 Dec	S18W68	265	100	3	Cso	2	B								
26 Dec	S18W80	263	120	2	Hsx	1	A								
27 Dec	S18W93	263	80	2	Hsx	1	A								
								3	0	0	3	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 263

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 1382												
18 Dec	S18E25	263	30	3	Dro	5	B								
19 Dec	S18E18	257	100	6	Dai	12	B								
20 Dec	S19E06	256	120	3	Dai	13	B				1				
21 Dec	S14W10	258	140	9	Dsc	17	B	6			9				
22 Dec	S19W21	257	50	4	Dai	9	B				3				
23 Dec	S18W35	257	100	7	Dsi	15	B	1							
24 Dec	S18W48	257	30	7	Cso	8	B								
25 Dec	S18W61	258	plage												
26 Dec	S21W74	258	plage												
27 Dec	S21W86	256	plage												
								7	0	0	13	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 256

			Region 1383												
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

Crossed West Limb.
Absolute heliographic longitude: 209

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 1384													
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

Crossed West Limb.
Absolute heliographic longitude: 197

		Region 1385													
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

Crossed West Limb.
Absolute heliographic longitude: 224

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 1386													
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								
								5	0	0	6	1	0	0	0

Still on Disk.
Absolute heliographic longitude: 149

		Region 1387													
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

Crossed West Limb.
Absolute heliographic longitude: 225

		Region 1388													
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								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 102

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 1389												
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				
								23	5	0	21	3	0	0	0

Still on Disk.
Absolute heliographic longitude: 86

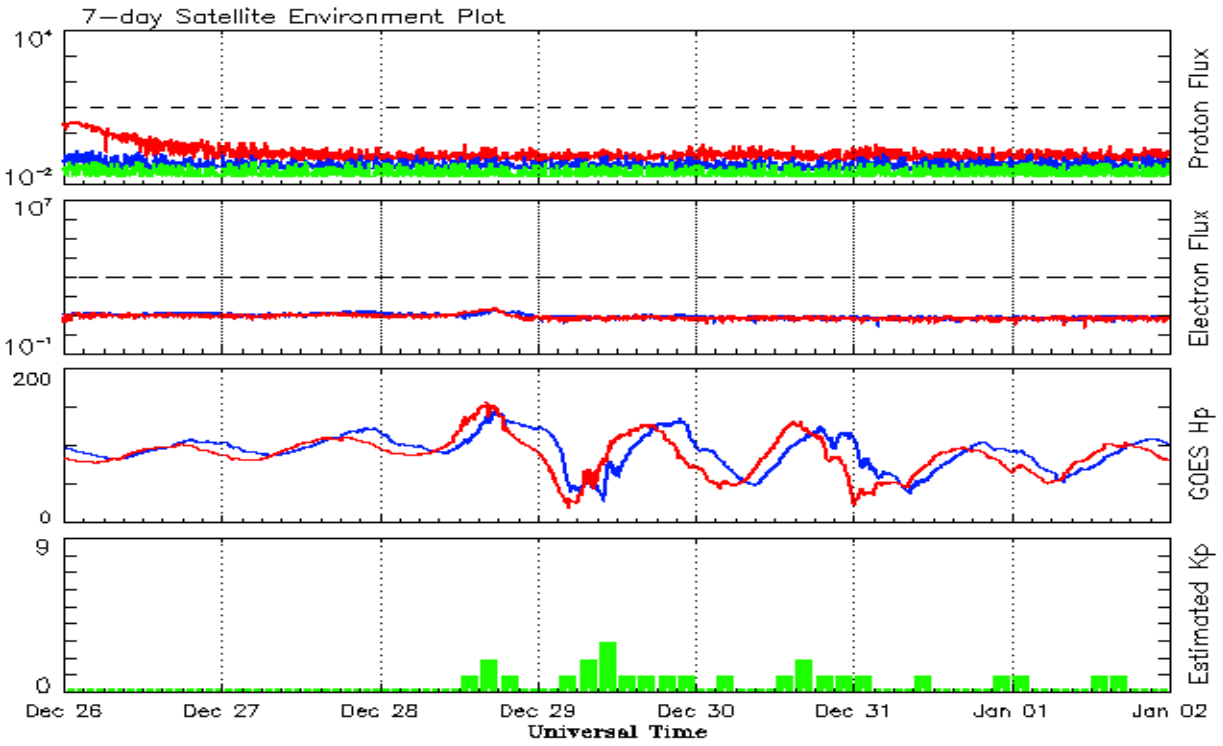
			Region 1390												
28 Dec	N09E44	113	10	2	Bxo	3	B								
29 Dec	N08E29	115	10	5	Cao	6	B								
30 Dec	N09E14	116	40	7	Cso	8	B								
31 Dec	N09W00	117	10	10	Bxo	4	B								
01 Jan	N09W14	119	plage												
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 117

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	7.3
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 26 December 2011

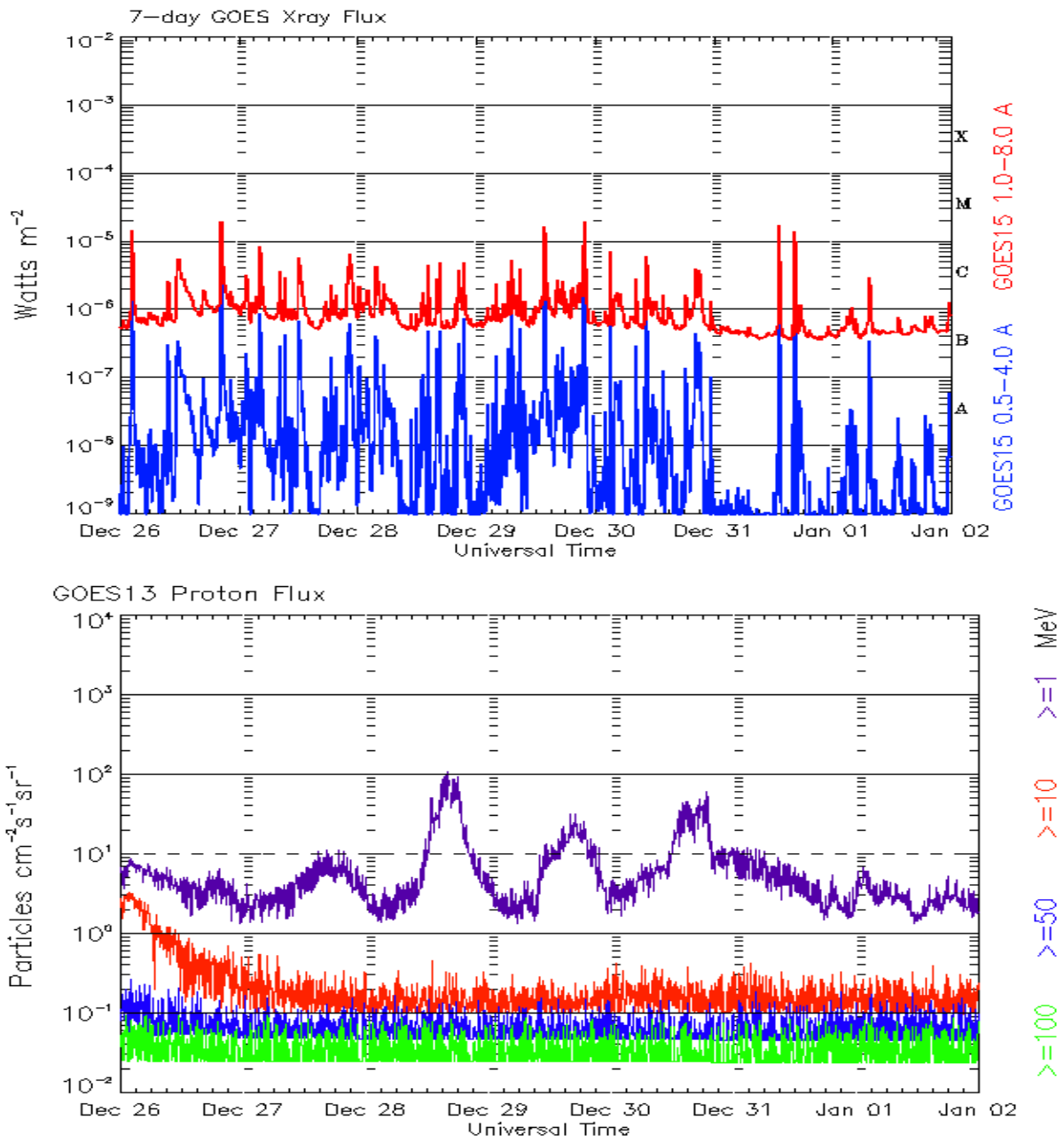
The proton flux plot contains the five-minute averaged integral proton flux (protons/cm^2-sec -sr) as measured by the SWPC Primary GOES satellite, near West 75, for each of three energy thresholds: greater than 10, 50, and 100 MeV.

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.

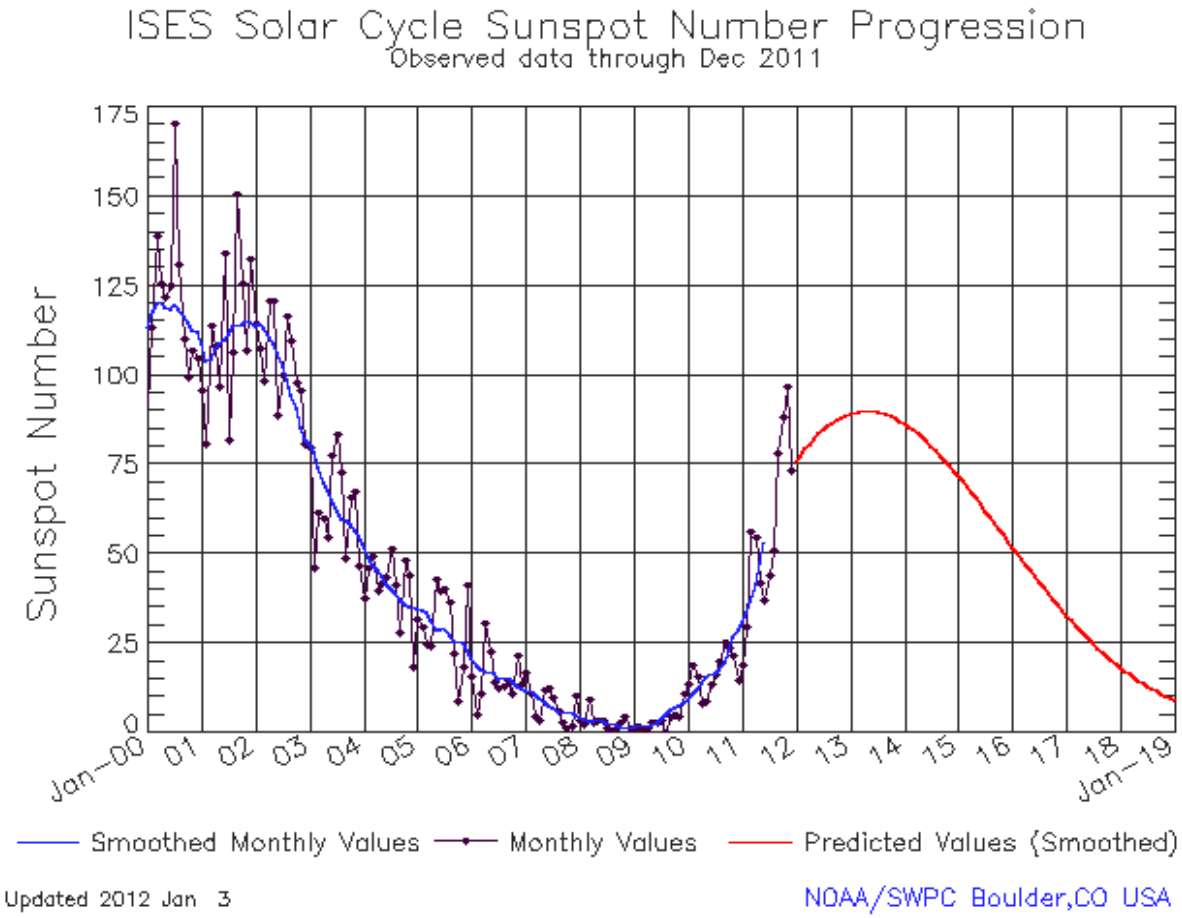
The data included here are those now available in real time at the SWPC and are incomplete in that they do not include the full set of parameters and energy ranges known to cause satellite operating anomalies. The proton and electron fluxes and Kp are 'global' parameters that are applicable to a first 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 26 December 2011

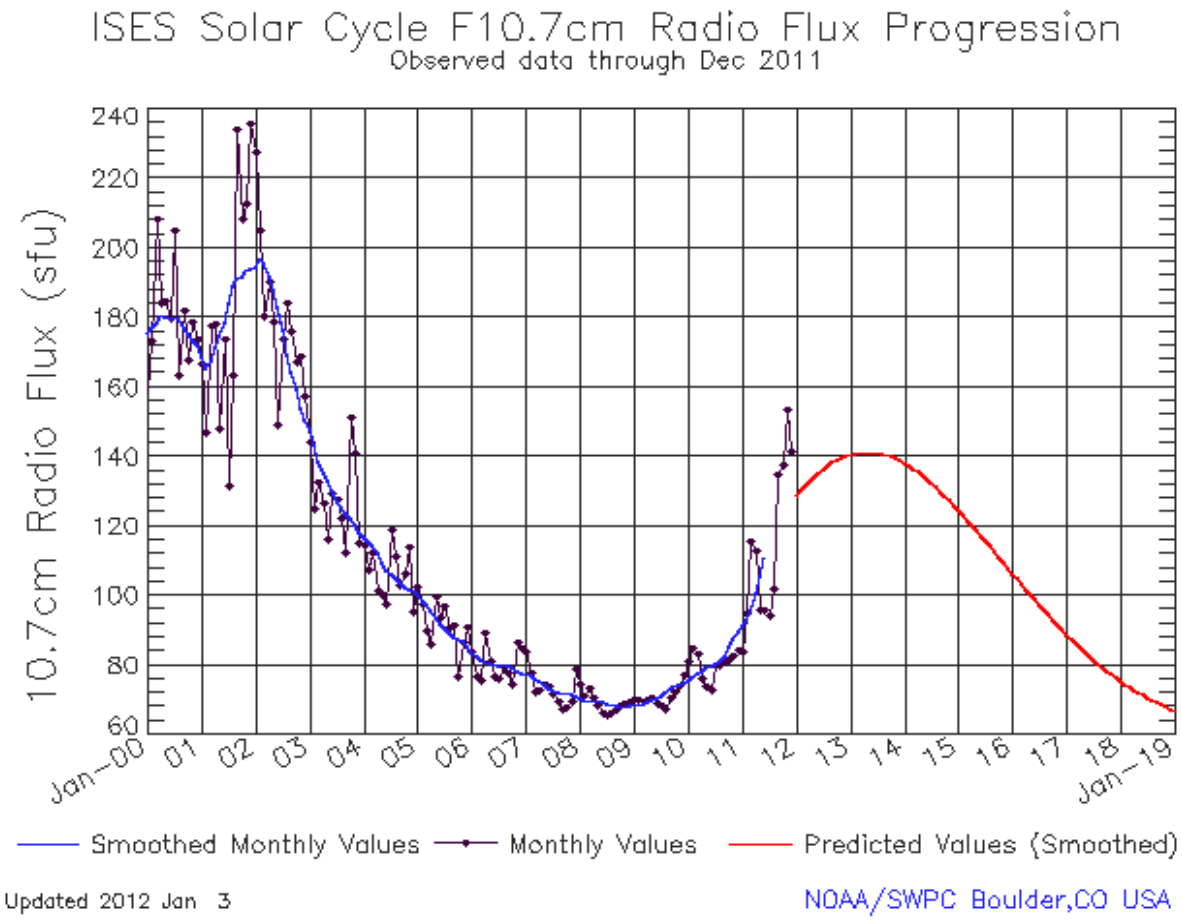
The x-ray plots contains five-minute averages x-ray flux (Watt/m^2) as measure by the SWPC primary GOES X-ray satellite, usually at West 105 longitude, in two wavelength bands, 0.05 - 0.4 and 0.1 - 0.8 nm. The letters A, B, C, M and X refer to x-ray event levels for the 0.1 - 0.8 nm band.

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.



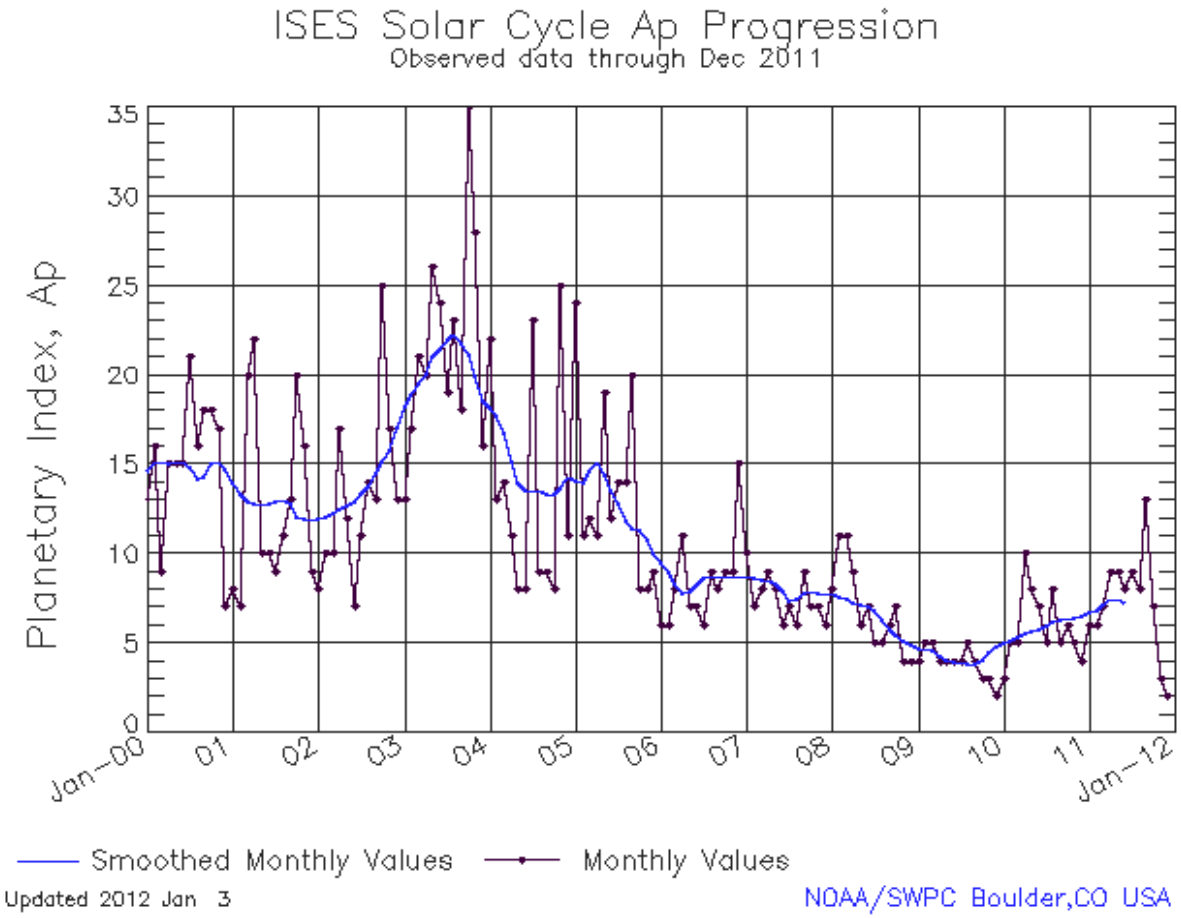
Smoothed Sunpot Number Prediction

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2010	9	11	12	14	16	16	17	17	20	23	27	29
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)
2011	31	33	37	42	48	53	58	62	65	67	70	74
	(***)	(***)	(***)	(***)	(***)	(***)	(1)	(2)	(3)	(5)	(5)	(6)
2012	78	81	83	83	82	83	85	86	87	88	88	89
	(7)	(7)	(8)	(9)	(9)	(10)	(10)	(10)	(10)	(10)	(10)	(10)
2013	89	90	90	90	90	90	90	89	89	89	88	87
	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)
2014	86	86	85	84	83	81	80	79	78	76	75	73
	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)
2015	72	70	69	67	65	64	62	60	59	57	55	54
	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)
2016	52	50	49	47	45	44	42	40	39	37	36	34
	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)
2017	33	31	30	29	27	26	25	24	23	21	20	19
	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)
2018	18	17	16	15	15	14	13	12	12	11	10	10
	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)
2019	9	8	8	7	7	6	6	6	5	5	4	4
	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)



Smoothed F10.7cm Radio Flux Prediction

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2010	76	77	78	78	79	80	80	81	82	85	88	90
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)
2011	91	93	96	100	106	111	115	119	121	122	125	128
	(***)	(***)	(***)	(***)	(***)	(***)	(1)	(1)	(2)	(3)	(4)	(4)
2012	131	135	136	136	136	135	136	137	138	139	140	140
	(5)	(6)	(7)	(8)	(8)	(9)	(9)	(9)	(9)	(9)	(9)	(9)
2013	141	141	141	141	141	141	141	141	140	140	139	139
	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)
2014	138	137	136	136	135	134	132	131	130	129	127	126
	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)
2015	125	123	122	120	119	117	116	114	113	111	110	108
	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)
2016	106	105	103	102	100	99	97	96	94	93	92	90
	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)
2017	89	88	86	85	84	83	82	80	79	78	77	76
	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)
2018	75	75	74	73	72	71	71	70	69	69	68	67
	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)
2019	67	66	66	65	65	65	64	64	63	63	63	63
	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)



Solar Cycle Comparison charts are temporarily unavailable.

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 achive 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