

Solar activity began the week at moderate levels and ended at high levels. Region 1928 (S17, L=8, class/area=Ekc/460 on 21 Dec) unleashed a flurry of M-class x-ray flares (R1 radio blackouts) on Saturday, 22 Dec. Five of the six M-flares which occurred on 22 December originated from Region 1928. The largest was an M3/1N at 1512 UTC. This region appeared on the disk on 18 December as a Dao type region with 12 spots and a beta-gamma magnetic configuration. The magnetic complexity persisted throughout the week as the region grew to become the largest on the visible disk. The only other region to produce M-class flares was Region 1934 (S14, L=268, class/area=Dac/160 on 22 Dec). This region first rotated around the east limb on 19 December as plage. By 20 Dec it had developed spots and a simple beta magnetic configuration. It continued to grow, developing 9 spots and a beta-gamma magnetic configuration by 22 December. Region 1934 was responsible for three energetic events, an M3 flare at 19/2319 UTC, an M1 flare at 20/1157 UTC, and an M1/1f flare at 22/1438 UTC. Region 1917 (S16, L=77, class/area=Dki/420) was the second largest region on the disk and produced five C-class events during the week before crossing the west limb on 19 Dec. No Earth-directed coronal mass ejections were observed during the week.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at low to moderate levels all week.

Geomagnetic field activity was mostly quiet throughout the week. It began at unsettled levels for the first two synoptic periods of the week in the wake of a coronal hole high speed stream. A solar sector boundary crossing from positive to negative was observed at the ACE spacecraft around 16/0700 UTC. Quiet levels dominated the remainder of the week with the exception of a single unsettled episode on 20 Dec during the 03-06 UTC synoptic period.

### **Space Weather Outlook**

**23 December - 18 January 2014**

Solar activity is expected to begin at moderate to high levels with continued M-class activity (R1-R2, minor to moderate radio blackouts) from Regions 1928 and 1934 likely. This activity will be accompanied by a slight chance for an X-class (R3 or greater, strong radio blackout) event and will persist through 02 January when Region 1934 rotates around the west limb. Activity may reach moderate to high levels again beginning on 07 January when Old Region 1928 returns. These elevated levels of solar activity may last through the end of the forecast period.

There is a slight chance for proton events at geosynchronous orbit through 28 December as Region 1928 rotates off the visible solar disk.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be normal levels to



moderate levels through the forecast period.

Geomagnetic field activity is expected to be at quiet to unsettled levels, in the absence of any transient features, with the following exceptions: 25 Dec, 03-04 Jan, and 10 Jan, when conditions may reach active levels in response to recurrent coronal hole high speed streams.



### ***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
16 December	154	114	780	B7.1	5	0	0	2	0	0	0	0
17 December	159	91	760	*	3	0	0	7	0	0	0	0
18 December	156	118	1130	B7.8	4	0	0	4	0	0	0	0
19 December	153	138	1150	B8.0	7	1	0	2	0	0	0	0
20 December	149	137	1070	C1.1	8	1	0	1	0	0	0	0
21 December	144	131	1190	B7.8	10	0	0	2	1	0	0	0
22 December	138	111	880	B9.4	14	6	0	10	3	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
16 December	3.5e+05	1.0e+04	2.5e+03		9.5e+05	
17 December	1.7e+05	1.0e+04	3.0e+03		2.2e+06	
18 December	1.5e+05	1.0e+04	2.7e+03		1.9e+06	
19 December	1.0e+05	9.6e+03	2.3e+03		1.5e+06	
20 December	8.2e+04	1.1e+04	2.7e+03		1.5e+06	
21 December	6.3e+04	1.0e+04	2.6e+03		1.8e+06	
22 December	1.3e+05	1.0e+04	2.6e+03		2.5e+06	

### ***Daily Geomagnetic Data***

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
16 December	5	2-2-2-0-2-2-1-1	6	1-1-1-3-3-1-0-1	7	3-3-2-1-1-1-2-2
17 December	3	1-0-0-0-0-2-2-1	1	0-0-0-1-0-0-2-0	3	2-1-0-0-0-1-2-1
18 December	3	0-1-1-1-1-2-1-1	2	0-0-3-1-0-0-0-0	4	1-1-2-1-0-1-1-2
19 December	4	1-1-0-0-2-2-1-2	3	0-1-0-0-2-2-1-1	5	2-2-0-0-1-2-2-2
20 December	6	2-2-0-2-2-3-1-1	2	1-1-1-1-1-1-0-0	6	2-3-0-1-1-2-2-1
21 December	4	1-1-2-1-2-1-1-0	1	1-0-2-0-0-0-0-0	4	1-1-2-1-0-0-1-0
22 December	2	0-1-0-0-2-2-0-0	0	0-0-0-0-0-0-0-0	3	0-1-1-1-0-0-1-0

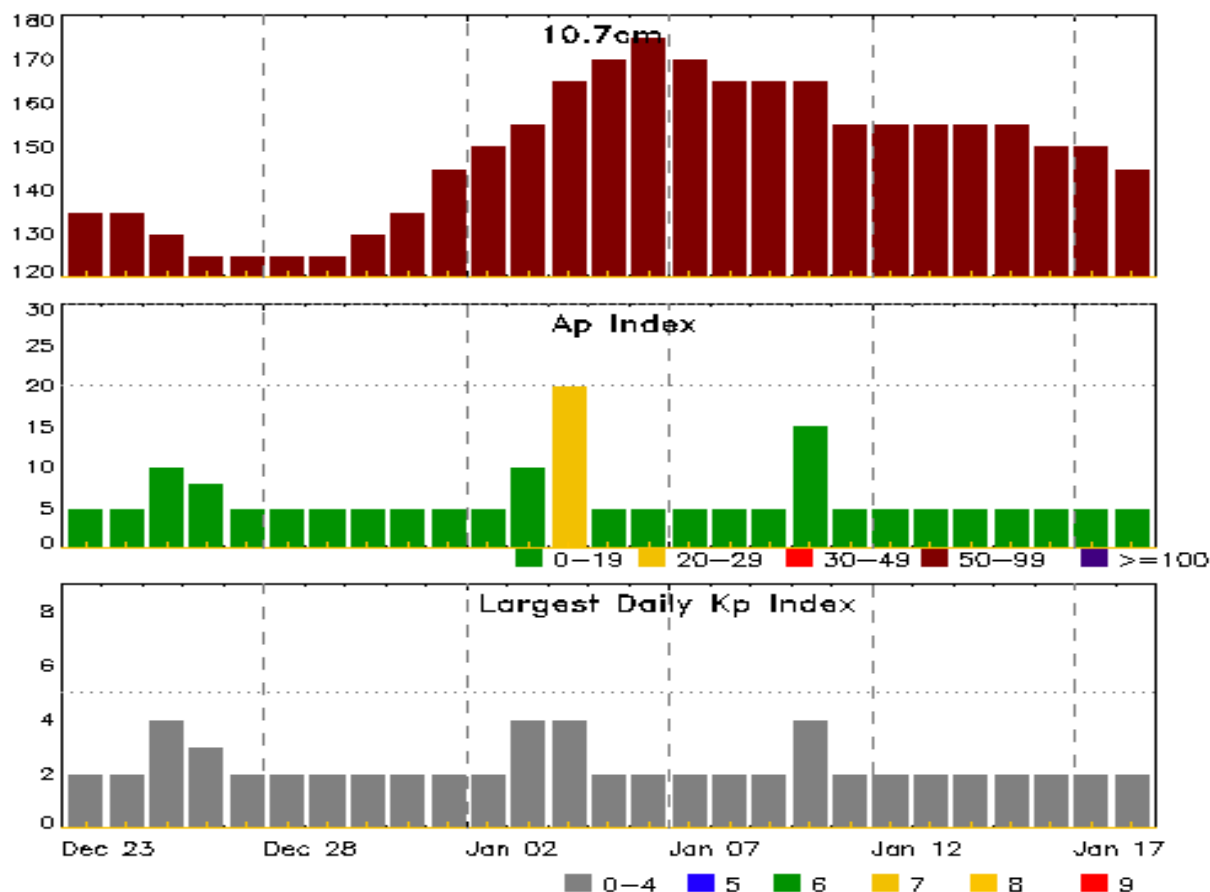


### *Alerts and Warnings Issued*

<b>Date &amp; Time of Issue UTC</b>	<b>Type of Alert or Warning</b>	<b>Date &amp; Time of Event UTC</b>
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
23 Dec	135	5	2	06 Jan	175	5	2
24	135	5	2	07	170	5	2
25	130	10	4	08	165	5	2
26	125	8	3	09	165	5	2
27	125	5	2	10	165	15	4
28	125	5	2	11	155	5	2
29	125	5	2	12	155	5	2
30	130	5	2	13	155	5	2
31	135	5	2	14	155	5	2
01 Jan	145	5	2	15	155	5	2
02	150	5	2	16	150	5	2
03	155	10	4	17	150	5	2
04	165	20	4	18	145	5	2
05	170	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
19 Dec	2306	2319	2326	M3.5	0.021			1934				
20 Dec	1135	1157	1207	M1.6	0.019			1934				
22 Dec	0805	0811	0818	M1.9	0.008	SF	S20W49	1928				
22 Dec	0833	0837	0841	M1.1	0.004	SF	S17W52	1928				
22 Dec	1424	1438	1448	M1.6	0.015	1F	S18E44	1934				
22 Dec	1506	1512	1519	M3.3	0.016	1N	S19W56	1928				
22 Dec	2123	2208	2213	M1.6	0.014	SN	S17W58	1928				
22 Dec	2344	0003	0005	M1.3	0.006	SF	S17W60	1928	130			

### ***Flare List***

Date	Time			X-ray Class	Optical		
	Begin	Max	End		Imp/ Brtns	Location Lat CMD	Rgn #
16 Dec	0105	0110	0114	C1.5			
16 Dec	0321	0330	0344	C3.6	SF	S13W40	1917
16 Dec	0619	0620	0622	C1.3			
16 Dec	0837	0842	0845	C1.9	SF	S14W40	1917
16 Dec	2053	2133	2209	C3.1			
17 Dec	0340	0341	0343		SF	S15E21	
17 Dec	0420	0423	0429		SF	S15E21	
17 Dec	0438	0439	0446		SF	S16E20	
17 Dec	0448	0450	0455		SF	S16E21	
17 Dec	0518	0525	0532		SF	S16E20	
17 Dec	1128	1132	1137		SF	S15E20	1928
17 Dec	1728	1733	1752	C2.0			
17 Dec	2128	2134	2140	C1.9			1917
17 Dec	2132	2133	2134		SF	S21W64	1917
17 Dec	2325	2329	2332	C4.0			
18 Dec	0437	0441	0445	C1.3			
18 Dec	0531	0535	0538	C1.5	SF	S12W66	1917
18 Dec	0829	U0831	A0836		SF	S08E46	
18 Dec	B0854	0916	0932		SF	S10E45	
18 Dec	1040	U1049	A1108		SF	S08E44	
18 Dec	1507	1510	1515	C1.8			1930
18 Dec	2259	2303	2306	C1.3			1930
19 Dec	0709	0721	0733	C1.8	SF	S14E32	1930



## *Flare List*

Date	Time			Optical			Rgn #
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	
19 Dec	0817	0828	0849	C1.4			1921
19 Dec	0903	0918	0924	C1.8			1928
19 Dec	0925	0936	0949		SF	S17W10	1928
19 Dec	1014	1026	1031	C1.6			1921
19 Dec	1526	1535	1554	C2.2			1928
19 Dec	1908	1912	1915	C1.3			1931
19 Dec	1939	1942	1945	C1.4			1917
19 Dec	2306	2319	2326	M3.5			1934
20 Dec	0253	0258	0302	C2.2			
20 Dec	0445	0448	0453	C1.5			
20 Dec	1105	1111	1118	C2.2			1934
20 Dec	1135	1157	1207	M1.6			1934
20 Dec	1452	1504	1515	C3.2			1928
20 Dec	1526	1533	1539	C8.5			1928
20 Dec	1623	1630	1634	C5.4			1928
20 Dec	1711	1714	1719	C2.3			1928
20 Dec	2108	2116	2123	C2.7			
20 Dec	2316	2317	2324		SF	S17W34	1928
21 Dec	0006	0013	0018	C3.0			1928
21 Dec	0256	0303	0308	C3.5			1928
21 Dec	1011	1032	1115	C9.2	1F	S18W37	1928
21 Dec	1118	1121	1134		SF	S18W38	1928
21 Dec	1447	1452	1457	C1.7			1928
21 Dec	1701	1706	1713	C2.8			
21 Dec	1833	1841	1852	C2.0			
21 Dec	1922	1929	1933	C7.5			1928
21 Dec	2001	2006	2009	C2.1			
21 Dec	2143	2222	2233	C3.2			
21 Dec	2316	2320	2331	C2.3	SF	S16W47	1928
22 Dec	0111	0116	0126	C1.2			
22 Dec	0150	0155	0203	C1.7			
22 Dec	0230	0234	0239	C1.6			
22 Dec	0305	0313	0324	C2.2			
22 Dec	0335	0347	0358	C5.1	SF	S16W48	1928
22 Dec	0407	0443	0459	C4.7	SF	S16W48	1928
22 Dec	0719	0738	0746	C2.3			
22 Dec	0805	0811	0818	M1.9	SF	S20W49	1928
22 Dec	0833	0837	0841	M1.1	SF	S17W52	1928



## *Flare List*

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
22 Dec	0903	0932	0957	C6.4	1F	S14E47	1934
22 Dec	1119	1126	1135	C3.7	SF	S21W50	1928
22 Dec	1226	1243	1250	C4.3			
22 Dec	1424	1438	1448	M1.6	1F	S18E44	1934
22 Dec	B1445	1512	1533	M3.3	1N	S19W56	1928
22 Dec	1855	1909	1917	C8.8	SF	S17W59	1928
22 Dec	1921	1925	1930	C6.1			
22 Dec	2029	2034	2039	C6.1	SF	S18W56	1928
22 Dec	2123	2208	2213	M1.6	SN	S17W58	1928
22 Dec	2236	2242	2312	C8.2	SF	S17W58	1928
22 Dec	2344	0003	0005	M1.3	SF	S17W60	1928





## Region Summary

Date	Location	Sunspot Characteristics						Flares							
	Lat CMD	Helio	Area 10 <sup>-6</sup> hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical				
		Lon						C	M	X	S	1	2	3	4
Region 1917															
06 Dec	S16E77	83	plage					2							
07 Dec	S16E63	83	60	8	Dao	8	B	1							
08 Dec	S16E57	74	210	8	Dai	8	B	1							
09 Dec	S16E45	74	240	8	Cai	10	B	1							
10 Dec	S17E31	74	250	7	Dki	18	B								
11 Dec	S15E17	75	210	7	Dai	13	B	1			1				
12 Dec	S15E04	75	190	6	Cai	12	B	3			1				
13 Dec	S15W10	77	220	7	Dai	11	BG	2			2				
14 Dec	S15W24	77	260	9	Dkc	26	BG	2			4				
15 Dec	S15W37	77	340	10	Dkc	33	BG	1			1				
16 Dec	S15W51	77	320	11	Ekc	16	BG	2			2				
17 Dec	S15W64	77	250	12	Eki	9	BG	1			1				
18 Dec	S16W77	77	420	7	Dki	4	BG	1			1				
19 Dec	S17W91	79	180	4	Cso	2	B	1							
								19	0	0	13	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 75

<b>Region 1918</b>															
08 Dec	S09E76	56	60	2	Hax	3	A								
09 Dec	S08E63	55	110	3	Dao	4	B								
10 Dec	S09E51	54	170	5	Dao	8	B								
11 Dec	S09E38	54	160	5	Dao	7	B				1				
12 Dec	S08E25	53	180	6	Dao	13	BG								
13 Dec	S09E11	56	180	6	Dao	11	BG								
14 Dec	S10W02	55	180	6	Dao	8	BG								
15 Dec	S10W15	55	170	6	Cao	11	BG								
16 Dec	S10W29	55	90	6	Cao	6	B								
17 Dec	S09W43	56	70	2	Hsx	2	A								
18 Dec	S09W55	55	50	3	Hax	1	A								
19 Dec	S10W70	58	10	2	Axx	3	A								
20 Dec	S10W84	58	plage												
								0	0	0	1	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 55



### *Region Summary - continued*

	Location		Sunspot Characteristics					Flares							
		Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
Date	Lat CMD	Lon	10 <sup>-6</sup> hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4
Region 1920															
09 Dec	N12E71	47	70	4	Hsx	1	A	1							
10 Dec	N12E57	48	60	2	Hax	1	A	1							
11 Dec	N12E44	48	90	2	Hax	1	A								
12 Dec	N13E31	48	80	3	Hax	2	A								
13 Dec	N12E18	49	70	2	Hax	2	A	1			1				
14 Dec	N12E05	48	70	4	Hax	5	A								
15 Dec	N13W07	47	50	2	Hsx	3	A								
16 Dec	N12W21	47	40	4	Hsx	2	A								
17 Dec	N12W35	48	50	1	Hsx	1	A								
18 Dec	N12W48	48	50	3	Hsx	1	A								
19 Dec	N13W62	50	60	4	Cso	2	B								
20 Dec	N13W75	49	50	2	Hax	1	A								
21 Dec	N13W88	49	30	1	Hax	1	A								
								3	0	0	1	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 48

<b>Region 1921</b>															
09 Dec	N06E75	43	120	6	Hsx	2	A	1							
10 Dec	N06E62	43	350	4	Hkx	2	A								
11 Dec	N07E50	42	350	4	Hkx	2	A								
12 Dec	N08E37	42	360	4	Hkx	2	A	1			1				
13 Dec	N07E23	44	350	5	Cko	8	B				1				
14 Dec	N07E10	43	380	6	Cko	9	B								
15 Dec	N07W03	43	400	7	Hkx	9	A								
16 Dec	N06W15	41	300	8	Cko	7	B								
17 Dec	N07W30	43	250	5	Cko	5	B								
18 Dec	N06W43	43	220	4	Dso	2	B								
19 Dec	N06W57	45	220	4	Hax	2	A	2							
20 Dec	N07W71	45	200	4	Hax	2	A								
21 Dec	N07W85	46	180	4	Hax	2	A								
22 Dec	N07W94	42	60	1	Hsx	1	A								
								4	0	0	2	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 43



### ***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

#### ***Region 1922***

10 Dec	N12W15	120	120	6	Dao	14	BG								
11 Dec	N10W32	124	90	7	Dso	8	BG								
12 Dec	N10W45	124	90	10	Dsi	9	B								
13 Dec	N10W58	125	80	10	Dso	4	B								
14 Dec	N10W71	124	60	10	Dao	3	B								
15 Dec	N10W84	124	40	8	Cao	2	B								
								0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 120

#### ***Region 1923***

10 Dec	N17E28	77	10	4	Bxo	5	B								
11 Dec	N18E14	79	10	5	Bxo	9	B								
12 Dec	N18E02	78	10	8	Bxo	9	B								
13 Dec	N18W10	77	50	6	Dao	8	B								
14 Dec	N17W23	76	40	8	Dao	11	B								
15 Dec	N17W37	77	30	7	Cro	10	B								
16 Dec	N01W49	76	10	5	Bxo	6	B								
17 Dec	N01W64	78	plage												
18 Dec	N01W79	80	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.

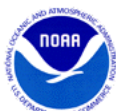
Absolute heliographic longitude: 78

#### ***Region 1925***

13 Dec	S08E56	11	30	5	Cro	4	B								
14 Dec	S07E42	11	30	7	Cro	4	B	2			2				
15 Dec	S07E28	12	20	2	Hrx	3	A								
16 Dec	S09E16	10	10	4	Bxo	4	B								
17 Dec	S07E04	9	plage												
18 Dec	S07W09	10	plage												
19 Dec	S07W24	12	plage												
20 Dec	S07W39	13	plage												
21 Dec	S07W54	15	plage												
22 Dec	S07W69	17	plage												
								2	0	0	2	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 9



### *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

#### *Region 1926*

14 Dec	N09W01	54	20	6	Cro	6	B								
15 Dec	N09W14	54	10	6	Bxo	7	B	1			1				
16 Dec	N10W30	56	plage												
17 Dec	N10W44	58	plage												
18 Dec	N10W58	59	plage												
19 Dec	N10W72	60	plage												
20 Dec	N10W86	60	plage												
								1	0	0	1	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 54

#### *Region 1927*

16 Dec	S25W73	100	10	1	Bxo	3	B								
17 Dec	S26W86	100	10	1	Bxo	2	B								
								0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 100

#### *Region 1928*

17 Dec	S15E08	4	130	6	Dao	12	BG				1				
18 Dec	S15W05	5	240	10	Dai	21	BG								
19 Dec	S16W19	7	360	12	Ekc	24	BG	2			1				
20 Dec	S17W32	6	400	15	Ekc	18	BG	4			1				
21 Dec	S17W47	8	460	15	Ekc	28	BG	6			2	1			
22 Dec	S17W61	9	380	15	Ekc	22	BG	6	5		10	1			
								18	5	0	15	2	0	0	0

Still on Disk.

Absolute heliographic longitude: 5

#### *Region 1929*

18 Dec	S11E55	305	10		Hrx	1	A								
19 Dec	S11E40	308	10	5	Bxo	2	B								
20 Dec	S12E25	309	10	6	Bxo	5	B								
21 Dec	S12E11	310	10	2	Axx	3	A								
22 Dec	S13W04	312	10	2	Bxo	2	B								
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 312



### *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

#### *Region 1930*

18 Dec	S09E35	325	40	3	Cai	7	B	2							
19 Dec	S11E22	326	90	5	Dai	10	B	1			1				
20 Dec	S11E08	326	90	5	Dai	12	B								
21 Dec	S11W05	326	90	6	Dai	7	B								
22 Dec	S11W19	327	60	7	Dso	5	B								
								3	0	0	1	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 326

#### *Region 1931*

18 Dec	S14E76	284	100	2	Hax	1	A								
19 Dec	S15E62	286	210	3	Hax	1	A	1							
20 Dec	S15E48	286	190	3	Hax	1	A								
21 Dec	S15E36	285	220	5	Hsx	2	A								
22 Dec	S15E21	287	170	3	Hsx	1	A								
								1	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 287

#### *Region 1932*

19 Dec	N04E17	331	10	3	Axx	2	A								
20 Dec	N04E04	330	10	1	Axx	1	A								
21 Dec	N04W11	332	plage												
22 Dec	N04W26	334	plage												
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 330

#### *Region 1933*

20 Dec	S13W53	27	40	6	Cso	4	B								
21 Dec	S13W65	26	60	7	Dao	3	B								
22 Dec	S13W82	30	40	3	Hsx	1	A								
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 27



### *Region Summary - continued*

	Location	Sunspot Characteristics						Flares							
		Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
Date	Lat CMD	Lon	10 <sup>-6</sup> hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4
Region 1934															
19 Dec	S15E79	268	plage							1					
20 Dec	S15E65	269	80	3	Cao	3	B	1	1						
21 Dec	S15E53	268	140	6	Cao	5	B								
22 Dec	S15E40	268	160	8	Dac	9	BG	1	1			2			
								2	3	0	0	2	0	0	0

Still on Disk.

Absolute heliographic longitude: 268

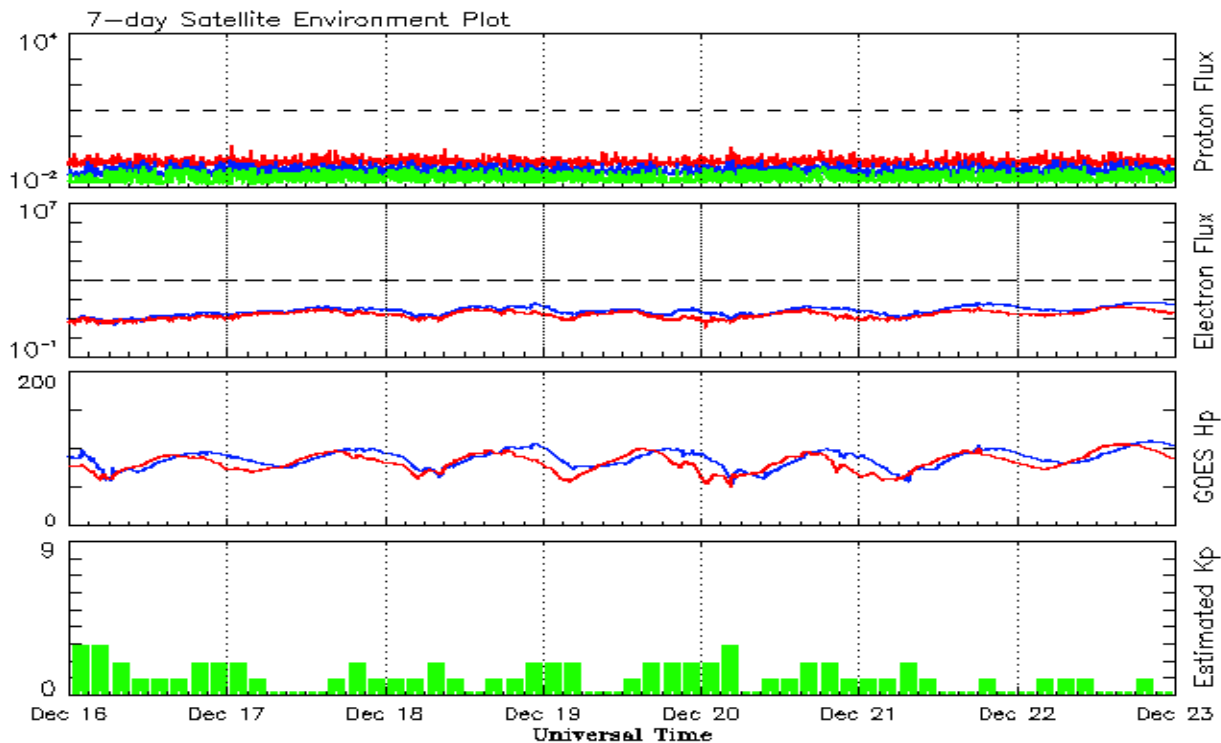


**Recent Solar Indices (preliminary)**  
**Observed monthly mean values**

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>2011</b>									
December	106.3	73.0	0.69	89.2	63.4	141.2	121.6	3	8.0
<b>2012</b>									
January	91.3	58.3	0.64	92.0	65.5	133.1	124.4	6	8.3
February	50.1	32.9	0.66	94.2	66.9	106.7	126.7	7	8.4
March	77.9	64.3	0.82	94.1	66.8	115.1	126.8	14	8.1
April	84.4	55.2	0.65	91.3	64.6	113.1	125.8	9	8.0
May	99.5	69.0	0.69	87.7	61.7	121.5	123.8	8	8.2
June	88.6	64.5	0.73	83.9	58.9	120.5	121.1	10	8.3
July	99.6	66.5	0.67	82.4	57.8	135.6	119.5	13	8.3
August	85.8	63.0	0.74	83.1	58.2	115.7	119.2	7	8.1
September	84.0	61.4	0.73	83.7	58.1	123.2	118.9	8	7.8
October	73.5	53.3	0.73	85.0	58.6	123.3	119.2	9	7.4
November	89.2	61.8	0.69	87.3	59.7	120.9	120.1	6	7.3
December	60.4	40.8	0.68	88.0	59.6	108.4	120.1	3	7.5
<b>2013</b>									
January	99.8	62.9	0.63	87.1	58.7	127.1	118.9	4	7.5
February	60.0	38.1	0.63	86.7	58.4	104.4	118.0	5	7.4
March	81.0	57.9	0.71	85.7	57.5	111.2	117.1	9	7.4
April	112.8	72.4	0.64	86.7	57.9	125.0	116.6	5	7.2
May	125.5	78.7	0.63	90.5	59.9	131.3	118.1	10	7.0
June	80.1	52.5	0.66			110.2		13	
July	86.1	57.0	0.66			115.6		9	
August	90.2	66.0	0.73			114.7		9	
September	55.0	36.9	0.67			102.7		5	
October	127.1	85.6	0.67			132.3		7	
November	125.7	77.6	0.62			148.4		5	

**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 16 December 2013*

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.

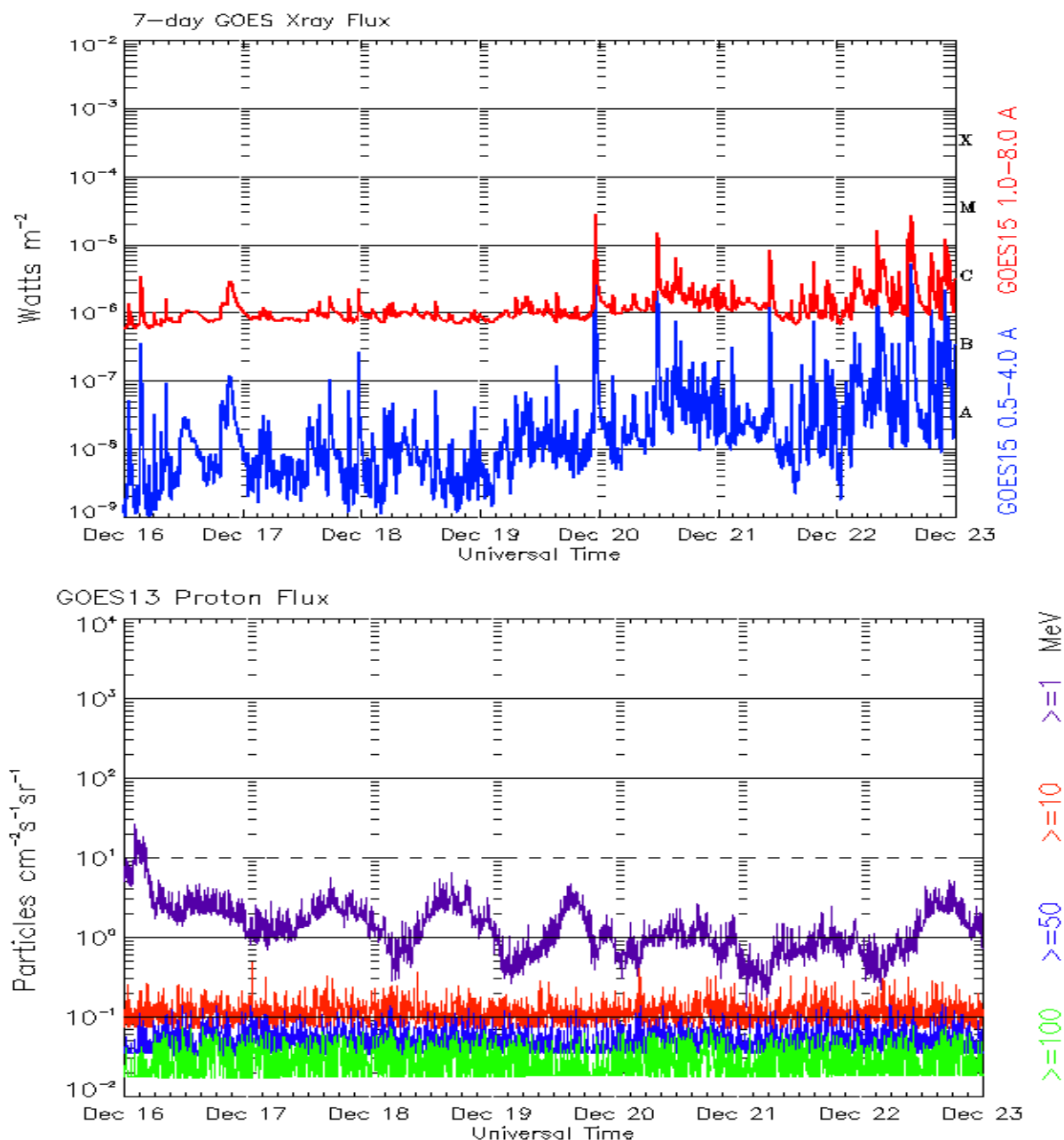
The Hp plot contains the five minute averaged Hp magnetic field component in nanoteslas (nT) as by the SWPC Primary GOES satellite. The Hp component is parallel to the spin axis of the satellite, which is nearly parallel to the Earth's rotation axis.

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 16 December 2013*

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 integral 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 Monday 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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