

Solar activity ranged from low to moderate levels (R1-Minor) with low activity observed on 25, 26, and 27 Dec, and moderate activity observed on 21, 22, 23, and 24 Dec. The majority of the flare activity occurred from Regions 2472 and 2473. Region 2472 (N04, L=331, class/area Dai/170 on 23 Dec) produced an M2/Sf at 21/0103 UTC and an M1/1n at 21/1014 UTC before decaying. Region 2473 (S22, L=331, class/area Fkc/590 on 26 Dec), the largest region on the disk, produced an M1/Sf at 22/0341 UTC, an M4/1f at 23/0040 UTC, and an M1 at 24/0212 UTC. Multiple eruptions were observed in coronagraph imagery, but all were directed off the east limb and none were geoeffective.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal to high levels through the entire week 21 December - 27 December.

Geomagnetic field activity reached G1 (Minor) to G2 (Moderate) storm levels early on 21 Dec due to effects from a CME that erupted on 16 Dec. G2 storm conditions were observed from 21/0000-0600 UTC, with G1 storm conditions occurring in the 21/0600-0900 UTC synoptic period. Solar wind parameters at the ACE spacecraft were enhanced with Bt reaching as high as 18 nT and prolonged periods of southward magnetic field (-Bz). An isolated period of active conditions was observed early on 22 Dec due to lingering CME effects. Active conditions occurred late on 23 Dec due to weak substorming. Quiet to unsettled conditions were observed on 24, 25, and 27 Dec. The geomagnetic field reached G1 (Minor) storm conditions late on 26 Dec (26/2100-2359 UTC) due to a negative polarity coronal hole high speed stream (CH HSS).

Space Weather Outlook **28 December - 23 January 2016**

Solar activity is expected to be at low to moderate levels (R1-Minor) throughout the period. Moderate activity is likely through 03 Jan as Regions 2472 (N04, L=329) and 2473 (S22, L=332) rotate off the disk. Low activity levels are expected on 04-23 Jan with moderate activity possible on 15-23 Jan as Regions 2472 and 2473 rotate back onto the visible side of the disk.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at moderate to high levels on 28 Dec - 12 Jan in response to coronal hole high speed stream (CH HSS) effects. Normal to moderate levels are expected on 13-23 Jan.

Geomagnetic field activity is expected to be at active levels on 01, 03 Jan with G1 (Minor) storm conditions on 02 Jan due to a positive polarity CH HSS. G1 storm conditions are likely again on 06 Jan with active levels following on 07 Jan due to a positive polarity CH HSS. 10 and 11 Jan



are likely to see G1 storm and active conditions, respectively due to a negative polarity CH HSS. Generally quiet to unsettled conditions are expected from 13-23 Jan.



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
21 December	122	38	500	B6.7	10	2	0	9	2	0	0	0
22 December	130	68	790	B7.4	3	1	0	16	1	0	0	0
23 December	134	63	910	B5.2	2	1	0	12	1	0	0	0
24 December	133	51	880	B6.9	3	1	0	13	0	0	0	0
25 December	126	71	880	B4.9	6	0	0	3	0	0	0	0
26 December	117	63	620	B4.0	4	0	0	6	0	0	0	0
27 December	110	67	560	B3.3	2	0	0	6	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
	21 December		5.1e+05	1.1e+04	2.8e+03	
22 December		1.5e+06	1.3e+04	3.4e+03		6.3e+07
23 December		8.6e+05	1.3e+04	3.4e+03		1.2e+08
24 December		1.4e+06	1.3e+04	3.2e+03		1.3e+08
25 December		1.3e+06	1.2e+04	2.9e+03		1.1e+08
26 December		1.5e+06	1.3e+04	3.0e+03		8.9e+07
27 December		1.8e+06	1.3e+04	3.0e+03		1.5e+08

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	21 December	22	5-5-4-4-2-2-2-2	49	3-6-6-7-5-3-2-2	38
22 December	8	2-2-2-3-2-1-2-2	27	2-2-3-7-4-2-1-2	13	3-3-3-4-2-1-2-2
23 December	7	1-2-2-1-2-2-2-3	14	2-2-3-4-4-3-2-2	11	2-2-2-2-2-2-3-4
24 December	8	2-2-3-1-2-2-2-2	17	2-3-4-3-5-2-2-2	12	3-3-3-2-3-2-3-3
25 December	6	1-1-3-1-2-2-2-1	9	2-1-3-3-3-2-2-1	9	3-2-3-2-2-2-2-2
26 December	11	2-2-2-2-3-2-2-4	17	1-2-2-2-5-4-2-4	15	3-2-2-2-3-3-3-5
27 December	7	2-2-2-2-2-2-2-2	15	2-2-3-5-4-2-1-1	15	3-2-3-2-3-2-2-2



Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
21 Dec 0032	ALERT: Geomagnetic K = 5	21/0030
21 Dec 0051	ALERT: Geomagnetic K = 6	21/0050
21 Dec 0129	ALERT: Type II Radio Emission	21/0101
21 Dec 0404	ALERT: Geomagnetic K = 5	21/0404
21 Dec 0423	ALERT: Geomagnetic K = 6	21/0421
21 Dec 0428	WARNING: Geomagnetic K \geq 7	21/0428 - 0800
21 Dec 0428	EXTENDED WARNING: Geomagnetic K = 6	20/1420 - 21/0900
21 Dec 0653	CANCELLATION: Geomagnetic K \geq 7	
21 Dec 0823	ALERT: Geomagnetic K = 5	21/0820
21 Dec 1530	ALERT: Electron 2MeV Integral Flux \geq 1000pfu	21/1515
21 Dec 2052	EXTENDED WARNING: Geomagnetic K = 4	19/0010 - 22/0700
22 Dec 1104	WARNING: Geomagnetic K = 4	22/1105 - 2300
22 Dec 1108	ALERT: Geomagnetic K = 4	22/1107
22 Dec 1236	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	21/1515
23 Dec 0105	ALERT: Type IV Radio Emission	23/0039
23 Dec 0108	SUMMARY: 10cm Radio Burst	23/0057 - 0058
23 Dec 0117	ALERT: Type II Radio Emission	23/0036
23 Dec 1156	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	21/1515
23 Dec 2222	WARNING: Geomagnetic K = 4	23/2222 - 24/1200
24 Dec 0000	ALERT: Geomagnetic K = 4	23/2359
24 Dec 0944	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	21/1515
25 Dec 1156	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	21/1515
26 Dec 1149	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	21/1515
26 Dec 2125	WARNING: Geomagnetic K = 4	26/2124 - 27/0400
26 Dec 2129	ALERT: Geomagnetic K = 4	26/2128

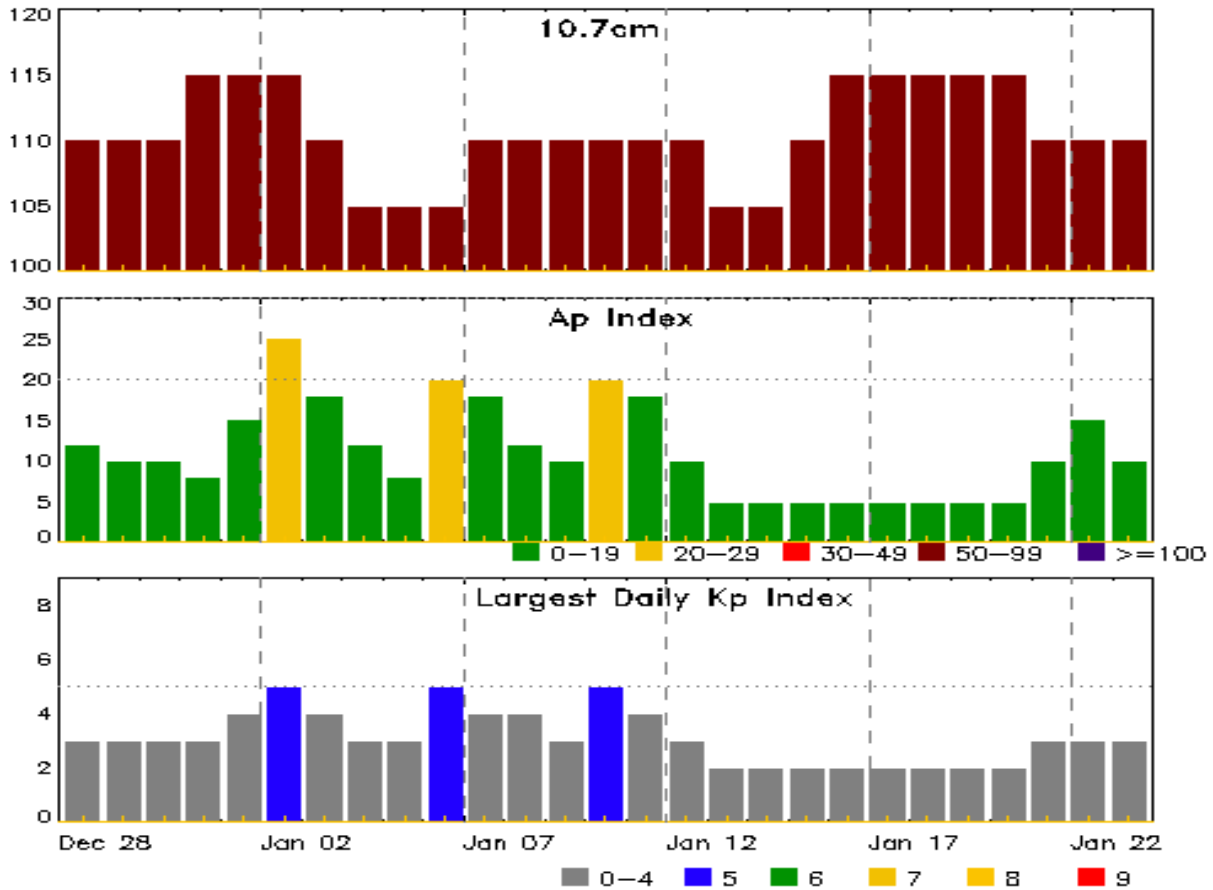


Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
26 Dec 2133	WARNING: Geomagnetic K = 5	26/2132 - 27/0400
27 Dec 0002	ALERT: Geomagnetic K = 5	26/2359
27 Dec 1101	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	21/1515



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
28 Dec	110	12	3	11 Jan	110	18	4
29	110	10	3	12	110	10	3
30	110	10	3	13	105	5	2
31	115	8	3	14	105	5	2
01 Jan	115	15	4	15	110	5	2
02	115	25	5	16	115	5	2
03	110	18	4	17	115	5	2
04	105	12	3	18	115	5	2
05	105	8	3	19	115	5	2
06	105	20	5	20	115	5	2
07	110	18	4	21	110	10	3
08	110	12	4	22	110	15	3
09	110	10	3	23	110	10	3
10	110	20	5				



Energetic Events

Date	Time			X-ray	Optical Information				Peak		Sweep Freq	
	Begin	Max	Half	Class	Integ Flux	Imp/ Brtns	Location		Radio Flux		Intensity	
			Max				Rgn	Lat	CMD	245	2695	II
21 Dec	0052	0103	0111	M2.8	0.019				2472			1
21 Dec	1009	1019	1032	M1.1	0.010	1N	N04E85		2472			
22 Dec	0315	0334	0348	M1.6	0.021	SF	S23E75		2473	120		
23 Dec	0023	0040	0052	M4.7	0.049	1F	S22E63		2473	500	2	2
24 Dec	0149	0212	0222	M1.1	0.013				2473			

Flare List

Date	Time			X-ray Class	Imp/ Brtns	Optical		Rgn #
	Begin	Max	End			Location	Lat	
21 Dec	0052	0103	0111	M2.8				2472
21 Dec	0310	0316	0321	C2.4				2472
21 Dec	0450	0458	0504	C2.0				2472
21 Dec	0529	0539	0543	C9.1				2472
21 Dec	0825	0829	0831	C1.7				2472
21 Dec	0900	0904	0909	C1.0				2472
21 Dec	B0916	U0920	0932		SF	N04E85		
21 Dec	1009	1019	1032	M1.1	1N	N04E85		2472
21 Dec	1246	1248	1300		SF	N04E85		
21 Dec	1417	1433	1448	C2.1	1F	S22E79		2473
21 Dec	1456	1543	1557		SF	S22E79		
21 Dec	1539	1637	1641	C1.3	SF	S22E79		2473
21 Dec	1716	1719	1724		SF	S22E79		
21 Dec	1808	1827	1842	C6.2				2473
21 Dec	2205	2211	2231		SF	S22E77		2473
21 Dec	2223	2226	2228	C1.1	SF	N16W27		2470
21 Dec	2319	2321	2327		SF	S22E77		2473
21 Dec	2332	2339	A2340	C3.3	SF	S22E77		2473
22 Dec	0315	0334	0348	M1.6	SF	S23E75		2473
22 Dec	0421	0426	0428		SF	S23E76		2473
22 Dec	0438	0439	0440		SF	S23E76		2473
22 Dec	0501	0505	0508		SF	S22E75		2473
22 Dec	0508	0509	0513		SF	S22E75		2473
22 Dec	0601	0601	0601		SF	S20E74		2473
22 Dec	B0736	U0737	A0742		SF	S20E73		2473
22 Dec	0743	0748	0848		SF	S20E73		2473



Flare List

Date	Time			X-ray Class	Imp/ Brtns	Optical	
	Begin	Max	End			Location Lat CMD	Rgn #
22 Dec	B0936	U0939	A1028		SF	S20E73	2473
22 Dec	1011	1012	1015		SF	N04E73	2472
22 Dec	B1032	U1035	A1042		SF	S20E71	2473
22 Dec	B1043	U1054	A1113		SF	S20E71	2473
22 Dec	B1054	U1054	A1110		SF	N06W44	2474
22 Dec	B1115	U1230	A1428		SF	S21E67	2473
22 Dec	1305	1311	1405	C6.3	SN	N07E74	2472
22 Dec	1417	1441	1446	C4.1			2473
22 Dec	B1448	1451	1515		1F	S22E77	2473
22 Dec	1719	1719	1729		SF	S23E71	2473
22 Dec	1817	1832	1840	C1.4			2473
23 Dec	0023	0040	0052	M4.7	1F	S22E63	2473
23 Dec	0112	0114	0119		SF	S22E63	2473
23 Dec	0402	0414	0437	C7.5	SF	N05E65	2472
23 Dec	B0740	U0740	A0750		SF	N04E59	2472
23 Dec	B0806	U0816	A0909		SF	N07E63	2472
23 Dec	B0901	U0910	A0923		SF	S20E59	2473
23 Dec	B0926	U0930	A0935		SF	S20E60	2473
23 Dec	B0940	U0940	A0945		SF	S20E60	2473
23 Dec	0954	1001	1005		SF	S20E58	2473
23 Dec	1036	1036	1042		SF	S20E57	2473
23 Dec	1048	1048	1106		SF	S20E57	2473
23 Dec	1124	1124	1127		SF	N05E60	2472
23 Dec	1257	U1308	A1320		SF	S20E57	2473
23 Dec	1737	1744	1752	C1.3			2473
24 Dec	0041	0046	0050	C1.7			2472
24 Dec	0149	0212	0222	M1.1			2473
24 Dec	0358	0403	0405		SF	S22E49	2473
24 Dec	0406	0412	0415		SF	S22E49	2473
24 Dec	0415	0435	0522	C5.9	SF	S22E49	2472
24 Dec	0534	0540	0627		SF	N05E50	2472
24 Dec	0750	0751	0818		SF	S20E46	2473
24 Dec	0907	0916	0925		SF	S20E46	2473
24 Dec	0937	0941	0959		SF	S20E46	2473
24 Dec	1036	U1123	1140		SF	S22E47	2473
24 Dec	1046	1107	1116	C2.0	SF	N05E48	2472
24 Dec	1158	U1200	A1207		SF	S22E47	2473
24 Dec	B1224	U1228	A1302		SF	S23E47	2473



Flare List

Date	Time			X-ray Class	Optical		Rgn #
	Begin	Max	End		Imp/ Brtns	Location Lat CMD	
24 Dec	1310	1311	1315		SF	S20E43	2473
24 Dec	1342	1343	1403		SF	S19E41	2473
25 Dec	0405	0517	0530	C1.5			2473
25 Dec	0910	0913	0919		SF	N07E36	2472
25 Dec	0920	0938	1001	C2.0	SF	S21E33	2473
25 Dec	1233	1245	1304	C1.0			2473
25 Dec	1307	1314	1325	C1.1			2473
25 Dec	1659	1729	1749	C6.9			2472
25 Dec	2248	2300	2314	C3.0	SF	S21E23	2473
26 Dec	0144	0153	0232	C1.6	SF	S20E21	2473
26 Dec	0501	0510	0523	C7.8			2473
26 Dec	0540	0543	0546		SF	S26E23	2473
26 Dec	B0839	U0846	A0901		SF	S19E17	2473
26 Dec	B0926	U1015	A1124		SF	S20E18	2473
26 Dec	0948	0953	0959	B8.3	SF	S20E18	2473
26 Dec	B1126	U1207	A1318	C1.2	SF	S21E18	2473
26 Dec	1510	1526	1543	C4.1			2473
27 Dec	0010	0013	0015	B5.6	SF	S19E05	2473
27 Dec	0017	0019	0024		SF	S19E05	2473
27 Dec	0826	0827	0832		SF	S18E02	2473
27 Dec	1108	1109	1115		SF	N06E09	2472
27 Dec	1126	1129	1144		SF	S19E04	2473
27 Dec	1158	1201	1204	B9.7	SF	S23W05	2473
27 Dec	1859	1910	1927	C2.8			2472
27 Dec	2041	2047	2057	C1.0			
27 Dec	2141	2146	2152	B9.0			2473



Region Summary

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 2468																	
10 Dec	S15E65	128	120	4	Dao	3	B	1			1						
11 Dec	S14E52	126	70	4	Dao	4	B	1									
12 Dec	S15E39	126	40	3	Dao	5	B	2			1						
13 Dec	S15E26	125	40	2	Cao	4	B	1			1	1					
14 Dec	S15E12	126	30	2	Cao	3	B				2						
15 Dec	S15W02	127	10	1	Cro	3	B	1			2						
16 Dec	S16W13	125	30	4	Cro	5	B	1			1	1					
17 Dec	S17W27	126	20	3	Cro	3	B				1						
18 Dec	S16W41	127	10	1	Axx	1	A				4						
19 Dec	S15W54	126	10	1	Axx	1	A	1			1						
20 Dec	S14W67	126	0	1	Axx	1	A	1			1						
21 Dec	S14W81	127	plage														
								9	0	0	15	2	0	0	0		

Crossed West Limb.
 Absolute heliographic longitude: 127

Region 2469																	
12 Dec	N18E67	98	100	6	Dso	3	B	3									
13 Dec	N18E56	95	90	6	Dso	8	B				1						
14 Dec	N18E42	96	50	6	Cao	2	B	1			1						
15 Dec	N18E28	97	30	1	Hax	1	A										
16 Dec	N18E13	99	20	2	Hax	2	A										
17 Dec	N18W01	100	20	2	Hax	2	A										
18 Dec	N19W15	101	10	1	Axx	2	A	2				1					
19 Dec	N19W28	100	0	21	Axx	1	A										
20 Dec	N19W42	101	plage														
21 Dec	N19W56	102	plage														
22 Dec	N19W70	103	plage														
23 Dec	N19W84	104	plage														
								6	0	0	2	1	0	0	0		

Crossed West Limb.
 Absolute heliographic longitude: 100



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 2470																	
12 Dec	N13E76	89	80	4	Hsx	1	A	3									
13 Dec	N12E64	87	270	6	Dkc	6	B										
14 Dec	N13E56	82	360	10	Dki	10	B					3					
15 Dec	N13E43	82	610	14	Eko	16	B										
16 Dec	N14E31	81	530	15	Eko	12	B					2					
17 Dec	N15E18	81	610	14	Eko	17	B	2				2					
18 Dec	N15E06	80	550	14	Eko	16	B					1					
19 Dec	N14W08	80	450	14	Eho	12	B	3									
20 Dec	N15W21	80	430	13	Eho	12	B	2									
21 Dec	N14W35	81	410	13	Cho	3	B	1				1					
22 Dec	N13W50	83	400	3	Hhx	1	A										
23 Dec	N12W66	86	320	3	Hhx	1	A										
24 Dec	N12W78	85	280	4	Hhx	1	A										
25 Dec	N12W90	83	250	5	Hhx	1	A										
								11	0	0	9	0	0	0	0	0	

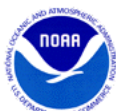
Crossed West Limb.

Absolute heliographic longitude: 80

Region 2471																	
14 Dec	S21E45	93	20	3	Cro	3	B										
15 Dec	S21E30	95	10	3	Bxo	4	B										
16 Dec	S21E16	96	plage														
17 Dec	S21E02	97	plage														
18 Dec	S21W12	98	plage														
19 Dec	S21W26	98	plage														
20 Dec	S21W40	99	plage														
21 Dec	S21W54	100	plage														
22 Dec	S21W68	101	plage														
23 Dec	S21W82	102	plage														
								0	0	0	0	0	0	0	0	0	

Crossed West Limb.

Absolute heliographic longitude: 97



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 2472																							
20 Dec	N04E93	328		plage					5														
21 Dec	N04E78	328	60		5	Hax	1	A	5	2													
22 Dec	N03E62	331	150		7	Dao	10	B	1				2										
23 Dec	N04E49	331	170		8	Dai	10	BG	1				4										
24 Dec	N03E37	330	100		6	Dai	8	B	3				2										
25 Dec	N03E23	330	40		6	Cao	7	B	1				1										
26 Dec	N04E11	329	30		8	Cso	7	B															
27 Dec	N04W02	329	30		7	Cro	9	B	1				1										
									17	2	0	10	0	0	0	0	0						

Still on Disk.

Absolute heliographic longitude: 329

Region 2473																							
21 Dec	S22E79	327	30		4	Cso	4	B	4				3										
22 Dec	S23E62	331	230		10	Dac	12	BD	2	1			13	1									
23 Dec	S23E49	331	420		12	Ekc	11	BG	1	1			8	1									
24 Dec	S22E35	332	500		14	Ekc	12	BG		1			11										
25 Dec	S22E22	331	570		15	Ekc	19	BG	5				2										
26 Dec	S22E09	331	590		16	Fkc	36	BGD	4				6										
27 Dec	S22W05	332	530		16	Fhc	38	BD					5										
									16	3	0	48	2	0	0	0	0						

Still on Disk.

Absolute heliographic longitude: 332

Region 2474																							
22 Dec	N07W52	85	10		2	Bxo	5	B					1										
23 Dec	N08W63	83	0		1	Axx	1	A															
24 Dec	N08W77	84		plage																			
									0	0	0	1	0	0	0	0	0						

Died on Disk.

Absolute heliographic longitude: 85

Region 2475																							
25 Dec	N08W06	358	20		3	Cro	4	B															
26 Dec	N08W19	359		plage																			
27 Dec	N08W33	360		plage																			
									0	0	0	0	0	0	0	0	0						

Still on Disk.

Absolute heliographic longitude: 358

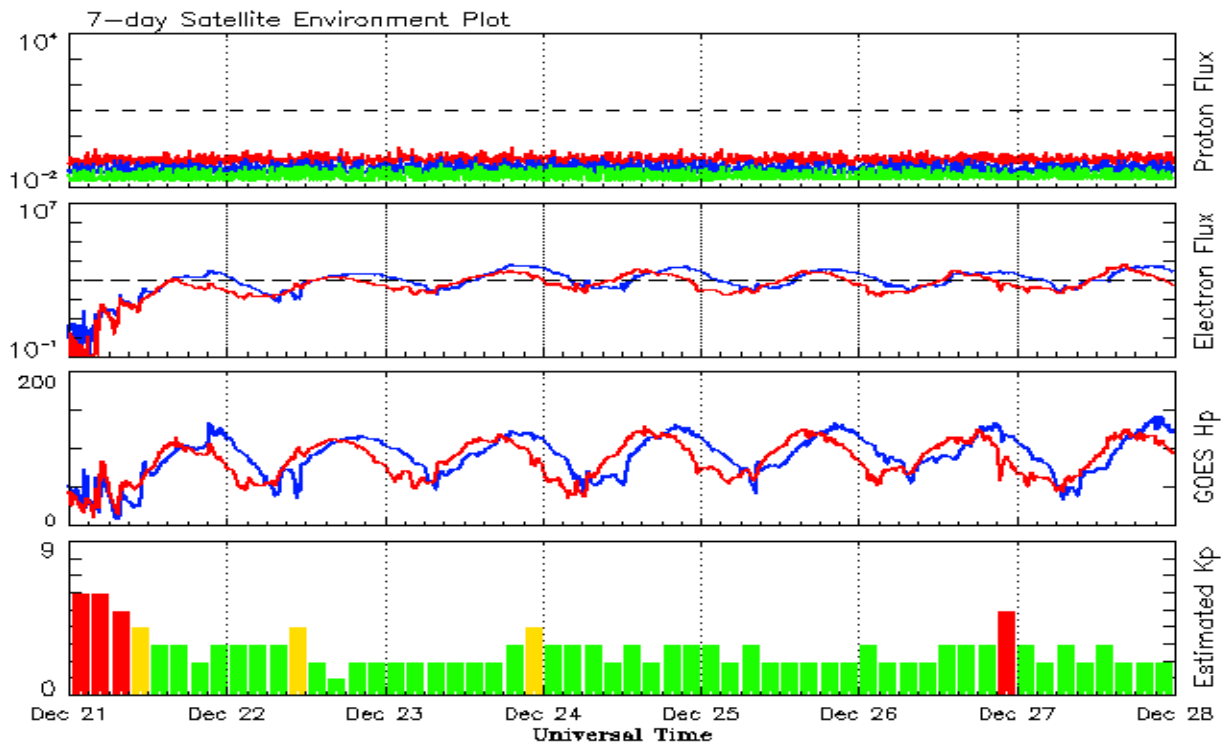


Recent Solar Indices (preliminary)
Observed monthly mean values

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
2013									
December	118.2	90.3	0.76	115.4	75.9	147.7	135.9	5	7.5
2014									
January	125.9	81.8	0.65	117.7	77.3	158.6	137.3	6	7.1
February	174.6	102.3	0.59	119.5	78.3	170.3	138.6	12	6.9
March	141.1	91.9	0.65	123.2	80.8	149.9	140.8	6	7.2
April	130.5	67.5	0.65	124.8	69.8	144.3	143.5	9	7.5
May	116.8	67.5	0.64	122.3	69.0	130.0	144.7	7	7.9
June	107.7	61.7	0.66	121.4	68.5	122.2	145.5	7	8.4
July	113.6	60.1	0.64	120.4	67.6	137.3	145.2	5	8.8
August	106.2	64.1	0.70	115.1	65.0	124.7	142.8	9	8.9
September	127.4	78.0	0.69	107.4	61.1	146.1	140.1	11	9.3
October	92.0	54.0	0.66	101.7	58.4	153.7	138.4	10	9.9
November	101.8	62.2	0.69	97.9	56.8	155.3	137.4	10	10.1
December	120.0	67.7	0.65	95.2	55.3	158.7	137.0	12	10.5
2015									
January	101.2	55.8	0.66	92.1	53.6	141.7	135.8	10	11.0
February	70.6	40.0	0.63	88.3	51.7	128.8	133.8	10	11.5
March	61.7	32.7	0.62	84.2	49.3	126.0	131.2	17	12.0
April	72.5	45.2	0.75	80.5	47.3	129.2	127.3	12	12.4
May	83.0	53.3	0.71	77.5	45.6	120.1	123.3	9	12.7
June	77.3	39.9	0.53			123.2		14	
July	68.4	39.8	0.58			107.0		10	
August	61.6	38.8	0.63			106.2		16	
September	72.5	46.9	0.65			102.1		16	
October	59.5	37.0	0.62			104.1		15	
November	61.8	37.9	0.61			109.6		13	

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 21 December 2015*

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.

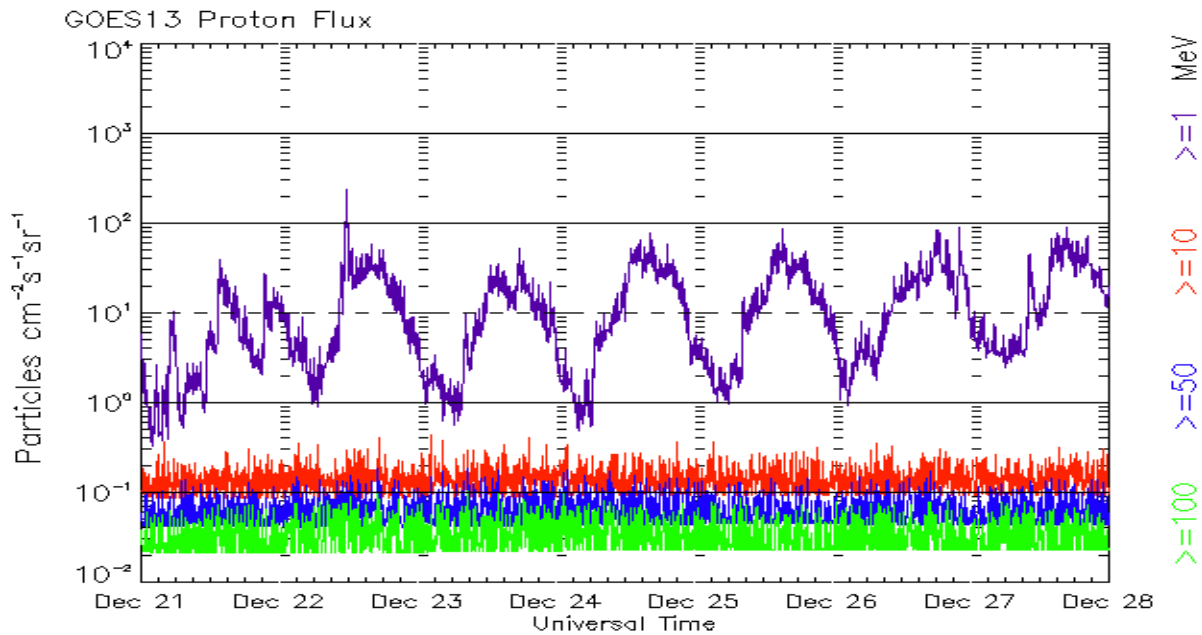
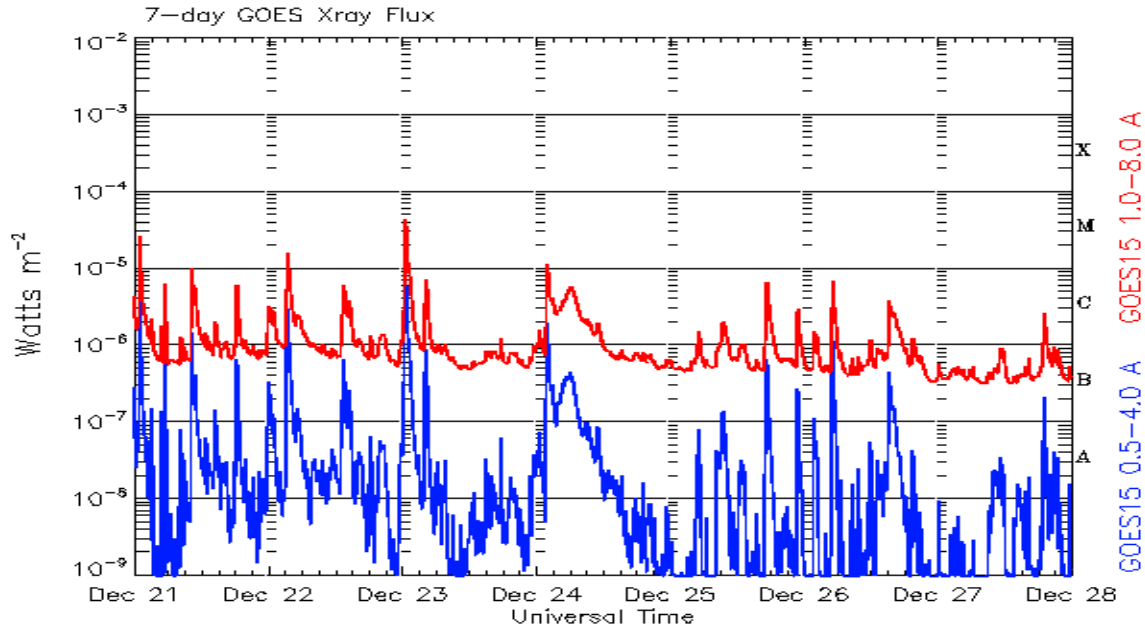
The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

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 21 December 2015*

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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