Space Weather Highlights **SWPC PRF 1933**
10 September - 16 September 2012 **17 September 2012**

Solar activity was at low levels during the first half of the of the summary period, and ended the week at very low levels. Region 1569 (S12, L=296, class/area=Eac/210 on 14 September) was the largest and most magnetically complex region of the period, yet only yielded four C-class flares. The largest of these was a C3/Sf flare that occurred at 11/0111Z. A filament eruption occurred near N22W20 at approximately 13/0640Z. The associated CME had an estimated speed of 536 km/s, but had little to no impact on Earth. A Type II Radio Sweep occurred at approximately 15/2259Z, had an estimated speed of 681 km/s, and was associated with a non-Earth directed CME near the north west limb.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at high levels on 10 and 12 September. Moderate levels were observed on 11 September and again from 13 - 16 September.

The geomagnetic field was at quiet levels throughout the period with two isolated unsettled periods on 12 September and 15 September due to extended periods of negative Bz. A solar sector boundary crossing was also observed at approximately 16/1800Z.

Space Weather Outlook
17 September - 13 October 2012

Solar activity is expected to be at very low to low levels with a chance for moderate activity throughout the forecast period.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at high levels on 18-20 and 24-27 September, then again from 07-09 October.

Geomagnetic field activity is expected to be quiet to unsettled with active conditions possible on 19-22 September, 03-05, 09-10, and 12-13 October. The active conditions are mainly associated with coronal hole high speed streams.

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
10 September	111	62	250	B4.7	5	0	0	7	0	0	0	0
11 September	105	73	390	B4.8	6	0	0	2	0	0	0	0
12 September	103	68	380	B4.1	3	0	0	1	0	0	0	0
13 September	99	44	390	B3.1	7	0	0	2	0	0	0	0
14 September	101	44	270	B1.5	0	0	0	2	0	0	0	0
15 September	98	53	300	B1.7	0	0	0	1	0	0	0	0
16 September	97	77	240	B1.5	0	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
10 September	5.3e+05	1.3e+04	2.8e+03		6.4e+07	
11 September	3.2e+05	1.3e+04	2.8e+03		5.9e+07	
12 September	4.2e+05	1.2e+04	3.0e+03		5.0e+07	
13 September	2.2e+05	1.1e+04	2.6e+03		2.2e+07	
14 September	2.2e+05	1.1e+04	2.6e+03		1.8e+07	
15 September	1.2e+05	1.1e+04	2.6e+03		1.4e+07	
16 September	1.4e+05	1.2e+04	2.8e+03		2.3e+07	

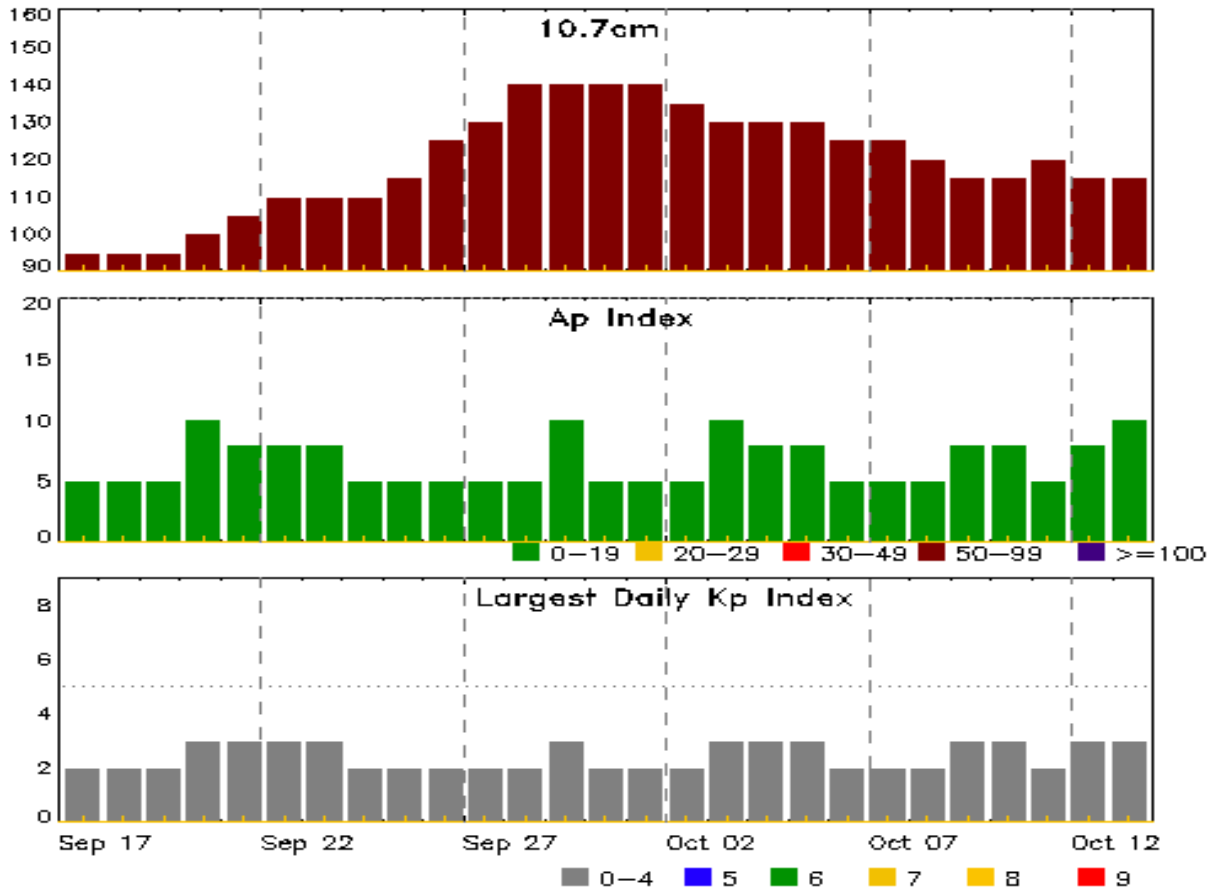
Daily Geomagnetic Data

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

Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
10 Sep 1338	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	09/1520
12 Sep 1407	ALERT: Electron 2MeV Integral Flux >= 1000pfu	12/1340
15 Sep 2344	ALERT: Type II Radio Emission	15/2259
16 Sep 0409	WARNING: Geomagnetic Sudden Impulse expected	16/0440 - 0510

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
17 Sep	95	5	2	01 Oct	140	5	2
18	95	5	2	02	135	5	2
19	95	5	2	03	130	10	3
20	100	10	3	04	130	8	3
21	105	8	3	05	130	8	3
22	110	8	3	06	125	5	2
23	110	8	3	07	125	5	2
24	110	5	2	08	120	5	2
25	115	5	2	09	115	8	3
26	125	5	2	10	115	8	3
27	130	5	2	11	120	5	2
28	140	5	2	12	115	8	3
29	140	10	3	13	115	10	3
30	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

No Events Observed

Flare List

	Time				Optical		
Date	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
10 Sep	0718	0721	0724	B8.7	SF	S18W56	1564
10 Sep	0922	0932	0937	C1.9	SF	S19W57	1564
10 Sep	0950	0953	1000		SF	S19W58	1564
10 Sep	1018	1023	1031	C1.6	SF	N16E22	1567
10 Sep	1250	1255	1259	C3.1	SF	S19W60	1564
10 Sep	1956	2001	2005	B9.3	SF	S14E70	1569
10 Sep	2114	2131	2135	C2.2	SF	S13W70	1564
10 Sep	2342	2356	0008	C6.0			1564
11 Sep	0100	0111	0118	C3.5	SF	S13E66	1569
11 Sep	0825	0932	0941	C1.1			1567
11 Sep	0926	0932	0939	C1.1	SF	N17E10	1567
11 Sep	1028	1110	1143	C2.1			1564
11 Sep	1400	1404	1406	B8.5			
11 Sep	2054	2058	2101	C2.9			
11 Sep	2143	2207	2246	C4.1			1564
12 Sep	0101	0104	0106	C1.3			
12 Sep	0433	0436	0438	B6.4			
12 Sep	1005	1031	1051	C1.5			1564
12 Sep	1410	1428	1437	C1.0			
12 Sep	1727	1803	1904	B9.1			1564
12 Sep	2238	2241	2245	B7.4			1569
12 Sep	2259	2324	2337	B9.7			1569
12 Sep	2335	2336	2341		SF	S15E43	1569
13 Sep	0117	0121	0126	B6.5	SF	S13E39	1569
13 Sep	0308	0508	0539	C2.6			1564
13 Sep	0710	0716	0720	C1.8	SF	S13E36	1569
13 Sep	0736	0746	0801	C1.9			
13 Sep	0823	0834	0857	C2.6			1569
13 Sep	0948	0952	0955	B8.6			1569
13 Sep	1302	1306	1308	C1.8			
13 Sep	1427	1432	1436	B7.5			1569

Flare List

	Time			Optical			
Date	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
13 Sep	1556	1601	1605	C1.7			1569
13 Sep	1639	1644	1647	B6.5			1569
13 Sep	1713	1718	1726	B5.8			1569
13 Sep	1817	1822	1827	C1.3			
13 Sep	2250	2256	2301	B6.9			1569
14 Sep	0140	0146	0151	B3.8			
14 Sep	0815	0817	0822		SF	N21W54	1566
14 Sep	1314	1323	1328	B3.9			1569
14 Sep	1317	U1323	1332		SF	S13E15	1569
14 Sep	2324	2341	2351	B3.0			1566
15 Sep	1431	1435	1437	B4.1			
15 Sep	1654	1659	1702	B4.8			
15 Sep	1836	1841	1844	B2.9			
15 Sep	1858	1903	1906	B4.2			
15 Sep	2007	2011	2014	B3.1			
15 Sep	2142	2147	2150	B9.0			1573
15 Sep	2241	2244	2247	B2.9			1573
15 Sep	2253	2259	2305	B9.6			1566
15 Sep	2335	2341	2346	B4.2	SF	N19E80	1573
16 Sep	0441	0442	0445		SF	N17E78	1573

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 1562													
30 Aug	S16E56	92	10	1	Axx	1	A								
31 Aug	S15E40	95	30	5	Cri	2	B	1					1		
01 Sep	S16E25	96	20	6	Dao	4	B								
02 Sep	S17E10	99	20	5	Cso	3	B								
03 Sep	S19W07	103	10	3	Bxi	3	B								
04 Sep	S20W22	104	50	4	Dso	6	B								
05 Sep	S21W35	104	70	5	Dso	5	B								
06 Sep	S22W48	104	100	7	Dso	7	B								
07 Sep	S20W63	106	340	9	Dho	6	B	2			3				
08 Sep	S21W77	107	220	9	Dao	6	B								
09 Sep	S21W88	105	120	2	Dao	1	B								
								3	0	0	3	0	1	0	0

Crossed West Limb.
Absolute heliographic longitude: 103

		Region 1563													
29 Aug	S25E85	78	plage					1							
30 Aug	S25E71	78	10	1	Axx	1	A	3	1		1				
31 Aug	S24E58	77	40	8	Dso	4	B	2			4				
01 Sep	S25E43	78	70	7	Dso	4	B								
02 Sep	S26E29	81	50	7	Dao	4	B								
03 Sep	S26E15	80	70	8	Dro	5	B								
04 Sep	S24E03	80	10	8	Bxo	5	B								
05 Sep	S24W10	80	plage												
06 Sep	S24W24	81	plage												
07 Sep	S24W37	81	plage												
08 Sep	S24W51	81	plage												
09 Sep	S24W65	82	plage												
10 Sep	S24W79	83	plage												
								6	1	0	5	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 80

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 1564													
31 Aug	S13E70	65	60	5	Dao	3	B	2							
01 Sep	S14E56	66	90	8	Dao	9	B	1			1				
02 Sep	S15E41	68	150	10	Dao	13	B	1			6				
03 Sep	S16E26	69	220	12	Esi	19	BG	7			7				
04 Sep	S14E14	68	160	13	Esi	29	BG	3			4				
05 Sep	S14E01	68	270	12	Esi	32	BG	3			4				
06 Sep	S14W13	70	180	13	Esi	25	B	3			4				
07 Sep	S13W28	71	200	13	Esi	35	B	2			2				
08 Sep	S13W39	69	140	12	Eai	19	BG	2	1		5				
09 Sep	S13W53	70	140	12	Eai	19	BG	1	1		1	1			
10 Sep	S12W69	72	120	6	Dao	4	B	4			5				
11 Sep	S11W82	72	110	9	Dao	4	B	2							
								31	2	0	39	1	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 68

		Region 1565													
03 Sep	N11E21	74	40	7	Dao	6	B								
04 Sep	N10E07	75	80	4	Dso	5	B	2			1				
05 Sep	N10W05	74	40	4	Dso	4	B								
06 Sep	N10W19	75	30	4	Cso	5	B								
07 Sep	N11W32	74	10	2	Axx	3	A								
08 Sep	N11W46	76	plage												
09 Sep	N11W60	77	plage												
10 Sep	N11W74	78	plage												
11 Sep	N11W88	79	plage												
								2	0	0	1	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 74

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 1566												
03 Sep	N24E76	20	60	1	Hax	1	A								
04 Sep	N22E64	18	60	5	Hax	1	A								
05 Sep	N22E50	18	60	4	Hsx	1	A								
06 Sep	N22E39	18	70	3	Hsx	2	A								
07 Sep	N23E26	16	70	1	Cao	2	B								
08 Sep	N22E12	17	60	2	Hsx	1	A								
09 Sep	N23E01	15	60	2	Hsx	1	A								
10 Sep	N23W12	15	60	1	Hsx	1	A								
11 Sep	N23W25	15	40	2	Hsx	3	A								
12 Sep	N23W39	16	40	2	Hsx	2	A								
13 Sep	N23W51	15	50	1	Hsx	1	A								
14 Sep	N22W65	15	30	2	Hsx	2	A				1				
15 Sep	N23W76	13	10	1	Hrx	1	A								
16 Sep	N23W89	14	10	1	Hrx	1	A								
								0	0	0	1	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 15

			Region 1567												
07 Sep	N17E56	347	10	2	Bxo	2	B								
08 Sep	N17E39	350	50	5	Dao	4	B								
09 Sep	N17E27	349	50	7	Dao	8	B								
10 Sep	N16E14	348	10	7	Bxo	2	B	1			1				
11 Sep	N16W02	351	30	9	Dso	4	B	2			1				
12 Sep	N16W16	353	plage												
13 Sep	N16W30	354	plage												
14 Sep	N16W44	355	plage												
15 Sep	N16W58	356	plage												
16 Sep	N17W71	355	plage												
								3	0	0	2	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 351

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 1568												
09 Sep	S11W28	44	50	3	Dso	8	BG	1			1				
10 Sep	S11W40	43	30	5	Dro	4	B								
11 Sep	S10W55	44	50	5	Dso	4	B								
12 Sep	S09W68	45	10	1	Axx	2	A								
13 Sep	S09W82	46	plage												
								1	0	0	1	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 44

			Region 1569												
10 Sep	S11E65	298	30	1	Hax	1	A				1				
11 Sep	S12E53	296	160	10	Dao	8	B	1			1				
12 Sep	S12E39	297	200	12	Eso	10	B				1				
13 Sep	S12E27	296	210	12	Eac	10	BG	3			2				
14 Sep	S12E14	296	140	13	Eao	10	BG				1				
15 Sep	S12W00	296	180	12	Eso	8	BG								
16 Sep	S12W13	296	120	12	Cso	6	B								
								4	0	0	6	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 296

			Region 1570												
12 Sep	S13W34	10	20	2	Cso	3	B								
13 Sep	S13W48	12	plage												
14 Sep	S13W62	13	plage												
15 Sep	S13W76	14	plage												
16 Sep	S13W90	15	plage												
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 10

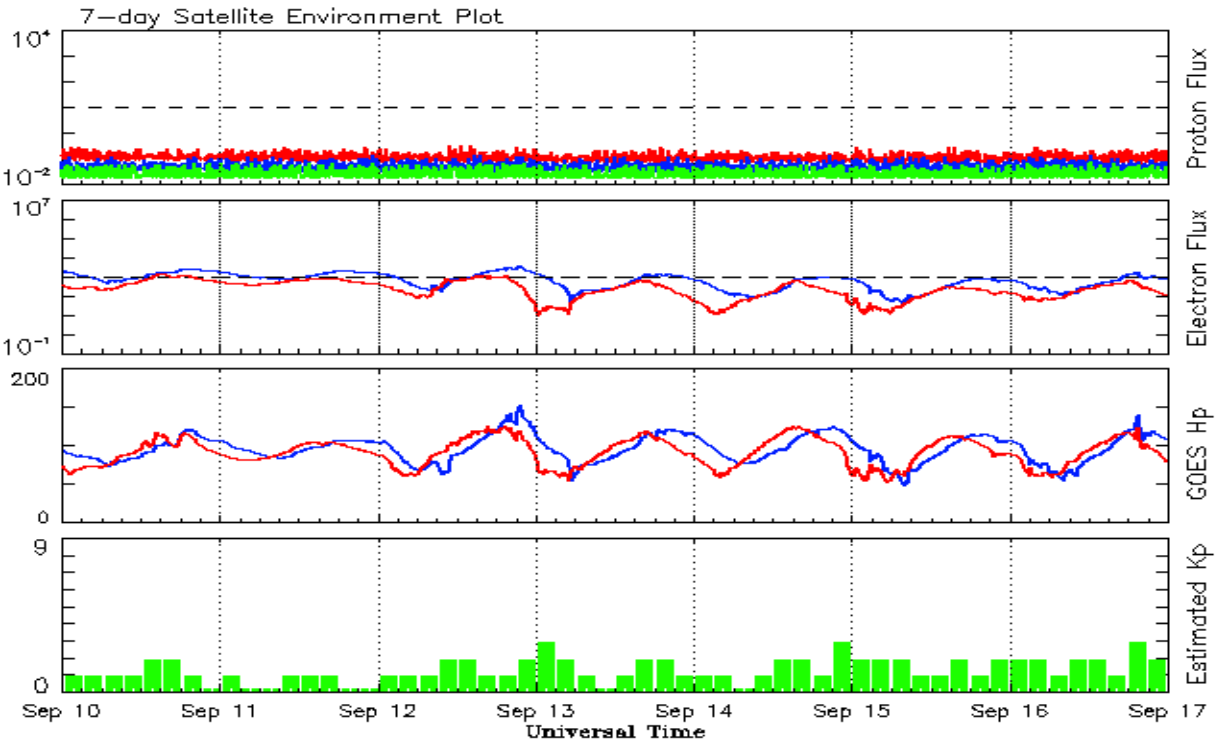
Region Summary - continued

	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 1571												
12 Sep	S12E57	279	110	6	Cso	1	B								
13 Sep	S13E46	277	130	8	Cso	3	B								
14 Sep	S12E33	277	100	6	Cso	2	B								
15 Sep	S13E19	277	100	5	Cso	3	B								
16 Sep	S13E06	277	90	7	Cso	6	B								
								0	0	0	0	0	0	0	0
Still on Disk.															
Absolute heliographic longitude: 277															
			Region 1572												
15 Sep	N15W70	7	10		Axx	1	A								
16 Sep	N16W83	7	10		Axx	1	A								
								0	0	0	0	0	0	0	0
Still on Disk.															
Absolute heliographic longitude: 7															
			Region 1573												
15 Sep	N17E76	222	plage								1				
16 Sep	N17E62	222	10		Axx	1	A				1				
								0	0	0	2	0	0	0	0
Still on Disk.															
Absolute heliographic longitude: 222															
			Region 1574												
16 Sep	S25W17	302	0	2	Bxo	2	B								
								0	0	0	0	0	0	0	0
Still on Disk.															
Absolute heliographic longitude: 302															

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					
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	43.8	0.66	82.5	57.2	94.2	115.4	9	7.3
August	66.1	50.6	0.77	84.9	59.0	101.7	117.9	8	7.4
September	106.4	78.0	0.73	84.6	59.5	134.5	118.4	13	7.7
October	116.8	88.0	0.75	84.6	59.9	137.2	118.4	7	8.0
November	133.1	96.7	0.73	86.3	61.1	153.1	119.5	3	8.0
December	106.3	73.0	0.69	89.2	63.4	141.2	121.6	3	8.0
				2012					
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			115.1		14	
April	84.4	55.2	0.65			113.1		9	
May	99.5	69.0	0.69			121.5		8	
June	88.6	64.5	0.73			120.5		10	
July	99.6	66.5	0.67			135.6		13	
August	85.8	63.1	0.74			115.7		7	

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 10 September 2012

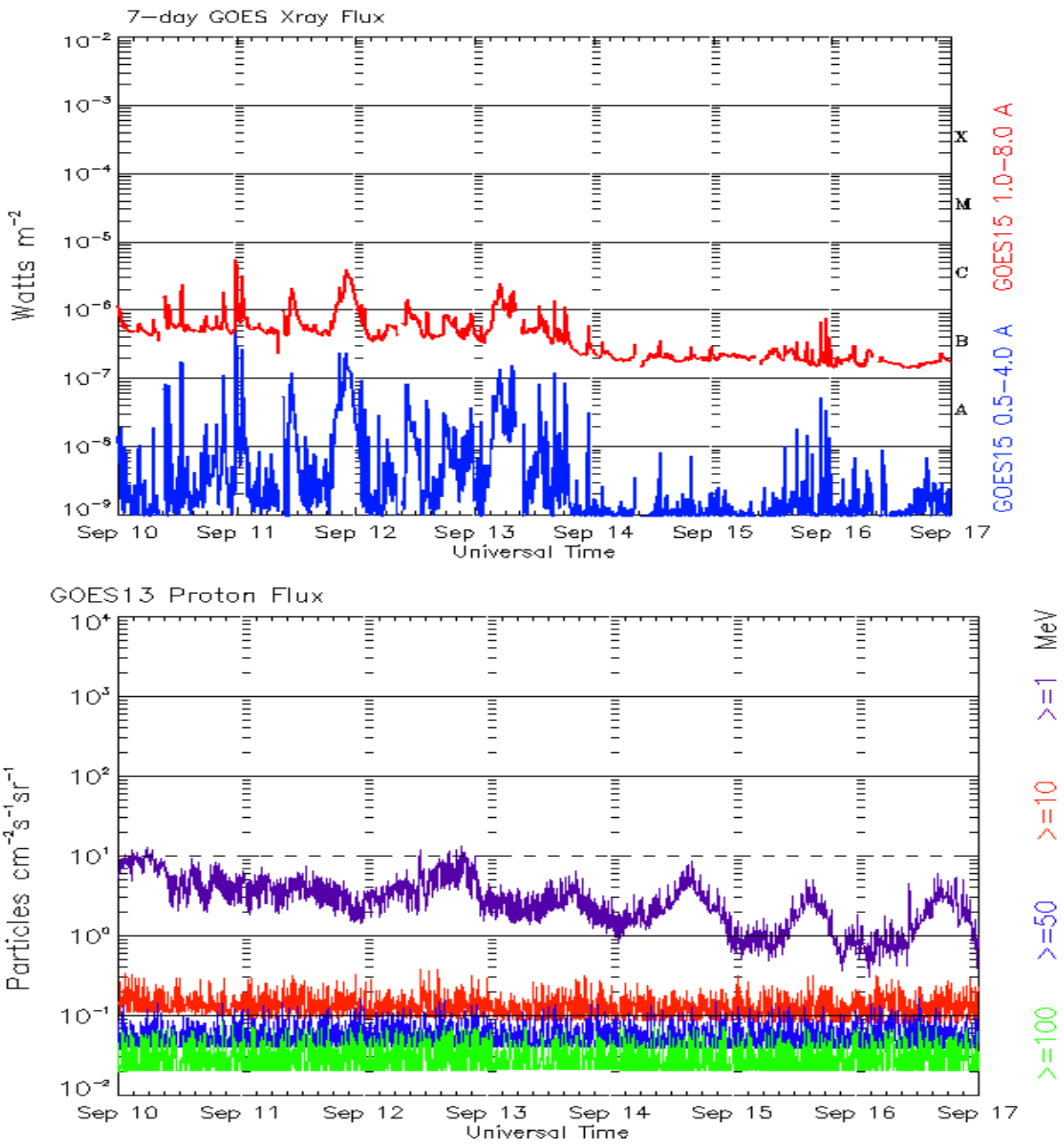
The proton flux plot contains the five-minute averaged integral proton flux (protons/cm^2-sec -sr) as measured by the SWPC Primary GOES satellite, near West 75, for each of three energy thresholds: greater than 10, 50, and 100 MeV.

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 10 September 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.

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

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