

Space Weather Highlights
04 January 2010 – 10 January 2010

SWO PRF 1793
12 January 2010

Solar activity was at low levels on 04 January. Region 1039 (S28, L=052, class/area Dso/150 on 04 January) produced a C1.0/Sf event at 04/0342 UTC, as well as several B-class flares. Activity decreased to very low levels during 05 – 08 January. Region 1040 (N30, L=243, class/area Eao/130 on 10 January) produced numerous low-level B-class flares during this period. Region 1039 retained its Beta magnetic configuration and rotated off the visible disk on 05 January. Activity increased to low levels on 09 January. Region 1040 produced a C1.0 event at 09/1503 UTC and several B-class flares. Activity decreased to very low levels on 10 January. Region 1040 produced numerous low-level B-class flares. Region 1040 maintained a Beta magnetic configuration during its transit.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal background levels during the period.

Geomagnetic field activity was at predominantly quiet levels during the entire period. There was an isolated unsettled period observed at high latitudes on 10 January. Observations from the ACE spacecraft showed solar wind speed varied between a low of 241 km/s at 04/1519 UTC to a high of 352 km/s at 06/0804 UTC. The density peaked at 12 p/cc at 04/0302 UTC. The southward component of the interplanetary magnetic field (IMF) ranged between +7 nT and -6 nT.

Space Weather Outlook
13 January 2010 – 08 February 2010

Solar activity is expected to be at very low to low levels for the entire forecast period. Isolated moderate activity is possible from 01 – 08 February with the return of old Region 1040 (N30, L243).

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to increase to moderate levels on 14 – 15 January. Normal flux levels are expected during the rest of the period.

The geomagnetic field is expected to be at predominantly quiet levels for the forecast period.



Daily Solar Data

Date	Radio Flux 10.7 cm	Sun spot No.	Sunspot Area (10 ⁻⁶ hemi.)	X-ray Background	Flares						
					X-ray Flux			Optical			
					C	M	X	S	1	2	3 4
04 January	73	15	150	A3.0	1	0	0	1	0	0	0 0
05 January	77	13	90	A3.4	0	0	0	0	0	0	0 0
06 January	77	0	0	A3.3	0	0	0	0	0	0	0 0
07 January	78	15	80	A4.1	0	0	0	0	0	0	0 0
08 January	77	14	40	A3.1	0	0	0	0	0	0	0 0
09 January	82	20	70	A6.3	1	0	0	0	0	0	0 0
10 January	84	25	130	A7.5	0	0	0	5	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	>.6 MeV	>2MeV	>4 MeV
04 January	4.7e+05	2.0e+04	4.5e+03		3.7e+04	
05 January	4.7e+05	2.1e+04	4.6e+03		3.8e+04	
06 January	4.9e+05	2.1e+04	4.9e+03		4.0e+04	
07 January	5.6e+05	2.1e+04	5.0e+03		3.6e+04	
08 January	4.7e+05	2.1e+04	4.8e+03		4.4e+04	
09 January	5.7e+05	2.0e+04	4.7e+03		4.5e+04	
10 January	9.3e+05	2.1e+04	4.6e+03		4.1e+04	

Daily Geomagnetic Data

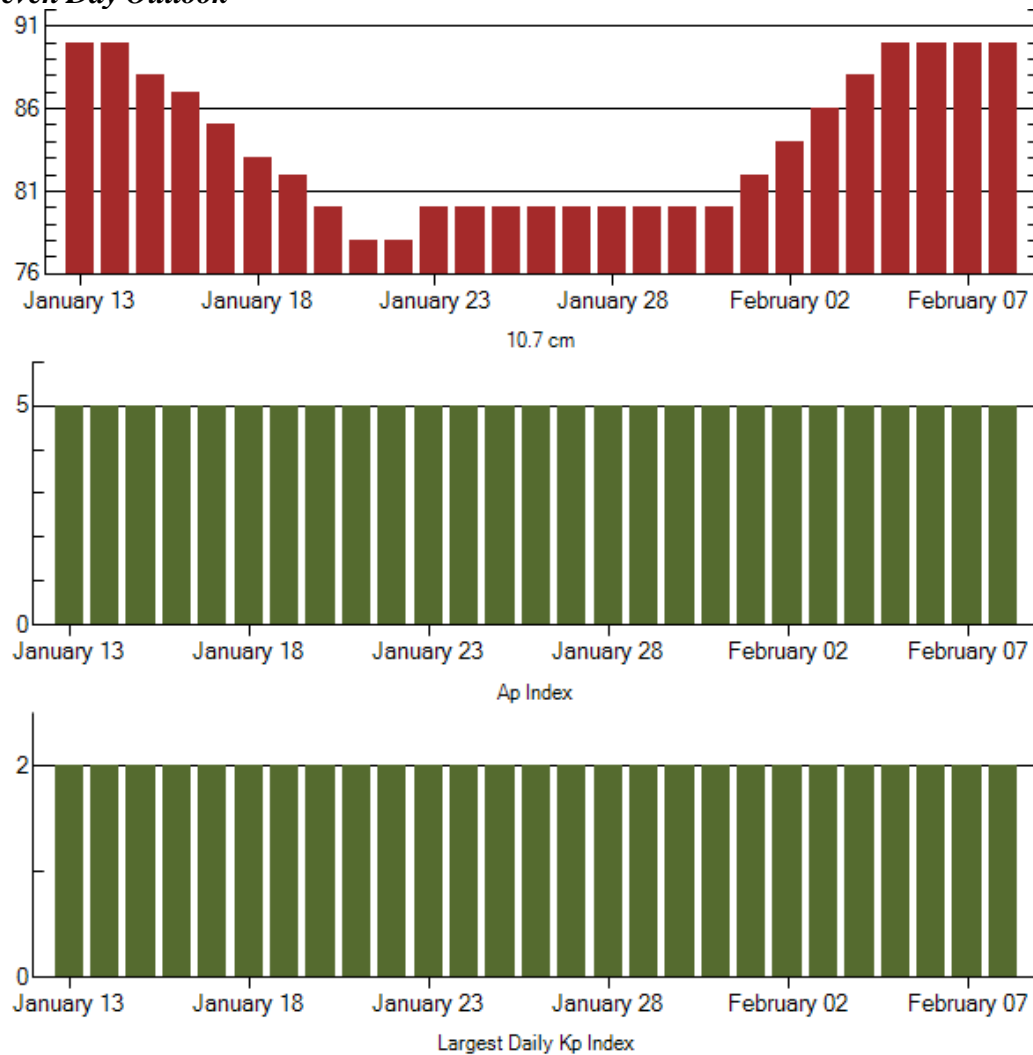
Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
04 January	1	0-0-1-1-0-0-1-0	1	0-0-2-2-0-0-0-0	2	0-0-2-1-0-0-0-0
05 January	1	0-0-0-0-1-1-1-0	0	0-0-0-0-0-0-0-0	1	0-0-0-0-0-1-0-0
06 January	0	1-0-0-0-0-0-0-0	0	0-0-0-0-0-0-0-0	1	0-1-0-0-0-0-0-0
07 January	0	0-0-0-0-0-0-0-0	0	0-0-0-0-0-0-0-0	1	0-0-0-0-0-0-0-1
08 January	0	0-0-0-0-0-1-0-0	1	0-0-2-0-0-0-0-0	2	0-0-1-0-0-1-0-0
09 January	1	0-0-0-0-1-1-0-0	1	0-0-0-1-1-0-0-0	1	0-0-0-0-1-1-0-1
10 January	2	0-0-0-1-1-1-1-0	3	0-0-0-2-3-1-0-0	2	0-0-0-1-1-1-0-1

Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
<i>No Alerts Issued</i>		



Twenty-seven Day Outlook



Date	Radio Flux 10.7 cm	Planetary A Index	Largest Kp Index	Date	Radio Flux 10.7 cm	Planetary A Index	Largest Kp Index
13 Jan	90	5	2	27 Jan	80	5	2
14	90	5	2	28	80	5	2
15	88	5	2	29	80	5	2
16	87	5	2	30	80	5	2
17	85	5	2	31	80	5	2
18	83	5	2	01 Feb	82	5	2
19	82	5	2	02	84	5	2
20	80	5	2	03	86	5	2
21	78	5	2	04	88	5	2
22	78	5	2	05	90	5	2
23	80	5	2	06	90	5	2
24	80	5	2	07	90	5	2
25	80	5	2	08	90	5	2
26	80	5	2				



Energetic Events

2nd-Scan Events												
Date	Time			X-ray		Optical Information				Peak		Sweep Freq
	1/2			Integ		Imp/	Location		Rgn	Radio Flux		Intensity
	Begin	Max	Max	Class	Flux	Brtns	Lat	CMD	#	245	2695	II
No Events Observed												

No Events Observed

Flare List

Date	Time			X-ray	Imp /	Optical		Rgn
	Begin	Max	End			Location	Lat CMD	

Region 1039

26 Dec	S26E45	53	10	6	BXO	3	B												
27 Dec	S27E31	54	100	7	DSO	7	B												
28 Dec	S28E18	54	90	8	DSO	7	B												
29 Dec	S28E06	53	80	9	DAO	7	B												
30 Dec	S27W08	54	50	6	DSO	5	B												
31 Dec	S28W21	54	130	6	DAI	8	B												
01 Jan	S27W35	54	120	9	DSO	6	B												
02 Jan	S28W46	52	190	8	DSO	12	B	2			4	1							
03 Jan	S29W59	52	220	7	DSO	10	B	1			2	1							
04 Jan	S28W72	52	150	7	DSO	5	B	1			1								
05 Jan	S29W90	56	90	5	DRO	3	B												
											4	0	0	7	2	0	0		0

Crossed West Limb.

Absolute heliographic longitude: 53

Region 1040

07 Jan	N28E59	241	80	5	BXO	5	B												
08 Jan	N29E47	240	40	3	BXO	4	B												
09 Jan	N30E35	239	70	10	CRI	10	B	1											
10 Jan	N30E18	243	130	15	EAO	15	B					5							
									1	0	0	5	0	0	0			0	

Still on Disk.

Absolute heliographic longitude: 243



Region Summary

Date	Location		Sunspot Characteristics					Flares							
	° Lat ° CMD)	Helio	Area (10 ⁻⁶ hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical				
		Lon						C	M	X	S	1	2	3	4
Region 1039															
26 Dec	S26E45	53	10	6	BXO	3	B								
27 Dec	S27E31	54	100	7	DSO	7	B								
28 Dec	S28E18	54	90	8	DSO	7	B								
29 Dec	S28E06	53	80	9	DAO	7	B								
30 Dec	S27W08	54	50	6	DSO	5	B								
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02 Jan	S28W46	52	190	8	DSO	12	B	2			4	1			
03 Jan	S29W59	52	220	7	DSO	10	B	1			2	1			
04 Jan	S28W72	52	150	7	DSO	5	B	1			1				
05 Jan	S29W90	56	90	5	DRO	3	B								
								4	0	0	7	2	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 53

<i>Region 1040</i>															
07 Jan	N28E59	241	80	5	BXO	5	B								
08 Jan	N29E47	240	40	3	BXO	4	B								
09 Jan	N30E35	239	70	10	CRI	10	B	1							
10 Jan	N30E18	243	130	15	EAO	15	B				5				
								1	0	0	5	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 243



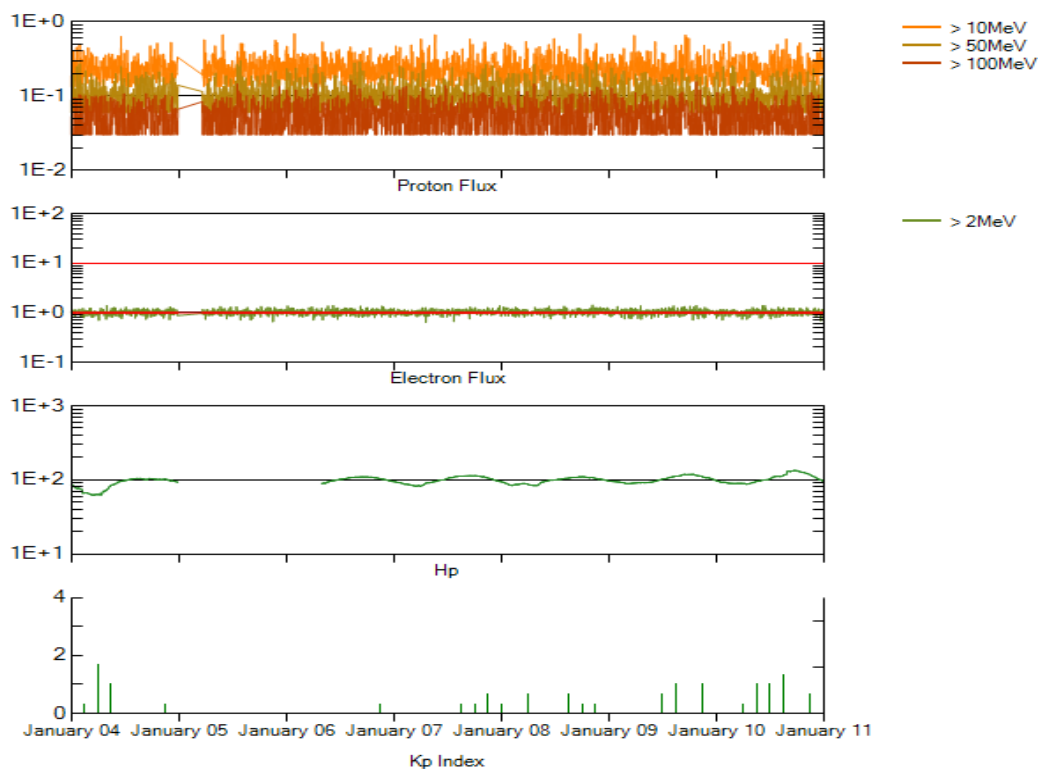
Recent Solar Indices (preliminary)
Of the observed monthly mean values

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
January	5.1	3.3	0.65	6.9	4.2	74.3	70.3	8	7.8
February	3.8	2.1	0.55	5.9	3.6	71.1	69.9	11	7.6
March	15.9	9.3	0.58	5.3	3.3	72.9	69.8	11	7.5
April	4.9	2.9	0.59	5.3	3.4	70.2	69.8	9	7.3
May	5.7	3.2	0.56	5.7	3.5	68.4	69.8	6	7.2
June	4.2	3.4	0.81	5.2	3.3	65.9	69.4	7	7.0
July	1.0	0.8	0.80	4.5	2.8	65.7	68.8	5	6.8
August	0.0	0.5	**	4.4	2.7	66.3	68.6	5	6.3
September	1.5	1.1	0.73	3.7	2.3	67.1	68.4	6	5.8
October	5.2	2.9	0.56	2.9	1.9	68.3	68.2	7	5.4
November	6.8	4.1	0.60	2.7	1.8	68.6	68.3	4	5.1
December	1.3	0.8	0.62	2.7	1.7	69.2	68.5	4	4.9
2009									
January	2.8	1.3	0.46	3.0	1.8	69.8	68.7	4	4.7
February	2.5	1.4	0.56	3.1	1.9	70.0	68.8	5	4.7
March	0.7	0.7	1.00	3.4	2.0	69.2	69.0	5	4.6
April	1.2	1.2	1.00	3.7	2.2	69.7	69.3	4	4.3
May	3.9	2.9	0.74	3.8	2.3	70.5	69.7	4	4.1
June	6.6	2.6	0.39	4.4	2.7	68.6	70.2	4	4.0
July	5.0	3.5	0.70			68.2		4	
August	0.3	0.0	0.00			67.4		5	
September	6.6	4.2	0.64			70.5		4	
October	7.0	4.6	0.66			72.3		3	
November	7.7	4.2	0.55			73.6		3	
December	15.7	10.6	0.68			76.8		1	

NOTE: Values are final except for the most recent 6 months which are considered preliminary. Cycle 23 started in May 1996 with an RI=8.0. Cycle 23 maximum was April 2000 with an RI=120.8.

** SWPC sunspot number was less than RI value, so a ratio could not be computed.





Weekly Geosynchronous Satellite Environment Summary
Week Beginning 04 January 2010

GOES-11 designated Primary Proton and Electron Satellite.

Protons plot contains the five-minute averaged integral proton flux (protons/cm²–sec–sr) as measured by GOES-11 (W135) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

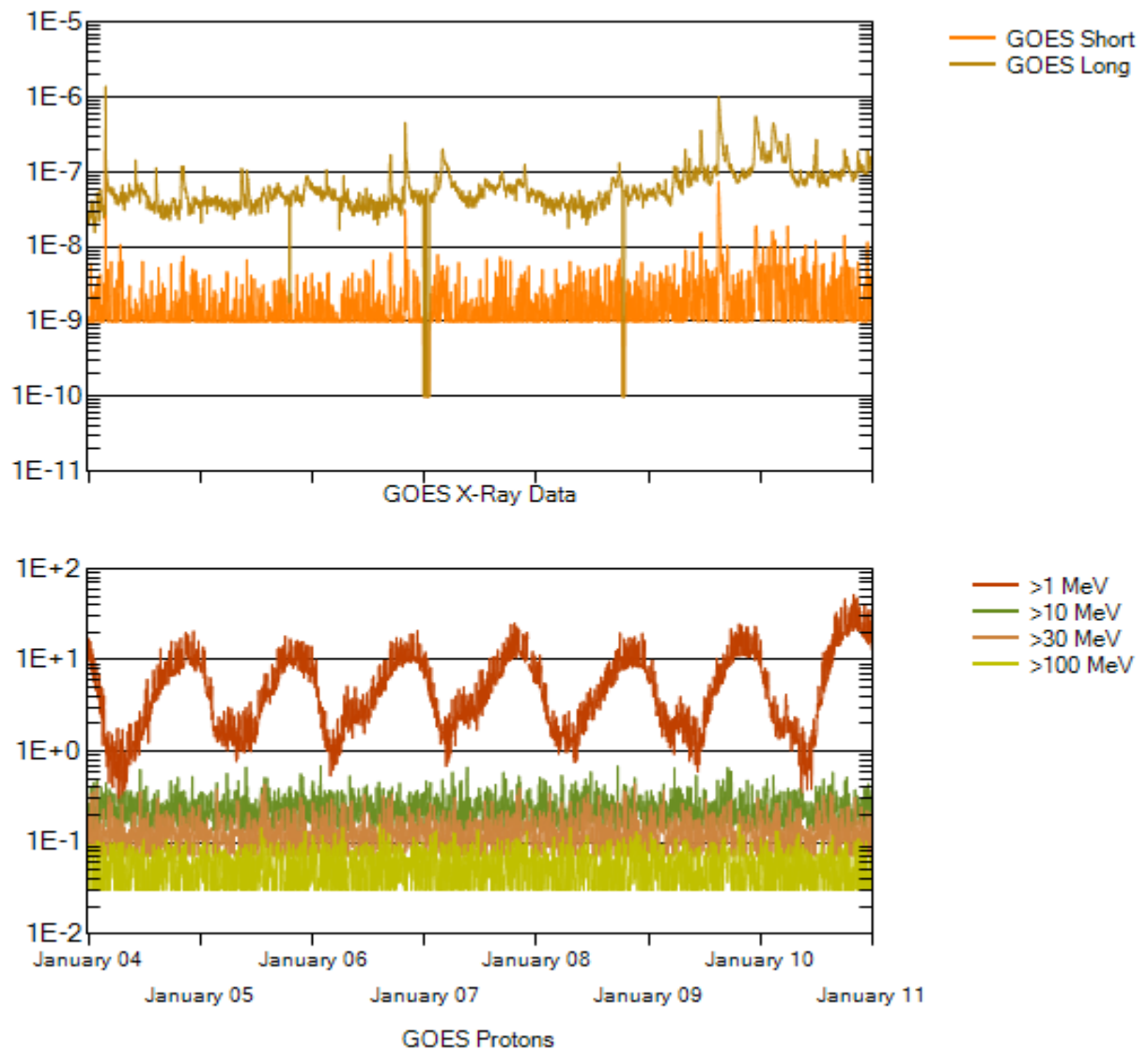
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²–sec–sr) with energies greater than 2 MeV at GOES-11.

Hp plot contains the five minute averaged magnetic field H - component in nanoteslas (nT) as measured by GOES-11. The H component is parallel to the spin axis of the satellite, which is nearly parallel to the Earth's rotation axis.

Kp plot contains the estimated planetary 3-hour K-index (derived by the Air Force Weather Agency) in real time from magnetometers at Meanook, Canada; Sitka, AK; Glenlea, Canada; St. Johns, Canada; Ottawa, Canada; Newport, WA; Fredericksburg, VA; Boulder, CO; Fresno, CA and Hartland, UK. These data are made available through cooperation from the Geological Survey of Canada (GSC), British Geological Survey (BGS) and the US Geological Survey. These may differ from the final Kp values derived from a more extensive network of magnetometers.

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

X-ray plot contains five-minute averaged x-ray flux (Watts/m²) as measured by GOES 14 (W105) 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.

Proton plot contains the five-minute averaged integral proton flux (protons/cm²-sec-sr) as measured by GOES-11 for each of the energy thresholds: >1, >10, >30 and >100 MeV. P10 event threshold is 10 pfu (protons/cm²-sec-sr) at greater than 10 MeV.

