

Solar activity ranged from very low to low. Low levels occurred on 23 February while very low conditions were observed on 21 – 22 and 24 - 27 February. The largest region on the disk, Region 735 (S07, L=121, class/area, Ekc/470 on 16 February), remained fairly quiet, producing only minor activity before rotating around the west limb on 23 February. Midday on 27 February, a section of a large filament erupted off the southwest limb. LASCO imagery indicated an associated CME was observed off the southwest limb; however, it did not appear to be Earth directed. All other regions on the disk were magnetically simple and stable.

Solar wind data were available from the NASA Advanced Composition Explorer (ACE) spacecraft during most of the summary period. The period began with solar wind speed near 425 km/s and the Bz component of the IMF weak, not varying much beyond +/- 4 nT. Thereafter, and through early on 23 February, the IMF Bz remained neutral while the solar wind speed hit a low of near 340 km/s. On 23 February, a solar sector boundary crossing was observed in the ACE satellite data. By late on the 23rd, the IMF Bz began to oscillate through +/- 11 nT while temperature, density, and solar wind speed increased, all indicative of a co-rotating interactive region (CIR) and a high speed coronal hole wind stream. Wind speed gradually increased, and ended the summary period near 615 km/s while the IMF Bz remained variable, not fluctuating much beyond +/-10 nT. For the balance of the summary period, the geomagnetic field remained under the influence of the high speed stream.

No greater than 10 MeV proton events were observed this period.

The greater than 2 MeV electron flux at geosynchronous orbit was at high levels from 21 – 24 February.

During the summary period, the geomagnetic field ranged from quiet to unsettled levels with active to minor storming periods observed at the higher latitudes. The period began on 21 February with quiet to unsettled conditions with periods of active conditions observed at the higher latitudes. From 22 February through midday on the 24th, conditions were quiet at all latitudes. By midday on the 24th, activity increased to quiet to unsettled with periods of active to minor storming observed at high latitudes due to the effects of a geoeffective coronal hole high speed wind stream. These conditions persisted for the remainder of the summary period.

Space Weather Outlook **02 March - 28 March 2005**

Solar activity is expected to be at very low to low conditions the entire forecast period.

A greater than 10 MeV proton event is not expected.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at high levels on 07 – 12 March and again 17 – 19 March.

The geomagnetic field is expected to range from quiet to minor storm levels. Coronal hole high speed wind streams are expected to produce unsettled to active levels with occasional minor storm periods on 06 – 09 March and again on 16 – 17 March. Otherwise, expect quiet to unsettled conditions.



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	
21 February	95	33	560	A9.9	0	0	0	0	0	0	0	0	0
22 February	92	23	510	B1.1	0	0	0	0	0	0	0	0	0
23 February	85	54	200	B1.1	2	0	0	0	0	0	0	0	0
24 February	80	17	40	A6.4	0	0	0	0	0	0	0	0	0
25 February	78	15	30	A2.1	0	0	0	0	0	0	0	0	0
26 February	77	27	70	A1.4	0	0	0	0	0	0	0	0	0
27 February	76	12	20	A1.7	0	0	0	0	0	0	0	0	0

Daily Particle Data

Date	Proton Fluence (protons/cm ² -day-sr)			Electron Fluence (electrons/cm ² -day-sr)		
	>1MeV	>10MeV	>100MeV	>.6MeV	>2MeV	>4MeV
	21 February	2.7E+5	1.3E+4	2.8E+3		3.9E+7
22 February	3.2E+5	1.3E+4	2.9E+3		6.9E+7	
23 February	3.5E+5	1.4E+4	3.1E+3		9.9E+7	
24 February	5.0E+5	1.4E+4	3.2E+3		7.3E+7	
25 February	3.9E+5	1.4E+4	3.2E+3		7.5E+6	
26 February	3.0E+5	1.4E+4	3.5E+3		3.8E+6	
27 February	3.7E+5	1.4E+4	3.4E+3		8.3E+6	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	21 February	4	3-2-2-0-1-0-0-1	18	2-3-3-4-4-2-4-3	8
22 February	3	1-1-0-0-1-1-2-2	2	0-0-0-0-0-2-2-1	4	1-1-0-0-1-2-2-1
23 February	2	1-0-1-1-1-0-1-1	1	0-0-1-0-0-0-0-1	4	1-1-2-1-1-2-1-1
24 February	4	0-1-1-1-3-1-1-1	8	0-0-0-1-5-1-2-1	5	0-0-1-1-3-1-2-2
25 February	9	1-1-2-2-3-3-3-2	12	0-0-2-3-3-4-4-1	9	1-1-2-2-2-3-3-2
26 February	9	2-2-2-2-3-3-2-1	18	1-1-2-4-5-5-2-1	9	2-2-2-3-3-3-2-2
27 February	6	0-2-2-1-3-2-1-1	9	0-1-2-2-5-1-1-1	8	0-2-3-1-3-2-2-1

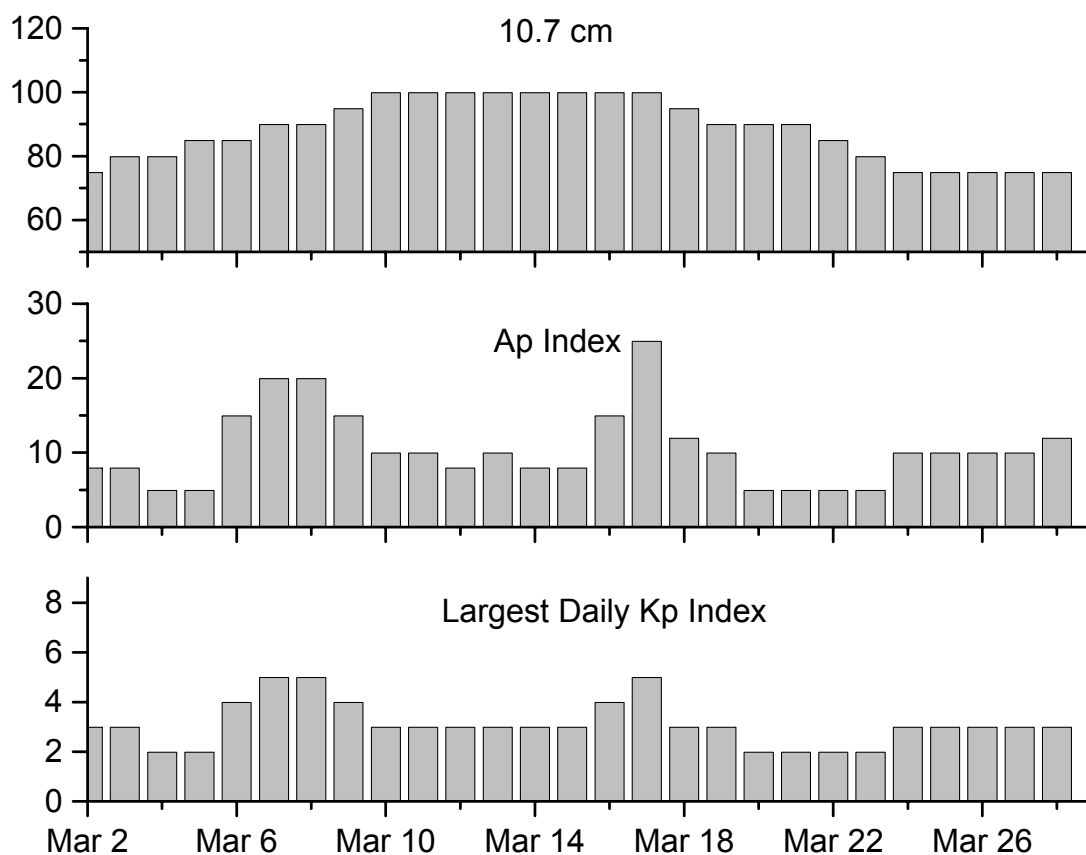


Alerts and Warnings Issued

<u>Date & Time of Issue</u>	<u>Type of Alert or Warning</u>	<u>Date & Time of Event UTC</u>
21 Feb 0006	1 – 245 MHz Radio Noise Storm	20 Feb
21 Feb 1436	ALERT: Electron 2MeV Integral Flux > 1000pfu	21 Feb 1415
22 Feb 0006	1 – 245 MHz Radio Noise Storm	21 Feb
22 Feb 1513	ALERT: Electron 2MeV Integral Flux > 1000pfu	22 Feb 1450
23 Feb 1157	ALERT: Electron 2MeV Integral Flux > 1000pfu	22 Feb 1140
24 Feb 0018	4 – 245 MHz Radio Bursts	23 Feb
24 Feb 1114	ALERT: Electron 2MeV Integral Flux > 1000pfu	24 Feb 1055
25 Feb 1706	WARNING: Geomagnetic K= 4	25 Feb 1707 - 2359
25 Feb 1739	ALERT: Geomagnetic K= 4	25 Feb 1738
25 Feb 2353	EXTENDED WARNING: Geomagnetic K= 4	25 Feb 1707 -26 Feb 1600
26 Feb 1555	EXTENDED WARNING: Geomagnetic K= 4	25 Feb 1707 -27 Feb 1600



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
02 Mar	75	8	3	16 Mar	100	15	4
03	80	8	3	17	100	25	5
04	80	5	2	18	95	12	3
05	85	5	2	19	90	10	3
06	85	15	4	20	90	5	2
07	90	20	5	21	90	5	2
08	90	20	5	22	85	5	2
09	95	15	4	23	80	5	2
10	100	10	3	24	75	10	3
11	100	10	3	25	75	10	3
12	100	8	3	26	75	10	3
13	100	10	3	27	75	10	3
14	100	8	3	28	75	12	3
15	100	8	3				



Energetic Events

Date	Time		X-ray		Optical Information			Peak		Sweep Freq		
	Begin	Max	Max	Class	Flux	Imp/	Location	Rgn	Radio Flux		Intensity	
						Brtns	Lat CMD	#	245	2695	II	IV

No Events Observed

Flare List

Date	Begin	Time		X-ray Class.	Optical		Rgn
		Max	End		Imp / Brtns	Location Lat CMD	
21 February	0852	0856	0900	B1.8			
	1044	1048	1058	B1.7			
	1234	1238	1240	B2.2			735
	1331	1334	1336	B1.4			736
	1416	1422	1425	B6.4			736
	1957	2000	2006	B2.8			736
	2014	2019	2028	B6.0			736
	2212	2216	2220	B1.9			
	2241	2245	2248	B2.0			735
22 February	1409	1414	1424	B2.6			734
	1624	1628	1637	B2.1			736
	1806	1859	1936	B8.9			
23 February	2115	2119	2122	B4.1			
	0540	0544	0546	B2.6			
	0559	0603	0605	B2.2			735
	0621	0628	0633	C1.3			735
	0731	0744	0751	B1.8			735
	0815	0823	0827	B2.4			736
	0844	0848	0850	B8.1			736
	0931	0934	0936	C2.6			736
	1144	1148	1150	B2.6			736
24 February	1359	1404	1406	B6.0			736
	0007	0022	0038	B2.4			737
25 February	No Flares Observed						
26 February	No Flares Observed						
27 February	No Flares Observed						



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

Region 734

09 Feb	S04E71	136	0060	02	Hax	001	A												
10 Feb	S04E57	137	0050	02	Hax	001	A	1											
11 Feb	S04E44	136	0060	02	Hsx	001	A	1											
12 Feb	S05E31	136	0060	02	Hsx	001	A												
13 Feb	S04E17	137	0080	02	Hsx	001	A	1			1								
14 Feb	S05E04	137	0070	05	Cao	007	B	1			1								
15 Feb	S04W10	138	0070	04	Cso	004	B	1											
16 Feb	S04W23	138	0080	04	Cso	005	B	1					1						
17 Feb	S05W34	135	0070	04	Cso	004	B												
18 Feb	S05W50	138	0040	02	Dso	003	B												
19 Feb	S05W63	138	0040	01	Hsx	001	A												
20 Feb	S05W76	138	0040	01	Hsx	001	A												
21 Feb	S07W89	138																	
								6	0	0	2	1	0	0	0	0			

Crossed West Limb.

Absolute heliographic longitude:137

Region 735

10 Feb	S08E74	120	0080	04	Hsx	001	A												
11 Feb	S08E60	120	0410	06	Dho	003	B												
12 Feb	S08E47	120	0380	04	Hhx	001	A				1								
13 Feb	S09E34	120	0370	07	Dho	008	B												
14 Feb	S08E20	121	0440	07	Dko	026	B												
15 Feb	S08E06	122	0420	11	Cko	015	Bg						3						
16 Feb	S07W06	121	0470	11	Ekc	017	Bgd	1			1								
17 Feb	S10W18	119	0420	08	Dkc	011	Bgd												
18 Feb	S09W32	120	0460	06	Dko	008	B	1			1								
19 Feb	S09W45	120	0410	06	Dki	018	Bg												
20 Feb	S09W58	120	0440	06	Dko	012	Bg												
21 Feb	S09W71	120	0440	05	Dko	006	Bg												
22 Feb	S09W85	120	0300	03	Cko	002	B												
23 Feb	S09W97	119	0060	02	Hsx	001	A	1											
								3	0	0	6	0	0	0	0	0			

Crossed West Limb.

Absolute heliographic longitude:122



Region Summary – continued.

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							
<i>Region 736</i>																						
20 Feb	N13W50	112	0030	05	Dao	006	B															
21 Feb	N13W63	112	0120	07	Dao	007	B															
22 Feb	N13W77	112	0210	07	Dko	001	B															
23 Feb	N13W92	114	0090	02	Cso	003	B	1														
								1	0	0	0	0	0	0	0	0	0	0	0	0	0	
Crossed West Limb.																						
Absolute heliographic longitude: 112																						
<i>Region 737</i>																						
23 Feb	S07W31	053	0040	04	Dsi	008	B															
24 Feb	S09W44	053	0040	05	Dso	007	B															
25 Feb	S11W59	055	0030	06	Bxo	005	B															
26 Feb	S11W72	055	0040	04	Bxo	003	B															
27 Feb	S11W85	055																				
								0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Still on Disk.																						
Absolute heliographic longitude: 053																						
<i>Region 738</i>																						
23 Feb	S10E10	012	0010	02	Bxo	002	B															
24 Feb	S10W03	012																				
								0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Still on Disk.																						
Absolute heliographic longitude: 012																						
<i>Region 739</i>																						
26 Feb	S04E52	291	0030	05	Bxo	004	B															
27 Feb	S04E38	292	0020	01	Axx	002	A															
								0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Still on Disk.																						
Absolute heliographic longitude: 292																						

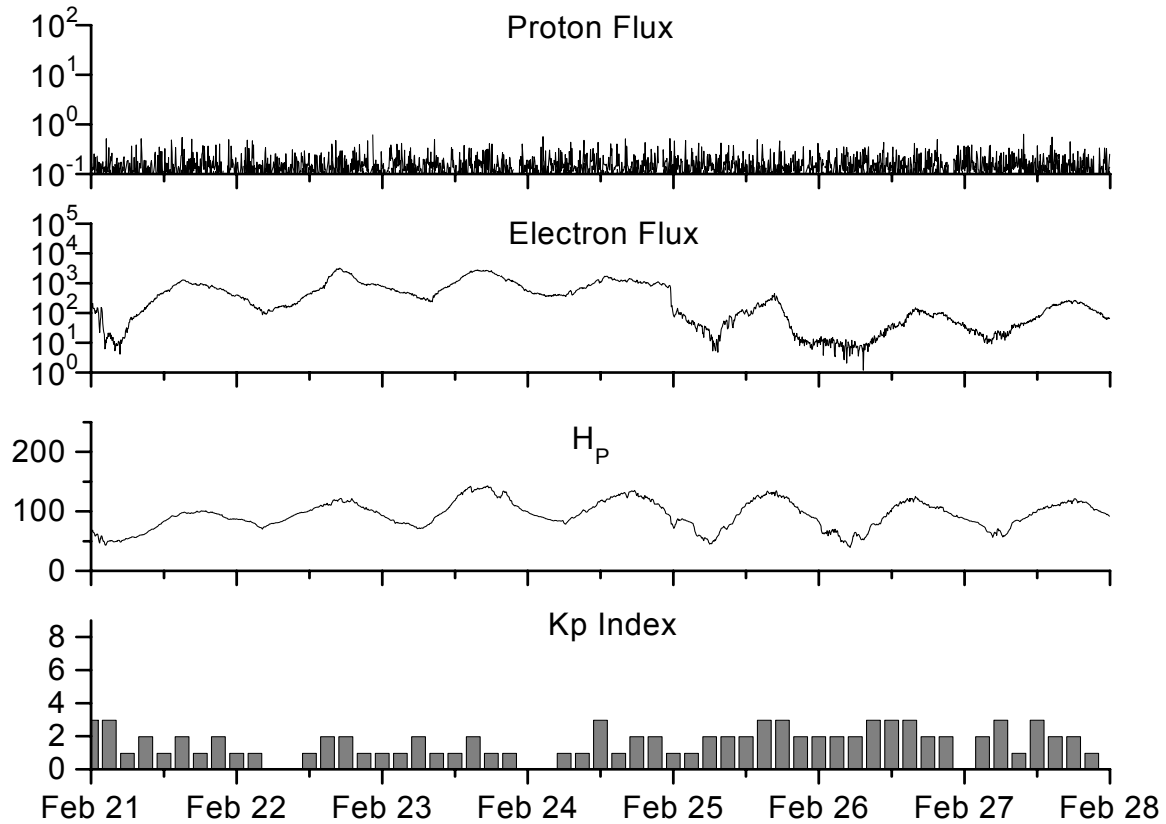


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

Month	Sunspot Numbers			Radio Flux		Geomagnetic			
	Observed values SWO	Ratio RI	Ratio RI/SWO	Smooth values SWO	Smooth values RI	*Penticton 10.7 cm	Smooth Value	Planetary Ap	Smooth Value
2003									
February	87.0	46.0	0.53	136.4	78.5	124.5	144.7	17	18.9
March	119.7	61.1	0.51	128.1	74.2	132.2	139.5	21	19.4
April	119.7	60.0	0.50	121.5	70.3	126.3	135.0	20	20.1
May	89.6	55.2	0.62	118.3	67.8	129.3	133.1	26	21.0
June	118.4	77.4	0.65	113.6	65.2	129.4	130.2	24	21.5
July	132.8	85.0	0.64	106.9	62.0	127.8	127.2	19	22.0
August	114.3	72.7	0.64	102.8	60.3	122.1	125.2	23	22.2
September	82.6	48.8	0.59	100.7	59.8	112.3	123.7	18	21.8
October	118.9	65.5	0.55	96.6	58.4	153.1	121.8	35	21.1
November	118.9	67.3	0.57	93.6	57.0	153.1	120.1	28	20.0
December	75.4	46.5	0.62	91.4	55.0	115.1	118.0	16	18.6
2004									
January	62.3	37.7	0.61	87.9	52.0	114.1	116.3	22	18.1
February	75.6	45.8	0.61	84.2	49.4	107.0	115.5	13	17.7
March	81.0	49.1	0.61	80.9	47.2	112.2	114.6	14	16.9
April	59.3	39.3	0.66	77.9	45.6	101.2	112.3	11	15.5
May	77.3	41.5	0.54	74.1	43.9	99.8	109.2	8	14.3
June	78.9	43.2	0.55	70.4	41.7	97.4	107.2	8	14.0
July	87.8	51.0	0.58	68.3	40.2	118.5	105.9	23	13.8
August	69.5	40.9	0.59			110.1		11	
September	50.0	27.7	0.55			103.1		10	
October	77.9	48.4	0.62			105.7		9	
November	70.5	43.7	0.62			113.2		26	
December	34.7	17.9	0.52			94.6		11	
2005									
January	52.0	31.3	0.60			102.4		22	

NOTE: All smoothed values after September 2002 and monthly values after March 2003 are preliminary estimates. The lowest smoothed sunspot index number for Cycle 22, RI = 8.0, occurred in May 1996. The highest smoothed sunspot number for Cycle 23, RI= 120.8, occurred April 2000. *After June 1991, the 10.7 cm radio flux data source is Penticton, B.C. Canada. Prior to that, it was Ottawa.





*Weekly Geosynchronous Satellite Environment Summary
Week Beginning 21 February 2005*

Protons plot contains the five-minute averaged integral proton flux (protons/cm²-sec-sr) as measured by GOES-11 (W110) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

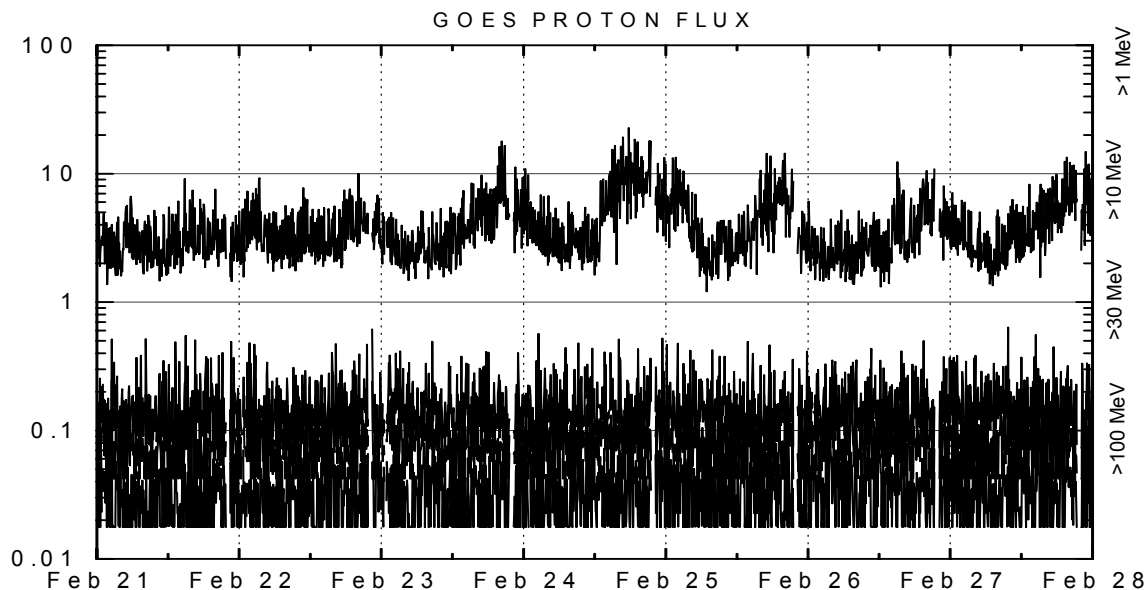
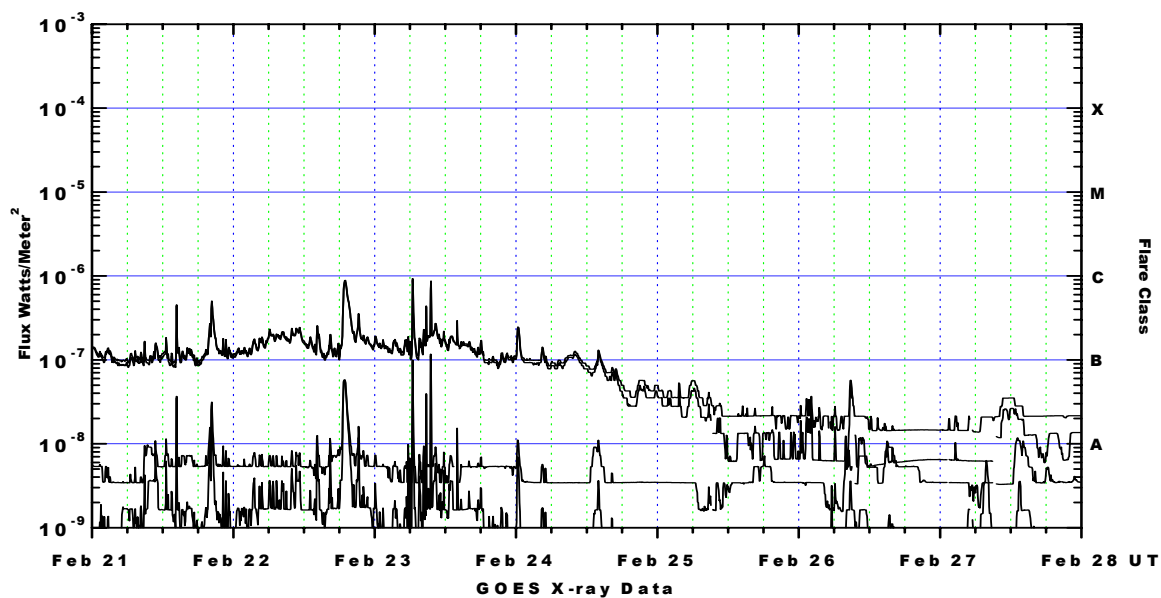
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec-sr) with energies greater than 2 MeV at GOES-12 (W75).

H_p plot contains the five minute averaged magnetic field H - component in nanoteslas (nT) as measured by GOES-12. The H component is parallel to the spin axis of the satellite, which is nearly parallel to the Earth's rotation axis.

K_p 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 K_p values derived from a more extensive network of magnetometers.

The data included here are those now available in real time at the SWO 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 K_p 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 12 (W76) and GOES 10 (W135) in two wavelength bands, .05 - .4 and .1 - .8 nm. The letters A, B, C, M and X refer to x-ray event levels for the .1 - .8 nm band.

Proton plot contains the five-minute averaged integral proton flux (protons/cm²-sec-sr) as measured by GOES-11 (W110) 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.

