

Solar activity was at low levels for 25-27 October with occasional C-class events from Region 1117 (N20, L=060, class/area Dsi/550 on 29 October). Activity levels decreased to very low for 28-30 October, but then increased back to low levels with two C-class events from Region 1117 on 31 October including the largest of the period, a C5 at 0431 UTC. The other spotted groups on the disk were relatively quiet and stable.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit reached high levels every day for 25-30 October, and then decreased to predominantly moderate levels on 31 October.

The geomagnetic field was predominantly quiet to unsettled for 25-26 October. Quiet levels prevailed for the remainder of the period for 27-31 October. Solar wind data from the ACE spacecraft showed a high speed solar wind stream in progress at the beginning of the interval, with steadily decreasing solar wind velocities. The peak velocities of the high speed stream occurred on 25 October with values in the 600-660 km/s range, but had decayed to nominal background speeds around 1445 UTC on 28 October. A weak transient signature was observed at ACE on 31 October, possibly due to a slow, Earth-directed CME that occurred on the 26th. However, there was not any significant geomagnetic response.

Space Weather Outlook **03 November – 29 November 2010**

Solar activity is expected to be at predominantly very low to low levels. Recurrence would suggest possible increases for 05-15 November (return of old Region 1112) and 14-25 November (return of old Region 1117).

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at normal or possibly moderate levels for 03-18 November. There is a possibility for an increase to moderate to high levels for 19-24 November in response to a recurrent high speed stream. Normal levels should resume for 25 November and through the end of the period.

The geomagnetic field is expected to be at mostly quiet levels for 03 – 17 November. An increase to unsettled to active levels with isolated storm periods at high latitudes is possible for 18-22 November in response to a recurrent high speed stream. Quiet levels are expected to prevail for 23-29 November.



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
25 October	86	57	540	A9.6	1	0	0	4	0	0	0	0
26 October	86	74	540	B1.1	2	0	0	5	0	0	0	0
27 October	88	53	540	B1.0	1	0	0	2	0	0	0	0
28 October	86	27	520	A9.4	0	0	0	0	0	0	0	0
29 October	86	24	550	A8.1	0	0	0	0	0	0	0	0
30 October	85	32	490	B1.1	0	0	0	2	0	0	0	0
31 October	81	32	550	A9.4	2	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	>.6 MeV	>2MeV	>4 MeV
25 October	6.5e+05	1.4e+04	3.2e+03		3.3e+08	
26 October	7.8e+05	1.4e+04	3.4e+03		4.3e+08	
27 October	5.2e+05	1.5e+04	3.8e+03		1.4e+08	
28 October	6.5e+05	1.8e+04	6.6e+03		1.4e+08	
29 October	6.0e+05	1.7e+04	6.8e+03		1.3e+08	
30 October	2.4e+06	1.4e+04	3.5e+03		1.7e+08	
31 October	1.6e+06	1.3e+04	3.2e+03		3.6e+07	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
25 October	4	1-1-1-1-2-1-2-1	9	1-1-2-3-4-2-1-2	6	2-1-1-1-2-1-3-1
26 October	6	3-1-2-2-1-1-2-1	7	2-1-2-2-1-2-3-2	8	3-2-2-2-1-2-2-2
27 October	3	0-1-1-1-1-1-2-1	2	1-1-0-1-1-0-1-0	4	1-1-1-0-1-0-2-2
28 October	2	0-0-0-1-1-1-1-0	4	1-0-0-3-2-1-1-0	3	0-0-0-0-1-1-1-1
29 October	2	1-1-1-0-1-0-0-0	2	1-0-0-0-2-2-0-0	3	1-1-0-0-1-2-0-0
30 October	2	0-0-0-1-1-1-0-1	0	0-0-0-0-0-1-0-0	2	0-0-0-1-1-2-0-0
31 October	4	0-2-1-2-2-1-1-1	1	0-0-0-0-1-0-1-0	3	0-2-0-1-2-0-0-1

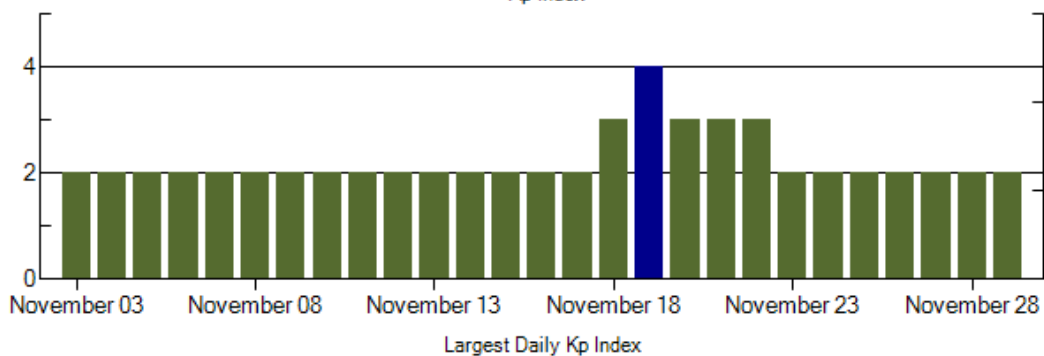
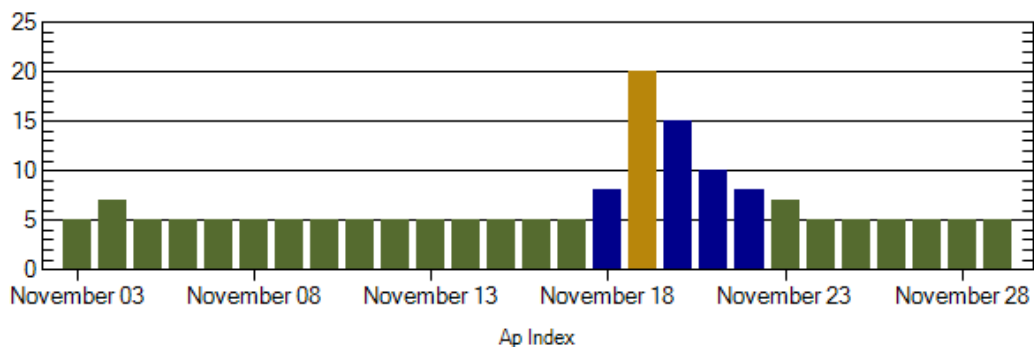
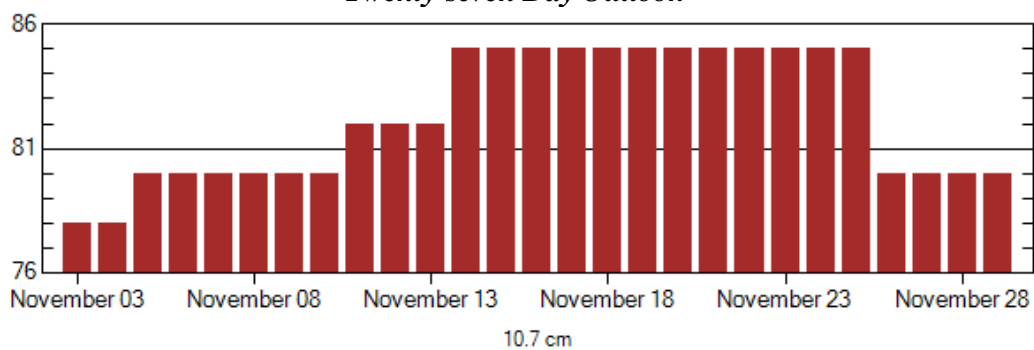


Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
25 Oct 0506	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	24 Oct 1340
26 Oct 0506	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	24 Oct 1340
27 Oct 0835	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	24 Oct 1340
28 Oct 0506	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	24 Oct 1340
29 Oct 0555	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	24 Oct 1340
30 Oct 0505	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	24 Oct 1340



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
03 Nov	78	5	2	17 Nov	85	5	2
04	78	7	2	18	85	8	3
05	80	5	2	19	85	20	4
06	80	5	2	20	85	15	3
07	80	5	2	21	85	10	3
08	80	5	2	22	85	8	3
09	80	5	2	23	85	7	2
10	80	5	2	24	85	5	2
11	82	5	2	25	85	5	2
12	82	5	2	26	80	5	2
13	82	5	2	27	80	5	2
14	85	5	2	28	80	5	2
15	85	5	2	29	80	5	2
16	85	5	2				



Energetic Events

Date	Time		X-ray		Optical Information			Peak		Sweep Freq	
	$\frac{1}{2}$		Integ		Imp/	Location	Rgn	Radio Flux		Intensity	
	Begin	Max	Max	Class	Brtns	Lat CMD	#	245	2695	II	IV

No Events Observed

Flare List

Date	Time			X-ray	Imp /	Optical		Rgn
	Begin	Max	End			Location	Lat CMD	
25 October	0344	0406	0433	B1.7				1117
	0600	0601	0611	B2.1	SF	N19E12		1117
	0809	0836	0904	B3.1	SF	N19E9		1117
	0911	0915	0920		SF	N19E8		1117
	0924	0945	A1021		SF	N19E7		1117
	1152	1217	1235	B6.4				1117
	1314	1318	1322	B2.7				1117
	1333	1336	1339	B3.0				1117
	2146	2153	2200	B6.9				1117
	2206	2212	2218	C2.3				1117
26 October	0040	0041	0046	B8.4	SF	N19W2		1117
	0106	0113	0119	C1.1				
	0131	0131	0135		SF	N20W2		1117
	0214	0217	0219	B3.8				1117
	0311	0316	0319	B6.3				1115
	0311	0316	0319	B6.3				1115
	0425	0429	0432	B5.6				1119
	0533	0533	0538	B6.0	SF	N23W37		1119
	0634	0638	0644	B2.8				1117
	0729	0730	0735	B4.8	SF	N19W5		1117
	0813	0814	0819	C1.0	SF	N23W38		1119
	0826	0830	0835	B3.3				1117
	1129	1132	1134	B2.1				
	1448	1453	1456	B2.1				1119
	2307	2312	2315	B2.2				1117
	2234	2240	2248	B1.6				1119
27 October	0547	0550	0557	B2.5				1115
	0606	0607	0614	B7.0	SF	N20W18		1117
	0920	0926	0932	B1.9				1117
	0949	0954	0957	B2.9				1117
	1100	1107	1111	B2.0				1117
	1309	1312	1317	B1.5				1117
	1355	1407	1451	B2.1				
	1703	1703	1708	C1.2	SF	N18W25		1117
	2153	2159	2201	B1.8				1117
28 October	1012	1015	1019	B2.0				



Flare List-Continued

Date	Time			X-ray Class.	Imp / Brtns	Optical	Rgn
	Begin	Max	End			Location Lat CMD	
29 October	0129	0137	0144	B3.2			1117
	0431	0434	0437	B1.5			1117
	0446	0451	0456	B1.9			1117
	0532	0538	0544	B3.9			1117
	0634	0639	0646	B1.8			1117
	1138	1143	1148	B1.4			1117
	1614	1619	1622	B1.8			1117
	1728	1732	1736	B4.0			1117
30 October	0341	0348	0354	B3.1			1117
	0413	0416	0418	B3.4			1117
	0441	0445	0450	B1.7			
	0534	0539	0542	B6.5			1117
	0631	0632	0639		SF	N35E76	1120
	0715	0717	0719	B2.1	SF	N35E70	1120
	1003	1006	1009	B1.7			
	1330	1333	1339	B1.8			1117
31 October	0112	0116	0119	B5.1			1117
	0317	0317	0328	C1.8	SF	N24W67	1117
	0415	0418	0421	B2.8			1117
	0426	0431	0436	C5.7			1117
	0907	0911	0915	B1.9			1117
	1804	1808	1813	B1.6			
	2009	2021	2028	B1.6			
	2201	2208	2214	B4.6			1117
	2232	2236	2239	B1.7			1117
	2112	2116	2119	B1.6			1117



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
<i>Region 1113</i>															
13 Oct	N17E76	141	120	1	HAX	1	A								
14 Oct	N17E63	141	100	2	HSX	1	A								
15 Oct	N17E50	140	130	3	HSX	1	A								
16 Oct	N17E36	141	130	3	HSX	1	A								
17 Oct	N18E23	141	160	2	HSX	2	A								
18 Oct	N18E10	141	150	4	CSO	5	B								
19 Oct	N17W03	141	130	3	HSX	2	A								
20 Oct	N16W17	141	110	4	CSO	3	B								
21 Oct	N16W31	142	80	2	HAX	2	A								
22 Oct	N16W40	140	90	2	HSX	2	A								
23 Oct	N16W55	140	100	2	HSX	2	A								
24 Oct	N16W69	141	80	2	HSX	1	A								
25 Oct	N13W82	139	100	1	HSX	2	A								
26 Oct	N17W92	136	60	2	HSX	1	A								
								0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 141

<i>Region 1115</i>															
15 Oct	S28E63	130	170	4	HSX	1	A								
16 Oct	S28E50	127	170	4	HSX	1	A								
17 Oct	S28E37	127	140	3	HSX	1	A								
18 Oct	S28E25	126	160	2	HSX	1	A								
19 Oct	S29E13	125	190	5	CSO	3	B								
20 Oct	S31W01	125	110	4	CSO	2	B								
21 Oct	S29W13	124	140	3	HSX	1	A								
22 Oct	S30W22	121	110	2	HSX	1	A								
23 Oct	S29W36	121	140	3	HSX	1	A				1				
24 Oct	S30W51	122	120	3	HSX	1	A								
25 Oct	S30W64	121	160	2	HSX	1	A								
26 Oct	S31W75	120	120	8	HSX	1	A								
27 Oct	S29W90	124	80	2	HSX	1	A								
								0	0	0	1	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 125



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 1117</i>															
19 Oct	N25E74	63	50	5	HSX	1	A								
20 Oct	N24E60	64	70	2	HSX	2	A								
21 Oct	N23E48	63	80	2	HSX	1	A								
22 Oct	N23E36	63	70	2	HSX	1	A								
23 Oct	N22E28	57	120	8	CSO	10	B								
24 Oct	N22E12	60	210	9	DSO	13	B					1			
25 Oct	N22W02	59	260	9	DSI	12	B	1				4			
26 Oct	N21W15	59	360	11	EH1	31	BG					3			
27 Oct	N22W28	59	450	11	EKC	21	B	1				2			
28 Oct	N22W41	60	520	10	DKC	17	B								
29 Oct	N20W55	60	550	9	DHI	14	B								
30 Oct	N20W72	65	480	10	DHO	9	B								
31 Oct	N22W83	60	510	8	DHO	8	B	2				1			
								4	0	0	11	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 59

<i>Region 1118</i>															
18 Oct	N17E77	74	10	1	AXX	1	A								
19 Oct	N16E61	76		1	AXX	1	A								
20 Oct	N14E47	77		1	AXX	2	A								
21 Oct	N14E34	77													
23 Oct	N14E08	78													
24 Oct	N14W05	78													
25 Oct	N14W18	78													
26 Oct	N14W31	78													
27 Oct	N14W44	78													
28 Oct	N14W57	78													
29 Oct	N14W70	78													
30 Oct	N14W83	78													
31 Oct	N14W96	78													
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 78



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

Region 1119

24 Oct	N22W25	97	10	3	BXO	2	B								
25 Oct	N23W38	95	20	4	CRO	2	B								
26 Oct	N22W49	94		1	AXX	1	A	1			2				
27 Oct	N24W60	91	10	1	AXX	1	A								
28 Oct	N24W73	91													
29 Oct	N24W86	91													
								1	0	0	2	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 97

Region 1120

30 Oct	N39E69	283	10	4	BXO	3	B				2				
31 Oct	N40E53	286	40	9	CRO	4	B								
								0	0	0	2	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 286

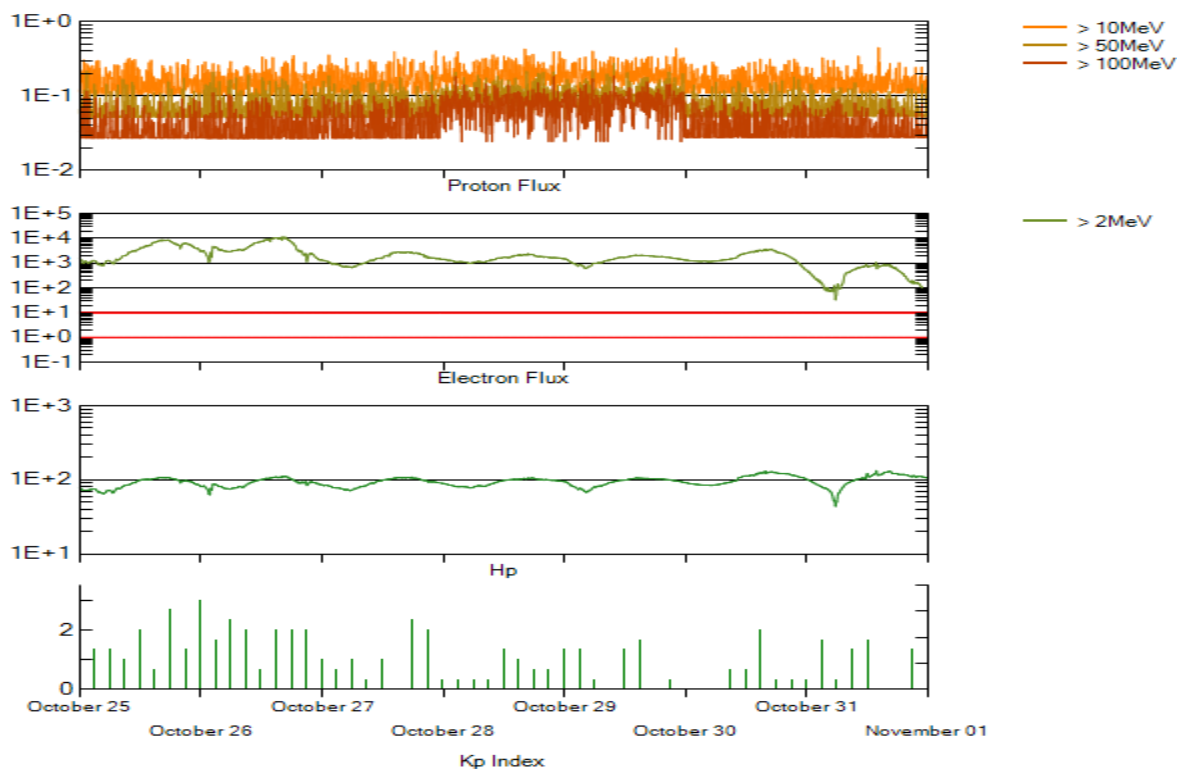


Recent Solar Indices (preliminary)
Of the observed monthly mean values

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
November	6.8	4.1	0.60	2.7	1.7	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	0.8	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	2.9	0.39	4.4	2.7	68.6	70.2	4	4.0
July	5.0	3.2	0.70	5.8	3.6	68.2	71.0	4	3.9
August	0.3	0.0	0.00	7.7	4.8	67.4	72.1	5	3.8
September	6.6	4.3	0.64	9.9	6.2	70.5	73.3	4	3.8
October	7.0	4.8	0.66	11.3	7.1	72.3	74.1	3	4.1
November	7.7	4.1	0.55	12.4	7.6	73.6	74.5	3	4.5
December	15.7	10.8	0.68	13.6	8.3	76.8	74.9	2	4.8
2010									
January	21.3	13.2	0.62	14.8	9.3	81.1	75.5	3	5.0
February	31.0	18.8	0.60	16.7	10.6	84.7	76.5	5	5.1
March	24.7	15.4	0.62	19.1	12.3	83.3	77.5	5	5.3
April	11.2	8.0	0.71	21.4	14.0	75.9	78.3	10	5.5
May	19.9	8.7	0.44			73.8		8	
June	17.9	13.6	0.75			72.6		7	
July	23.1	16.1	0.70			79.9		5	
August	28.2	19.6	0.70			79.7		8	
September	35.6	25.2	0.71			81.1		5	
October	35.0	23.5	0.67			81.6		6	

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. Solar minimum, marking the start of Cycle 24, was December 2008.





Weekly Geosynchronous Satellite Environment Summary
Week Beginning 25 October 2010

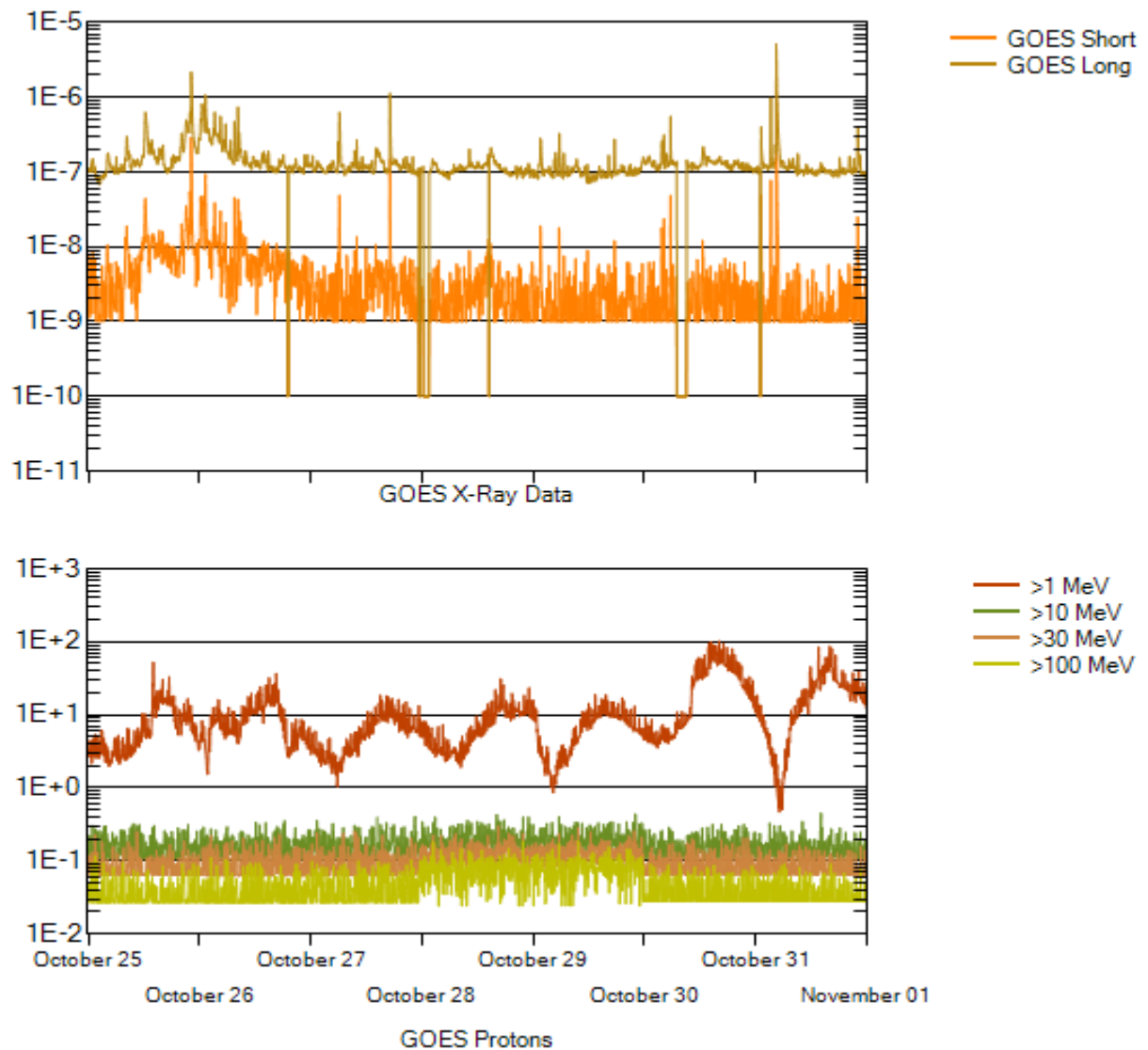
The proton flux plot contains the five-minute averaged integral proton flux (protons/cm²–sec–sr) as measured by GOES-13 (W75) for each of three energy thresholds: greater than 10, 50, and 100 MeV. The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm²–sec–sr) with energies greater than 2 MeV at GOES-13.

The Hp plot contains the five minute averaged Hp magnetic field component in nanoteslas (nT) as measured by GOES-13. The Hp 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

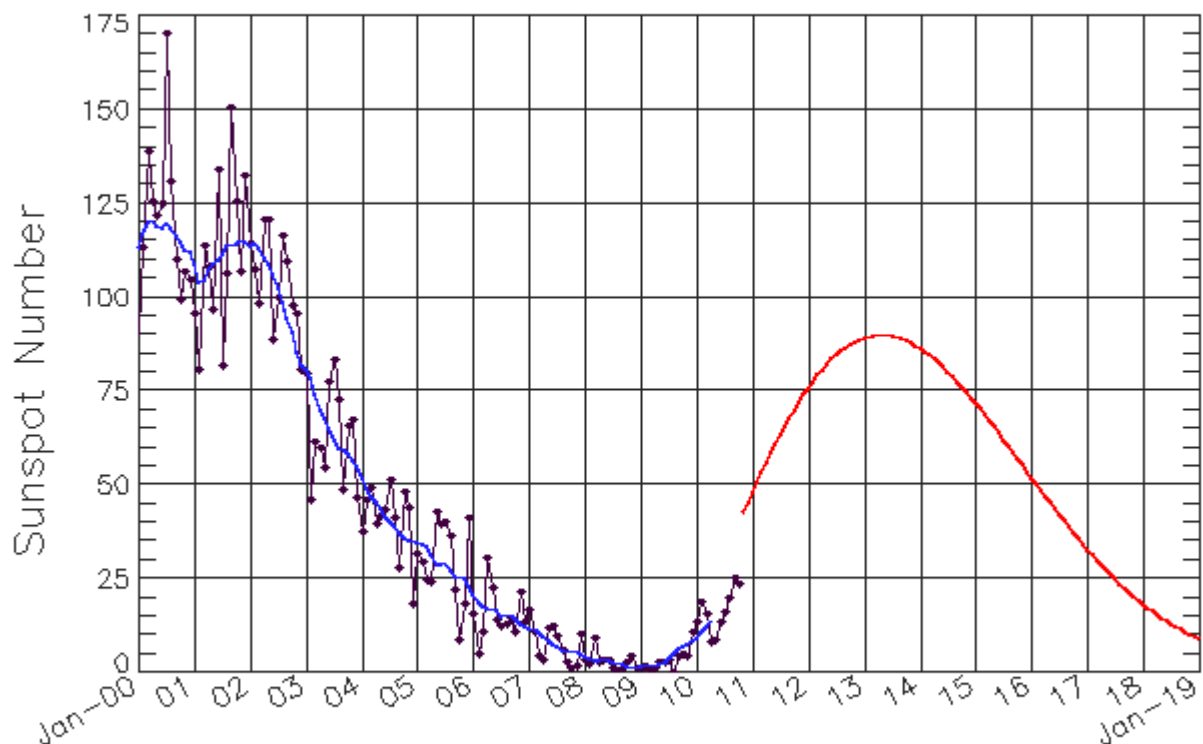
The x-ray plot contains five-minute averaged x-ray flux (Watts/m^2) as measured by GOES 14 (W105) in two wavelength bands, 0.05 - 0.4 and 0.1 - 0.8 nm. The letters A, B, C, M and X refer to x-ray event levels for the 0.1 - 0.8 nm band.

The proton plot contains the five-minute averaged integral proton flux ($\text{protons/cm}^2\text{-sec-sr}$) as measured by GOES-13 for each of the energy thresholds: >1, >10, >30 and >100 MeV. P10 event threshold is 10 pfu ($\text{protons/cm}^2\text{-sec-sr}$) at greater than 10 MeV.



ISES Solar Cycle Sunspot Number Progression

Observed data through Oct 2010



— Smoothed Monthly Values —●— Monthly Values — Predicted Values (Smoothed)

Updated 2010 Nov 2

NOAA/SWPC Boulder, CO USA

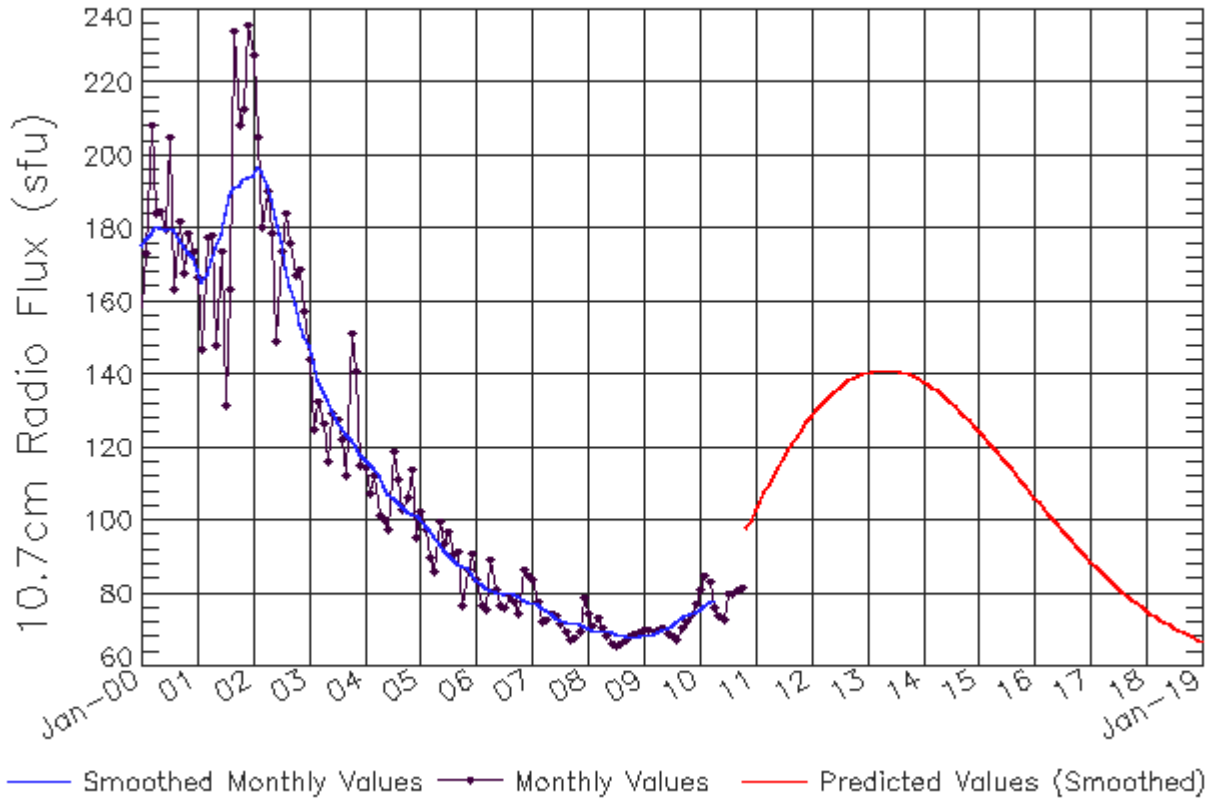
Smoothed Sunspot Number Prediction

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2009	2 (***)	2 (***)	2 (***)	2 (***)	2 (***)	3 (***)	4 (***)	5 (***)	6 (***)	7 (***)	8 (***)	8 (***)
2010	9 (***)	11 (***)	12 (***)	14 (***)	16 (1)	19 (2)	22 (3)	25 (5)	28 (5)	32 (6)	36 (7)	40 (7)
2011	44 (8)	48 (9)	51 (9)	55 (10)	59 (10)	61 (10)	63 (10)	66 (10)	68 (10)	70 (10)	72 (10)	74 (10)
2012	76 (10)	78 (10)	79 (10)	81 (10)	82 (10)	84 (10)	85 (10)	86 (10)	87 (10)	88 (10)	88 (10)	89 (10)
2013	89 (10)	90 (10)	90 (10)	90 (10)	90 (10)	90 (10)	90 (10)	89 (10)	89 (10)	89 (10)	88 (10)	87 (10)
2014	86 (10)	86 (10)	85 (10)	84 (10)	83 (10)	81 (10)	80 (10)	79 (10)	78 (10)	76 (10)	75 (10)	73 (10)
2015	72 (10)	70 (10)	69 (10)	67 (10)	65 (10)	64 (10)	62 (10)	60 (10)	59 (10)	57 (10)	55 (10)	54 (10)
2016	52 (10)	50 (10)	49 (10)	47 (10)	45 (10)	44 (10)	42 (10)	40 (10)	39 (10)	37 (10)	36 (10)	34 (10)
2017	33 (10)	31 (10)	30 (10)	29 (10)	27 (10)	26 (10)	25 (10)	24 (10)	23 (10)	21 (10)	20 (10)	19 (10)
2018	18 (10)	17 (10)	16 (10)	15 (10)	15 (10)	14 (10)	13 (10)	12 (10)	12 (10)	11 (10)	10 (10)	10 (10)
2019	9 (10)	8 (10)	8 (10)	7 (10)	7 (10)	6 (10)	6 (10)	6 (10)	5 (10)	5 (10)	4 (10)	4 (10)



ISES Solar Cycle F10.7cm Radio Flux Progression

Observed data through Oct 2010



Updated 2010 Nov 2

NOAA/SWPC Boulder, CO USA

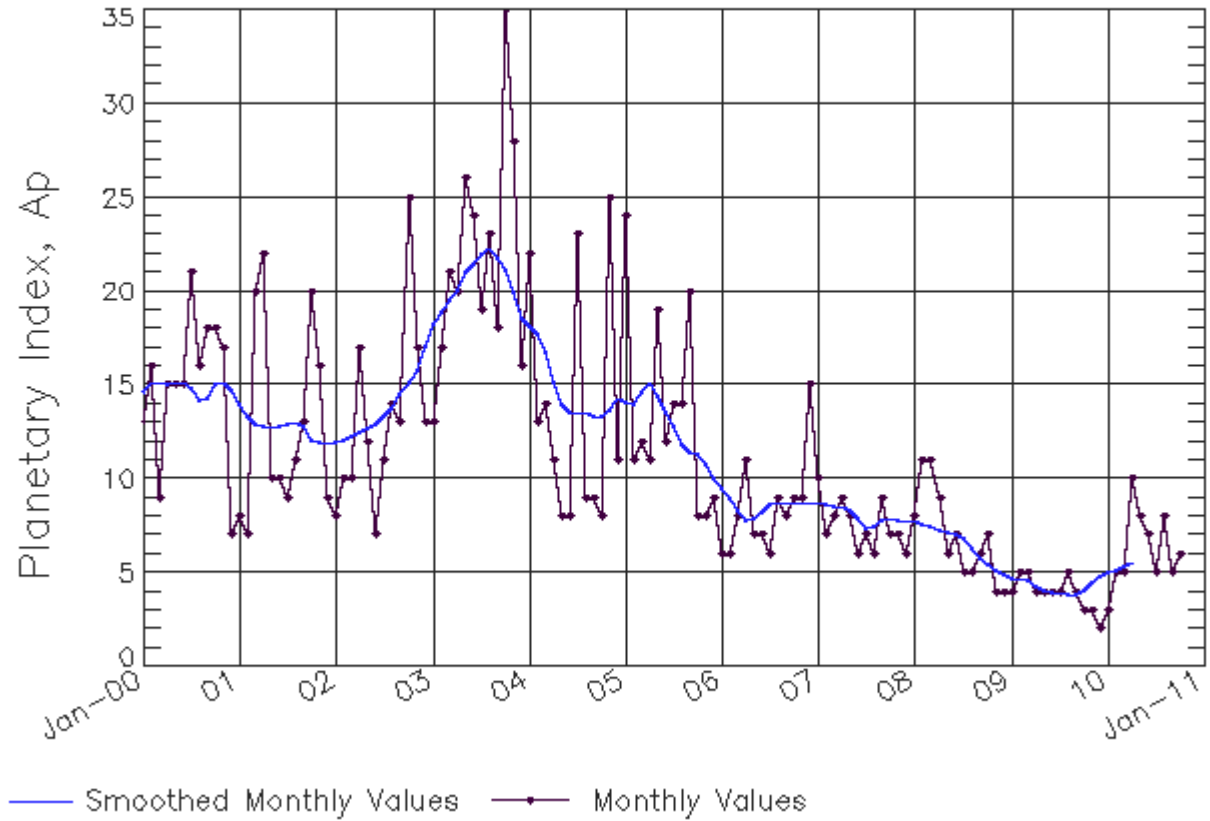
Smoothed F10.7cm Radio Flux Prediction

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2009	69 (***)	69 (***)	69 (***)	69 (***)	70 (***)	70 (***)	71 (***)	72 (***)	73 (***)	74 (***)	75 (***)	75 (***)
2010	76 (***)	77 (***)	78 (***)	78 (***)	80 (1)	82 (1)	84 (2)	85 (3)	87 (4)	90 (4)	93 (5)	96 (6)
2011	99 (7)	103 (8)	106 (8)	109 (9)	112 (9)	115 (9)	117 (9)	119 (9)	121 (9)	123 (9)	125 (9)	127 (9)
2012	128 (9)	130 (9)	132 (9)	133 (9)	134 (9)	135 (9)	136 (9)	137 (9)	138 (9)	139 (9)	140 (9)	140 (9)
2013	141 (9)	141 (9)	141 (9)	141 (9)	141 (9)	141 (9)	141 (9)	141 (9)	140 (9)	140 (9)	139 (9)	139 (9)
2014	138 (9)	137 (9)	136 (9)	136 (9)	135 (9)	134 (9)	132 (9)	131 (9)	130 (9)	129 (9)	127 (9)	126 (9)
2015	125 (9)	123 (9)	122 (9)	120 (9)	119 (9)	117 (9)	116 (9)	114 (9)	113 (9)	111 (9)	110 (9)	108 (9)
2016	106 (9)	105 (9)	103 (9)	102 (9)	100 (9)	99 (9)	97 (9)	96 (9)	94 (9)	93 (9)	92 (9)	90 (9)
2017	89 (9)	88 (9)	86 (9)	85 (9)	84 (9)	83 (9)	82 (9)	80 (9)	79 (9)	78 (9)	77 (9)	76 (9)
2018	75 (9)	75 (9)	74 (9)	73 (9)	72 (9)	71 (9)	71 (9)	70 (9)	69 (9)	69 (9)	68 (9)	67 (9)
2019	67 (9)	66 (9)	66 (9)	65 (9)	65 (9)	65 (9)	64 (9)	64 (9)	63 (9)	63 (9)	63 (9)	63 (9)



ISES Solar Cycle Ap Progression

Observed data through Oct 2010



Updated 2010 Nov 2

NOAA/SWPC Boulder, CO USA

