

Space Weather Highlights
23 May - 29 May 2016

SWPC PRF 2126
30 May 2016

Solar activity was very low on 23, 25, and 27-29 May with only background flare activity observed. Low levels of solar activity were observed on 24 May due to an isolated C1 flare from Region 2546 (S07, L=223, class/area=Cho/550 on 21 May) and on 26 May due to isolated C1 flares from Regions 2546 and 2548 (N13, L=171, class/area=Dsi/130 on 27 May). No Earth-directed coronal mass ejections were observed during the period.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal to moderate levels throughout the week.

Geomagnetic field activity was at quiet levels on 23 and 25-26 May and quiet to unsettled levels throughout the remainder of the period with an isolated period of active conditions observed on 28 May due to coronal hole high speed stream influence.

Space Weather Outlook
30 May - 25 June 2016

Solar activity is expected to be at very low levels with C-class flares possible throughout the outlook period.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to reach high levels on 05-07 and 12-16 Jun with normal to moderate levels expected throughout the remainder of the outlook period.

Geomagnetic field activity is likely to reach G1 (Minor) geomagnetic storm levels on 30 May and 05 Jun and active conditions are expected on 31 May and 06, 11-13, 17 and 24 Jun, all due to the influence of multiple recurrent coronal hole high speed streams. Quiet and quiet to unsettled conditions are expected throughout the remainder of the outlook period under a nominal solar wind regime.



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		
23 May	97	13	460	B1.5	0	0	0	1	0	0	0	0	
24 May	94	24	460	B1.6	1	0	0	4	0	0	0	0	
25 May	94	27	380	B1.5	0	0	0	2	0	0	0	0	
26 May	92	30	420	B1.5	2	0	0	4	0	0	0	0	
27 May	90	19	130	B1.8	0	0	0	0	0	0	0	0	
28 May	88	31	140	B1.7	0	0	0	1	0	0	0	0	
29 May	83	25	80	B1.3	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
	23 May	1.5e+05	1.3e+04	3.1e+03	2.5e+07	
24 May	1.2e+05	1.3e+04	3.3e+03	2.8e+07		
25 May	1.6e+05	1.3e+04	3.2e+03	2.8e+07		
26 May	2.9e+05	1.3e+04	3.1e+03	2.9e+07		
27 May	1.5e+05	1.3e+04	3.3e+03	3.5e+06		
28 May	6.9e+05	1.3e+04	2.9e+03	4.5e+06		
29 May	1.9e+05	1.3e+04	3.1e+03	1.6e+07		

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	23 May	4	0-1-2-2-2-1-2-0	4	0-2-2-3-1-0-0-1	5
24 May	6	1-1-1-3-2-2-2-1	6	1-2-1-4-2-0-0-0	6	2-2-1-3-2-1-1-1
25 May	4	1-1-1-2-2-1-1-0	2	0-2-1-1-0-0-0-0	3	1-2-1-1-1-1-0-0
26 May	4	0-0-1-1-2-2-2-1	0	0-0-0-0-0-0-1-0	4	1-1-1-1-1-1-1-1
27 May	12	3-3-2-2-3-2-3-3	13	2-3-1-4-3-3-2-3	10	3-3-1-2-2-2-3-3
28 May	13	3-3-4-2-2-2-3-2	23	3-3-6-4-3-3-2-2	14	3-2-4-2-2-3-3-3
29 May	8	2-2-1-2-2-2-2-3	9	2-3-3-3-1-1-1-2	7	2-2-2-2-1-1-2-3

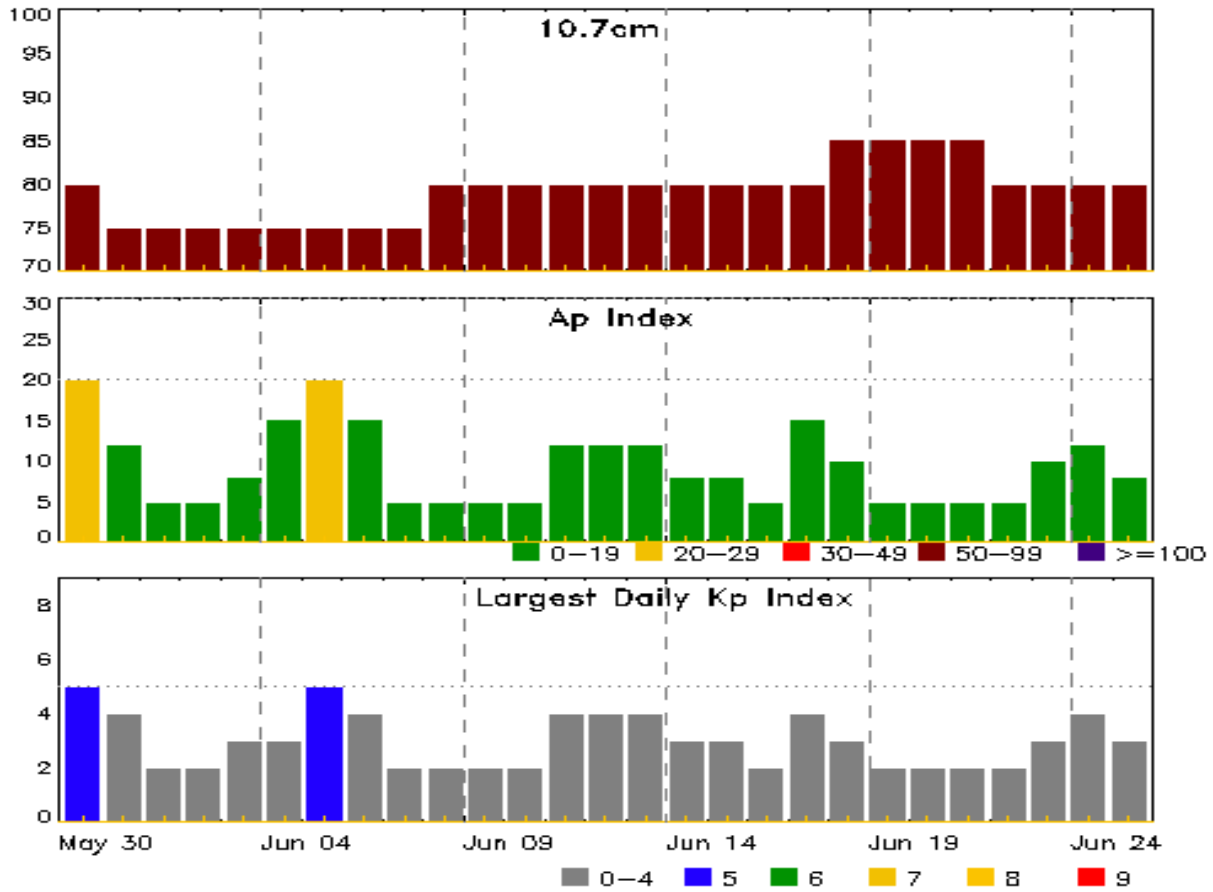


Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
26 May 1418	ALERT: Type IV Radio Emission	26/1359
27 May 2001	WATCH: Geomagnetic Storm Category G1 predicted	
27 May 2015	WARNING: Geomagnetic K = 4	27/2015 - 2359
27 May 2328	EXTENDED WARNING: Geomagnetic K = 4	27/2015 - 28/0600
28 May 0735	WARNING: Geomagnetic K = 4	28/0735 - 1600
28 May 0738	ALERT: Geomagnetic K = 4	28/0737
28 May 0821	WARNING: Geomagnetic K = 5	28/0821 - 1500
28 May 1559	EXTENDED WARNING: Geomagnetic K = 4	28/0735 - 2359



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
30 May	80	20	5	13 Jun	80	12	4
31	75	12	4	14	80	8	3
01 Jun	75	5	2	15	80	8	3
02	75	5	2	16	80	5	2
03	75	8	3	17	80	15	4
04	75	15	3	18	85	10	3
05	75	20	5	19	85	5	2
06	75	15	4	20	85	5	2
07	75	5	2	21	85	5	2
08	80	5	2	22	80	5	2
09	80	5	2	23	80	10	3
10	80	5	2	24	80	12	4
11	80	12	4	25	80	8	3
12	80	12	4				



Energetic Events

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

No Events Observed

Flare List

Date	Time			X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
	Begin	Max	End				
23 May	0741	0745	0747	B2.0			2546
23 May	0813	0818	0824	B3.0	SF	S11W41	2546
23 May	1334	1338	1342	B3.4			
23 May	1705	1708	1711	B2.2			
23 May	2005	2009	2012	B2.5			
23 May	2013	2017	2022	B6.9			
23 May	2255	2258	2302	B2.5			
24 May	0722	0725	0728	B2.7			
24 May	0819	0824	0828	B5.3	SF	S14W57	2546
24 May	0831	0836	0840	B9.6	SF	S08W51	2546
24 May	1016	1020	1023	C1.3	SF	S11W59	2546
24 May	1329	1333	1336	B2.0			
24 May	1702	1705	1712	B4.0			
24 May	2049	2107	2110	B9.5	SF	S08W62	2546
24 May	2218	2221	2226	B2.6			
24 May	2324	2334	2339	B5.5			
25 May	0159	0203	0206	B3.8	SF	S11W56	2546
25 May	2104	2117	2129	B9.3	SF	N17W22	2548
26 May	0335	0339	0344	B2.0			2548
26 May	0516	0516	0520		SF	N13W26	2548
26 May	1253	1253	1257		SF	N14W31	2548
26 May	1325	1337	1350	C1.1	SF	N14W30	2548
26 May	1345	1351	1357	C1.0			2546
26 May	1628	1633	1637	B4.0	SF	N14W34	2548
27 May	1629	1645	1654	B3.9			
27 May	1705	1720	1740	B4.6			2548
28 May	1149	1155	1216	B3.3	SF	S15E28	2549
28 May	2119	2123	2125	B2.8			2549
29 May	0233	0321	0430	B3.4			
29 May	0650	0656	0702	B7.2			2548
29 May	0856	0904	0911	B6.5	SF	N15W71	2548



Flare List

Date	Time			X-ray Class	Optical		Rgn #
	Begin	Max	End		Imp/ Brtns	Location Lat CMD	
29 May	1447	1450	1457	B1.7			2548



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 2546																							
14 May	S07E71	223	250	6	Hhx	1	A																
15 May	S07E57	224	410	5	Hhx	3	A																
16 May	S07E43	225	540	6	Hhx	2	A																
17 May	S07E33	222	540	5	Cho	5	B																
18 May	S07E19	222	480	6	Cho	2	B																
19 May	S07E07	221	440	7	Cho	4	B																
20 May	S07W07	222	520	7	Cho	9	B						2										
21 May	S07W21	223	550	7	Cho	7	B	1					5										
22 May	S07W35	224	480	6	Cho	5	B						1										
23 May	S07W49	224	460	6	Hhx	3	A						1										
24 May	S07W63	225	450	4	Hhx	1	A	1					4										
25 May	S07W75	224	330	4	Hhx	1	A						1										
26 May	S07W88	224	300	3	Hhx	1	A	1															
								3	0	0	14	0	0	0	0	0	0	0	0	0	0		

Crossed West Limb.
Absolute heliographic longitude: 221

Region 2547																							
19 May	S18W28	256	10	3	Bxo	3	B																
20 May	S17W42	257	10	4	Bxo	3	B																
21 May	S17W56	258	plage																				
22 May	S17W70	259	plage																				
23 May	S17W84	259	plage																				
								0	0	0	0	0	0	0	0	0	0	0	0	0	0		

Crossed West Limb.
Absolute heliographic longitude: 256

Region 2548																							
24 May	N13W08	170	10	4	Bxo	3	B																
25 May	N13W22	171	50	6	Dao	6	B						1										
26 May	N13W36	172	120	8	Dso	9	B	1					4										
27 May	N13W49	171	130	8	Dsi	9	B																
28 May	N11W62	170	120	8	Cso	8	B																
29 May	N14W78	174	60	2	Hsx	2	A						1										
								1	0	0	6	0	0	0	0	0	0	0	0	0	0		

Still on Disk.
Absolute heliographic longitude: 170



Region Summary - continued

Date	Location		Sunspot Characteristics				Flares													
	Lat	CMD	Helio Lon	Area 10 ⁻⁶	Extent hemi.	Spot (helio) Class	Spot Count	Mag Class	X-ray			Optical								
									C	M	X	S	1	2	3	4				
Region 2549																				
28 May	S14E18		90	20	4	Dro	3	B					1							
29 May	S14E03		93	20	5	Cro	3	B												
									0	0	0	1	0	0	0	0	0			

Still on Disk.

Absolute heliographic longitude: 93

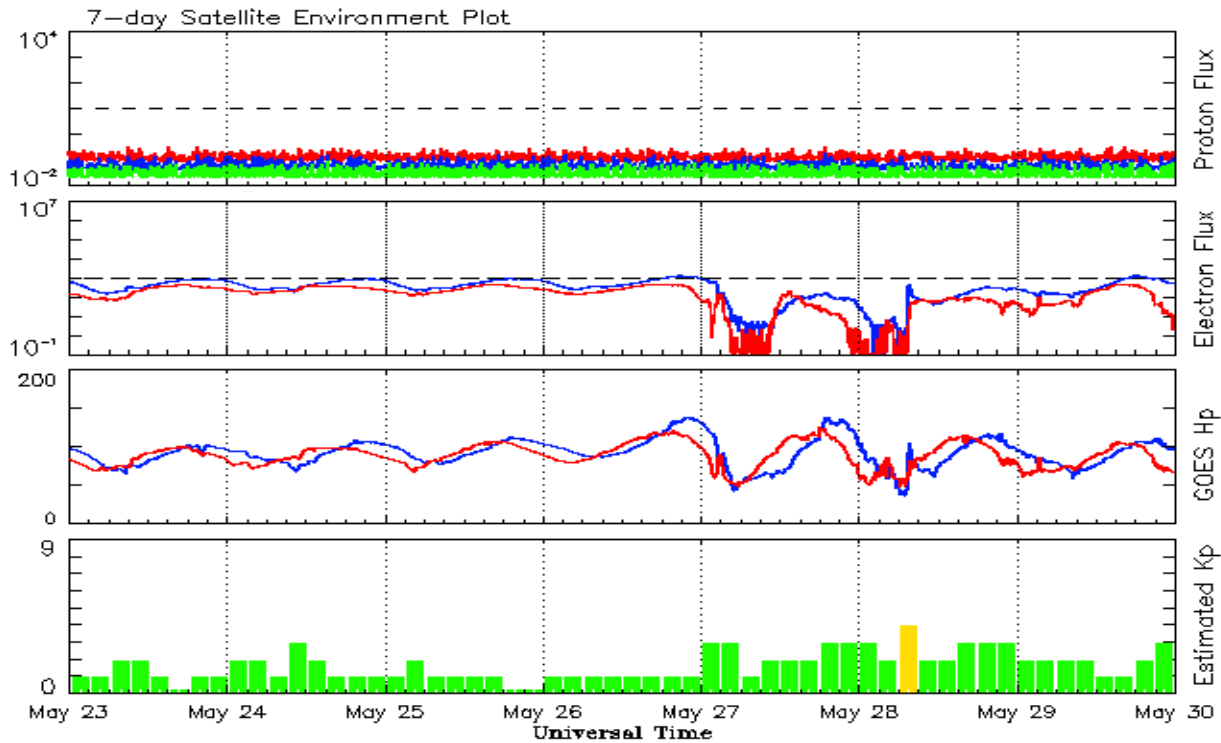


Recent Solar Indices (preliminary)
Observed monthly mean values

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	
2014										
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	45.7	120.1	123.3	9	12.7	
June	77.3	39.9	0.53	73.1	43.3	123.2	119.5	14	13.0	
July	68.4	39.5	0.58	68.2	41.0	107.0	116.0	10	13.1	
August	61.6	38.6	0.63	65.5	39.8	106.2	113.3	16	13.1	
September	72.5	47.2	0.65	64.0	39.6	102.1	110.8	16	12.8	
October	59.5	38.2	0.62	61.8	38.6	104.1	107.9	15	12.5	
November	61.8	37.3	0.61			109.6		13		
December	54.1	34.8	0.64			112.8		15		
2016										
January	50.4	34.0	0.67			103.5		10		
February	56.0	34.3	0.61			103.5		10		
March	40.9	32.9	0.80			91.6		11		
April	39.2	22.8	0.58			93.4		10		

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 23 May 2016*

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.

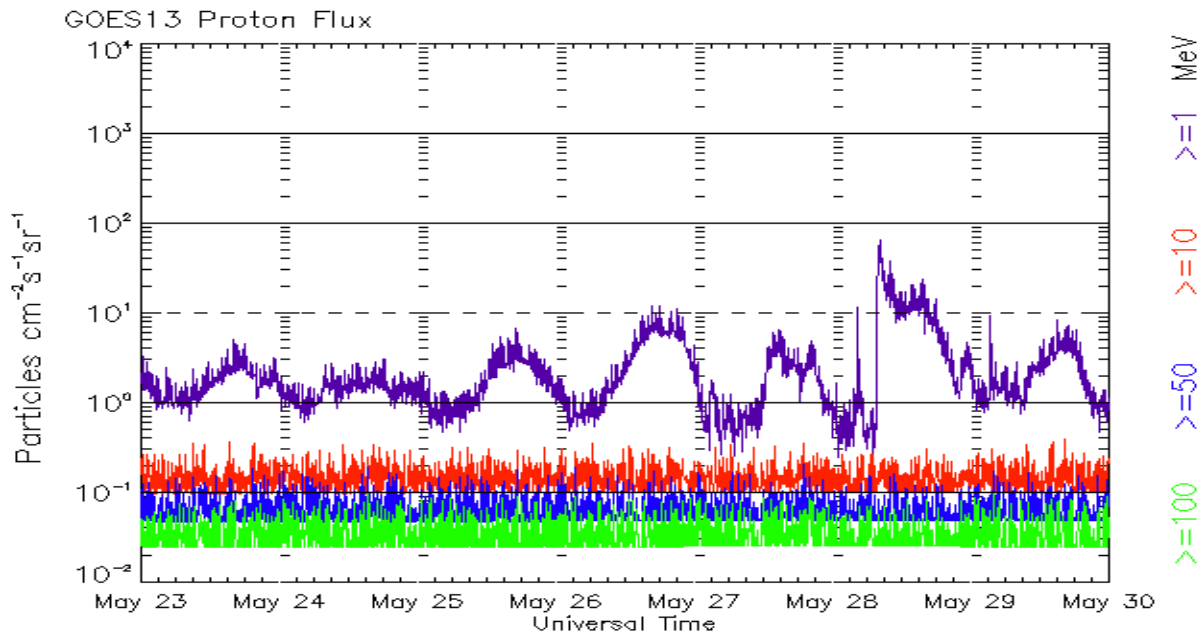
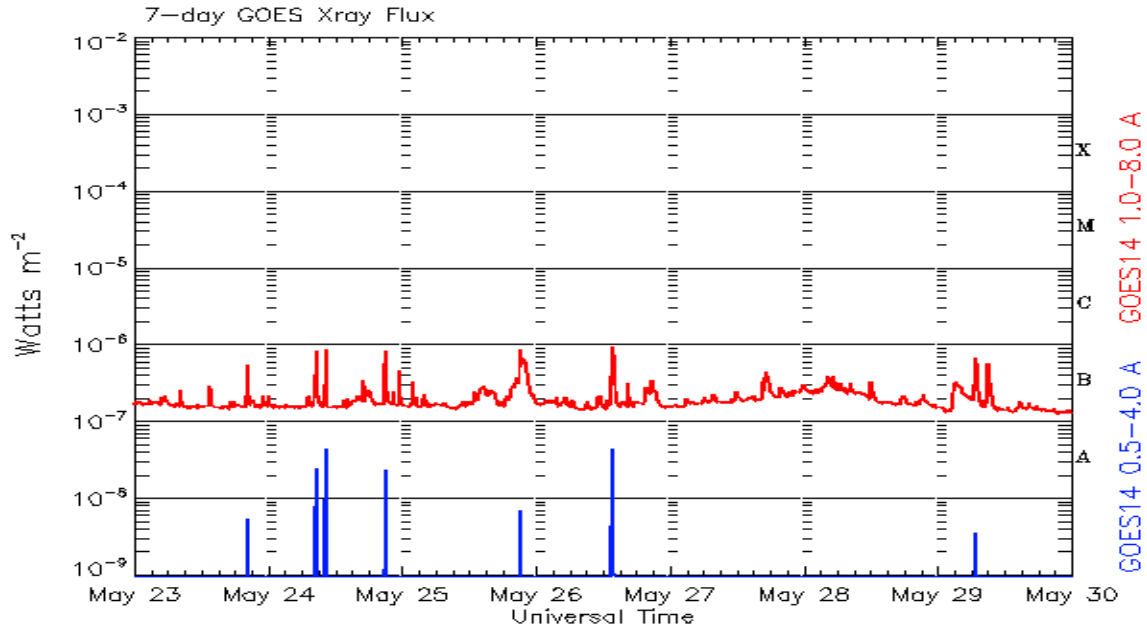
The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

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 23 May 2016*

The x-ray plots contains five-minute averages x-ray flux (Watt/m²) 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/cm² -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.



Preliminary Report and Forecast of Solar Geophysical Data (The Weekly)

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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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