

Solar activity was at low levels. Region 2683 (N14, L=119, class/area Hkx/280 on 28 Sep) produced the strongest flare of the period, a C1 at 26/0234 UTC. All active regions on the disk remained relatively quiet, simple and stable. No Earth-directed CMEs were observed during the reporting period.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit ranged from normal background to very high levels. Normal background levels on 25 Sep increased to moderate levels on 26-27 Sep. A further increase to high levels on 28-29 Sep and 01 Oct, with a peak of very high levels on 30 Sep, was observed in response to activity generated by a positive polarity CH HSS. A maximum flux of 52,054 pfu was observed at 30/1635 UTC.

Geomagnetic field activity ranged from quiet to G3 (Strong) storm levels in response to a positive polarity CH HSS. Quiet to unsettled conditions on 25 Sep and quiet conditions at 26 Sep gave way to G2 (Moderate) storm levels on 27 Sep due to the onset of the CH HSS. Conditions increased to active to G3 (Strong) levels on 28 Sep as wind speed continued to increase, reaching a peak of just above 700 km/s. Geomagnetic activity quickly decreased as wind speeds gradually waned over the next several days. Quiet to active activity was observed on 30 Sep and quiet to unsettled was observed on 29 Sep and 01 Oct. The period ended with solar wind speeds near 450 km/s.

### **Space Weather Outlook** **02 October - 28 October 2017**

Solar activity is expected to be very low, with a slight chance for C-class 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 02-05 Oct, 07-09 Oct, 12-21 Oct and 01 Nov; very high levels are expected on 27 Oct. Elevated flux levels are expected in anticipation of influence from multiple, recurrent CH HSSs. Normal to moderate levels are expected for the remainder of the outlook period.

Geomagnetic field activity is expected to be at unsettled levels on 02 Oct, 06 Oct, 08 Oct, 16-17 Oct and 28 Oct; active levels are expected on 07 Oct, 15 Oct and 26-27 Oct; G1 (Minor) storm levels are expected on 11-14 Oct; G2 (Moderate) storm levels are expected on 24 Oct and G3 (Strong) storm levels are expected on 25 Oct. All increased activity is expected in response to multiple, recurrent CH HSSs. Quiet conditions are expected over the remainder of the outlook period.



### *Daily Solar Data*

Date	Radio Flux 10.7cm	Sun spot No.	Sunspot Area (10 <sup>-6</sup> hemi.)	X-ray Background Flux	Flares							
					X-ray			Optical				
					C	M	X	S	1	2	3	4
25 September	90	36	560	B1.1	0	0	0	1	0	0	0	0
26 September	91	40	460	B1.3	1	0	0	1	0	0	0	0
27 September	91	35	530	A8.1	1	0	0	0	1	0	0	0
28 September	91	40	480	A9.1	0	0	0	0	0	0	0	0
29 September	90	39	460	A8.1	0	0	0	1	0	0	0	0
30 September	89	38	440	A7.3	0	0	0	1	0	0	0	0
01 October	86	34	430	A5.4	0	0	0	0	0	0	0	0

### *Daily Particle Data*

Date	Proton Fluence (protons/cm <sup>2</sup> -day -sr)			Electron Fluence (electrons/cm <sup>2</sup> -day -sr)		
	>1 MeV	>10 MeV	>100 MeV	>0.6 MeV	>2MeV	>4 MeV
	25 September		7.7e+05	1.5e+04	2.9e+03	
26 September		7.5e+05	1.5e+04	3.2e+03		3.7e+06
27 September		2.9e+06	1.4e+04	3.0e+03		1.9e+06
28 September		4.6e+06	1.3e+04	3.0e+03		9.4e+07
29 September		4.7e+06	1.4e+04	3.3e+03		1.2e+09
30 September		6.4e+06	1.4e+04	3.4e+03		1.4e+09
01 October		4.9e+06	1.4e+04	3.4e+03		4.8e+08

### *Daily Geomagnetic Data*

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	25 September	5	3-2-1-1-1-1-0	2	3-1-0-0-0-0-0-0	5
26 September	3	0-0-2-1-1-1-1-2	2	0-1-1-0-0-0-0-2	4	1-1-2-1-1-0-0-2
27 September	24	3-2-4-4-3-2-5-5	47	2-1-5-6-6-6-4-5	37	3-2-5-4-4-3-6-6
28 September	41	5-6-6-4-3-3-3-5	72	5-6-8-5-5-6-3-3	55	6-7-7-5-4-4-4-5
29 September	8	3-2-3-2-2-1-1-2	29	3-2-4-6-6-3-1-2	12	3-2-3-3-3-2-2-2
30 September	11	2-3-3-2-2-3-2-3	36	2-3-5-4-6-6-3-3	16	2-3-4-2-3-4-2-3
01 October	10	3-1-3-2-2-2-2-3	23	3-1-4-6-4-3-2-2	18	3-2-3-2-2-3-2-3



## *Alerts and Warnings Issued*

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
25 Sep 2046	WATCH: Geomagnetic Storm Category G2 predicted	
27 Sep 0611	WARNING: Geomagnetic K = 4	27/0610 - 1500
27 Sep 0744	ALERT: Geomagnetic K = 4	27/0745
27 Sep 0745	EXTENDED WARNING: Geomagnetic K = 4	27/0610 - 2100
27 Sep 0749	WARNING: Geomagnetic K = 5	27/0749 - 1800
27 Sep 0848	ALERT: Geomagnetic K = 5	27/0848
27 Sep 1705	EXTENDED WARNING: Geomagnetic K = 5	27/0749 - 28/0300
27 Sep 1705	EXTENDED WARNING: Geomagnetic K = 4	27/0610 - 28/1200
27 Sep 1947	WATCH: Geomagnetic Storm Category G2 predicted	
27 Sep 2011	ALERT: Geomagnetic K = 5	27/2010
27 Sep 2013	WARNING: Geomagnetic K = 6	27/2012 - 28/0300
27 Sep 2024	ALERT: Geomagnetic K = 6	27/2024
27 Sep 2203	ALERT: Geomagnetic K = 5	27/2202
27 Sep 2222	ALERT: Geomagnetic K = 6	27/2220
28 Sep 0132	ALERT: Geomagnetic K = 5	28/0130
28 Sep 0245	EXTENDED WARNING: Geomagnetic K = 4	27/0610 - 28/1800
28 Sep 0245	EXTENDED WARNING: Geomagnetic K = 6	27/2012 - 28/0900
28 Sep 0245	EXTENDED WARNING: Geomagnetic K = 5	27/0749 - 28/1500
28 Sep 0303	ALERT: Geomagnetic K = 6	28/0259
28 Sep 0412	ALERT: Geomagnetic K = 5	28/0411
28 Sep 0509	ALERT: Geomagnetic K = 6	28/0508
28 Sep 0537	WARNING: Geomagnetic K >= 7	28/0536 - 0900
28 Sep 0600	ALERT: Geomagnetic K = 7	28/0559
28 Sep 0636	ALERT: Geomagnetic K = 5	28/0635
28 Sep 0749	ALERT: Geomagnetic K = 6	28/0749
28 Sep 0805	ALERT: Geomagnetic K = 7	28/0805
28 Sep 0822	EXTENDED WARNING: Geomagnetic K = 6	27/2012 - 28/1500
28 Sep 1007	ALERT: Geomagnetic K = 5	28/1007
28 Sep 1252	ALERT: Electron 2MeV Integral Flux >= 1000pfu	28/1235

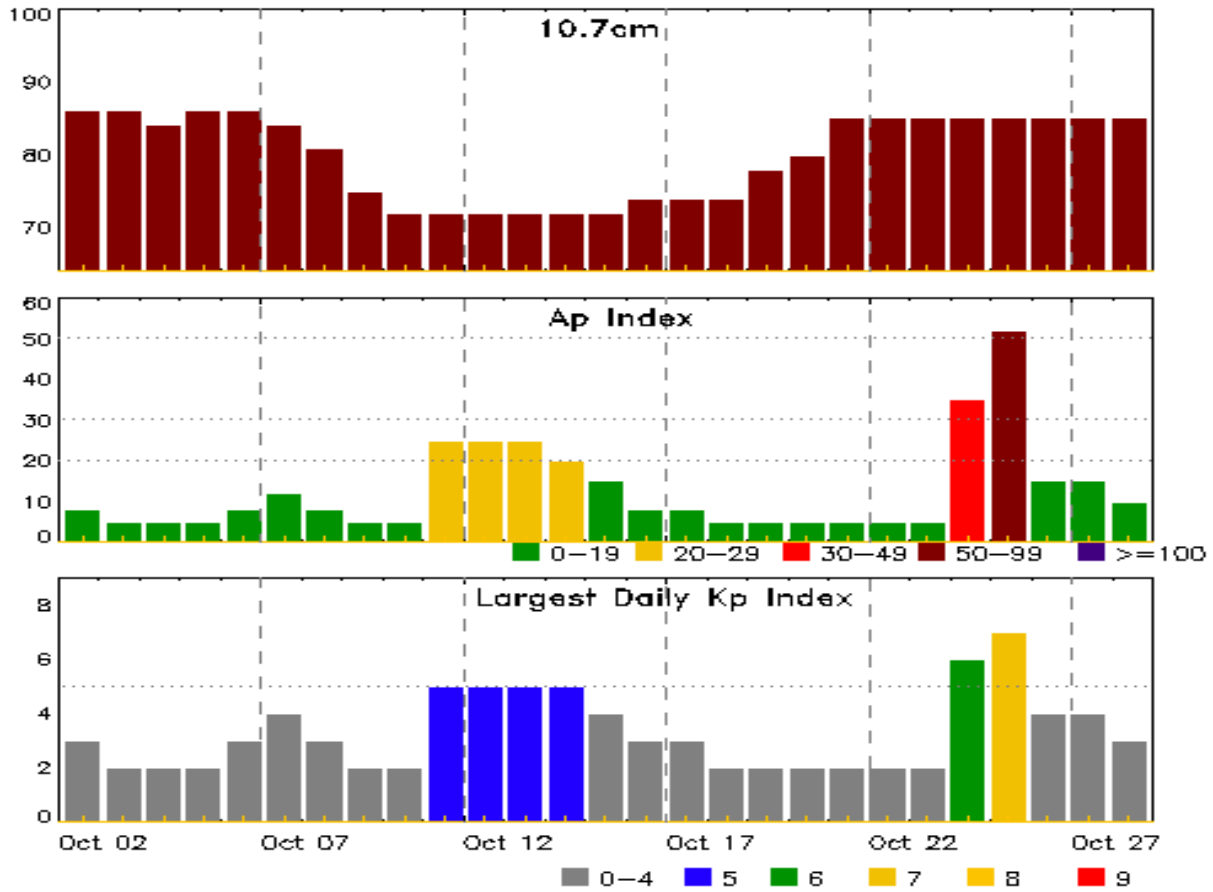


### *Alerts and Warnings Issued*

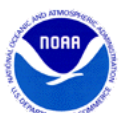
<b>Date &amp; Time of Issue UTC</b>	<b>Type of Alert or Warning</b>	<b>Date &amp; Time of Event UTC</b>
28 Sep 1431	EXTENDED WARNING: Geomagnetic K = 5	27/0749 - 28/2100
28 Sep 1436	EXTENDED WARNING: Geomagnetic K = 4	27/0610 - 29/1200
28 Sep 2048	EXTENDED WARNING: Geomagnetic K = 5	27/0749 - 29/0300
28 Sep 2330	ALERT: Geomagnetic K = 5	28/2330
29 Sep 0500	CONTINUED ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	28/1235
29 Sep 1151	EXTENDED WARNING: Geomagnetic K = 4	27/0610 - 29/1800
30 Sep 0503	CONTINUED ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	28/1235
30 Sep 0521	WARNING: Geomagnetic K = 4	30/0520 - 1500
30 Sep 0903	ALERT: Geomagnetic K = 4	30/0859
30 Sep 1456	EXTENDED WARNING: Geomagnetic K = 4	30/0520 - 2100
30 Sep 2030	EXTENDED WARNING: Geomagnetic K = 4	30/0520 - 01/0300
01 Oct 0255	EXTENDED WARNING: Geomagnetic K = 4	30/0520 - 01/1200
01 Oct 0736	CONTINUED ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	28/1235



## 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
02 Oct	86	8	3	16 Oct	74	8	3
03	86	5	2	17	74	8	3
04	84	5	2	18	74	5	2
05	86	5	2	19	78	5	2
06	86	8	3	20	80	5	2
07	84	12	4	21	85	5	2
08	81	8	3	22	85	5	2
09	75	5	2	23	85	5	2
10	72	5	2	24	85	35	6
11	72	25	5	25	85	52	7
12	72	25	5	26	85	15	4
13	72	25	5	27	85	15	4
14	72	20	5	28	85	10	3
15	72	15	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 #	245	2695	II

**No Events Observed**

### *Flare List*

Date	Time			X-ray Class	Imp/ Brtns	Optical Location Lat CMD	Rgn #
	Begin	Max	End				
25 Sep	0214	0235	0246	B5.7			2681
25 Sep	1251	1256	1259	B3.3			
25 Sep	1435	1514	1532	B5.9	SF	S09E10	2681
25 Sep	1709	1712	1714	B2.9			2681
25 Sep	2038	2046	2058	B2.5			2683
26 Sep	0216	0220	0225	B2.3			2683
26 Sep	0229	0234	0238	C1.8			2683
26 Sep	0601	0605	0608	B4.6			2682
26 Sep	0747	0751	0756	B2.7			2683
26 Sep	0923	0926	0930	B2.1			2683
26 Sep	1341	1345	1349	B3.0	SF	N13E64	2683
27 Sep	0001	U0108	0129	C1.7	1F	S13E60	2683
27 Sep	1351	1406	1429	B2.4			2682
27 Sep	1746	1750	1803	B2.1			2681
28 Sep	1409	1434	1533	B2.9			2681
29 Sep	1325	1331	1338	B2.2			2682
29 Sep	1428	1432	1437	B2.5	SF	S12E16	2682
30 Sep	1704	1711	1715	B3.5	SF	S12E00	2682



## Region Summary

Date	Location		Sunspot Characteristics				Flares											
	Lat CMD	Helio Lon	Area 10 <sup>6</sup> hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical							
								C	M	X	S	1	2	3	4			
<b>Region 2681</b>																		
20 Sep	S12E73	178	60	2	Hsx	1	A											
21 Sep	S13E59	179	80	2	Hsx	1	A											
22 Sep	S13E46	180	80	2	Hsx	1	A											
23 Sep	S13E32	179	90	3	Cso	2	B											
24 Sep	S13E19	179	90	2	Hsx	1	A											
25 Sep	S12E04	179	100	3	Cso	3	B					1						
26 Sep	S15W09	181	120	6	Cso	7	B											
27 Sep	S13W21	179	80	3	Hsx	1	A											
28 Sep	S14W35	180	70	2	Hsx	1	A											
29 Sep	S14W48	180	70	2	Hsx	1	A											
30 Sep	S14W61	180	60	2	Hsx	1	A											
01 Oct	S14W74	180	60	2	Hsx	1	A											
										0	0	0	1	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 179

<b>Region 2682</b>																		
24 Sep	S09E71	127	180	3	Hsx	1	A											
25 Sep	S10E59	126	200	3	Hax	1	A											
26 Sep	S11E46	122	180	3	Hax	1	A											
27 Sep	S10E31	127	180	3	Hax	2	A											
28 Sep	S09E21	124	130	11	Cao	7	B											
29 Sep	S09E08	124	120	9	Cao	6	B					1						
30 Sep	S11W05	124	110	9	Cso	5	B					1						
01 Oct	S11W18	124	100	3	Hsx	1	A											
										0	0	0	2	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 124



### *Region Summary - continued*

Date	Location		Sunspot Characteristics				Flares											
	Lat CMD	Helio Lon	Area 10 <sup>-6</sup> hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical							
								C	M	X	S	1	2	3	4			
<b>Region 2683</b>																		
25 Sep	N11E76	109	260	3	Hkx	2	A											
26 Sep	N12E60	111	160	5	Dao	2	B	1				1						
27 Sep	N13E46	112	270	4	Hkx	2	A	1					1					
28 Sep	N14E26	119	280	5	Hkx	2	A											
29 Sep	N14E21	111	270	4	Hkx	2	A											
30 Sep	N13E08	111	270	4	Hkx	2	A											
01 Oct	N13W05	111	270	4	Hkx	2	A											
								2	0	0	1	1	0	0	0	0		

Still on Disk.

Absolute heliographic longitude: 111



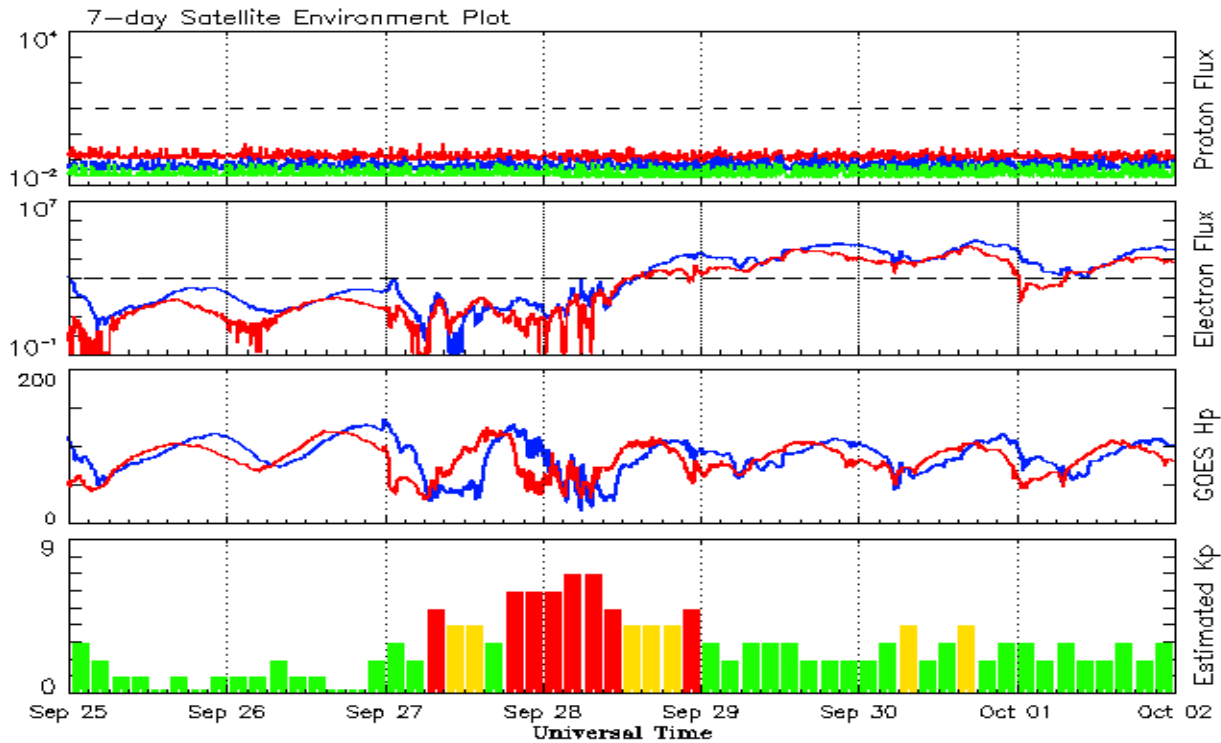


**Recent Solar Indices (preliminary)**  
**Observed monthly mean values**

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	
<b>2015</b>										
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	59.0	36.7	109.6	105.3	13	12.5	
December	54.1	34.8	0.64	55.1	34.7	112.8	102.5	15	12.5	
<b>2016</b>										
January	50.4	34.2	0.67	51.4	32.6	103.5	99.9	10	12.3	
February	56.0	33.8	0.61	49.6	31.5	103.5	98.1	10	12.0	
March	40.9	32.5	0.80	47.7	30.2	91.6	96.6	11	11.8	
April	39.2	22.7	0.58	45.0	28.7	93.4	95.3	10	11.8	
May	48.9	30.9	0.64	42.1	26.9	93.1	93.2	12	11.7	
June	19.3	12.3	0.65	39.0	24.9	81.9	90.4	9	11.4	
July	36.8	19.4	0.53	36.5	23.1	85.9	87.7	10	11.2	
August	50.4	30.1	0.60	34.2	21.6	85.0	85.5	10	11.2	
September	37.4	26.8	0.72	32.1	19.9	87.8	83.7	16	11.3	
October	30.0	20.0	0.67	31.1	18.9	86.1	82.5	16	11.6	
November	22.4	12.8	0.57	29.4	17.9	78.7	81.1	10	11.6	
December	17.6	11.1	0.64	28.1	17.1	75.1	80.0	10	11.4	
<b>2017</b>										
January	28.1	15.7	0.55	27.3	16.7	77.4	79.4	10	11.3	
February	22.0	15.8	0.71	25.5	16.0	76.9	78.7	10	11.3	
March	25.4	10.6	0.42	24.6	15.5	74.6	78.6	15	11.5	
April	30.4	19.6	0.64			80.9		13		
May	18.1	11.3	0.62			73.5		9		
June	18.0	11.6	0.64			74.8		7		
July	18.8	11.0	0.59			77.7		9		
August	25.0	19.9	0.80			77.9		12		
September	42.2	26.2	0.62			92.0		19		

**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 25 September 2017*

The proton flux plot contains the five-minute averaged integral proton flux (protons/cm<sup>2</sup>-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.

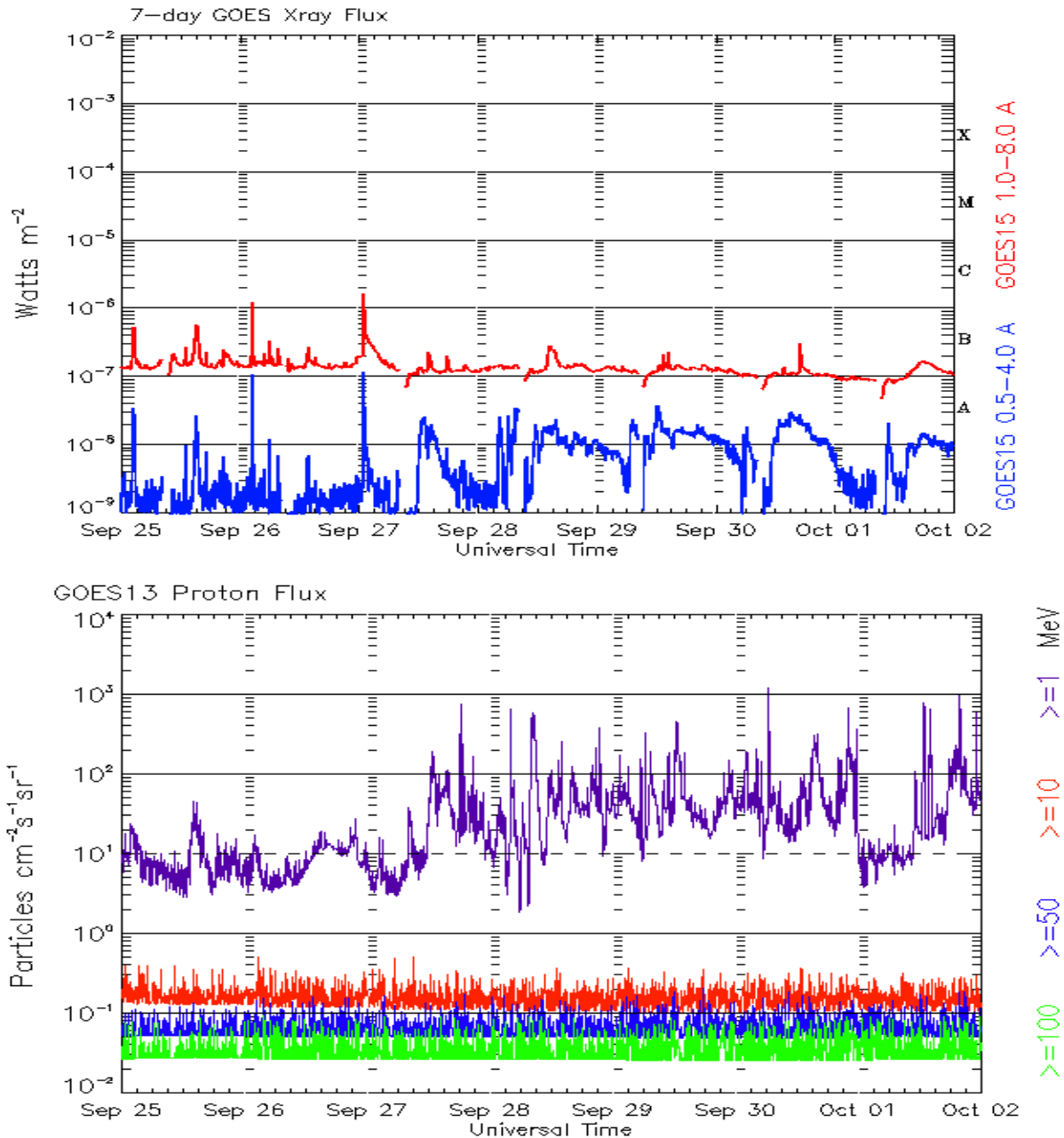
The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm<sup>2</sup>-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

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.

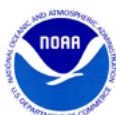




*Weekly GOES Satellite X-ray and Proton Plots  
Week Beginning 25 September 2017*

The x-ray plots contains five-minute averages x-ray flux (Watt/m<sup>2</sup>) 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<sup>2</sup> -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

The Weekly has been published continuously since 1951 and is available online since 1997.

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