Space Weather Highlights **SWPC PRF 2207**
11 December - 17 December 2017 **18 December 2017**

Solar activity was quiet throughout the entire reporting period. The strongest event was a B6 flare from a plage region on the E. limb at 11/0052 UTC. A filament was observed in SDO/AIA 304 imagery lifting off of the SE quadrant, near S25E47, at approximately 15/1229 UTC. The event was modeled using WSA/Enlil which suggested the potential for the periphery of the CME to become geoeffective around 19 Dec. No additional Earth-directed CMEs were observed.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal to high levels on 11 and 17 Dec, normal to moderate levels were observed on 12 and 13 Dec and moderate levels were observed on 14-16 Dec. A maximum flux of 2,300 pfu was observed at 11/0000 UTC.

Geomagnetic field activity ranged from quiet to G1 (Minor), mostly due to CH HSS influence, during the reporting period. Quiet levels were observed on 15-16 Dec; quiet to unsettled levels were observed on 11 and 13-14 Dec; quiet to active levels were observed on 12 Dec; the peak levels of quiet to G1 (Minor) levels were observed 17 Dec.

Space Weather Outlook
18 December - 13 January 2018

Solar activity is expected to be at very low levels 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 reach moderate levels on 18 Dec, 22 Dec - 01 Jan, and 07-13 Jan; high levels are likely on 19-21 Dec and 02-06 Jan. All increases in electron flux are anticipated due to the expected influence of recurrent CH HSSs.

Geomagnetic field activity is expected to reach G1 (Minor) storm levels on 18-19 Dec, 01 Jan, and 13 Jan. Active conditions are likely on 20 Dec, 27 Dec, 02 Jan, and 08 Jan. Unsettled levels are likely on 21-22 Dec, 28 Dec, 31 Dec, 03 Jan and 09 Jan. All elevations in geomagnetic field activity are anticipated from multiple, recurrent CH HSSs. The remainder of the forecast period is expected to observe quiet conditions.

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
11 December	72	13	10	A4.3	0	0	0	0	0	0	0	0
12 December	71	13	10	A4.1	0	0	0	0	0	0	0	0
13 December	72	0	0	A4.0	0	0	0	0	0	0	0	0
14 December	72	0	0	A4.1	0	0	0	0	0	0	0	0
15 December	72	0	0	A3.9	0	0	0	0	0	0	0	0
16 December	71	0	0	A3.8	0	0	0	0	0	0	0	0
17 December	71	0	0	A3.9	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)	
	>1 MeV	>10 MeV	>100 MeV	>0.6 MeV	>2MeV	>4 MeV
11 December		4.3e+07	1.5e+04	3.6e+03	1.5e+07	
12 December		6.9e+05	1.6e+04	3.5e+03	6.9e+06	
13 December		3.0e+05	1.5e+04	3.6e+03	6.3e+06	
14 December		3.7e+05	1.6e+04	3.5e+03	1.0e+07	
15 December		7.7e+05	1.6e+04	3.8e+03	1.1e+07	
16 December		8.0e+05	1.6e+04	3.7e+03	8.8e+06	
17 December		2.9e+06	1.6e+04	3.5e+03	1.5e+07	

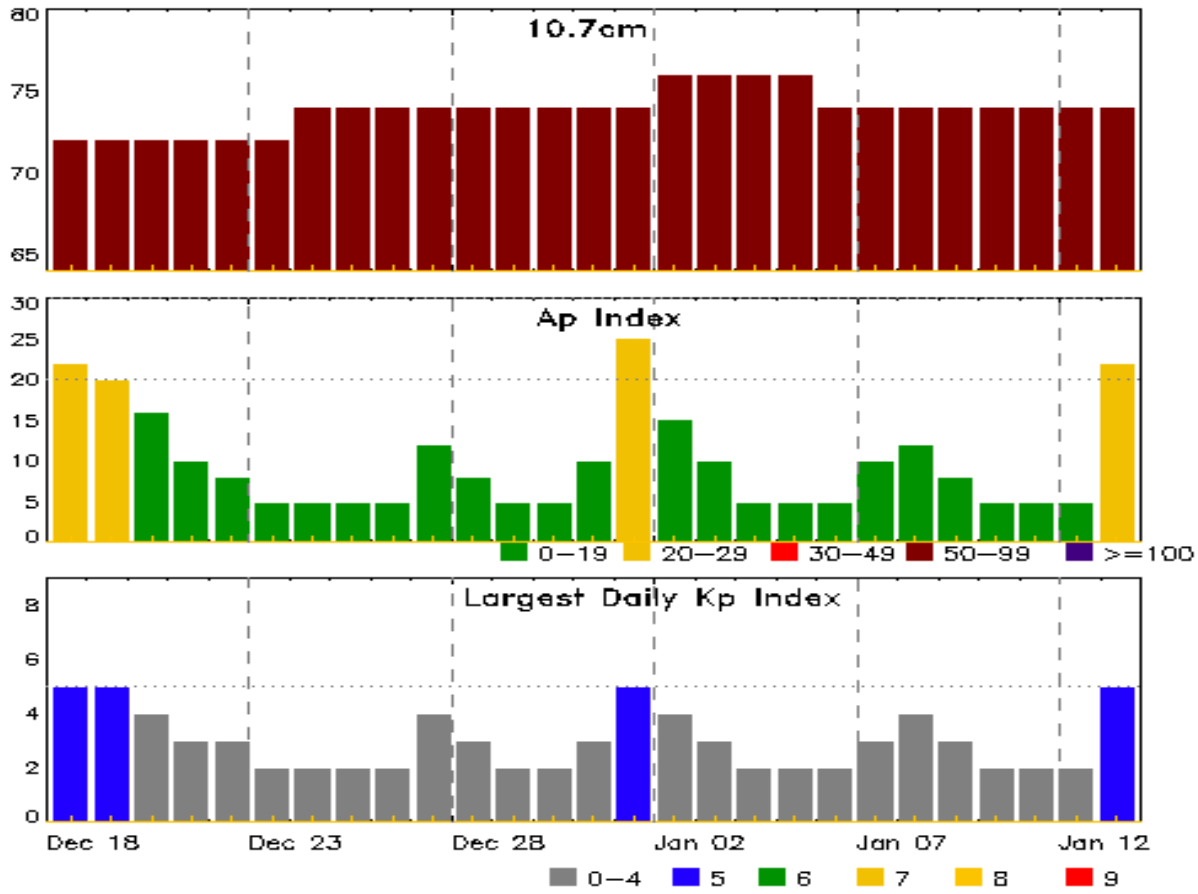
Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
11 December	8	0-2-3-2-3-2-2-1	25	0-1-3-6-6-3-2-1	10	1-3-3-2-3-2-3-1
12 December	9	2-2-2-3-1-2-3-2	19	0-3-3-5-4-3-4-2	13	3-3-3-3-2-3-4-3
13 December	4	0-0-1-1-2-2-2-2	9	1-0-2-4-4-2-1-0	7	1-1-2-1-2-2-3-3
14 December	2	2-0-0-0-1-1-1-1	3	1-0-0-2-3-0-0-0	5	3-1-1-1-1-0-1-1
15 December	3	0-1-0-1-2-1-1-1	2	0-0-0-1-2-1-1-1	5	1-1-1-1-2-1-1-2
16 December	3	0-1-1-0-1-1-1-2	3	0-0-1-2-2-0-0-1	4	0-0-1-1-1-1-1-2
17 December	16	2-2-4-3-3-3-4-3	40	0-2-4-6-5-6-5-4	12	3-3-5-3-3-4-5-4

Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
11 Dec 0825	WARNING: Geomagnetic K = 4	11/0825 - 1500
11 Dec 1431	EXTENDED WARNING: Geomagnetic K = 4	11/0825 - 2359
12 Dec 1942	WARNING: Geomagnetic K = 4	12/1943 - 2359
12 Dec 2002	ALERT: Geomagnetic K = 4	12/2002
15 Dec 1515	WATCH: Geomagnetic Storm Category G1 predicted	
16 Dec 1813	WATCH: Geomagnetic Storm Category G1 predicted	
17 Dec 0438	WARNING: Geomagnetic K = 4	17/0445 - 1500
17 Dec 0626	ALERT: Geomagnetic K = 4	17/0625
17 Dec 0705	WARNING: Geomagnetic K = 5	17/0704 - 1200
17 Dec 0722	ALERT: Geomagnetic K = 5	17/0721
17 Dec 1443	EXTENDED WARNING: Geomagnetic K = 4	17/0445 - 18/0900
17 Dec 1902	WARNING: Geomagnetic K = 5	17/1900 - 18/0300
17 Dec 2027	ALERT: Geomagnetic K = 5	17/2027
17 Dec 2126	ALERT: Electron 2MeV Integral Flux >= 1000pfu	17/2100

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
18 Dec	72	22	5	01 Jan	74	25	5
19	72	20	5	02	76	15	4
20	72	16	4	03	76	10	3
21	72	10	3	04	76	5	2
22	72	8	3	05	76	5	2
23	72	5	2	06	74	5	2
24	74	5	2	07	74	10	3
25	74	5	2	08	74	12	4
26	74	5	2	09	74	8	3
27	74	12	4	10	74	5	2
28	74	8	3	11	74	5	2
29	74	5	2	12	74	5	2
30	74	5	2	13	74	22	5
31	74	10	3				

Energetic Events

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

No Events Observed

Flare List

	Time						
				Optical			
Date	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
11 Dec	0040	0052	0059	B6.2			
13 Dec	2141	2144	2148	B1.2			
14 Dec	0510	0526	0545	B1.1			
14 Dec	2144	2208	2225	B1.1			

Region Summary

	Location		Sunspot Characteristics					Flares							
		Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
Date	Lat CMD	Lon	10^{-6} hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4
		Region 2690													
06 Dec	N07W17	332	10	2	Bxo	3	B								
07 Dec	N06W32	334	10	1	Axx	1	A								
08 Dec	N06W46	335	plage												
09 Dec	N06W59	335	plage												
10 Dec	N06W72	335	plage												
11 Dec	N06W87	336	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 332

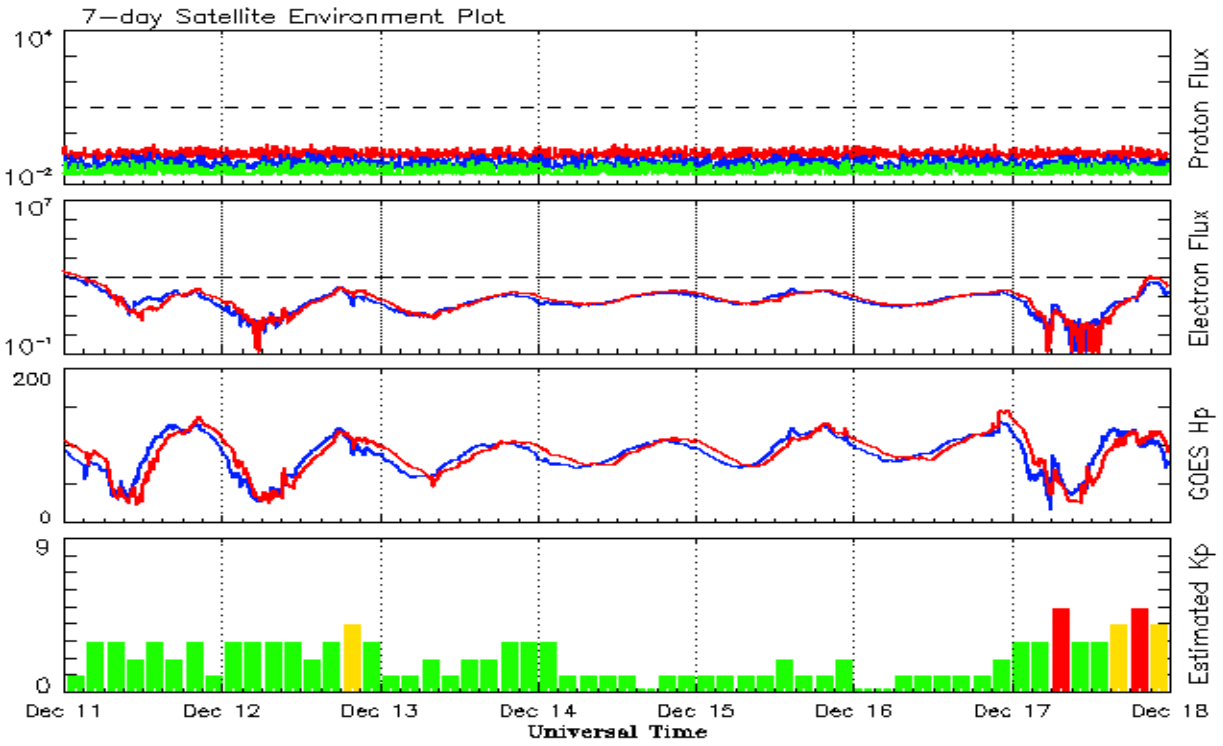
		Region 2691													
10 Dec	S03E42	221	10	1	Axx	1	A								
11 Dec	S03E29	220	10	1	Bxo	3	B								
12 Dec	S03E16	220	10	4	Bxo	3	B								
13 Dec	S03E01	222	plage												
14 Dec	S03W12	222	plage												
15 Dec	S03W25	222	plage												
16 Dec	S03W38	222	plage												
17 Dec	S03W52	222	plage												
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 222

Recent Solar Indices (preliminary)
Observed monthly mean values

	Sunspot Numbers					Radio Flux		Geomagnetic	
	Observed values		Ratio	Smooth values		Penticton	Smooth	Planetary	Smooth
Month	SEC	RI	RI/SEC	SEC	RI	10.7 cm	Value	Ap	Value
				2015					
December	54.1	34.8	0.64	55.1	34.7	112.8	102.5	15	12.5
				2016					
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
				2017					
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	15.9	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	19.4	0.64	24.3	14.9	80.9	78.4	13	11.5
May	18.1	11.3	0.62	23.1	14.0	73.5	77.7	9	11.3
June	18.0	11.5	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	
October	16.0	7.9	0.49			76.4		11	
November	7.7	3.4	0.44			72.1		11	

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 11 December 2017

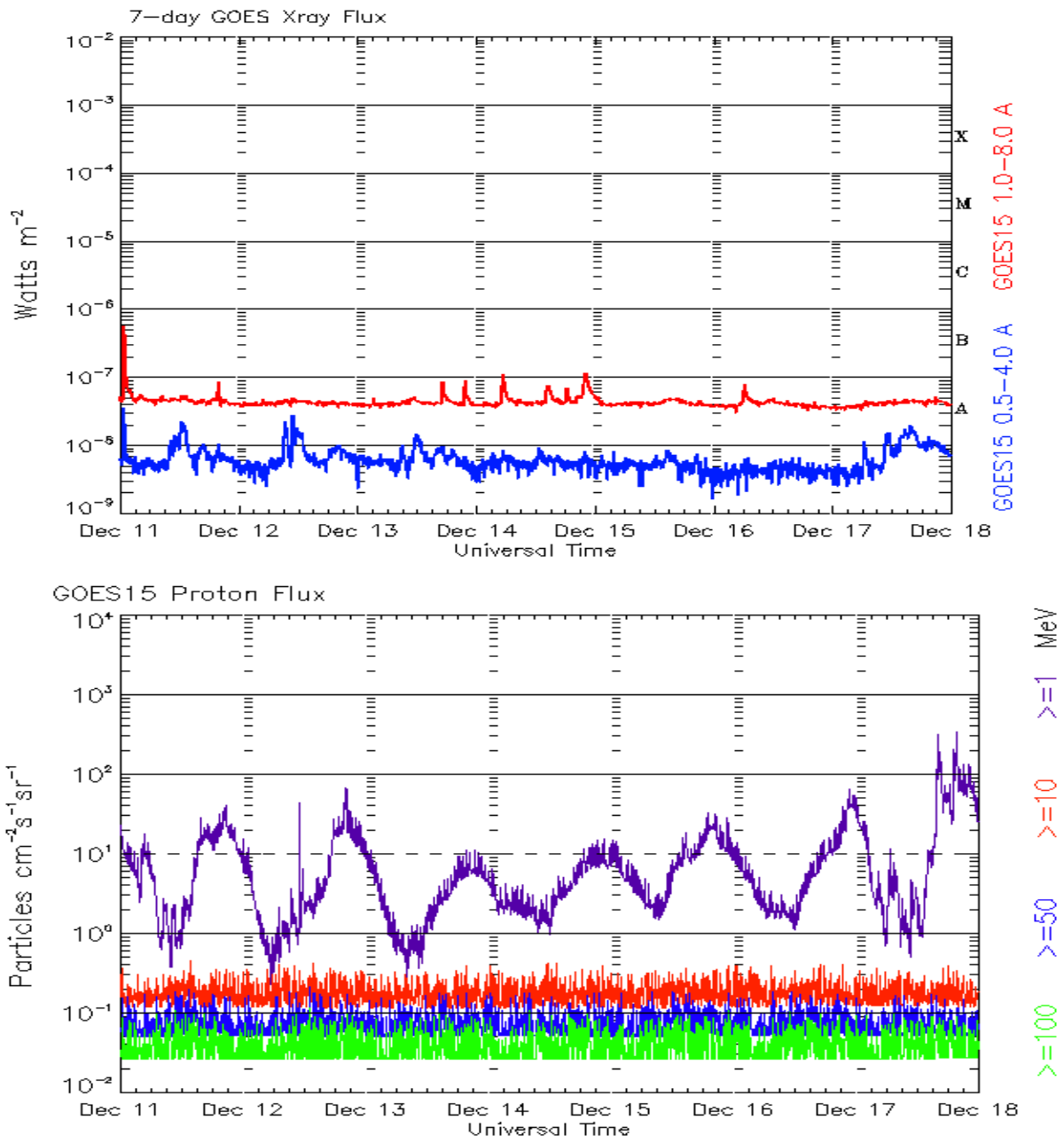
The proton flux plot contains the five-minute averaged integral proton flux (protons/cm^2-sec -sr) as measured by the SWPC Primary GOES satellite, near West 75, for each of three energy thresholds: greater than 10, 50, and 100 MeV.

The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm^2-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 11 December 2017

The x-ray plots contains five-minute averages x-ray flux (Watt/m^2) 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^2 -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.

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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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