

Ionospheric Weather W-index thresholds

The peak electron density, NmF2, deviation from quiet median:

$$DEV(NmF2)=\log(NmF2/NmF2med)$$

Total electron content, TEC, deviation from quiet median:

$$DEV(TEC)=\log(TEC/TECmed)$$

Categories of the ionospheric weather W-index corresponding to the logarithmic deviation from the median:

W-index	DEV(NmF2) DEV(TEC)	Ionosphere state
4	DEV > 0.301	Intense positive W ⁺ storm
3	0.155 < DEV ≤ 0.301	Moderate W ⁺ storm or substorm
2	0.046 < DEV ≤ 0.155	Moderate W ⁺ disturbance
1	0.0 < DEV ≤ 0.046	Quiet W ⁺ state
0	DEV = 0.0	Reference Quiet state
-1	-0.046 ≤ DEV < 0.0	Quiet W ⁻ state
-2	-0.155 ≤ DEV < -0.046	Moderate W ⁻ disturbance
-3	-0.301 ≤ DEV < -0.155	Moderate W ⁻ storm or substorm
-4	DEV < -0.301	Intense negative W ⁻ storm

Gulyaeva, T.L., I. Stanislawska, and M. Tomasik. Ionospheric weather: Cloning missed foF2 observations for derivation of variability index. *Annales Geophysicae*, 26, N.2, 315-321, www.ann-geophys.net/26/315/2008/, 2008.

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