

Geomagnetic Storm Scale

The NOAA Geomagnetic Storm Scale indicates the severity of geomagnetic storms. It is denoted by a G followed by a number from 1 to 5, with 1 being a minor event, and 5 being an extreme event.

The scale uses the planetary [K-Index](#), K_p as it's physical measure, the scale levels are shown below:

Category	Possible Effects
<p>G1</p> <p>Minor</p> <p>$K_p = 5$</p>	<p>Power systems: Weak power grid fluctuations can occur.</p> <p>Other systems: Migratory animals are affected at this and higher levels; aurora is commonly visible at high latitudes.</p>
<p>G2</p> <p>Moderate</p> <p>$K_p = 6$</p>	<p>Power systems: high-latitude power systems may experience voltage alarms, long-duration storms may cause transformer damage.</p> <p>Other systems: HF radio propagation can fade at higher latitudes, and aurora has been seen at 55° geomagnetic lat..</p>
<p>G3</p> <p>Strong</p> <p>$K_p = 7$</p>	<p>Power systems: voltage corrections may be required, false alarms triggered on some protection devices.</p> <p>Other systems: intermittent satellite navigation and low-frequency radio navigation problems may occur, HF radio may be intermittent, and aurora has been seen at 50° geomagnetic lat..</p>
<p>G4</p> <p>Severe</p> <p>$K_p = 8$</p>	<p>Power systems: possible widespread voltage control problems and some protective systems will mistakenly trip out key assets from the grid.</p> <p>Other systems: induced pipeline currents affect preventive measures, HF radio propagation sporadic, satellite navigation degraded for hours, low-frequency radio navigation disrupted, and aurora has been seen as low at 45° geomagnetic lat..</p>
<p>G5</p> <p>Extreme</p> <p>$K_p = 9$</p>	<p>Power systems: widespread voltage control problems and protective system problems can occur, some grid systems may experience complete collapse or blackouts. Transformers may experience damage.</p> <p>Other systems: Pipeline currents can reach hundreds of amps, HF (high frequency) radio propagation may be impossible in many areas for one to two days, satellite navigation may be degraded for days, low-frequency radio navigation can be out for hours, and aurora has been seen at 40° geomagnetic lat..</p>