
From solar eruption to transformer saturation: the space weather chain

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Abstract

The main Space Weather Events of the Solar Cycle 23 are listed with their subsequent effects on ground infrastructure, such as power grids. The analysis includes a brief description of their origin (location, time and accompanied solar events), their signatures in the solar wind as recorded at 1AU (ACE satellite) and detailed explanations of their effects on the ground. The differences in the response of the geomagnetic to the same solar event in the polar, auroral and low-latitude regions will be discussed in more detail. Effects on power grids will be presented in terms of the currents in the transformers.

Keywords: impacts on power grids, earth magnetic field, earth environment

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