

Super magnetic storms and geomagnetically induced currents in Japan

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Geomagnetically induced currents (GIC) flowing in ground-based conductor systems during large geomagnetic storms are one of the most important space weather phenomena that affect our ground-based infrastructures. Former research showed that GIC activity in subauroral latitudes depends on the storm phase and on the interplanetary drivers, such as coronal mass ejections (CMEs) and corotating interacting regions (CIRs). Despite of the differences between CME and CIR storms, the relationship between GIC and the time derivative of the horizontal ground magnetic field is always the same. However, Japan is located at lower latitude, and because of its distinctive ground conductivity structure, it is not obvious how large GICs flow in Japan during super storms. Further, ionospheric current system itself of super storms is not obvious. I will discuss the methodology how to study the GICs in Japan during super storms using our limited observations.

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