

A Numerical Simulation of the Geomagnetically Induced Electric Field with the Three-Dimensional Resistivity Model

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The Geomagnetically induced current (GIC) sometimes causes power-line failure in the geomagnetically high-latitude regions like Canada and Sweden. On the other hand, it has been regarded that Japan is free from this danger because it is located in the lower-latitude region. However, this assumption may not be valid when an extremely severe space weather event happens. In addition, as the GIC and the induced electric field are strongly controlled by non-uniform distribution of the Earth's electric resistivity, we need to evaluate these values taking the non-uniform distribution into account. It is noted that there has been no works about it. In this talk, we will present the geomagnetically induced electric field based on the modeled electric resistivity distribution by using a numerical code applicable to the three-dimensional induction problems. As the results, there are large anomalies in the intensity of the electric field in Japan.

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