

Acoustic Coupling Between Lower Atmosphere and Ionosphere

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It has been assumed that most (or all) of geomagnetic pulsations are generated in space plasmas and the energy source is the solar wind. However, the lower atmosphere has enough energy to generate various electromagnetic phenomena in the ionosphere and magnetosphere, although quantitative estimation or observationally reliable confirmation of the electromagnetic effects has actually not been done. At the 2004 Sumatra earthquake, we found an evidence of electromagnetic effects, i.e., geomagnetic pulsations and "TEC pulsations". We suppose that these phenomena are generated by a dynamo in the ionosphere through the acoustic resonance between the ground and the thermosphere. We found a similar phenomenon at the 1991 Mt. Pinatubo eruption more clearly. In this paper, we report the results of investigation in other cases including typhoons.