

# **ANOMALY OF THE GEOMAGNETIC Sq VARIATION IN JAPAN: EFFECT FROM SUBTERRANEAN STRUCTURE OR THE OCEAN EFFECT?**

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Many years ago Rikitake et al. (1956) described anomalous behavior of vertical component (Z) of geomagnetic solar quiet (Sq) daily variation field at Japanese observatories - namely about two hours shift of the local noontime peak towards morning hours. They suggested that this anomaly is associated with low electrical conductivity beneath central Japan. Although a few works have been done to confirm or argue this explanation, no clear answer has been obtained so far. The goal of this work is to understand the nature of this anomaly using our three-dimensional (3-D) forward solution. The 3-D conductivity model of the Earth includes oceans of laterally variable conductance and spherical conductor underneath. The model is induced by realistic Sq source that is obtained from spherical harmonic analysis of X and Y collected worldwide. We demonstrate that ocean is a major contributor to the anomalous behavior of the daily variations of Z at Japanese observatories. We also investigate whether the remaining residuals can be attributed to the effect from subducting slab.

Sq variations, EM induction, ocean effect

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