

Observations of Motionally-Induced Electric and Magnetic Fields in the Izu Islands Area (2)

Yoichi Sasai [1], Makoto Uyeshima [1], Yoshinobu Ishikawa [1], Shigeru Koyama [1], Takehiko Hashima [2]

[1] Earthq. Res. Inst., Univ. Tokyo, [2] Hachijo Hydrogr. Obs., MSA

There is a definite discrepancy in a typical feature of the island effect between the case of induction by external fields and that of induction by tidal currents. Because of shear oceanic flows, the Z component magnetic field is generated even at the center of an island, in contrast to the external field origin.

In order to understand the nature of motionally induced EM fields on an island, Larsen's (1968) model was reexamined for the tidally induced fields. Although the island effect or distortion of induced electric currents by an island is crucial, there is a definite discrepancy between the case of induction by external fields and that of induction by tidal currents. Because of shear oceanic flows the Z component magnetic field is generated even at the center of an island, in contrast to the case of external field origin. This suggests a possible source for some prominent Z component variation with no horizontal component observed at HJJ observatory associated with the meander of Kuroshio.