

津波早期警戒のための陸上地磁気三成分観測点 Installation of a Vector Magnetometer for a Ground-based Tsunami Early Warning

川嶋 一生^{1*}; 藤 浩明²; 吉村 令慧³; 藤井 郁子⁴; 仰木 淳平⁴; 阿部 聡⁵
KAWASHIMA, Issei^{1*}; TOH, Hiroaki²; YOSHIMURA, Ryokei³; FUJII, Ikuko⁴; OOGI, Junpei⁴; ABE, Satoshi⁵

¹ 京都大学大学院理学研究科, ² 京都大学大学院理学研究科附属地磁気世界資料解析センター, ³ 京都大学防災研究所地震防災研究部門, ⁴ 気象庁地磁気観測所, ⁵ 国土地理院

¹Graduate School of Science, Kyoto University, ²Data Analysis Center for Geomagnetism and Space Magnetism, Graduate School of Science, Kyoto University, ³Earthquake Hazards Division, Disaster Prevention Research Institute, Kyoto University, ⁴Kakioka Magnetic Observatory, Japan Meteorological Agency, ⁵GeoSpatial Information Authority of Japan

Conductive sea water moving in the geomagnetic main field generates electromagnetic variations by a physical process called the oceanic dynamo effect. This effect at the time of tsunami passages was recently detected on the seafloor in the northwest Pacific (Toh et al., 2011) and on Easter Island (Manoj et al., 2011). The tsunami-induced electromagnetic field is expected to contribute to existing global tsunami warning systems.

We are carrying out a project that aims to observe geomagnetic variations associated with tsunami passages by ground-based real-time observations. This project requires a pair of geomagnetic observation sites for clear detection of tsunami events. The geomagnetic coast effect and the external field due to ionospheric and/or magnetospheric disturbances can be removed by taking real-time differences between a coastal and an inland geomagnetic sites. We installed a vector magnetometer at Umaji located in the middle of Muroto Peninsula, where artificial electromagnetic noises are very small. This location is selected as a counterpart of the existing observation site at Muroto located at the tip of the peninsula, which is operated by Geospatial Information Authority of Japan (GSI).

In this presentation, we will make a progress report on our ground-based tsunami warning system consisting of a pair of vector magnetometers. This system is intended to detect the geomagnetic field variations induced by tsunamis at the time of Nankai/Tonankai earthquakes.

キーワード: 地磁気, 津波

Keywords: Geomagnetism, Tsunami