Japan Geoscience Union Meeting 2015
(May 24th - 28th at Makuhari, Chiba, Japan)

MIS02-P03 Room:Convention Hall Time:May 26 18:15-19:30

investigations of geomagnetic diurnal variations associated with the 2011 off the Pacific coast of Tohoku earthquake

YAMAGUCHI, Takuto[1*] ; HAN, Peng[2] ; YOSHINO, Chie[2] ; HATTORI, Katsumi[2]

[1]Faculty of Science,Chiba University, [2]Graduate School of Science, Chiba University

As one of the most promising candidates for short-time earthquake forecasting, the seismoele-ctromagnetic phenomena have been intensively studied for several decades. Recently, Xu et al. (2013) have reported unusual behaviors of geomagnetic diurnal variations in the vertical component prior to the 2011 off the Pacific coast of Tohoku earthquake (Mw9.0). In this study, we carry out further studies by investigating the spatial distribution of the anomalous geomagnetic diurnal variations associated with the Tohoku earthquake.

Ratios of Z component diurnal variations between the target station and the remote reference station Kakioka have been computed. After removing seasonal variations revealed by wavelet transform analysis, the 15days running mean of the ratio shows a clear anomaly exceeding the statistical threshold about 2 month before the mega event in Esashi and Mizsawa stations, which are close to the Mw9.0 earthquake epicenter. These results indicate that the location of the anomalies is consistent with the epicenter. Moreover, other independent geophysical parameter such as seismicity and crustal deformation also show clear unusual changes simultaneously, which suggests these anomalies might be related with the mega event.