

## Inner and external geomagnetic Sq current system associated with the 2011 Tohoku earthquake (Mw 9.0)

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Han et al. (2016) have reported unusual behaviors of geomagnetic diurnal variation (GDV) in the vertical component prior to the 2011 off the Pacific coast of Tohoku earthquake (Mw 9.0). Spatiotemporal characteristics of the GDV anomalies and the possible coupling of multiple pre-earthquake phenomena have been demonstrated. To make a further understanding of the reported geomagnetic anomalies, spherical cap harmonic analysis method is applied to reveal the inner and external geomagnetic Sq current system. The inner Sq current, which is an induced field, may reflect possible conductivity structure changes related to the Tohoku earthquake. We calculate three-component Sq variations of 17 geomagnetic observatories. The detailed results will be shown in our presentation.

Keywords: Sq variation, Inner and external geomagnetic field, Tohoku earthquake