

Study of anomalous behaviors of geomagnetic diurnal variations prior to earthquake

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For short-term earthquake forecasting, the seismo-electromagnetic phenomena have been considered as one of the most promising analysis for several decades. In this study, we have investigated pre-seismic ionospheric disturbances by using the geomagnetic diurnal variations in the vertical component, following Xu et al.(2013).

To validate the result of Xu et al.(2013), we investigated the geomagnetic data associated with the Kumamoto earthquake(2016) and Fukushima earthquake(2016). Geomagnetic data of two observations in Kyushu area have been analyzed using the same method in Xu et al.(2013). Ratios of diurnal variation range between the target station Kuju (KUJ) which is about 55km from the epicenter and the remote reference station Kanoya (KNY) about 150km distant to the epicenter have been computed. The ratios of diurnal variation range between KAK and ESA indicated several of anomalies because of continuing earthquakes during years. Therefore we also have investigated the geomagnetic data associated with the Toyama area, where earthquakes rarely occur, to compare with where earthquakes occurred frequently such as the Fukushima area.

Keywords: Geomagnetic diurnal variation, Seismo-magnetic phenomena, Kumamoto earthquake