

Earthquake occurrence rate after pre-seismic-like ionospheric disturbance appearance using the DEMETER data

*Shoho Togo¹, Hidetoshi Nitta¹, Masashi Kamogawa¹, Jean-Jacques Berthelier², Tetsuya Kodama³, Toshiyasu Nagao⁴

1.Department of Physics, Tokyo Gakugei University, 2.LATMOS, France, 3.Earth Observation Research, 4.Earthquake Prediction Research Center, Tokai University

We statistically investigate pre-seismic ionospheric disturbances by using the VLF electric field data of the DEMETER, following Nemeč et al. (Geophys. Res. Lett., 2008; J. Geophys. Res.; 2009) and Pisa et al. (J. Geophys. Res., 2013). Our replicated analysis also showed that the background intensity of around 1.7 kHz electric field decreased within 4 hours before the mainshock with magnitude of more than 4.8, using the complete data set of the DEMETER, i.e., 6.5-year data (Figure 1a). In order to understand the physical mechanism of the depression of the background intensity, we selected 10 orbits highly related to the decrease of the intensity for the event analysis from the whole data. We applied statistical correlation to the whole data evaluating anomaly appearance rate and earthquake occurrence rate.

Keywords: Earthquake, DEMETER, Ionosphere