

Enhanced dynamo electric field as a possible cause of ionosphere disturbance before Large Earthquake

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Disturbance of ionosphere before large earthquakes has been very often reported. One of the possible disturbing drivers is electric field, which explains most of the ionosphere features we reported so far. However, the origin of the electric field is still in the darkness. One idea of electric field generation exists inside earth interior (Freund et al., 2006). We propose here that the electric field is dynamo field at the height of ≈ 100 km, which simply intensified before earthquake; intensified eastward (westward) electric field during daytime (nighttime). This idea explains satellite data (Oyama et al., 2008; Oyama et al., 2011; Ryu et al., 2014; Ryu et al., 2016; Oyama et al., 2016; Oyama et al., 2019).

Next question on the electric field generation is the mechanism which modifies the dynamo field. We speculate that modification of E field is a result of modification of neutral wind system, which is originally caused by internal gravity waves which propagate from below. Then again next question is on the origin of the internal gravity waves. The waves might be originally caused by the ground motion, and these waves which propagate upward might interact with planetary wave, and amplified. We show several side evidence of ground motions before earthquakes.

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