Enhanced Electric Field Before Large Earthquakes

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Electric field seems to be a main driver which disturbs ionosphere prior to large earthquake. The problem is where and how the electric field is generated. We have proposed that electric field is originally dynamo field which appears ionosphere E and F region. It enhances around the epicenter region. That is, during daytime the eastward electric field is enhanced, while during nigh time, westward electric field is enhanced. This idea explains all ionosphere anomalies which we have found from the past studies (Oyama et al., 2008; Oyama et al., 2011 ;Oyama et al., 2019). Next question is the mechanism of enhanced dynamo E field. Most probably, Pedersen conductivity of E/F region reduced. The electric potential which exists between dawn and dusk is divided by the conductivity of the earthquake-disturbed region, resulting in the stronger E field in the disturbed region. Further question is the mechanism of reduced conductivity. The conductivity is reduced by irregularity of neutral particle density and by increase of neutral density. These two are generated by the breaking of gravity and/or acoustic waves.

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