



# Modeling of the ionosphere response on the earthquake preparation

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Seismo-ionosphere coupling processes have been investigated considering the GPS observed anomalous ionospheric Total Electron Content (TEC) variations before strong earthquakes as their precursors. The numerical simulations' results of the TEC response on the vertical electric currents flowing between the Earth and ionosphere during the earthquake (EQ) preparation time have been performed. Model experiments have been carried out using the Upper Atmosphere Model. The following currents' parameters were varied in: (i) direction (to or from the ionosphere); (ii) latitudinal zone of the sources' (EQ epicenters) location; (iii) currents' configuration: (1) grid nodes with "straight" currents were surrounded by "border" grid points with currents of opposite direction ("return" currents); (2) the "return" currents were spread out over the globe; (3) without "return" currents. Numerical simulations have shown that electric currents with density of  $4 \times 10^{-8}$  A/m<sup>2</sup> over the area of about 200 km in longitude and 2500 km in latitude produce both positive and negative TEC disturbances with magnitude up to 35 % in agreement with GPS TEC observations before EQs.

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