

STUDY OF GEOMAGNETIC INDUCED CURRENT EFFECT ON POWER GRID USING DIFFERENT VARIABLES

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During large magnetic storm the geomagnetically induced current has a negative impact on ground conducting technology system. The time derivative of horizontal and northern component of geomagnetic field (dH/dt , dX/dt) is greater than 30nT/min for induced current causing undesirable consequence in power grids. Multiple regression analyses were developed to predict level of geomagnetic disturbance using time derivatives of horizontal geomagnetic field, northern component of time derivatives of geomagnetic field, east and north component of geoelectric field, auroral electrojet and disturbance storm time from 1994- 2007 at low and subauroral latitudes. The statistical test RMSE (Root Mean Square Error) and MBE (Mean Bias Error) were employed to evaluate the accuracy of the geomagnetic disturbance. Different variables have been used to develop different types of models. There are high values of correlation coefficient and coefficient of determination which gives good results and with also low statistical indicator. The equations produced the best correlations at subauroral and low latitude, the best correlation is obtained with low values of RMSE and MBE.

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