Geophysical Research Abstracts
Vol. 19, EGU2017-86, 2017
EGU General Assembly 2017

Development of the GIC forecasting for Canadian Power grid

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Geomagnetic disturbances (GMD) can affect power systems producing transformer heating, relay misoperation, voltage sag and, in extreme cases, system collapse. Concern that an extreme geomagnetic storm could seriously affect power systems across North America has prompted NERC to develop new standards that require power utilities to conduct a geomagnetic hazard assessment and take appropriate mitigation measures if necessary.
The best way to be prepared for a GMD event is to have a real-time forecasting system which will give predictions of the levels of Geomagnetically Induced Currents (GIC) in the system. To date, the Canadian Space Weather Forecast Centre/Geomagnetic Observatory operated by Natural Resources Canada provides forecasts of the ground geomagnetic activity on a regional scale.
This presentation describes the progress in development of the forecasting capabilities to predict the GIC and related values (indices) based on the existing regional geomagnetic forecast. The realistic (data-based) approach will be employed to identify the appropriate indices of the geomagnetic and geoelectric activity and corresponding GIC indices. Resulting forecasted values will be tested and further steps identified.