

Solar Wind Monitoring and Induction Modeling for GIC

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Geomagnetic storms and their associated ionospheric electrical currents induce surface electric fields in the Earth and these drive geomagnetically induced currents (GIC) through electrical power grids. GIC are significant because they affect the lifetime and performance of the voltage transformers in any grid. Working with Scottish Power plc (SP) in the UK, BGS has identified new user needs, which require the development of additional capabilities to improve the existing service that BGS provides for SP. A real-time geomagnetic storm warning service is being developed using near real time data from the NASA/NOAA ACE spacecraft. An enhanced power grid GIC model is being developed and this will merge the BGS induced surface electric field and conductivity models with a more detailed power grid network model to predict GIC in the Scottish power grid in near real time. We review the progress made to date on this project, one of the ESTEC service development activities.