

Discrimination between ionospheric and magnetospheric origin contribution of GIC

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Geomagnetically induced currents (GIC) are one of the most serious threats to our more and more technological society. They are caused by the geolectric field flowing in the conductive Earth during intense solar disturbances. This work focuses on the evaluation of GIC amplitude through the M.A.I.GIC. model (Piersanti et al., 2018) for two geomagnetic storms (March 17 and June 22, 2015) of the last solar cycle, over the European sector. For this purpose 1-second magnetic data from ground observatories are used. The ionospheric and magnetospheric origin contributions to GIC are then separated via ALIF technique and their latitudinal behaviour investigated in some detail. As expected, the magnetospheric origin contribution is dominant at low latitudes, while the ionospheric one is dominant at high latitudes. Interestingly, this analysis shows that GIC present high amplitudes also during the sudden impulse (SI) of the geomagnetic storm and not only during its main phase.