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Contribution of E x B drift to the low latitude TEC modelling during geomagnetic storms

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Due to the complicated nature of equatorial electrodynamics during geomagnetic storms, it was found that modelling ionospheric total electron content (TEC) is more difficult in the low latitude than in the mid-latitude. Towards the improvement of TEC modelling in the low latitude, E × B is introduced for the first time in TEC modelling as a new input, in addition to the standard inputs which represent solar and geomagnetic activities, diurnal and seasonal variations. For this purpose, Non linear Regression analysis (NLRA) model is developed using TEC data (1998 - 2016) derived from the Global Positioning Systems (GPS) measurements over Seychelles (SEY1, 4.67° S , 55.48° E). On the basis of statistics, the contribution of E x B drift to TEC modelling for the low latitude region is highlighted and results are compared with the International Reference Ionosphere (IRI) predictions.

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Main supervisor (name and email)
and his / her institution

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