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New results about the topside modification of NeQuick using the Gallagher plasmaspheric model

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NeQuick ionospheric electron density model has a very simple topside formulation which allows to take into account the electron content up to 20000 km. In the present work Gallagher model has been used in connection with NeQuick to provide a more realistic representation of the electron concentration distribution in the plasmasphere. An analysis of the impact of the proposed modification in low geomagnetic latitudes ($\pm 40^o$) on modeled vertical TEC has been performed for different levels of solar activity, season and UT. In addition, GPS vertical TEC values obtained from seven IGS station data have been compared with the NeQuick and NeQuick+ Gallagher vertical TEC values, confirming the importance of including a plasmaspheric formulation in the NeQuick model.