



A demonstration of median values applied for forecast of Total Electron Content

Claudia Borries and Ronny Badeke

Institute for Communication and Navigation, DLR, Neustrelitz, Germany (claudia.borries@dlr.de)

The ionosphere is a well-known error source for many applications and services using transionospheric radiolink signals. Maps of total electron content (TEC) are a common tool for presenting the ionospheric conditions. While users can obtain high quality post-processed and near real-time (NRT) TEC maps in Europe (e.g. from IGS, SWACI and RTIM), forecasts of TEC, which are required by many users for mission planning, are still rare in Europe. Especially forecasts of 24 hours and more are challenging because of large deviations during ionospheric storm conditions.

For the computation and analysis of TEC perturbations, the 27 days median TEC is a common parameter used as quiet time reference. Here, we demonstrate its applicability for forecasting TEC. Quiet and storm conditions are analysed separately. We use NRT TEC data, to demonstrate the applicability and quality of median TEC in NRT applications. The results show that median TEC is a good approach for 24 hours TEC forecast during quiet ionospheric conditions. Because the forecast accuracy decreases during storm conditions, we suggest the development of an individual TEC perturbation model, describing the TEC deviations during storm conditions.