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An improved bottomside for the ionospheric electron density model NeQuick

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Abstract

The ionospheric electron density model NeQuick is a «profiler» which uses the peaks of the E-layer, the F1-layer and the F2-layer as anchor points. In the version prepared for and submitted to the International Telecommunication Union (ITU) the model uses the ITU-R (CCIR) maps for foF2 and M(3000)F2 and adapted maps similar to the ITU-R ones for foE and foF1. Since users found problematic behaviour of NeQuick under conditions of strong differences of foE and foF2 map structures, the profiling was adapted by changing the properties of the Epstein layers used for this purpose. The new formulation avoids both strange horizontal structures of the geographic distribution of electron density in fixed heights and unrealistic peculiarities of the height profile which occasionally occurred with the old version of the model. Since the Epstein layer approach allows for 8 parameters only (3 layer amplitudes and 5 semi-thicknesses) the adaptation was no minor task but needed careful planning of suitable strategies.

Keywords

ionosphere;electron density models;profilers

Full Text:

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References

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KEYWORDS

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