

The Ionospheric Effect on HF Wave Propagation in Equatorial Region

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Abstract

A 3D ray tracing model was employed to study the effect of the equatorial ionosphere on High-Frequency (HF) radio propagation. The ionosphere was generated by Parameterized Ionospheric Model to represent the ionospheric profiles in the equatorial region. The homogeneous ionospheric profile was used for comparison of effect of the ionospheric inhomogeneity on HF ray tracing. The magnetic effect on HF propagation was investigated as well. The effect of ionospheric inhomogeneity was found to be substantial.