

Geomagnetism and Aeronomy 2001 vol.41 N2, pages 220-225

The effect of the large-scale structure of the Es layer on limiting frequencies at oblique incidence

Sherstyukov O., Minullin R., Akchurin A., Zykov E.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

The results of experimental determinations of the correction coefficient K to the parameter M for converting the vertical-sounding frequency parameters of the Es layer into oblique-incidence limiting frequencies are reported. The measurements were made on the Moscow-Kazan path using a digital ionospheric sounder operating in the variable-frequency oblique-incidence sounding mode. Vertical-incidence sounding was performed on the path midpoint simultaneously with the oblique-incidence measurements. The coefficients K were determined by computing the ratios of the experimentally determined parameters M to the corresponding computed parameters M_0 for specular signals reflected from the Es layer at a height of 110 km. The resulting distribution of the coefficient K can be fully interpreted in terms of the cloud model of the Es layer with the parameters inferred from the temporal variations in the blanketing frequency $f_b E_s$. The signal-amplitude dependence of the coefficient K is found to differ during daytime and nighttime hours. The corresponding differences for signal levels below -30 dB can also be interpreted in terms of the gradient and scattering Es layer models. Copyright © 2001 by MAIK "Nauka/Interperiodica".
