Geophysical Research Abstracts,
Vol. 10, EGU2008-A-01117, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-01117
EGU General Assembly 2008

Maximum usable frequency as an adaptation parameter of the ionospheric model

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As was known, empirical models of the ionosphere describe average conditions of HF propagation. It is traditional to use such parameters as foF2, hmF2, TEC to adapt models to current conditions. However, only HF propagation along a given path is the most precise way to determine ionospheric conditions (as MOF/MUF values). This principle was realized by chirp sounding many years ago. Nowadays chirp nets exist in Australia, Russia and, of course, somewhere else. It was interesting to appreciate adaptation abilities of MUF parameter. In this report effectiveness of such an adaptation is investigated by means of MUF data base of Broms, Zolesi (1994) for two European paths Rome-Linkoping and Chelveston- Linkoping and experimental values of foF2 for stations of vertical sounding Slough, Rome and Juliusruh. Two aspects are considered: 1) adaptation in areas without vertical sounding (to determine foF2), 2) determination of MUF in the next-path areas. Moreover, for the last case two variants are compared (using linear regressions and determination of effective index of solar activity corresponding to experimental value of MUF). The IRI model and IG12 index are used. Comparison of calculated values of foF2 and MUF with experimental values showed that MUF adaptation effectiveness for foF2 is rather less than for the next- path MUF. In many cases using effective value of IG12 can provide better results than linear regressions. In both of cases the best results are obtained by MUF2F2 (2 hop). If there is not MUF2F2 value it is possible to use the value recalculating from MUFF2.