



Results of using the IRI model over Inskip-Rostov path

O. Maltseva

Institute of Physics, Russia, Rostov State University, mal@ip.rsu.ru

After a long stagnation period attempts are making to revive education and science in Russia. One step is a creation of South Federal University (SFU) on basis of Rostov State University (RSU). An important direction of radio physical investigations in RSU was always a study of the ionosphere and wave propagation via it. This report contains a short review of last results concerning the use of the IRI model to reference HF propagation: 1) inclusion of IRI into the mathematical model of HF channel on basis of ray tracing, 2) joint using IRI, MSIS, L-database of CCIR for determination of collision frequency, 3) determination of signal power, 4) development of adaptation methods to decrease errors of operative prediction, 5) comparison of experimental MOF and MUF values predicted on base of the IRI model using data of chirp sounding, also a list of international conferences devoted to problems of HF propagation and expected to be held in 2007-2008 on basis of SFU.

New results that will be presented in this report concern a comparison of 5 methods of MUF estimation on example of experimental MOF data on Inskip-Rostov path ($D \sim 3050$ km). Special attention is paid to comparison with results obtained by means of DIAS database, which is considered as a standard, because terminal points of this path lie near bounds of DIAS zone and there are VS stations near these points (Chilton and Rostov) and a half of path (Pruhonice). The first method is the use of empirical ionospheric models for long-term prediction (comparison of median of MOF and MUF values provided by IRI and DIAS). Methods 2-5 are used for operative prediction. In the second method MUF3000 are determined on data of Pruhonice and MUF point to point procedure of DIAS. In the third method experimental $N(h)$ -profiles in a few points are used. MUF values are calculated by means of IRI adapted to VS data in the fourth method. In the fifth method MUF values are calculated by IRI adapted to TEC-GPS data. Necessity and possibility to use one method or another depends on many conditions. Error of method is an important criterion. Obtained results can be

useful for users of the IRI model and DIAS database.