



Some initial results of using correction technique for radio occultation data in Arctic region

V.Kunitsyn (1), V.Zakharov (1), K. Dethloff (2), R. Neuber (2), A. Rinke (2)

(1) M.Lomonosov Moscow State University, Russia (kunitsyn@phys.msu.su), (2) Alfred Wegener Institute for Polar and Marine Research, Germany (dethloff@awi-potsdam.de)

The study results of high latitude atmosphere in Arctic Region with the use of radio occultation (RO) experiments (CHAMP mission, GFZ archive) and dynamic regional models of atmosphere are presented. It is shown, that for the specification results of RO experiments it is possible to use prognostic model HIRHAM4, that lead to the increase of restoration accuracy of the refractivity index in the atmosphere containing heterogeneities of various spatial scales. The essence of our approach consists in using an atmospheric model to estimation the possible distortions received in RO experiments and special algorithms of correction for RO data are under construction. The results of verification of the developed technique with the use independent in-situ radiosondes measurements of meteo profiles (UKMO archive) in the period 2001-2004 are given. The events for verification are selected by the following only one criterion (at completeness of need data) - all events should correspond to a spatial deviation from each other not further than on 50 km and on time - no more than 6 hours. The analysis of the received verification data shows, that more than in 67 % of cases the offered procedure the correction is solvent. The bias errors for the chosen high-altitude range (2-10 km) after correction are reduced more than on 50 %, thus for the reference data are accepted radio sondes profiles. The application of the specified procedure as a whole improves also root-mean-square mistake in a retrieval profile. It is marked, that the growth of solar activity and large sizes of geomagnetic variations results in deterioration of correction quality. This results, as it is now represented, first of all are connected with the influence of ionosphere on correction procedure. The strong ionospheric disturbances can not be compensated by a used usually technique.