EMS Annual Meeting Abstracts,
Vol. 6, EMS2009-107, 2009
9th EMS / 9th ECAM

9th EMS Annual Meeting
9th European Conference on Applications of Meteorology
High resolution meteorology
- applications and services

Using WRF-ARW model for prediction of dangerous meteorological phenomena in southern regions of Russian Far East

B.E. Lamash and L.V. Gonchukov

Far East State University, Department of Geophysics, Vladivostok, Russian Federation (lamash@meteo.dvgu.ru, 74232515327)

Global models even with high spatio-temporal resolution can't take into consideration all local territory peculiarities. World datacenters don't have full sets of observational data, but regional meteoservices have one and can involve additional automatic complexes for sounding and observation. Also regional meteoservices know more about geographical peculiarities of zones of their responsibility. Thereupon using of mesoscale models, which make it possible to reproduce microscale processes more accurately, is necessary in prediction phenomena caused with free or forced convection, gravity waves etc.

Only Primorsky regional meteoservice uses numerical mesoscale models for south of Russian Far East. Localization of WRF-ARW model for Primorsky region conditions carries out lately. Optimal configurations of physics parameterization for different grids are searched for.

There are a lot of different geographical zones in Primorsky region – mountains, narrow valleys, plains, swamps, seashore with broken coastline. For local prediction it is necessary to take into consideration this variety. Typical example of process is passing of cold fronts from north-west to south-east and cumulus thunderstorm clouds development with strong windsqalls. One of such phenomena was observed April, 13, 2009 from 06 to 10 GMT. Cold front has passed fast from north-west to south-east and caused different intensity precipitations, thunderstorms and windsqalls. One day before WRF-ARW model has reproduced this process in detail, having precisely specified location and time of front passage, wind speed and precipitations sum. So computation on fine grids allows direct modeling of convective motions with due account taken of orography.

Full verification of land-use categories is planned as next task.