

Elena CORDONEANU defended her thesis

Study of the Thermal Circulations above the Carpathian-Black Sea Area by Using the Model ALADIN

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cordoneanu++at++meteo.inmh.ro

In this thesis the mesoscales systems with specific features for Romania have been studied, i.e. the extracarpathian snowstrom usually accompanied by LLJ and the orographic cyclogenesis in the western basin of the Black Sea. The ALADIN model, born in Toulouse from a fruitful cooperation between France and some Central and East European countries have been used for the study. The author was in the Romanian team.

The ARPEGE-ALADIN model have passed very well simulation tests for induced local circulations and we may consider that using it in an operational suite we will be able to forecast the atmospheric processes generated by subjacent surface until inferior mesoscale border. The tests for sensitivity of the model to the details of the orographic fields have shown that according as we are closer to 10km resolution for model grid, the information concerning characteristics of the land surface used for the time being became unsatisfactory. Even the information coming from the USNAVY which are the best so far, have to be replaced with others with a better resolution. In 1992, at the EWGLAM meeting, was established to change the resolution of the orography up to 1-2km and to add some new information about soil characteristics, vegetation etc.

Discussing about the forecast possibility of ALADIN model, which works in dynamic adaptation mode, have to be mentioned that those are limited by the performance of ARPEGE model which supplies initial and boundary conditions.

The ALADIN model was tested for some interesting atmospheric situation for Romania. A series of specific circulations features connected with geographic particularities of Romania, i.e. "crivatz" and sea breeze, have been highlighted. Crivatz is an orographic induced wind in the southern part of Romania and it has specific features like bora, mistral, orographic LLJ circulation in Rocky Mountains or Andes or from the northern and southern part of Alps. In fact all those regional orographic induced winds have a maximum wind speed around 1km.

The influence of the Black Sea in generating or in amplifies some mesoscale systems have been shown also. For the demonstration some cyclogenesis situation in the western part of the Black Sea was selected. The tests have been performed using an orography of the model with and without information concerning the Black Sea. When the Black Sea was replaced with land, information for the soil was taken from the vicinity.