Geophysical Research Abstracts
Vol. 14, EGU2012-10645, 2012
EGU General Assembly 2012

Towards NWP with the anelastic nonhydrostatic model EULAG – mountain flows

B. Rosa, M.J. Kurowski, D. Wójcik, and M.Z. Ziemiański

Institute of Meteorology and Water Management – National Research Institute, 61 Podlesna St., 01-673 Warsaw, Poland (bogdan.rosa@imgw.pl)

Contemporary numerical weather prediction (NWP) models are currently approaching 1km of horizontal resolution. A more accurate representation of local mountain effects is expected with this progress. However, the new technical and numerical challenges for such modeling emerge as the flow conditions (*e.g.* steepness of the orographic slopes) become increasingly complex. Therefore, it is necessary to develop effective tools to cope with these problems.

The anelastic nonhydrostatic model EULAG is a well-established and robust fluid solver that is a prospective dynamical core of a future weather forecasting model. It is extensively tested for correct representation of orographic flows. The presentation demonstrates model's abilities for simulating (i) upstream effects of the atmospheric flow over a mountain ridge and (ii) quasi-realistic Alpine summer convection. In the first case, a set of experiments was carried out for different flow regimes (linear, non-linear) and different setup (w/o Coriolis force, 2D/3D). The results were evaluated using reference solutions of Pierrehumbert and Wyman (1985 *JAS* **42** 977-1003). In the second case, the results of modeling of the Alpine convection for limited physics are presented. This part is focused especially on exploring the influence of horizontal grid resolution on the simulated convective processes.