1106-65-1537 **Andrei Bourchtein***, Rua Gomes Carneiro 1, Pelotas, 96010-610, Brazil, and **Ludmila Bourchtein**. *A time-splitting scheme for fully compressible atmospheric models.*

The complete atmospheric models contain solutions originated by various physical sources such as the atmosphere compressibility, the deformation effects, the gravity force, and also by the non-inertial forces related to the rotated reference frame. These phenomena have different characteristics of the propagation speed and energy contribution. The acoustic waves are the fastest and have negligible energy contribution, the inertial processes are the slowest and the most valuable in energy spectrum, and the gravity waves occupy the intermediate position.

In this study, we develop a semi-implicit time-splitting scheme for the nonhydrostatic atmospheric model. The acoustic and gravity waves are approximated implicitly, while slow inertial terms are treated explicitly. At each time step, the implicit part of approximation is reduced to three-dimensional elliptic equations solved by multigrid method. Stability analysis of the scheme shows that the time step is restricted only by the maximum velocity of the advection. The performed numerical experiments show the computational efficiency of the developed scheme and accuracy of the predicted atmospheric fields. (Received September 14, 2014)