Modeling of geophysical fluid flows: case of a Peruvian region

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Abstract

We model mathematically and computationally the geophysical fluid flows, using the basic concepts of rational mechanic and mathematical analysis; then as applications we present the numerical simulation of a rotating of viscoelastic fluid flow and simulate the forecast of some atmospheric variables for the region of La Libertad-Peru, using the Brazilian Regional Atmospheric Modeling System BRAMS; some climate variable as the precipitation is verify again the observed variable. Since its height above sea level varies from 3 msnm to 4800 msnm, observes certain instabilities in the simulation mainly when using a high-resolution mesh, due to this situation we try to improve stability by introducing a monotonic convective scheme of Walce, which is a high order and stable scheme.

Keywords: mathematical modeling, numerical modeling, numerical schemes, climate variables.

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