Geophysical Research Abstracts, Vol. 7, 03350, 2005
SRef-ID: 1607-7962/gra/EGU05-A-03350

Shallow water turbulence on a rotating sphere.

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The Contour Advective Semi Lagrangian Algorithm is applied to the shallow water equations written in terms of variables that separate, to leading order, the balanced and imbalanced components of the flow. This, along with a potential vorticity conserving approach, brings considerable numerical advantages. The model is used to study turbulent motion over a wide range of Froude and Rossby numbers. A new method for decomposing the resulting flows into their balanced and imbalanced components will be discussed. This has important implications for short and medium range forecasting and for the initialization of numerical models.