



SEMINAIRE CNRM / GAME

N°2012_23

jeudi 18 octobre 2012 à 14h

THE INTERNAL VARIABILITY OF EXTRATROPICAL BAROCLINICITY

par Pablo ZURITA-GOTOR

Department of Geophysics and Meteorology, Madrid

en salle Joël Noilhan

Résumé :

It is well known that the transient perturbations that dominate the heat and momentum transport in the extratropics grow at the expense of the available potential energy implied by the horizontal temperature gradient in the mean flow. This temperature gradient, or baroclinicity, plays a pivotal role for eddy development in linear instability theories and in nonlinear models of geostrophic turbulence. The relevance of baroclinicity for eddy growth is also apparent in observations, which show that the most intense eddy activity tends to occur over regions where this parameter is maximized. Yet despite the prominent role of baroclinicity for theories of extratropical circulation, very few studies have investigated its internal variability. In this work we describe the variability of baroclinicity anomalies at different frequencies using Southern Hemisphere data.

We show that this variability is driven by the eddy momentum fluxes at longer than synoptic timescales, consistent with a dynamical mechanism proposed by Robinson for extending the persistence of annular modes. The relevance of this mechanism is demonstrated by the strong sensitivity of annular mode persistence to baroclinicity variability in simulations with an idealized model.

Pour tout renseignement, contacter Y. Poirier (05 61 07 96 55) ou J.L. Sportouch (05 61 07 93 63)

Centre National de Recherches Météorologiques
42, Avenue G. Coriolis - 31057 Toulouse Cedex