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Inertia-Gravity Waves generated by near Balanced Flow in 2 Layer Shallow Water Turbulence on the beta Plane

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Using a fine resolution numerical model (2×4000^2 grid-points) of the two layer shallow-water equations of the mid-latitude beta plane dynamics, it is shown that there is no sudden breakdown of balance in the turbulent enstrophy-cascade but a faint and continuous emission of inertia gravity waves. The wave energy accumulates in the equator-ward region of the domain due to the Coriolis parameter depending on latitude and the dispersion relation of inertia gravity waves.

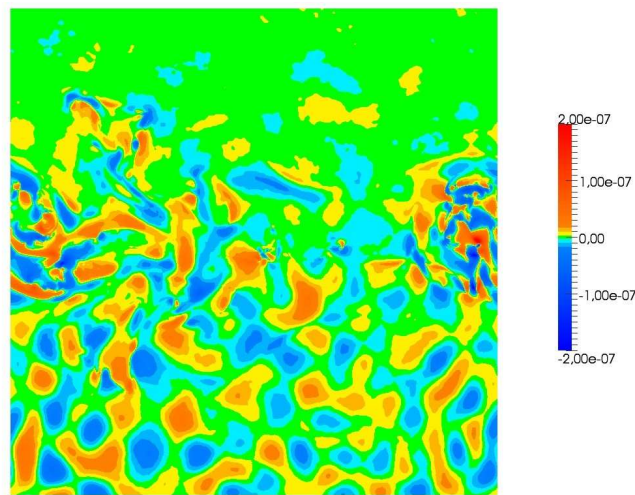


Figure 1: Divergence of the upper layer (in s^{-1}) after 250 days. The accumulation of wave-activity is clearly visible in the southern part of the domain. As is the dominance of structures of scale above the (baroclinic) deformation radius.

1. Wirth, A., Inertia-Gravity Waves generated by near Balanced Flow in 2 Layer Shallow Water Turbulence on the beta-plane, *Nonlin. Processes Geophys.*, 20, 25-34, 2013.