



Internally generated oceanic inertial gravity waves

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To achieve a better understanding of interactions between quasi-balanced eddying flows and internal gravity waves, in particular those interactions that involve eddying flows in a realistic ocean, internal gravity waves internally generated by the eddying flows are diagnosed from two experiments obtained with an ocean general circulation model at 0.1° resolution. Both experiments are forced with the same mean surface fluxes derived from the NCEP re-analysis. One includes and the other excludes the major external wave sources. Removing external wave sources eliminates almost all super-inertial energy, except in regions where flows tend to be baroclinically and barotropically unstable. In the mid-latitude oceans without external wave sources, strong super-inertial energy is found in the cores of jet-like eddying flows. This energy is associated with intermittent wave activities that satisfy the dispersion relation of the first mode of long internal gravity waves. The strength of this energy decreases exponentially with Rossby number.