



Diagnostics of diapycnal mixing z-level models

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Diffusion in ocean circulation models does not only arise from the explicitly applied diffusion term, but also from numerical discretisation errors, particularly of the advection terms, or from inadequate resolution of boundary layers by the model grid. We attempt to diagnose local rates of total diapycnal mixing in a z-level model by performing dye-tracer release experiments in close analogy to experiments that have been performed in the real ocean.

A robust method to diagnose total diapycnal mixing even on sloping and converging/diverging isopycnals has been developed in one- and two- dimensional case studies. Results from a global-ocean simulation of a number of executed and planned tracer release experiments are presented and implications for improvements of future ocean models are discussed.