Influence of horizontal and vertical model resolution on ocean variability in idealized double-gyre setting

Thierry Huck*[1]

[1]Laboratoire de physique des océans (LPO) – Université de Bretagne Occidentale (UBO), INSU, Institut Français de Recherche pour l'Exploitation de la Mer (IFREMER), CNRS : UMR6523, Institut de recherche pour le développement [IRD], Institut Universitaire Européen de la Mer (IUEM) – Z.I. Pointe du Diable B.P. 70 29280 Plouzané, France

Abstract

A series of numerical experiments with a shallow-water model based on HYCOM is run at increasing horizontal and vertical resolution under constant wind forcing.
The level of kinetic energy (mostly turbulent) varies greatly with resolution with no sign of convergence up to 1/48◦.
The low-frequency variability, on interannual periods, also varies widely depending on horizontal and vertical resolution.
Diagnostics are shown that illustrate the different regimes and how energy transfers between horizontal and vertical scales.

*Speaker