



Role of the spatial resolution on the oceanic subduction rate

G. Caniaux (1), M. Lévy (2), and K. Takahashi (3)

(1) CNRM/GAME (Météo-France/CNRS), TOULOUSE, France (caniaux@meteo.fr), (2) LOCEAN/IPSL, PARIS, France (Marina.Levy@locean-ipsl.upmc.fr), (3) Earth Simulator Center, Japan

Subduction is the process by which water masses irreversibly escape from the mixed layer in which they were in contact with the atmosphere, into the main thermocline. Diagnosing the annual subduction rates plays a key role in numerical models because the rate of deep water formation largely depends of the properties and realism of the simulated top mixed layers. In this study, annual subduction rates are evaluated with the kinematically defined instantaneous rate method of Valdivieso and al. (2004) and applied to academic simulations of the North Atlantic basin which only differ by their spatial resolution (respectively 1° , $1/3^\circ$, $1/9^\circ$, $1/27^\circ$ and $1/54^\circ$). The comparison of the simulations allows to evaluate the role of the resolution on subduction mechanisms. A second kind of comparison is provided with simulations obtained from the degradations of the stronger resolution simulation ($1/54^\circ$). This second kind of comparisons allows to directly evaluate the role of the resolution on subduction rate diagnostics.