



Adaptation of the vertical resolution in the mixed layer for HYCOM

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This study focuses on the dynamics of the mixed layer. When the mixed layer depth increases, the vertical discretisation eventually becomes too sparse at the bottom of this layer to accurately resolve its evolution and strong numerical errors can appear. This is linked to the fact that the vertical resolution is concentrated in the upper part of the ocean and does not adapt to the deepening of the mixed layer. Knowing that the HYbrid Coordinate Ocean Model (HYCOM) is able to modify the distribution of the vertical levels, we suggest a method to adapt the resolution to the mixed layer extension. This method is tested in 1-D configurations for three atmospheric forcing conditions: strong convection, strong wind mixing and warming. It is shown to improve the results when the mixed layer reaches deep layers.