



The Denmark Strait Overflow seen from different vertical grids in a very high resolution context

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NEMO ocean model is used to simulate the Denmark Strait overflow in a regional configuration. Numerical simulations are carried out using three different horizontal grid resolutions ($1/12^\circ$, $1/36^\circ$ and $1/60^\circ$). The vertical resolution is studied in z coordinates through 46, 75, 300 and 990 levels, reaching resolutions of $\sim 3\text{m}$ at the bottom. A different approach is also followed by the use of s -coordinates, also with different horizontal resolutions. Our study shows that s -coordinates are more performant at every resolution. The results in s -coordinates, even in $1/12^\circ$, compares well with hydrographic sections and also in terms of transport. Finally, in order to minimize the effects of pressure gradient errors in future global simulations, the use of a mixed vertical coordinate combining s and z coordinates in the same domain is investigated.