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Direct Numerical Simulation of the generation of internal waves over a thin obstacle

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Numerical simulation of stratified flows past a thin obstacle are performed in comparison with laboratory experiments, allowing a detailed description of the transient processes occurring from the starting of the flow up to the formation of completed internal waves field. A high resolution finite differences scheme has been adapted to the low Reynolds Navier-Stokes equation with transport equation for density defined by salinity in the experiments. Details of the resolved flow pattern as obtained from DNS are enriching the quantitative description of this complex flow that can be expanded to the investigation of atmospheric and oceanic flows patterns on sharp topography.

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