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On the structure of the pressure field induced by long internal waves in the framework of various weakly nonlinear models

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During the analysis of wave dynamics density and pressure are usually excluded to obtain the equation for a velocity or pycnocline displacement. In our work, the wave pressure variations are expressed in terms of pycnocline displacement, because existing models of internal waves are focused on the calculation of the vertical isopycnal displacement. This allows to combine in a single numerical model both calculation of the displacement field induced by internal waves and calculation of bottom pressure variations caused by internal waves. A comparison of the structure of wave pressure for displacements determined by various weakly nonlinear equations is made.