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An effect of the near-bottom pycnocline on the loads of the bottom hill

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The results of the present theoretical solutions and experimental data revealed the nature of the considerable growth of the wave-drag component, which is caused by the perturbation of a thin pycnoclyne placed at the depth h of the hill's height T = h. All of the earlier studies gave considerably lower wave-drag effect of about Cw $\sim$ 0.02 at the same values of the Froude number. The latter case, i.e. the presence of the near-bottom pycnocline, appeared to be the main condition for the sufficient increase of the wave-drag coefficient Cw $\sim$ 0.15 at the values of the Froude number Fr $\sim$ 0.5. This effect could exist in the natural conditions when the sharp pycnocline is deep enough to avoid the manifestation of internal perturbations at the free surface excluding any of its disturbance.

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