Transformation of the first mode internal solitary wave over an underwater step in a three-layer flow

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Interaction of the first mode solitary wave with bottom step in three-layer flow is studied numerically. Two modes of the internal waves exist in the three layer flow. Interaction of the first mode internal solitary wave with an obstacle is one of the known mechanisms of generation of the second-mode internal solitary waves. The second mode internal solitary waves appear as in the reflected wave field as well as in the transmitted wave field. In the case of thick intermediate layer secondary solitary waves of the second mode take convex form. Dependence of the generated second-mode solitary waves in transmitted and reflected wave of amplitude on the incident wave amplitude are studied. Energy transfer from the first mode into second modes during transformation is also studied