

Abstract Submitted
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Shallow-water models for gravity currents/intrusions in double-continuous-stratification systems MARIUS UNGARISH, Technion Haifa Israel — High-Reynolds-number Boussinesq gravity currents and intrusions systems, in which both the ambient and the propagating “current” are linearly stratified, are considered. The main focus is on a current of fixed volume released from a lock; the height ratio of the fluids H , and the stratification parameter of the ambient S , are quite general. It is shown that a one-layer shallow-water model, in which the internal stratification enters as a new dimensionless parameter, $\sigma \in [0, 1]$, provides insightful results. In general, the speed of propagation decreases when the internal stratification becomes more pronounced (σ increases), and in some cases the current runs out of driving force. This model is a versatile and robust self-contained prediction tool, which can be applied to both rectangular and axisymmetric geometries, and to quite general continuously- stratified systems.

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