

一維變量異重流模式之驗證與模擬比較

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摘 要 本文以有限差分法求解一維異重流之方程式，利用陳秉鈞（2007）實驗數據加以率定捲水係數（ E_w ）及總阻力係數（ C_d ）之重要參數（實驗不易取得）。所建置之數值模式，可反映鹽水異重流於實驗入口之發展段以及於長距離（40 公尺）傳輸的物理機制。此外，本文模擬渾水異重流（含不溶於水之砂或細泥）加以比較。根據波形分析後，發現不論渾水或鹽水異重流，兩者之沿程平均厚度的波型發展結果相似。

關鍵詞：異重流、捲水係數、阻力係數、數值模擬。

Verification and Comparison of Simulation for 1-D Unsteady Density Currents

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ABSTRACT Finite Difference Method was applied for modeling unsteady one-dimensional density currents. Experimental data (from Chen, 2007) was used to calibrate and determine two important parameters: water entrainment efficiency (E_w) and total drag coefficient (C_d). The 1-D model simulated well on both the entrance developing section and mass transfer of saline density current for a long distance (40m). Simulation of turbidity currents was compared with saline density currents. Based on the analysis of wave shape, and the depth-average thickness, both currents were similar.

Key Words: saline density currents, turbidity currents, water entrainment efficiency, total drag coefficient, numerical simulation.

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