The drag on a square cylinder from the impact of a gravity current ESTEBAN GONZALEZ-JUEZ, ECKART MEIBURG, GEORGE CONSTANTINESCU, UCSB — The drag on a square cylinder from the impact of a gravity current is studied using high-resolution two-dimensional direct numerical simulations. The calculated drag from the simulations agrees well with that from previous experimental measurements. A simplified model is proposed for the drag variation with time during the impact stage using Morrison's equation. Differences between the drag predicted with Morrison's equation and that calculated from the simulations are attributed to the formation of vortical structures, whose effect on the drag cannot be captured with Morrison's equation. The effect of these structures on the drag variation with time is discussed in detail in this work. The fluctuations of the drag are seen to increase as the Reynolds number increases.

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