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**Large-Eddy Simulation of Particle-Driven Gravity-Currents** ROLF HENNIGER, Institute of Fluid Dynamics, ETH Zurich, ECKART MEIBURG, Department of Mechanical Engineering, University of California at Santa Barbara, LEONHARD KLEISER, Institute of Fluid Dynamics, ETH Zurich — A gravity current forms when a heavier fluid propagates into a lighter one. In the case of particle-driven gravity currents, the density difference is caused by a differential loading of the fluid with small suspended particles. The particle influence is described in an Eulerian framework, such that the particles are represented as a concentration field. Typical Reynolds and Schmidt numbers in reality are orders of magnitude larger than those which are within reach of direct numerical simulation (DNS). In large-eddy simulations (LES) only the largest scales of the turbulent fluid motion are resolved by the numerical procedure, while the small (subgrid) scales are modeled. The LES approach is applied to both the fluid equations and the particle concentration equation. In the present work, we compare LES to DNS results at moderate Reynolds and Schmidt numbers. In particular, we consider the energy budget of the flow, the mixing behavior and the sedimentation profiles in a lock exchange configuration.

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