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Sediment dynamics over rippled beds in oscillatory flow: Numerical results PASCAL FEDE, ALBERTO SCOTTI, Dept. of Marine Sciences, Univ. of North Carolina, KEN KIGER, Dept. of Mechanical Engr., Univ. of Maryland —
The dynamic motion of solid particles is an important phenomena in a wide range of applications such as: coastal erosion, sand dune motion or fluidized bed. In these applications, an important issue is the effect of the wall-shape on the dynamical behavior of the dispersed phase and on the sediment deposition. In this study, Direct Numerical Simulations of steady fluid flow over a ripple have been coupled with Lagrangian tracking of discrete solid particles. The forces acting on the particles are reduced to the drag and the lift force induced by the fluid a flow. The particles are initially randomly distributed in the computational domain. On the bottom boundary, a saltating model is introduced to account for particle-wall interaction. Both steady and oscillatory conditions are considered, and the results are compare with ongoing experimental results discussed in a companion presentation.

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