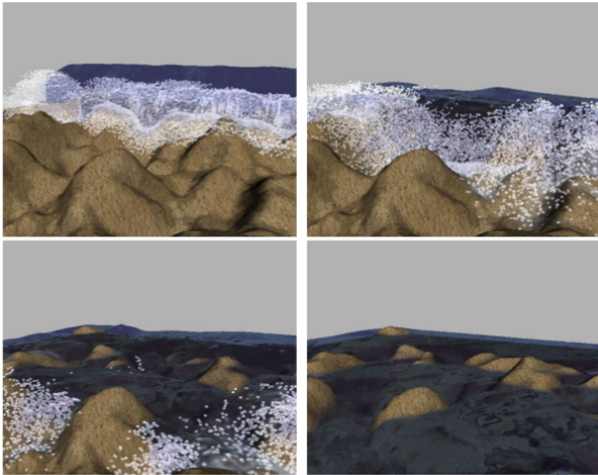


Enhanced Lattice Boltzmann Shallow Waters for real-time fluid simulations

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We present a novel approach at simulating fluids in real-time by coupling the Lattice Boltzmann Method for Shallow Waters with particle systems. The LBM can handle arbitrary underlying terrain and arbitrary fluid depth, which, in turn, allows us to extend it to track dry regions. The LBM is also two-way coupled with rigid bodies. The particle system adds more detail to the LBM; breaking waves are detected from the surface simulation and particles are generated to provide the effect, taking effectively certain amounts of fluid and reintegrating it back once they fall over again. Both the LBM and the particle

simulation are implemented in *CUDA*, although rigid bodies are simulated in *CPU*. Finally, we show the effectiveness of the method on commodity hardware.