

Abstract Submitted
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The growth and equilibrium of barchan dunes¹ ERICK FRANKLIN,
CARLOS ALVAREZ, UNICAMP-Univ de Campinas — Barchan dunes are commonly found in oil pipelines, on river beds, on Earth deserts, and on the surface of other planets. The main feature of a barchan dune is its horns pointing downstream; however, their time evolution has yet to be fully understood. Here, we investigate experimentally the formation of subaqueous barchan dunes in a closed conduit. In our experiments, granular heaps of conical shape were placed on the bottom wall of a rectangular channel and they were entrained by turbulent water flows. For each heap, horns appear and grow until an equilibrium length is reached. The experimental results show the existence of two time scales, one for the growth and the other for the equilibrium of horns, equal to $0.5t_c$ and $2t_c$, respectively, where t_c is a characteristic time scaling with the grains diameter, gravity acceleration, densities of the fluid and grains, and shear and threshold velocities.

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