



## **Observations on dune dynamics in covered flow**

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An experiment is presented for bed-form migration in a pressurized duct. The hydrodynamic discharge corresponded to 1.4 times the threshold value for incipient motion of light-weight particles with a size of 3 mm. Under these conditions, dunes (i.e. bed-forms with steep front and mild tail) with a height of around 2 cm developed and migrated along the duct. Dune length, period and celerity were also considered. Long-duration movies were taken from above the duct, to depict the different features of the sediment transport over the crests and in the troughs of the dunes. Eulerian measurements of concentration and velocity of bed-load particles were conducted by image analysis, the quantitative analysis showing the temporal and spatial coherence of the sediment motion. Despite the relatively simple (one-dimensional) nature of the process, transverse motion and impulsive gusts of grains were present because the dunes generated sediment motion patterns similar to those measured in local sediment transport processes. The present observations, though limited to a single experimental configuration, yield insight into the details of bed-form dynamics.