BURSTS IN DISCONTINUOUS AEOLIAN SALTATION

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We find in wind tunnel experiments a regime of discontinuous flux characterized by sand bursts close to the onset of Aeolian saltation. Scaling laws are observed in the time delay between each burst and in the measurements of the wind fluctuations at the fluid threshold Shields number θ_c. The time delay between each burst decreases on average with the increase of the Shields number until sand flux becomes continuous. A numerical model for saltation using discrete element methods consists of a poly-disperse 3D quiescent packing of hard spheres subjected to a logarithmic wind velocity profile imposed in horizontal direction (x-direction). A tracer attached to every particle generates stochastic turbulent perturbations that mimics the wind pick of sand grains and reproduce the sand bursts.

References

[1] M. V. Carneiro, K. R. Rasmussen, and H. J. Herrmann, *Bursts in discontinuous Aeolian saltation*, Scientific Reports **5** 11109 (2015).