Windblown Sand Sciences and Engineering

Summary outline:

Windblown sand is an emerging issue affecting both built environment (e.g. single buildings, urban areas, transport infrastructures), human activities (e.g. farms, industrial plants) and ecological system (e.g. coastal dunes and desert oasis) in sandy coastal and desert environments. To cope with the effects above, the demand for innovative approaches to properly model and measure windblown sand transport, and for the design and performance assessment of mitigation techniques has gained momentum both in the scientific literature and in the industrial practice.

From a scientific perspective, windblown sand phenomenon is characterized by its multiphysics nature, coupling fluid dynamics and sand erosion-transport-sedimentation-avalanching, and its multidisciplinary character, involving both fundamental and engineering disciplines.

Industry is currently facing a growing number of infrastructure projects ongoing and planned in sandy regions across North Africa, Middle East, and Asia. In this context, industry can provide emerging challenging design issues and stimuli to research.

As a result, research in windblown sand sciences and engineering should be fostered by bringing together several partially overlapping disciplines and scientific communities sometimes shamefully apart, such as applied mathematicians, physicists, aeolian geomorphologists, coastal and wind engineers, as well as both academic and non-academic sectors. The present mini-symposium is intended to help towards that end.

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