



Emergence of a characteristic length scale during dune growth

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Research on bedform dynamics have always been stimulated by a simple question: how a periodic dune pattern emerges? Answering this question has proven challenging, in large part because of the inherent variability of the boundary conditions that must be taken into account in the different environments where dunes have been observed (e.g., rivers, oceans, arid deserts). Hence, we have to continue to rely on theoretical models, which provide a quantitative description of the driving mechanisms with respect to the flow shear stress and the transport capacity. In order to bridge between theory and data, we present here the results of a landscape scale experiment to document the early stage of dune growth in a natural eolian context (Ping *et al.*, 2014). After flattening an experimental plot of 100 m long and 60 m wide in the Tengger Desert (Inner Mongolia, China), we measured winds and topography from April 2014 to November 2017 to reveal the development of regular dune patterns. Observations are compared to the predictions of the theoretical model using independently measured local transport properties.

Bibliography

Ping L., C. Narteau, Z. Dong, Z. Zhang, S. Courrech du Pont, *Emergence of oblique dunes in a landscape-scale experiment*, Nature Geoscience, 7, 99-103 (2014).