

Airflow and Sediment Dynamics in Arid Dune Fields Using Field and Modelling Techniques

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The British Society of Geomorphology's Conference Attendance Grant provided me the resources to attend the Association of American Geographers (AAG) 2015 Annual Meeting in Chicago, USA. Attending this international conference was a great opportunity to further develop my research project by providing a new and diverse audience to showcase my research. I took part in the Aeolian geomorphology session which was particularly relevant to my work and I was able to get direct feedback on my research efforts.

My oral presentation focused mainly on the impact of urban development on the geomorphologic evolution of an adjacent dune field system. Using data collected in the field by both high resolution three-dimensional anemometers and Computational Fluid Dynamics (CFD) modelling the impact of urbanization on the regional airflow patterns were analysed. The dunes migrate primarily in response to unidirectional winds and under these conditions the influence of the urban area greatly modified incipient flow conditions. Winds are compressed, accelerated and shifted to the south of the terrace while airflow conditions downwind of the urbanization are highly turbulent decelerated airflow conditions (Fig. 1). These airflow patterns lead to potentially accelerated erosion in areas where winds velocity is accelerated and stabilization in the urban shadow zone. This coupled anthropogenic and process oriented geomorphologic approach was well received by the audience and is especially interesting to me because of its relevancy and potential application to the local government and urban developers.

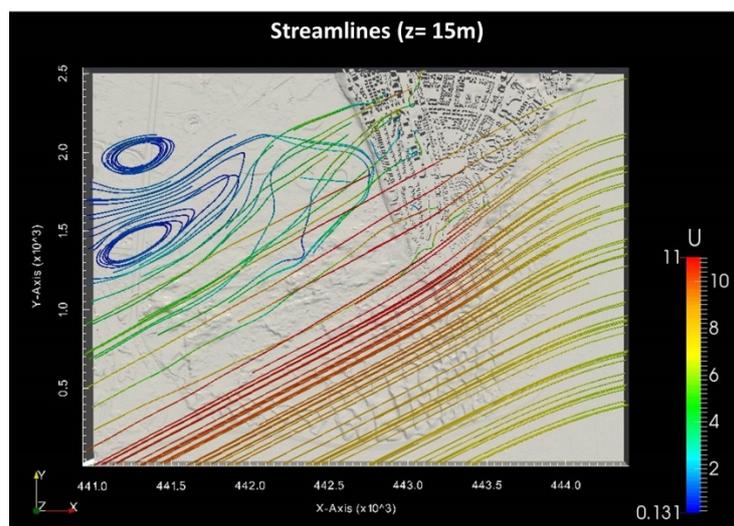


Figure 1: Characteristic streamlines generated at 15 m above the surface.

I would sincerely like to thank the BSG for awarding me the Conference Attendance Grant. I would highly recommend applying for this grant to any young scientists who are looking to establish themselves by presenting their work at a major international conference.