

MECHANICS SEMINAR

Barchan dunes: from where do they come from?**Erick Franklin**

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Microsoft Teams - <https://tinyurl.com/48fqbv82>**Abstract.**

Barchans are crescent-shaped dunes that are found in diverse environments, such as river beds, Earth's deserts, on the surface of Mars, and other planetary environments. Although presenting roughly the same morphology, the scales are highly different depending on the environment they are in: Their length and time scales go from 1 km and 10,000 years on Mars, passing by the 100 m and 1 year on deserts, down to 10 cm and 1 minute for barchans in water. In all cases, although the scales are different, the dynamics are comparable. In this talk, I will present the main results of our investigations to understand the origin of barchan and barchanoid forms and also how barchan fields emerge. For that, we made use of analytical, experimental and numerical approaches. The analytical part consisted mainly of stability analyses (with some perturbation methods) and the numerical part of CFD-DEM simulations. For the experimental part, we took advantage of the much faster scales of aquatic dunes and conducted experiments in a water channel. The results were sometimes surprising... OBS: I support open science, you can freely read and download my papers and data on <http://www.fem.unicamp.br/franklin>.