



## Drumlin height variability in the New York State drumlin field

Matteo Spagnolo (1), Dale P. Hess (2), and Chris D. Clark (3)

(1) Environment and Geography Department, University of Aberdeen (UK) ([m.spagnolo@abdn.ac.uk](mailto:m.spagnolo@abdn.ac.uk)), (2) Department of Earth Sciences, Brock University (Canada), (3) Department of Geography, Sheffield University (UK)

Although drumlins are among the most common landforms found in formerly glaciated terrain and have been studied for centuries, we still lack a general agreement on their genesis. No one theory of formation can be accepted, though, unless it is capable of explaining the shape of drumlins observed in nature. Most scientists will agree that drumlins have a characteristic shape, but what are the exact figures? While many studies have focused on drumlin length, width and elongation, there is a relatively lack of work on bedform height. In the few exceptions that can be found in the literature, drumlin height has been usually quantified in terms of altitudinal range, with biases related to topography, and from studies of a relatively small number of drumlins.

In this work, the height of over 6000 drumlins mapped in New York State, south of Lake Ontario, is analyzed. Specific GIS techniques are applied to effectively quantify drumlin height rather than the once typically measured altitudinal range. Results are discussed statistically and in respect to those reported in the literature as well as those recently emerged from a study of the British Isles. The spatial distribution of drumlin height across the New York State field varies systematically. This paper explores the potential influence of topography, bedrock and glacial history on this variation through spatial analysis. The correlation to other morphometric properties, i.e. length, width and elongation, has also revealed interesting trends.