

Assessing contextual information from SRTM data as a basis for classifying landform types. Case study: dune fields

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Abstract—During the recent years landform classification and mapping has been one of the most active areas of geomorphometry. However, there is still a lack of studies approaching the problematic of classifying repeating patterns of landform types by analyzing digital elevation models (DEMs). Therefore, our interest in such methods stems from the need to relate landforms to context. This approach relies on the potential of landscape metrics to evaluate landforms patterns and account for spatial context in geomorphometric analysis, as basis for classifying landform types. The quantification of landscape metrics has been carried out on DEMs, previously discretized through a segmentation process based on the following morphometric variables: elevation, elevation skewness, profile curvature, dissection and surface relief ratio. Each of these variables

were classified using an unsupervised algorithm for accomplishing a series of limits imposed by the concept of landscape metrics and further statistical analysis. In order to test the transferability degree of landscape metrics among different dune fields, a set of statistical analyses was carried out. The proposed methodology has been applied via freely available SRTM DSMs in different terms of roughness within the dune fields. The current approach provides a first prospect regarding the usefulness of landscape metrics as land-surface variables. We expect the additional information on pattern and context to be crucial in the ontology of landform types.