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Reading alpine morphology according to surface texture: two approaches compared

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The availability of high resolution digital terrain models (HR-DTM) opens the possibility to characterize quantitatively the solid earth surface morphology at high level of spatial detail. From this perspective, surface texture characterization can be intended in an analogous way to what performed for the analysis of artificial surfaces. The characterization of surface texture plays a pivotal role in the context of geo-structural and geomorphological interpretation and mapping, and offers interesting prospects from the side of hydrogeological and geo-engineering issues. In this work, we explore two methodologies for surface texture analysis. The study area is a small alpine basin (Missiaga basin, North-Eastern Italy), characterized by a complex surface morphology. The two methodologies, one based on geostatistical indexes and the other on local binary patterns, are applied to a 2 m pixel size HR-DTM. The results of this exploratory analysis are discussed from the perspective of the potentialities in information retrieval and applicability.