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## Quantify spatial heterogeneity using patch indices based on remote sensing data

Mohammad Noor Alhamad and Mohammad Alrababah

Jordan University of Science & Technology, Natural Resources& Environment, Irbid, Jordan (malhamad@just.edu.jo)

Quantifying spatial heterogeneity is a key step to find out the relationship between landscape pattern and ecological process. Many landscape metrics have been employed to measure the impact of humans on landscapes. In this study we examined the response of patch metrics to a large range of grain sizes in Mediterranean dryland landscapes. Patch metrics are algorithms that quantify specific spatial characteristics of patches, classes of patches, or entire landscape mosaics. derived metrics were based on Landsat ETM satellite imagery with a spatial resolution (pixel size) of 28.5 m for a northern Jordan. The investigated metrics were no. of patches (NP), patch density (PD), largest patch index (LPI), mean patch area (MPA) within six land use types (urban, agriculture, olive orchids, forestry, shrubland and rangeland). The patch metrics showed predictable relationships in, responses to changing grain size in all landuse types. The mean patch area metric behavior in response to variable grain size was best explained by positive power laws model (R2=0.99). Further, both no. pf patches and patch density exhibited negative power laws model (R2=0.99). Whereas, the largest patch index showed erratic responses and exhibiting no general scaling relations. It can be concluded that only metrics with predictable behavior with changing scale, could be extrapolated or interpolated across different scales. These findings stress the need to seriously consider scale issues when quantifying pattern-process relationships at the landscape level.