



## **Mediterranean dryland Mosaic: The effect of scale on core area metrics**

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Quantifying landscape spatial pattern is essential to understanding the relationship between landscape structure and ecological functions and process. Many landscape metrics have been developed to quantify spatial heterogeneity. Landscape metrics have been employed to measure the impact of humans on landscapes. We examined the response of four core areas metrics to a large range of grain sizes in Mediterranean dryland landscapes. The investigated metrics were (1) mean core area (CORE-MN), (2) area weighted mean core area (CORE-AM), (3) total core area (TCA) and (4) core area percentage of landscape (CPLAND) within six land use types (urban, agriculture, olive orchards, forestry, shrubland and rangeland). Agriculture areas showed the highest value for minimum TCA (2779.4 ha) within the tested grain sizes, followed by rangeland (1778.3 ha) and Forest (1488.5 ha). On the other hand, shrubland showed the lowest TCA (8.0 ha). The minimum CPLAND values were ranged from 0.002 for shrubland to 0.682 for agriculture land use. The maximum CORE-MN among the tested land use type at all levels of grain sizes was exhibited by agriculture land use type (519.759 ha). The core area metrics showed three types of behavior in response to changing grain size in all land use types. CORE-MN showed predictable relationship, best explained by non-linear responses to changing grain size ( $R^2=0.99$ ). Both TCA and CPLAND exhibited domain of scale effect in response to changing grain size. The threshold behavior for TCA and CPLAND was at the 4 x 4 grain size (about 1.3 ha). However, CORE-AM exhibited erratic behavior. The unique domain of scale-like behavior may be attributed to the unique characteristics of dryland Mediterranean landscapes; where both natural processes and ancient human activities play a great role in shaping the apparent pattern of the landscape