
Lacunarity for Spatial Heterogeneity Measurement in GIS

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Abstract

As a scale dependent measure of heterogeneity, lacunarity has been applied to the analysis of structures in both fractals and non-fractals. In this paper, the lacunarity concept and some lacunarity estimation methods are briefly described, then a Lacunarity Analysis extension for ArcView GIS (ESRI) is introduced. Using binary and gray-scale images, several examples are also given for lacunarity analysis of spatial heterogeneity. Experiments with gray-scale image textures show that a new lacunarity estimation method can provide more accurate heterogeneity measurement than some existing methods. The results suggest that lacunarity analysis is a promising tool for spatial heterogeneity measurement in a GIS environment.
