

# FROM IMAGE OBJECTS TO MAPS: AN ASSESSMENT OF CARTOGRAPHIC REQUIREMENTS FOR GEOBIA

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## **ABSTRACT:**

One of the advantages of GEOBIA methods is that they facilitate the integration of the results of RS image analysis into vector GIS. A necessary step for the integration is the conversion of the outline of the extracted image object, which is tied to the raster representation, into a simplified vector graphics. The term “simplified” refers thereby to both I) an abstracted representation and II) a representation that accounts for the objects man-made or natural origin, i.e. a building may have a rectangular outline, while a lake has a smooth curved outline. To achieve such a representation that withstands cartographic standards several requirements need to be fulfilled. A pre-requisite for any cartographic utilization is that the image needs to have a resolution appropriate to the mapping scale and purpose. For instance, a Landsat scene with 30m resolution can only be used to extract map objects for a topographic map of scale 1:150.000 or smaller in accordance with the sampling theorem and human perceptual limits. The first processing step after the raster-to-vector conversion is the transformation of the jagged zigzag outline originating from the raster-cell shape into straight segments. We consider this as psychological (and technical) requirement, as otherwise a viewer can get a false impression of the mapping accuracy. Cartographical requirements have to be considered next to ensure that perceptual minimum dimension are met with respect to polygon area, distance and line length. Finally computational requirements with respect to the number of points used for the vector representation have to be fulfilled. A point reduction will facilitate efficient use of available data storage and facilitate computational expensive data analysis, such as object neighbourhood analysis. Our presentation will illustrate those requirements with a focus on natural features such as forests and lakes.

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