



## **Automatic Extraction of Faults using Object Oriented Classifications and Fractal Analysis of Remote Sensing Data**

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Object-based classification is a promising methodology. Unlike pixel-based techniques, which only use the layer values, the object-based techniques can also use shape and context information of a scene texture. This extra degree of freedom provided by the objects aid the identification of geological structures. In this article, we present an evaluation of object-based classification in the context of extraction of morphology of geological faults. An automatic classification algorithm has been developed in order to extract faults morphologies and dimensions. The DEM and radar images of an area near Lake Magadi, Kenya, have been processed separately to identify which of them is a better candidate for mapping faults. We have then use the “fault” objects to determine the statistics of the faults populations. Especially the fractal dimensions of fault dimensions and spacing are similar to fractal dimensions directly measured on remote sensing images of the study area using Power Spectra (PSD) and variograms, but also with earthquakes magnitude and localization statistics. This new method allowed to get unbiased statistics of faults and help us to understand the evolution of the fault systems in extensional domains. Furthermore, the direct analysis of image textures is a good indicator of the fault statistics and allows us to classify the intensity of deformation.