

## Texture analysis of SAR-ERS1 images from South Cameroon

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### Abstract

Two processing methods were performed to analyse the texture of SAR images (ERS1-PRI) from South Cameroon which exhibits a smooth landscape of hectometric size convex hillslopes under the rainforest. The first method involves to filter the original image using a center connected filter to partially remove the speckle noise and then to apply three gradient-oriented filters according to three directions perpendicularly to the radar emission : South-West, West and North-West. These three directions were cleaned up by a reconstruction using low and high thresholds, the latter one corresponding to a marker. A closing of the three joined directions was then treated by an erosion as a marker. The segmented image is finally obtained by the intersection of the three joined directions with the reconstructed closing, revealing that at least 50% of the network is depicted from the original image. We have also applied multifractal analysis to texture description of three 100x100 pixels subscenes of ERS1 images, choosen for their texture representative of the main landforms types in southern Cameroon. The method consists to analyse the inner multifractal structure of an image with a set of regional multifractal spectra, each of them being computed for a given area. Regional multifractal spectra were obtained using a naïve estimator based upon the statistics of the singularity maps in the subscenes. The singularity spectra well discriminate the three types of texture. These preliminary results indicate that the coupling of classical processing and multifractal analysis is a promising way of research for SAR image segmentation.