

Classification of satellite SAR images using “texture eigenvalues” : Application to the Cameroonian littoral mangrove.

Emmanuel Tonyé(1), Narcisse Talla Tankam(1,2), Albert Dipanda(2), Alain Akono(1)

(1) : Laboratoire d'Electronique et de Traitement du Signal (LETS), Ecole Nationale Supérieure Polytechnique, BP 8390 Yaoundé, Cameroun, (2) : Laboratoire Electronique, Informatique et Image (LE2I), Université de Bourgogne, Dijon, France (tonyee@hotmail.com)

The objective of this work is the SAR image processing of ERS 2 acquired on the Cameroonian littoral area for the identification and the extraction of navigable surfaces and the surfaces occupied by the mangrove while being based on the concept of eigenvalues of texture in a supervised classification. The approach adopted in this work is based on the statistical parameters of analysis of the texture of SAR radar image. Our classification is based on 4 texture parameters. The main characteristic of this approach lies in the fact that each interested area (training area) is entirely characterized by its texture spectrum which is comparable to a texture table, with the various orders of texture parameters evaluation in ordinates and the various texture parameters in X-coordinate. This texture table is seen like a square matrix of order 4. This matrix is thus characterized by the whole of its eigenvalues which we call in the concrete cases " eigenvalues of texture. " Indeed, two matrixes which have the same eigenvalues are similar. A comparative study with existing data reveals that the results of this approach are extremely interesting.