Based on Multi-scale and Multi-feature Information Mining Technique for Remote Sensing Image and Application

Xiaomei Yang (LREIS, Institute of Geographic Sciences and Natural Resources Research, CAS)

Jianming Gong (LREIS, Institute of Geographic Sciences and Natural Resources Research, CAS)

Abstract

With the development of remote sensing technique and storage technique，there is a great number of spatial data，much of which is remote sensing image data. However，the use efficiency of the huge quantities of remote sensing image data is still low. It is very difficult for people to process with thousands of image data and find out knowledge from them. So people only can deal with remote sensing image which is still in a low lever. With the date mining，information retrieval，multi media database and other correlative field developing，it becomes possible to manage and analyze remote sensing images and find out useful information to people.

The paper puts a concept frame of the remote sensing image mining. The remote sensing images are different from ecumenical images, so according to these feathers we generalize the concept of remote sensing image mining and put forward the general process and the hierarchy frame.

Then the paper attempts to present an information extraction approach in terms of image segmentation based on an object-oriented

algorithm for high-resolution remote sensing images. An aim of our research is to establish an identification system of "pixel-primitive-object" and extract micro-scale coastal zone features, e.g., beach, coastline, sea wall, and mariculture pond.

Firstly we extract various internal characteristics of relatively homogeneous primitive objects using an image segmentation algorithm based on both spectral and shape information. Secondly, the features of those primitives are analyzed to ascertain an optimal object by adopting certain feature rules, such as the traditional feature of the spectrum, shape, texture, spatial relation etc.

Results from this research indicate that our model is practical to realize and the extraction accuracy of the coastal information is significantly improved compared to traditional approaches. Therefore, this study provides a potential way to serve our highly dynamic coastal zones for monitoring, management, development and utilization.

`