

The use of remote sensing for monitoring spatial and temporal changes in mangrove management

ABSTRACT

Mangroves are important in protecting shorelines against tidal waves and erosion. Since the mangrove forests in the Matang Mangrove Forest Reserve (MMFR), Perak, Malaysia are managed with sustainable objectives, spatial information on the mangroves needs to be acquired and updated from time to time. This paper describes the application of SPOT 4 satellite images for mapping mangrove forest extent and quantifying temporal changes within a 10-year period (1989-2000) in Kuala Trong, Perak of MMFR. Multi temporal SPOT 4 images of 1989 and 2000 were enhanced and classified using Erdas image processing software. Digital change detection technique was applied on both images and the magnitude of changes in mangrove region was analysed. Secondary data on the mangrove was obtained from the Forestry Department Peninsular Malaysia and used in the image classification, change detection analysis and field verification processes. Results showed that the mangrove forest at Kuala Trong, MMFR can be classified into five classes: excellent, good, poor, dryland and damaged forests. The overall image classification accuracy obtained was more than 70%. Remote sensing is an effective tool for mangrove monitoring in MMFR.

Keyword: Remote sensing; SPOT 4; Mangrove mapping; Change detection; Matang Mangrove Forest Reserve