

## **ASSESSMENT OF MANGROVE ECOSYSTEM CHANGE USING REMOTE SENSING AND GIS TECHNOLOGY IN AO SAWI-THUNG KHA, CHUMPHON, THAILAND**

**Surachai Ratanasermpong<sup>1</sup>, Dararat Disbunchong<sup>1</sup>, Thongchai Charupatt<sup>2</sup> and Suwit Ongsomwang<sup>2</sup>**

*<sup>1</sup> National Research Council of Thailand, Phaholyothin Road, Bangkok 10900, Thailand*

*<sup>2</sup> Royal Forest Department, Phaholyothin Road, Bangkok 10900, Thailand*

### **ABSTRACT**

The watershed and mangrove ecosystem of Ao Sawi-Thung Kha in Chumphon province has seen major changes induced by humans. These changes have been documented since 1973. The primary objective of this study was environmental management of the coastal zone, with emphasis on mangrove ecosystems and in identifying an effective approach for sustainable forest management using Remote Sensing and GIS technology. Detection of forest change was conducted by (1) assessing forest use in 1973, 1987, 1993 and 1998 based on visual interpretation of satellite imagery at the scale of 1:50,000; (2) evaluating forest use area and change using GIS; and (3) developing a plan for the sustainable use of forested land based on additional data. Major results were (1) compilation of a relevant thematic database; (2) assessment of forest land use in 1973, 1987, 1993 and 1998; (3) assessment of forest distribution in 1987, 1993 and 1998 as well as the change of land use between 1987-1993 and 1993-1998; and (4) development of a forest land use plan. Based on these data, the mangrove forest can be divided into three principal classes: (1) class I is near to the seashore where the mud is very soft and wet, dominated by *Avicennia alba* and *A. officinalis*; (2) class II is dominated by *Rhizophora apiculata* and *R. mucronata*; (3) class III mostly consists of mixed species including *Bruguiera cylindrica*, *Ceriops tagal*, *Excoecaria agallocha* and *Xylocarpus granatum*. In conclusion, remote sensing appears to be a significant tool for assessment and monitoring coastal zone resources, especially mangrove forests. In addition, planning and management of forest land use is easily and effectively conducted using GIS. However, the integration of remote sensing and GIS for the development of mangrove forest management plans by natural resource managers and planners is necessary.