

## Abstract

Spatial and temporal variation of organic matter and nutrient in mangrove sediments dominated by *Avicennia alba* Bl. was investigated in Chonburi Province, Thailand. Three permanent plots of 50×50 m<sup>2</sup> were constructed based on the physiognomic characteristics of trees in the area which could be clarified as old stand plot (A), mature plot (B) and young plant plot (C). Mangrove sediment and porewater were retrieved and measured from three occasions during the study period from April until December 2008 in order to find out the influence of *Avicennia* stands on sedimentary environment.

Water contents in sediment were falling in the range from 35.59 to 74.72 %, organic matter contents varied from 3.27 to 14.62 %, total nitrogen fell between 0.14 and 0.89 % and total phosphorus was recorded within the range 0.03-0.11 %. Highest amounts of measured sediment quality parameters were recorded from plot A whereas plot C contained the lowest. Seasonal variation of sediment quality was less pronounced compared to the influence of plant stands. Porewater parameters consisted of NO<sub>3</sub><sup>-</sup>, NO<sub>2</sub><sup>-</sup>, NH<sub>4</sub><sup>+</sup> and PO<sub>4</sub><sup>3-</sup> were examined and exhibited the value between 0.000-0.124 mg/l, 0.001-0.077 mg/l, 0.007-0.756 mg/l and 0.107-2.656 mg/l, respectively. Sulfide was found between 6.06-68.14 mg/l. There was a significant difference between plant stands and porewater qualities as well as seasonal variation. Decomposition of *Avicennia* leaves was conducted in the dry summer season and exhibited the traditional trends with the faster rate was found in the early period (14 days) followed by the slower rate throughout the incubation period. The decomposition *k* constants were determined and exhibited the closely value of 0.0276, 0.0285 and 0.0266 per day for leave produced from plot A, B and C, respectively. These results indicated that plant characteristics were potentially influencing sedimentary properties via the accumulation of organic matter where old stands rather accumulated high quantity of organic material to sediment underneath than those younger plants.