

Wanitcha Phansri 2011: Coastal Erosion Protection and Enhancing Sediment Deposition by Bamboo Wall at Samut Songkhram Province, Thailand. Master of Science (Earth Science and Technology), Major Field: Earth Science and Technology, Department of Earth Science. Thesis Advisor: Associate Professor Veerasak Udomchoke, D.Tech.Sc. 87 pages.

This research aims to apply integrated knowledge for coastal erosion protection by using bamboo walls which function as barriers to decrease energy of the attenuated incident waves at Pak Klong Bang Bo, Samut Songkhram Province. The objectives of this research include factors that cause coastal erosion and sedimentation, the rate of sediment deposition and erosion at bamboo wall protected and unprotected area, and the properties of deposited sediments. Randomized samplings of the sediments were carried out, and then soil properties were analyzed in laboratory following the ASTM standards. Leveling telescope was used to assess the levels of sediment erosion and deposition during each wind direction. Wind speed and direction data were collected at 4, 7, and 10 m. Floating sonar platforms were installed at 10 m in front of and behind the bamboo wall in order to measure amplitude and period of the water waves. Data from protected and unprotected sites were analyzed and compared. The results revealed that the causes of erosion and sediment deposition are due to human activities on change from mangroves to shrimp farm, the softness of deposited sediments and strong winds that cause high water waves during monsoon season. It was shown that, during late Northeast to Southerly wind, the sediment was deposited while the bank was eroded during early Northeast wind and the coastal floor was eroded during Southwest wind. Bamboo walls can help damping the amplitude and, therefore, the energy of incident water waves. The soft sediment deposited behind the bamboo walls showed 156 to 199 in percent of water content and 10.4 to 11.8 kN m⁻³ in unit weight that can also support the growth of young mangroves.

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Thesis Advisor's signature

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