COASTAL EROSION IMPACT ALONG THE GULF OF THAILAND

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The Gulf of Thailand is a continental shelf sea of the South China Sea. It comprises the territorial waters of 3 bordering countries. The coastline is stretched like a horseshoe, extending from the Thai-Malaysian border northward to the Upper Gulf and turning toward the east to reach the Thai-Cambodia border. The total length of the coast is approximately 1,700 kilometers, with 17 provincial coastal areas. Many large rivers which discharge into the Gulf of Thailand have made its coasts in many ways important from the past to present.

Sea-level changes during 9,000-1,000 yr B.P. resulted in the deposition of marine sediments in inland areas. These deposits are characterized by coastal geomorphology of beach sands, sand dunes, lagoons, marsh and tidal flats vegetated with mangrove forest. The coastal areas represent a rather dynamic environment. In the past, this environment was only changed by natural processes but recently it is changed by both natural processes as well as human activities. The changing coastlines have a strong impact on the environment and on social and economic conditions within the coastal societies.

Coastal change, in particular coastal erosion, is a geological hazard which occurs continuously and has a trend of increasing magnitude. According to this concern the present study project on coastal change was conducted along the coasts of the Gulf of Thailand between 1998-2001. In this study the different types of coasts and their related changing phenomena are based on geologic data while the rates of change per year are compiled from physical changes as well as from negative impacts on the societies in each coastal zone.

The results of the study reveal that there are many evidences of coastal impact along the Gulf of Thailand. Severe erosion with rates of more than 5 m per year occur along a distance of 181 km or about 11% of the total coastline. Moderate erosion with rates between 1-5 m per year comprise about 302 km or 18% of the coast. Depositional coastlines exist along 127 km or 8% of the total coastal length. The remaining 63% describe a stable coast with seasonal changes and recovered by natural processes. According to this study, coastal change is documented at an overall length of 610 km or 37% of the total coastline in the Gulf of Thailand.

Erosional impacts are found in every provinces along the coasts of the Gulf of Thailand. The most sensitive areas with regard to severe erosion are the tidal flats in the Upper Gulf. They are lineated in east-west direction from Bang Pakong river mouth in Cha Choeng Sao province to Tha Chin river mouth in Samut Sakorn province. Erosion of the sandy beaches is usually seen in coastal areas in the eastern and western parts of the Gulf which are developed for the tourism industry, for industrial estates or for housing zones. This evidence indicates a strong human induced factor to coastal change besides factors related to geology or to sea-level rise in context with global warming. Protection measures against the erosional processes in the Gulf of Thailand should have a careful assessment with regard to their engineering design and structure.