

GRAIN SIZE, CALCIUM CARBONATE CONTENT AND ACCUMULATION RATES OF RECENT SEDIMENTS IN PHANGNGA BAY, SOUTH THAILAND

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ABSTRACT

168 surface sediment samples and 46 short cores were collected from Phangnga Bay, South Thailand in January 1989 and January 1990. These samples have been analysed for grain size distributions and CaCO₃ content. The depositional environments have been distinguished on the basis of sea bed water depth, morphology and sediment grain size. The depositional environments are: mangrove channel; mangrove swamp; open intertidal; shallow marine; open marine; beach; reef and reef front. Mean grain size and sediment sorting show an overall increasing trend southwards (towards the more marine environment). CaCO₃ in the form of shell fragments also increases southwards as the diluting effect of terrigenous sediment decreases away from the dominant source of this sediment in the north. CaCO₃ also controls grain size distributions to some extent in that carbonate skeletal debris is the main component of the gravel size fraction and so high CaCO₃ values correspond to high gravel fraction values. Quartz sand abundance also increases towards the more open marine continental shelf environment and these samples are thought to represent relict sediments which were originally deposited in shallow marine or coastal plain environments when sea level was lower during the last glacial period. Seven wood and shell fragments from core sub-samples have been radiocarbon dated and accumulation and progradation rates calculated from these dates. Vertical apparent accumulation rates for the northern part of the bay for the last 6000 years vary between 0.3 and 1.53 mm year⁻¹ and mangrove swamp lateral progradation rates have been estimated at 1.5-1.67 m year⁻¹.