

RIVER CHANNEL REGULARITY, AN IMPORTANT SEDIMENTARY INDICATOR

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Quaternary sediments of the Gulf of Thailand are mainly fluvial deposits. Large quantities of boomer profiles, engineering boreholes, together with 3-D seismic surveys are available in the Gulf of Thailand. Up to several hundred meters deep, detailed fluvial facies can be clearly seen from time slices of the 3-D seismic data. Boomer profiles are built up from single channel record of high frequency (800-4000 Hz) seismic signals. Depth of investigation is about 100 m and vertical resolution is about 30 cm. Four sequences can be clearly identified from boomer profiles and boreholes, which are interpreted as the result of the last four 100 ky glacial and interglacial eustasy cycles. Boomer profiles allow fluvial channels observed from time slices to be assigned to different stages of relative sea level changes with boomer profiles. During high stand, rivers are characterised by high density, small meandering and anastomosing channels. During the early stage of relative sea level falling, rivers are characterised by a) irregular and large number of tributary channels, b) incised, and c) lack of point bars. Point bar-like bodies are seen, but, boomer profiles show that they present vertical accretion bed forms. They are interpreted as narrow floodplain deposits within incised valleys. With long term of low stand, river channels are regular and sinuous with wide point bars. Boomer profiles and engineering boreholes show that these point bars have evenly distributed clinoforms and high sand/mud ratio. As a general principle, river channels develop from incised and irregular, to strongly lateral moving and regular, to stable. It is suggested that irregularity can be an important parameter to classify rivers. Here, irregularity is defined as variation of channel radius/channel width ratio. Low and widely distributed values characterise irregular channels (sharp turnings). Small variations of the channel radius/channel width ratio indicate regular channels.