

The characteristics of bed materials and bed morphology in riffle-pool sequences in ChinKuaLiao stream, Taiwan

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The studies of streams in Taiwan comparatively lack the foundation investigations in bed materials. Reach and riverbank type investigation and bed materials sampling was been performed in ChinKuaLiao stream in Taiwan to discuss how bank types affect on reach types, and to compare the bed materials characteristic, such as particle size, flatness and sphericity between riffles and pools. The results reveal that the reaches with bedrock riverbank are helpful for pool formation. Bed longitudinal variations and the particle size have better corresponding relations in well development riffle-pool morphology. Furthermore, particle sizes in pools are coarser than riffles in nine of ten sample zones and significance differences in five ones ($\alpha=0.05$). Flatness is varies along with the river channel characteristic, and sphericity in most riffles is bigger than pools. In the cumulative size frequency distributions plots, the ϕ_{50} distribution in riffles is obviously more convergence than pools. This reveals there are great differences in bed material size distribution between pools.

Key words: *bed materials, pool, riffle, river bed morphology*

A barrier-lagoon system in the southwestern coast of Taiwan

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Chi-Ku Lagoon, enclosed mainly by the Wan-Tzu-Liao Barrier, is the largest remaining barrier-lagoon system in the southwestern coast of Taiwan. Most of the sediments are muddy except for those in the backbarrier tidal flat, tidal inlet, flood tidal delta, and the main tidal channel. With very little sediment sources from in-flowing rivers or drainages, most of the suspended materials are carried from the open sea through inlets by tidal currents. The grain size distribution is dominated by the tidal circulation in the lagoon, which is affected largely by the locations and distribution of tidal inlets along the barrier island. The Wan-Tzu-Liao Barrier, a slim barrier with lower elevation in the northern part, tends to be vulnerable to the storm waves, which causes the barrier island to be breached several times in different locations since late 1999. Only one of the new tidal inlets in the middle of the barrier remained open since then, and the others, including the old north inlet, were closing gradually. The tidal inlets that once opened and then closed are easily identified by the fan-shaped coarse sediment distribution that represents the remains of a flood tidal delta. The main tidal channel that connects the middle and south tidal inlets also has coarse sediments. Sediments become finer on both sides beyond the channel. Comparison of the satellite images in recent years reveals the opening and closing of the tidal inlets in the barriers that may affect the tidal circulation in the lagoon. The studies of sediment distribution confirmed these morphologic and process changes.

Key words: *barrier-lagoon system, morphology, sediment, Chi-Ku Lagoon*