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The Comparison of a Flowing Meandering Channel with Braided Channel at Fluid-Structure Interaction

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An analytical model is developed for free-surface flow over an erodible bed and is used to investigate the stability of the fluid-bed interface and the characteristics of the bed features by measuring the shear stress distribution with hot-film sensors. The model is based on the potential flow over a two-dimensional, moving, wavy bed with a sinusoidal profile of varying amplitude, and a sediment transport relation in which the transported rate is proportional to the power of the fluid velocity at the level of the meandering bed. The conflicting definition of the braided pattern raise the issues concerning (a) the difference between mid-channel bars and islands, (b) the precise nature of the interaction between flow stage and bars or islands and (c) the differences between the mechanisms of channel divergence that lead to river patterns termed as “braided” and those defined as “anastomosing”. Consideration is given to the factors involved in determining the shear stress distribution at the flow boundary layer. The experimental results are presented in two parts. Experimental observations of meander evolution described qualitatively. The most important parameter is the shear stress distribution, because of the inhomogeneous distribution of boundary layer meander features. At the wavy boundary layer, the shear stress distribution, measured with WTG-50 hot – film –anemometer is given graphically and theoretically.