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BED FORMS AND FLOW CHARACTERISTICS UNDER JET-CURRENT-WAVE SYSTEM IN ALLUVIAL CHANNELS

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ABSTRACT

The study of bed forms and flow characteristics under normal side jet in current-wave flow in alluvial channels are the main objectives of this research.

A series of experiments were carried out for different water depths and jet diameters, constant wave period, and constant flow discharge for flume and jet. Chien's numerical model was used to determine the flow velocities. Also a mathematical model, based on mass transport equation was prepared to determine the sediment loads for variable values of bed forms dimensions which were existed due to the system of flow.

The experimental results demonstrate that the jet energy in current-wave flow have a remarkable effect on the bed forms. The scour hole obtained will lead to good understand of the scour phenomenon and therefore better design of bed protection works. A good agreement is obtained between experimental and numerical Chien's results, within the lower values of jet velocity. The mathematical results of sediment loads are directly proportional with the bed form height ratio.

This study might help in the design of alluvial channels when it exposed to normal side jets in current-wave flow.

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