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Experimental study on the wave damping for the fluid-mud system

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In many nearshore regions around the world, the incoming waves frequently encounter a topography composed of various muddy materials. The muddy sea bottom has been found to be an efficient tool to reduce the wave energy coming in. This fluid-mud two-layer system recently attracts a great deal of attention from oceanographers as well as ocean engineers. In this paper, this topic is experimentally examined to evaluate how the waves are damped by various muds. Due to few discussions on the energy transfer and dissipation presented in past studies, most attentions of present study are focused on the transfer and dissipation of wave energy. Part of the incoming wave energy is dissipated due to the viscosity of mud, while part of wave energy is transferred to the mud layer which is responsible for the interfacial wave motion. It is found that the energy transferring from the surface wave to the mud is less than 1% of wave energy during each wave cycle. The transferred energy will accumulate with the increasing propagation distance, and finally becomes notable at the far-end side.