

How ripples formation dependence on the size of sand grains and the amplitude of vibration cycle

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We researched on how ripples formation dependence on the size of sand grains and the amplitude of vibration cycle by using a plastic bottle containing water and sand. We also pursued more precise conclusions by changing many parameters such as the size of the sand grains and the amplitude of vibration cycle. A total of eight mechanically controlled vibrations were applied using the LEGO BLOCK Mindstorm motor and programming. The particle size of the sand was also divided into many patterns. By using a color sand having a different color for each particle size, it became possible to record the state when a ripple mark is made of sand mixed with different particle sizes. The effect of each parameter on the pattern was discussed from the observation of the number of wave ripple peaks made of each pattern and the features of the pattern. We also studied of ripple mark through the computer simulation. By examining both from experiments and simulations, we consider the effect of changes in particle size and waves on ripple marks. In this research, I was instructed by the assistant professor Naofumi Yamaguchi of the University of Tsukuba.

Keywords: Ripple mark, Sedimentology

