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SANDBOX MODELING AND DEFORMATION OF SEDIMENTARY BASIN

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The knowledge structural development resulted from rocks deformation is limited due to poorly known of *in situ* rock properties. Investigating rock deformation using analogue modeling approach can solve this problem. Because, using analogue modeling we can relate and compare the initial (*undeformed*) stages with their later deformed stages. This comparison is very important in understanding of the structural development resulting from specific setting of rock deformation particularly involving sedimentary rocks or loose materials.

One of the problems in understanding deformation in the earth crust involves simulating structural development in sedimentary rocks. This can be achieved using analogue modeling. Sandbox modeling is one of the types of analogue modeling in geological sciences in which the main purpose is simulating deformation style and structural evolution of sedimentary rocks particular in the upper crust. Deformation in brittle realm depends on the shear strength, the coefficient of friction and cohesion. Therefore, to simulate the wide range of deformation styles actually observed in rocks, a range of different modeling materials need to be used. Experimental and theoretical studies have shown that sand is a good analogue for brittle *Mohr-Coulomb* behavior during shallow (depth of 1 – 10 km) deformation of sedimentary materials.

Numerous deformational setting has been studied at sandbox modeling laboratory, Department of Geology. The results of various studies in different tectonic setting such as compressive, extension and strike-slip system show remarkable excellent agreement with nature examples. One of the applications which can be very useful for earth science student is related to morphological developments and understanding the relationship between deformation and topography.