

Collapse, Growth and Merging of Cavity Regions in a Granular Material due to Viscous Flow**O. Sano**⁽¹⁾, Y. Kaneko⁽¹⁾, G.P. RajaSekhar⁽²⁾*(1) Tokyo University of Agri. Technology, Tokyo, Japan**(2) Indian Institute of Technology, Kharagpur, India*

Experimental and theoretical studies of viscous flow are made on the effect of macroscopic cavity regions in an otherwise homogeneous granular material. The presence of a cavity enhances volume flux and magnitude of velocity in the cavity, which amount to two[three] times and three[six] times, respectively, of the undisturbed flow in a circular [a spherical] cavity. The increment of the magnitude of flow causes collapse of the cavity boundary above a certain critical velocity. The fluidized region develops towards upstream direction, which changes flow field in and around it. Interaction of two circular cavities becomes largest at a certain arrangement, which leads to faster collapse and merging of the boundaries. In the case of many cavities, they develop into network formation of fluidized region, as well as macroscopic sheet-like cavity region, the latter of which is considered to be one of the mechanisms of the onset of landslide.

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