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Inter-bed fluid triggered slope failures of the Kaoping Canyon upstream area: Results from memorial R/V Ocean Researcher 5

Yi-Ching Yeh, Tsung-Fu Shen, Shao-Yung Liu, and Pai-Sen Yu

Taiwan Ocean Research Institute, National Applied Research Laboratories, Kaohsiung 852, Taiwan (ycyeh@narlabs.org.tw)

As a major pathway of the sediment transportation, the submarine canyons sculpture the seafloor then deposit sediments at the deep ocean. The submarine canyons could be classified to two categories: erosive or deposition based on geological environment or fluid flow down to the canyon. The erosive canyons often “attack” the levee which may result in submarine landslides or mass transportations due to slope failure. Once slope failure occurs at geological weakness area such as gas hydrate dissociation zone, giant mass slumping will be triggered. These kinds of mass transportations will further develop turbidity current or hyperpycnal flow, which could damage the submarine cables or pipes. The giant mass transportation even triggers devastated tsunami. In this study, a latest swath bathymetric map was compiled by comprising seven cruises between December, 2012 and March 2013. The result shows that regressive erosion may take a place north of 500 meters contour (gas hydrate dissociation region), southwest off Taiwan. Moreover, high resolution seismic image (acquired by Edgetech SB-424 sub-bottom profiler) show that gas rich sediments co-exist with submarine landslide deposits in the edge of the upstream of Kaoping submarine canyon. It implies that slope failures in the study area might be caused by weaken sediment collapse.