



Characteristics of the potential submarine landslide in the Keelung Shelf, off northern Taiwan

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In the northern margin of the westernmost Okinawa Trough, three obviously submarine canyons exist. From east to west, they are the North Mein-Hua Submarine Canyon, Mein-Hua Submarine Canyon and the Keelung Valley. Their orientations are NW-SE across the continental margin. The Okinawa Trough is a backarc basin and is under backarc extension. To better understand the extensional tectonics, we have conducted multi-channel reflection seismics, sub-bottom profilers and multi-beam bathymetry in the westernmost area. In the east, the slope of the continental margin between the Mein-Hua Submarine Canyon and the North Mei-Hua Submarine Canyon is very gentle, implying that the current risk of major slope failure is low. However, between the Keelung Valley and the Mei-Hua Submarine Canyon, the slope is rather steep and the submarine landslide hazard may exist. Our results show two general trends of fracture or faulting. The NE-SW trending faults generally follow the major orientation of the Taiwan mountain belt. Thus, these faults could be reverse faults from the former collisional thrust faults to currently post-collisional normal faults. Secondly, the E-W trending faults are consistent with the N-S extending of the Southern Okinawa Trough. It is probably associated with the offshore extension of the Kanchiao Fault or the Sanchiao Fault. These two faults could be regarded as the headwalls of the potential large submarine landslides. However, our reflection seismic profiles do not show a clear failure surface or a decollement. It could imply that the movement type of the potential submarine landslides could be of spreads.