



## **Gravity anomaly caused by the mud diapirs off southwest Taiwan and its implication to the development of the submarine canyons**

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Both the overpressure and buoyancy effects are generally used to account for the formation of submarine mud volcanoes (MVs) and mud diapirs (MDs). According to the distribution of the MDs and structural features, the compressive tectonic stress should play an important role on the formation of the MDs in the offshore area of southwest Taiwan. Onland Taiwan, the Tainan and Chungchou anticlinal structures (associated with MD) reveal positive gravity anomalies. The MDs in offshore southwest Taiwan are considered to be more active than onshore diapirs. However, the gravity nature of the submarine MDs is not clear. In 2012 and 2013, we have collected shipboard gravity data using R/V Ocean Researcher I in the offshore area of southwest Taiwan. By removing the gravimetric effect from the water-sediment interface and the regional gravity effect along the profiles, we find that the gravity contrasts of the MDs with respect to the surrounding strata are generally positive. The results seem conflict with the buoyant force that triggers the upward motion of the MDs. The positive density contrasts of the MDs can further indicate the relatively rigid rocks which influence the development of the Kaoping and the Fangliao Canyon.