Offshore Records of Submarine Natural Hazards off Southwestern Taiwan

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In the past several years, the large earthquake and torrential rains hit southern Taiwan and induced severe submarine hazards off south western Taiwan. The marine sediments (turbidites) provide alternative records for the researchers to study and understand the formation of these submarine geo-hazards.

The Hengchun Earthquake (M_L 7.0) which occurred on December 26, 2006, triggered turbidity current made the submarine cables lying downslope of the Fangliao Canyon and Gaoping Canyon were broken and caused huge economic lost. In addition to earthquake activities, typhoons and torrential rains induced flooding events are also important mechanisms responsible for making the turbidite system in the vicinities of the river mouth. Last year (2009), in August 8-9, the Morakot typhoon brought heavy rains in southern Taiwan and spark off serious landslides and flooding events on land. In the Gaoping Canyon, the typhoon also induced the cable break events. All these events may record in the marine stratum and by analyzing these records could help us to reconstruct the history of the earthquakes and floods in the past.

The chirp sonar profiles, in conjunction with cores analysis, including X-ray radiographs, grain size, and ^{210}Pb analysis results, are used to identify the sources, transportations and deposition times of the turbidites (or hyperpycnite) and reconstruct the history of the earthquakes and flooding events in the study area. All the evidences point out these submarine hazards are not only related to the earthquake or flooding events. The unique geological and hydrological background also plays an important role on the initiation of these submarine geo-hazards.