



Sediment-laden flow induced submarine cable failures off southwestern Taiwan

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Taiwan is located on the convergent boundary between the Eurasian and Philippine Sea plates, where has a highly frequency of earthquakes. Furthermore, the interaction between the largest continent (Eurasia Continent) and ocean (Pacific Ocean) leads to torrential-rain-induced flooding in the plume rain (May-June) and typhoon seasons (July-October). According to statistics from Water Resources Agency, in the last few decades, the mean annual sediment load was 384 million tons from the island of Taiwan into the sea. Off southwestern Taiwan, two major submarine canyons, the Gaoping submarine canyon (GPSC) and Fangliao submarine canyon (FLSC), are incising from continental shelf to deep sea floor and both of them transport considerable amounts of sediment to the South China Sea. In contrast to the GPSC which is directly connected to the Gaoping River, the FLSC which is smaller, younger and confined to the slope, does not associate with any river on land. Since 2006, southern Taiwan has been through several big typhoons and earthquakes which triggered submarine landslides and turbidity currents and damaged many submarine cables. The analytical results from sediment cores which taken from the GPSC and FLSC during 2005 to 2010 show these submarine cable break events may caused by different processes. In the upper GPSC, hyperpycnal flow might be the major process which caused the cable damages. On the contrary, cable failures in FLSC are due to sediment liquefaction.