



Paleotsunamis in Eastern Taiwan

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Although Taiwan is located in the active collision zone between Eurasian and the Philippine Sea plate with very high seismicity in and surrounding the island, and supposedly highly susceptible to tsunami hazard. However, there is no record of tsunami hazard in the past one hundred years, and only very few historical records show some possible extreme event occurred. Therefore study of tsunami was scarce in Taiwan. Although historical records do show possible tsunami events, the records were too sparse and incomplete to confidently reconstruct the paleotsunami events. In the past few years, numerical simulations based on possible tsunami-genic zones near Taiwan show that the island could be affected by the correctly directed tsunami. Nevertheless, there is no detail, scientific research of paleotsunami records yet in Taiwan.

Our field survey in eastern Taiwan (facing the western Pacific Ocean) along the coast uncovered several outcrops contain gravels embedded in well-developed soil layers. The rounded meta-sandstone gravels are clearly beach-origin and were brought to their current location upon extreme wave events, which is composed of either volcanic-clastic deposits from nearby hills or organic soil layers formed locally. Our investigation indicates that there are at least 3 events in the northern half of eastern Taiwan and at least 2 events in southern part of eastern Taiwan. Although these outcrops are next to the shoreline and Taiwan is susceptible from typhoons, these gravels could be farther away from the beach at the time of their deposition due to current high retreat rate of the sea cliff. Further investigations are needed to delineate possible sources of tsunamis that caused the deposits.