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The influence of rock resistence on shore platform morphology in Penghu Islands, Taiwan

C.-H. Lu, S.-J. Chyi, C.-C. Chen, L.-D. Ho, and P.-Y. Chang
National Kaohsiung Normal University, Department of Geography, Taiwan (valjean1816@gmail.com)

Penghu islands, in the southern Taiwan Strait, is a remnant of a middle-late Miocene basaltic shield volcano. According to traditional morphological province, Penghu islands was classified to abrasion tableland rather than volcano island. During Holocene period, Penghu islands was ever tableland landform, due to sea level change and inequality of mass movement, forming mesa-like island landform. Applying image processing to identify the distribution of shore platforms, the well developed shore platforms which could reach 3 to 5 km at lowest tide fringe Penghu, Jongtun, Baisha and Shiyu Island. However, the NE-wider, SW-narrower and wider in sheltered area distribution of shore platform in research area is quiet obvious.

According to the previous studies, the extraordinarily wide shore platforms which developed along the northeastern coast and facing the open sea are strongly affected by the mesa-like initial landform. However, the development of narrow shore platforms are still unknown. Based on the result of field investigation of the shore platform morphology, rock strengths, joint density, and the weathering index, the Spearman correlation coefficient of shore platform width to associated factor all have low correlation coefficients in spite of the results of linear regression or multiple stepwise regression analysis. Sunamura [U+FF08] 1992 [U+FF09] undertook a laboratory experiment, the result showed that when width of shore platform reach 60m, wave have low erosion efficiency to the cliff. Stephenson and Kirk [U+FF08] 2000a [U+FF09] used wave recorders to measure wave dissipation, the result showed that only 5-7 per cent of energy recorded at the seaward edge of platform. Therefore, the width of shore platform in Dachi Coast may reach a temporary static state .However, the height and type of shore platform to rock strength have high correlation coefficients. Therefore, in this case of Dachi Coast, we found that the shore platform seem to reach a temporary static state and the rock resistence is the primary control for the height and type of shore platform. Type B shore platform may evolve into Type A platform by the destruction of low tide cliff and surface downwearing of shore platform.