

Three types of submarine canyons offshore southwest Taiwan

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The sea floor off SW Taiwan is represented by an active margin. Morphologically, the margin is occupied by the narrow Kaoping shelf (<10 km) and the broad Kaoping slope which extends to a depth of about 3000m. Several submarine canyons are located on the active margin off SW Taiwan. Looking from NW to SE, these canyons are the Penghu, Shoushan, Kaohsiung, Kaoping, Fangliao, and Hongtsai canyons. Although these canyons are under the same regional controls (i.e., tectonics, sea level change), they have evolved with time and resulted in distinct morphologies.

Canyons off southwestern Taiwan are classified into three different types: 1. river-connected; 2. shelf-indented; 3. blind (confined to the slope). Type 1 canyon, the Kaoping Canyon, is directly connected to the Kaoping River, and is supplied with much sediment. The canyon head segment thus has relatively high tendency to generate hyperpycnal flows during flood seasons. The Penghu, Shoushan, Kaohsiung, and Fangliao canyon belong to type 2. The Fangliao Canyon is intensely incised into the shelf. The other three canyons are characterized by relatively weak headward erosion into the shelf. The Hongtsai Canyon is a type 3 canyon and is mainly resulted from activity of mud diapir and thrust faulting.

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