

Early Stages of Collisional Foreland Basin Development, Southern Taiwan

By

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An ideal area for studying collisional foreland basin development is Taiwan, the subaerially exposed portion of an active orogenic belt. The oblique collision, beginning in the late Miocene, of the Luzon volcanic arc with the southeast continental margin of China resulted in the progressive southward development of a foreland basin in western Taiwan. Thus the southern part of Taiwan represents the youngest (ongoing) stage of foreland basin development and is transitional with the offshore Manila trench. Previous studies have concentrated on the northern basin, but the southern part has not been studied in as much detail.

This study involved geologic mapping in the Hengchun Peninsula, measuring stratigraphic sections and collecting sandstone samples for petrographic study. This area consists of the young developing foreland basin deposits to the west, separated by the Hengchun reverse fault from Miocene accretionary prism rocks to the east, including the Kenting mélangé and Miocene submarine fan deposits. Most Miocene deposits (Shimen formation and conglomerate, Loshui sandstone) show typical deep-water turbidite structures (parallel lamination, normal grading, flute casts, dewatering structures). However, evidence of shallow marine conditions, including detrital oyster shells and coal lenses, is found in the Li Lung Shan formation.

Future study will involve detailed mapping and characterization of the accretionary prism and foreland basin deposits, and the Hengchun fault, to allow description of the relationship between uplift of the accretionary prism and growth of the foreland basin. Point counting of the sandstones will describe the sediment composition during early stages of collisional foreland basin development.