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Seismic Characteristics of foredeep, west Taiwan foreland basin

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In Taiwan strait, forebulge and foredeep are formed by flexural bending of lithosphere of the passive Chinese continental margin. Seismic profiles collected by NCOR (National Center for Ocean Research, Taiwan) were used to interpret the configuration of developing flexure tectonics in this area.

Using the the concept of plate flexure, we present the characteristics of sedimentary architecture in west Taiwan foreland sequences. Backward rotation subsidence in the foredeep area express the loading from the Taiwan orogenic side and feather-edging indicates syntectonic sedimentation progressively advancing of the wedge. At distal foreland, bevelling reflection were distinguished from foreland onlap at proximal foreland which might be the traces of eroded crest of forebulge and is the forming mechanism of disconformity at outcrop scale. Extensional normal fault, discontinuous reflectors and block rotation are also presented. According to progressive distribution of forebulge unconformity, forebulge might advance westward to the Chinese craton at 15-20 mm/yr.

The West Changyun Sand Ridge which is right on the crest of forebulge in the middle Taiwan Strait which is interpreted a modern “forebulge depozone”. Since seismic characteristics show that there is no consistence between topography high and uplifted bulge, we suggest that the forebulge depozone may be dominated by modern tidal currents which carry sands and accumulate on the forebulge.