



Tectono-sedimentary evolution of the deepwater sags in the Pearl River Mouth Basin (South China Sea)

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Regional (2D) seismic reflection profiles and borehole data are used to present the first comprehensive seismic-stratigraphic analysis of the deepwater sags in the Pearl River Mouth Basin, northern South China Sea (SCS). Three seismic-stratigraphic units were defined based on correlation between strata geometries and the continental rifting and breakup history of the northern South China margin. Unit 1 records syn-rift deposition that is associated with continental rifting of the SCS. On the basis of mapping seismic units we are able to identify three major phases of Cenozoic extension, each comprising distinct subsidence pulses separated by individual stratigraphic unconformity. The overlying Unit 2 is interpreted as the breakup sequences, probably recording the sedimentological changes during the continental breakup process of SCS. Multiple episodes of uplift and erosion, which generated substantial mass wasting into the Liwan Sag, occurred after the onset of continental breakup in the northern SCS. The most prominent uplifting and erosional events are the truncation related to the Early Miocene volcanism in the Baiyun Sag, uplift and erosion towards the southeast. Unit 3 records post-rift sedimentation and passive subsidence. Detailed seismic interpretation indicates that the post-rift succession is dominated by a complex of the downslope and alongslope processes.