



Rifting of the north-western South China Sea Basin from MCS images

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We have reprocessed about 2250 km of multichannel seismic reflection data collected during cruise Sonne 49 across the NW South China Sea. We present images across four regional lines that cross the outer continental shelf and slope, and extend into the deep-water basin. The seismic images are of high quality and show the crustal structure from clear base-of-the-crust reflections to continuous top-of-basement reflections and a well imaged syn-rift and post rift stratigraphy and intrusive magmatic layering. In addition, fault reflections in the basement are also common.

The crystalline basement and sediment strata display a series of structures that change laterally from the continental shelf to the deep-water basin and that have been used to define a continental domain, an abrupt continent to ocean transition and an oceanic domain. Existing wide-angle data coincident with our lines support our interpretation. The style of continental extension, the structures defining the continent to ocean transition, and the distribution of oceanic crust in the basin has been used to propose a tectonic model of the formation of the NW South China Sea continental margin. The data document the three-dimensional temporal evolution of the interplay between rifting processes and seafloor spreading leading to the current structural configuration.