



Stratigraphic correlation of Paleozoic to Neogene sediments from the South China margin to Reed Bank and Palawan.

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The age and nature of the sediments around the South China Sea constrain its opening and its evolution. Here, we combine well data analyses and fieldwork studies in China and Palawan to better understand the paleogeographic evolution of the conjugate margins of the South China Sea from Paleozoic to Neogene times.

Proterozoic basement and overlaying Paleozoic sedimentary deposits appear to be comparable on both sides. Among these sediments are the Carboniferous platform carbonates, which are ubiquitous around the South China blocks.

Significant variations in terms of sedimentary environment are found from the Triassic. At the Chinese margin the rocks are mainly composed of red sandstones overlain by Jurassic and early Cretaceous volcaniclastics, occasionally intruded by magmatic bodies. These sequences are overlain by Late Cretaceous continental red beds, with cross-bedding stratifications, and Paleogene continental or near shore sedimentary deposit. Offshore South China, the stratigraphic succession shows similar Paleogene lacustrine to paludal sandstones and shales, followed by massive Neogene sandstones and patchy reefs. On the South China margin the deposit environments from the Triassic to the Paleogene were mainly continental to shallow marine.

On the conjugate side of the South China Sea, on Reed Bank and the Dangerous Grounds, basement was not drilled but dredged with Triassic deltaic sandstone and claystone evidences. The Early Cretaceous marine shales and sandstones is overlain by Palaeogene sandstones marine and the Neogene carbonate platform. Onshore Palawan, Triassic rocks are composed of deep marine cherts and limestones overlain by Jurassic cherts, Cretaceous massive sandstones, turbidites and frequently limestones. The Paleogene is composed of turbidite-bearing flysh and Neogene reefal carbonates, such as the St Paul limestones. All of these sediments from the Triassic to the Paleogene show a slope to deep marine environment of deposition.

We propose that the depositional environment deepens from Northwest (China) to Southeast (Palawan) during the Mesozoic and the Cenozoic above a common continental basement. This variation from shallow continental to deep marine environment suggests that the entire area was the northern margin of a larger oceanic domain (easternmost part of Tethys?) during the Paleozoic to Early Mesozoic that later evolved to an active margin (Yen-shanian andean-type volcanic-arc). This margin has been dissected from the Late Mesozoic (Proto South China Sea opening) to Early Cenozoic (South China sea opening) involving some restricted depositional environment. Since the Neogene the SCS sedimentary evolution is dominated by a shallow type depositional environment: deltaic to open shelf on the Chinese margin and by a carbonate platform on the Palawan margin.