Paper 9

Tectonic features and evolution of the China Sea and adjacent regions

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The China Sea and adjacent regions consist of a series of tectonic units such as fragments, sutures and subduction zones. They went through the formation of the continental cores, forming platform and platform stabilization to the formation of Pangea.

Since Permian, blocks disintegrating from Gondwana collided with south-western area of China, forming Tethys-Himalayan tectonic zones, which caused three openings and closings of tethys oceans. Meanwhile, Hainan–Hida Yuli–Ryoke and Manila sutures were formed in south-east continental margin of East-Asia because of the active of Kula plate and subsequent Pacific plate. The old structural framework of China was reconstruocted due to the WNW-ESE trending compression stress imposed on the eastern part of Eurasian plate by the mentioned-above tectonic movement. The active margin was formed in the south-eastern margin of ancient east China Sea and the north margin of ancient south China Sea.

Through Cretaceous to mid-Oligocene, a lot of fault-subsidence basins controlled by tensional-shear faults was located in south-eastern areas. Tensional faults occurring in east China Sea resulted in the formation of skip-like downwarp, which showed the original formation of shelf-basins in the area. Because of the first spreading of the South China Sea, the NE trending rift-valley and the south-west oceanic basins were formed. Moreover, extension and subsidence occurring in south-east China resulted in a series of downwarp deposit basins developed over previous fault-subsidence and rift-valley basins since mid-Oligocene. The mid-ocean basin was formed during the second spreading of the South China Sea in this time. Subduction, covergence and backarc spreading were present in the margin of Eurasian plate. Three different structural units occurred from southeastern Japan to the Philippine Arc: (1) The subduction of Nanka Trough and Liukiu Trench made the backarc spreading of Japan ocean basin and Okinawa Trough. (2) The collision between ocean crust and continental crust was presented in Taiwan. (3) The Philippine Arc exhibited the framework of westward subduction of the Philippine Trench on the east flank and eastward subduction of the Manila Trench on the west flank. The China Sea eventually formed.

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