

## **THE DYNAMICAL EVOLUTION OF THE LARGE SEDIMENTARY BASINS IN THE CENTRAL TO WESTERN PART OF CHINA.**

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The large sedimentary basins in the western and central parts of China are mainly composite basins, i.e. Meso-to Cenozoic basin overlying upon Paleozoic basin. Their basement show great difference, and the basins are greatly reworked by the late surrounding orogenic belts and tectonic boundaries. The basins record multiple stage evolution, and consist of with different structural-sedimentary layers.

The large basins in the central portion of China include Ordos basin (OB) in the western part of North China craton and Sichuan basin (SB) in the central part of Yangtze craton. Both the OB and SB's basement record an extended continent cratonic history from early Precambrian (1.8Ga and 1.0Ga, respectively). They belong to typical composite cratonic basins. Upon the Paleozoic marine sedimentary basin, is superimposed Mesozoic to Cenozoic foreland basin, along the margin of earlier cratonic basin. Corresponding to the orogenic episodes along the plate margins, the Paleozoic cratonic basins uplift vertically, resulted in marine regression and formation of parallel unconformity within cratonic sequences. With formation of passive continental margin, cratonic basins commonly undergo marine progression. The uplift along the cratonic margin associated with Paleozoic orogenic activities might also have influence on the provenance region for the cratonic basins. The foreland basins associated with the Mesozoic to Cenozoic orogenic belts superimpose overlying upon the Paleozoic cratonic basins, which are evident in the western margin of OB, western and northwestern margins of SB. The large sedimentary basins in western part of China include Tarim, Jungar, Caidam among the modern Mountain ranges, and the Qiangtang sedimentary basin in the northern part of Tibet. Their tectonic evolution is mainly controlled by Central Asian orogenic belt and Tethys orogenic belt. In the early Paleozoic, the basin evolution is related with the assembly of Kazakstan plate with Tarim plate. In the late Paleozoic, the Kazakstan plate is fragmented from Tarim plate, and collides with Siberian plate. The Mesozoic to Cenozoic evolution of basins in the western part of China are associated with continue breakup of Gondwana, and assembly of its fragmented blocks (Qiangtang block, South Tibet block) with Eurasian continent. The long-distance tectonic effect from the Tethys orogenic belt significantly changes the early basins' structural patterns, with development of foreland basin along the margin of the earlier basins. Since Miocene, Indian plate collided with Eurasian continent, leading to the ancient orogenic belts within the Asian continent (Kunlun, Tianshan, Altai and Qilan Mts.). In the setting of transpression, the eroded orogenic belts are uplifted rapidly and thrust to the interior of sedimentary basins in the western part of China, the intra-continental foreland basins develop along and overlying upon the margin of cratonic basins. The strike-sliding with a large scale intensively reworks boundaries of sedimentary basins, with local development of pull-apart basins in west China. The sedimentary basins in the northwest part of China are parts of huge basin system of central Asia, which could be well correlated each other with their Paleozoic to Cenozoic tectonic evolution.