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Evolution of the Nanhua-Sinian Rifts in the Tarim Block

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The Tarim block, located in northwestern China, is one of the largest blocks in China. Precambrian rifts in the Tarim block control the evolution of Paleozoic rifts. On the basis of previous research by other authors, and also seismic profiles we have obtained, we can attempt to identify buried rifts in the Tarim block. Buried rifts can be identified by seismic reflection characteristics in the Tarim block regional profiles. In the Nanhua and Sinian system thickness contour map the two thickest branches are in the northeast and northwest of the Tarim block; it is suggested that they are Neoproterozoic Nanhua-Sinian rifts that exist in the Tarim block: the Manjiaer rift in northeast Tarim, and the Wushi rift in northwest Tarim. On the basis of analysis of outcrops and stratigraphic columns, the types and evolution of the two rifts are classified and divided into different episodes. In the Neoproterozoic, the Manjiaer rift in the eastern Tarim block experienced three episodes of rifting, whereas the Wushi rift in the southwestern margin of the Tarim block experienced two rifting episodes. In the Cambrian, the Manjiaer rift entered a craton basin stage, while the Wushi rift entered a cratonic basin stage. The paleogeography of the Proterozoic Tarim block is also reconstructed in this paper. Transgression gradually took place in the Tarim block during the Sinian period. Shelf facies surrounded by

platform margin belts were developed in the Kuruktag region, northeastern Tarim block, the range of which is generally constrained by the shape of the Manjiaer rift. The restricted platform facies and open platform facies deposition was mainly in the northern part, and the restricted platform facies sediments are distributed in the central part. In the northwestern Tarim block, the Sinian contours of the Wushi rift are invisible in the southern Tarim block. This suggests that the South uplift is located in the southern block, and the shore/shallow sea facies deposition is at the southwest edge. Transgression occurred in both the northwest and the northeast margins of the block in the Sinian period, while the continental facies (lacustrine and deep lacustrine facies) were mainly in the southern block; large-scale transgression did not take place due to uplifting in the center and south of the block.

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