

Paleomagnetic data from the Middle Permian rocks in North Tibet and their implications for tectonic evolution of northern Qiangtang-Qamdo block

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We report a middle Permian paleomagnetic result from the newly discovered Permian limestone on North Tibet (China) to address the limitation of previous data, and simultaneously to further clarify the tectonic and paleogeographic evolution of northern Qiangtang-Qamdo block which is a key to the study of the spatial-temporal relations between north Qiangtang and Qamdo block. One hundred and seventy five samples were collected at 19 sites in Middle Permian stratum of Kaixinling uplift belt on the north side of Tanggula Mountain near the boundary of the Qamdo block and the northern Qiangtang block, belonging to the Qamdo block. The sampling area is located. A systematic study of rock magnetism and paleomagnetism yield one reliable paleomagnetic pole position. The predominant magnetic carriers are magnetite and hematite. Progressive thermal or alternating field demagnetization isolated stable ChRM that has successfully passed the classic fold test, together with the unique presence of single reversed polarity in the Middle Permian rocks, indicating the primary remanence and preliminarily yielding a tilt-corrected mean direction of $D=252.9^\circ$, $I=24.3^\circ$, $K=6.9$, $A95=14.6^\circ$. The corresponding paleopole of 6.6°N , 202°E ($dp/dm=15.6/8.4$) shows a reversed polarity in downward inclination, and the palaeolatitude of 12.7°S implies that the Qamdo block was in low latitude of southern hemisphere in Permian. A comparative analysis has been conducted in combination with reliably available Carboniferous to Cretaceous paleomagnetic results of the Qiangtang Terrane, with conclusions as follows: (1) The northern Qiangtang block was relatively disintegrated with Qamdo block before Early Mesozoic in low latitudes of southern hemisphere. (2) At the late Paleozoic, northern Qiangtang block drifted slowly while Qamdo block drifted drastically to north. From the terminal of the late Paleozoic to the early Mesozoic, the two blocks went closer and closer. (3) Until the Late Triassic, the two blocks collided and amalgamated, forming an integrated block with a northern Lancang River Suture Zone. This study was supported by the National Natural Science Foundation of China (Grant No. 41304049, 41421002, 41402229).