Tectonic Implications of New Paleomagnetic Results from Qiangtang Terrane of Northern Tibet

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The Qiangtang terrane of Tibet is a critical region for tectonic reconstruction of Asia. Here, we present new paleomagnetic results obtained from Tertiary sedimentary sessions of the Dead Yak Valley (located at ~36°N and ~87°E and named by ourselves in the field as we counted more than 100 dead yaks in the valley) of northern Qiangtang terrane. The rocks are mainly red sediments including siltstone, mudstone, sandstone, and conglomerate, offering opportunity of applying paleomagnetic fold and conglomerate tests to check the stability of the remanent magnetization. A total of 248 individual oriented paleomagnetic samples were collected from 60 measured stratigraphic levels. The samples were subjected to progressive thermal (mainly) and alternating field (AF) demagnetization. Progressive thermal demagnetization to 700°C revealed a high unblocking temperature component was isolated between 625 and 700°C in almost all sandstone samples. The high temperature component has both normal and reversed polarities and is interpreted as the characteristic remanent magnetization (ChRM) on the basis of linear trajectories of demagnetization towards the origin and a similar direction from sample to sample. The fold test results are positive at 95% confidence level. The paleomagnetic data clearly show that Dead Yak Valley area (and by enlarge the northwester Qiangtang terrane) did occupy its current position in terms of paleolatitude at the time when the redbeds were formed. These samples significantly expand our Qiangtang redbed database, and can be directly compared to our previous paleomagnetic results from the central Qiangtang regions. Comparing these data from sections in the Dead Yak Valley to previously studied sections in the Fenghuo Shan region allows us to better define the western extent of the Hoh Xil basin and suggest that the Hoh Xil basin was a typical foreland basin in Tertiary.