New Paleomagnetic Result on Tertiary Sediments From NW Qiangtang: Implications for the Cenozoic Tectonic History of the Tibetan Plateau

Xixi Zhao[1], David Finn[1], Chengshan Wang[2], Yalin Li[2], Lidong Zhu[3], Wenguang Yang[3], Jun Meng[2], Jingen Dai[2]

[1]Department of Earth Sciences and the Institute of Geophysics and Planetary Physics, 1156 High Street, University of California, Santa Cruz, CA 95064, USA, xzhao@ ucsc.edu
[2]China University of Geosciences, Xueyuan Lu 29, Beijing 100083, China
[3]Chengdu University of Technology, Chengdu 610059, P.R. China

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 ~88°E and named by ourselves in the field as we counted more than 100 dead yaks in the valley) of the northwestern Qiangtang terrane. The rocks are mainly red sedimentary rocks 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 the Dead Yak Valley area (and by inference the northwestern Qiangtang terrane) occupied its current paleolatitude at the time when the redbeds were formed and imply a significant northward convergence of the Dead Yak Valley with respect to Eurasia (Siberia). Future work is needed to ascertain the influences of sedimentary inclination shallowing and tectonic shortening. 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 the Tertiary.

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