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Palaeomagnetism of the Laowogou and Hongya Pliocene/Pleistocene sections, Nihewan Basin, China

Joseph Liddicoat (1), Cai Baoquan (2), Zheng Shaohua (3), Chenglong Deng (4), Rixiang Zhu (4), Rui Zhang (4), Hong Ao (4), and Yongxin Pan (4)

(1) Department of Environmental Sciences, Barnard College, Columbia University, NY, NY 10027 USA (jliddico@barnard.edu), (2) Department of History, Xiamen University, Xiamen 361005, China, (3) Institute of Paleontology and Paleoanthropology, Chinese Academy of Sciences, Beijing 100044, China, (4) Paleomagnetism and Geochronology Laboratory, Institute of Geophysics, Chinese Academy of Sciences, Beijing 100029, China

The Nihewan Formation is exposed fluvio-lacustrine sediment in the Nihewan Basin about 150 km northwest of Beijing, China. The formation is of interest because it contains vertebrate mammal fossils that have been studied by geologists, palaeontologists, geochronologists, and palaeoanthropologists since the 1920s (Barbour, 1925; Teilhard de Chardin and Piveteau, 1930; many others). Laowogou (40˚08'59"N, 114˚39'31"E) and Hongya (40˚08'07"N, 114˚39'57.1"E), which are less than a km apart on the west side of the Huliu River, are two localities that are used in those investigations. Palaeomagnetic polarity has been measured in the sections and shows that they record similar polarity episodes. Near the base of each section above eolian red clay is normal polarity that Deng et al. (2008) interpret to be the in the Gauss Normal Chron (>2.581 Ma, Gradstein et al., 2004), and the underlying reverse polarity to be the Kaena Reverse Subchron (3.116-3.032 Ma, Gradstein et al., 2004)) in that Chron. About 30 m higher in the sections are 30 m of normal polarity that Deng et al. (2008) assign to the Olduvai Normal Subchron (1.945-1.778 Ma, Gradstein et al., 2004)). However, because Pliocene vertebrate mammal fossils (Huaxiamys downsi-Chardinomys yusheensis and Mimomys-Ungaromys assemblage zones) are in that interval at Laowogou (Cai et al., 2008), an alternate interpretation for the age of those sediments is that they were deposited during the upper Gauss Normal Chron. Regardless of the age presently assigned to the 30 m of normal polarity in the Laowogou and Hongya sections, magnetostratigraphy is a desired chronologic method for dating localities that contain important Pliocene and Pleistocene mammalian fauna in North China, and specifically in the Nihewan Basin.