

The climatic and environmental records in the sediment of the Luobei billabong in the district of Lop-Nur, Xinjiang in recent 30ka

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The upper 10.35-meter section of a drill core from the Luobei billabong (91°03'E, 40°47'N), Lop Nur, Xinjiang Province, NW China, has been studied for 12 environmental proxies, including magnetic susceptibility, granularity, chroma, carbonate and organic matter contents and pH values. The mean of first principal component was calculated on the basis of the results of the 12 proxies. Some samples of the section have been dated by use of MS-230Th method, which shows that the sediments of the section were deposited during the last 32,000 years. The late Quaternary sequence contains four climatic and environmental stages. Stage I (31.98 - 19.26kaBP) with the mean of first principal component of -0.8773, is the coldest and wettest stage. It corresponds to the early stage of late Weichsel glacial period and overlaps with the last glacial maximum (LGM, 23-19kaBP). Stage II (19.26-13.53kaBP) with the mean of first principal component of +0.5233 is an interglacial period with a warm/dry climate. Stage III (13.53-12.73kaBP) with the mean of first principal component of -0.1075 is a cold/wet period. It is the late stage of the late Weichsel glacial period and is the late stage of the last global glaciation. Stage IV (12.73kaBP - recent) with the mean of first principal component of +1.275 is a warm/dry period. During Stage IV, there existed the Younger Dryas event (12.08-11.80kaBP). During 10-9kaBP, it was the earliest warm episode in the Holocene. The environmental change of this district was restricted by global change, suggested by analysis to glacial-interglacial cycles phenomenon. But it was different from the mutative trend of monsoon region in east China because of its own characteristic, which was the situation of cold-wet and warm-dry climate-environment change. It was caused by the uplift of Tibet Plateau and the westerly wind circulation. This research was supported by the NNSF(No.404730061).

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