

***n*-Alkane characteristics and ancient microbial community records of the Linxia Basin, NE Tibetan Plateau: implications for enhanced aridity at around 8 Ma**

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Introduction

The Linxia Basin accumulating thick and continuous sequence of fluvio-lacustrine-dominated Cenozoic sediments with environmental significance on aridification of interior Asia. Furthermore, the stratigraphic sequence of the basin has been well dated based on high-resolution magnetostratigraphy constrained by fossil mammals [1, 2].

Results and Discussion

The characteristics of *n*-alkanes indicate that the organic matter derived from mixed sources including bacteria, algae and higher plants. In the late Miocene around 8 Ma, the Pwax (index of proportion of land plants) values decrease, accompanying with relatively low values of ACL (average chain length) and increased Paq (index of proportion of aquatic plants) values, which suggest an arid event at around 8 Ma. It is noteworthy that the increasing Firmicutes (arid-adapted microbe) and the relatively decreasing Proteobacteria (humid-adapted microbe) at approximately 8 Ma also corroborated this arid event (Fig. 1). Therefore, it suggests that the microbial community can be served as a potential tool for the reconstruction of paleoenvironment.

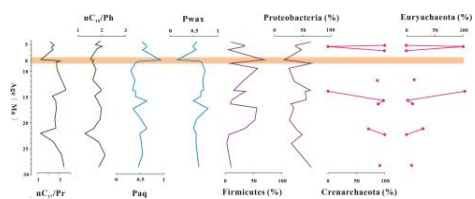


Figure 1: Microbial-geochemical proxy records over the past 29 million years of Maogou section in the Linxia Basin.

[1] Fang *et al.* (2016) *Global and Planetary Change* **145**, 78-97. [2] Deng *et al.* (2004) *Acta Geologica Sinica* **78**, 8-14.