

Vegetation-based moisture shifts in Qaidam Basin (NE Tibetan Plateau) during the Mid-Pleistocene Transition

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To better understand the evolution of the Asian monsoon during the Mid-Pleistocene Transition (MPT; ~1.2-0.7 Ma BP), which marks the shift from the 41-ka to the 100-ka ice-volume cycles during the Quaternary, we here investigate changes in moisture availability over the Qaidam Basin (NE Tibetan Plateau). Given the strategic position of the Qaidam Basin between the monsoon-westerlies-Siberian High climate systems and the sensitive response of desert plants to moisture shifts, we evaluate the vegetation dynamics on a continuous palaeolake sediment core (SG1) at centennial- to millennial-scale resolution. The most dominant pollen taxa comprise *Artemisia* and Chenopodiaceae, which account for ~60% of the total pollen grains on each sample. Based on the criterion that Chenopodiaceae can tolerate drier conditions than *Artemisia*, we apply their ratio (A/C) as a measure of relative moisture availability in arid regions. Our results provide evidence for increasing moisture during the younger intervals of the MPT (i.e., MIS 19-21). Such conditions point to strengthening of the influence of the summer monsoon and/or weakening of the winter monsoon over the Tibetan Plateau during that time, possibly driven by orbital forcing (i.e., low eccentricity and precession).

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