

Stalagmite-inferred hydroclimate records during 72-112 ka from Hokkaido, Japan

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The westerlies are one of most important factors affecting precipitation in the northeastern Asia. In modern day, a Pacific-East Asian teleconnection was suggested. Whether similar teleconnection had occurred over a multi-millennial scale is not yet available. Here, we present stalagmite-inferred hydroclimate records from Oku-Ashibetsu cave in Hokkaido (43°14'12" N, 142°13'09" E), northern Japan, where the rainfall pattern is influenced by the westerlies, covering the interval of 72-112 thousand years ago (ka, before 1950 C.E.). Records of the $\delta^{13}\text{C}$, a proxy reflecting changes in temperature and precipitation, covary with the trace elements (e.g. Sr, Ba), proxies for hydrological variation. Our results suggest a sub-orbital-scale increasing trend of regional precipitation from 112 ka to 72 ka, punctuated by several millennial dry events and suggesting a multiscale variation of the westerlies, similar to the Pacific east-west temperature anomalies. The covariance suggests that the hydrology in western Hokkaido region is possibly coupled with Pacific Ocean thermodynamics in a multi-millennial and even a sub-orbital-scales, emphasizing the teleconnection between low and mid latitude in the past.