

Using Chinese loess ^{10}Be to reconstruct the precipitation of the last 130 ka

W. Zhou,^{1,2,*} F. Xian,¹ Y. Du,¹ X. Kong,^{1,2} Z. Wu,^{1,2} and Y. Zhu¹

¹*State Key lab of loess and Quaternary Geology,
Institute of Earth Environment, CAS, Xi'an, China*

²*Xian AMS Center, Xi'an, China*

Cosmogenic ^{10}Be is considered as a useful proxy for past changes in precipitation. This is because its fallout flux in sediments was mainly controlled by wet precipitation after its production in Earth's atmosphere [1, 2].

Here we present a new study for precipitation reconstruction since the last 130 ka using Chinese loess ^{10}Be . In our method, the two components of geomagnetic modulation and the dust dilution have been removed from ^{10}Be concentration in loess in order to derive the pure precipitation component. Thus, we have quantitatively reconstructed the last 130 ka precipitation sequence in central Chinese Loess Plateau. The general similarity between our result and the absolutely dated $\delta^{18}\text{O}$ records from Hulu/Sanbao caves indicates that the new ^{10}Be method is robust. Our result also displays that increased precipitation occurred during Marine Isotope Stage 3 (MIS 3), and its variation amplitude is generally similar with that of MIS 5. Through the comparison between ^{10}Be precipitation, the stacked marine isotopes and summer insolation, we propose that the rising precipitation during MIS 3 in China appears to be basically controlled by the summer insolation differential forcing between 30°N and 30°S .

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[2] W. Zhou *et al.*, *Radiocarbon* **49**(1), 139 (2007).

*Electronic address: weijian@loess.llqg.ac.cn