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Younger Dryas and early Holocene climate oscillations recorded by a high-resolution profile of delta ^{18}O of stalagmite DSY09 from Southeast of Loess Plateau, China

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We here report a precisely-dated and high-resolution record of Younger Dryas event from Chinese loess plateau. Nearly 500 oxygen isotopic measurements combining with 24 ^{230}Th dates were carried out for an 86 cm long continuously precipitated stalagmite DSY09 from Dongshiya Cave in Luanchuan county, Henan province, China, with temporal resolution of up to 2-8 year during 9.0-11.5 ka B.P and 9-13 year during 11.5-12.9 ka B.P. The high-resolution oxygen isotope profile records the climate oscillation on decadal-centennial scale in the southeastern Loess Plateau for the period from 13.0 to 9.0 ky B.P. The cold YD event is clearly visible in the ^{18}O time series of stalagmite DSY09, which is synchronous with Greenland ice core records and stalagmite records from the southern China and the southern France to Northern Tunisia. However, the feature of gradually transition into YD and thereafter toward Preboreal of DSY09 is different from those of Greenland ice core, similar to the stalagmite records from Hulu and Dongge Caves. The intensive increase of ^{18}O combing with much lower growth rate and dense nature of calcite crystal fabric indicate the relative weak summer monsoon during the cold YD event. A noteworthiness is that DSY09 ^{18}O record displays larger amplitude of oscillation in both the YD cold period and the decadal-centennial scale variation afterward, probably owing to the rapid growth rate of stalagmite DSY09 encoded high-frequency signal, and (or) because Dongshiya locates around the natural boundary of southern wet and northern arid climate zones of China, which makes this site be sensitive to summer monsoon variation. The high-

resolution DSY09 also records a series of positive ^{18}O event in the period from the end of YD to 9 ka B.P. Some of these centennial scale oscillations coincide with the ^{18}O records of GRIP2 and stalagmites from Asia and Europe.

Keywords: Younger Dryas; High-resolution; stalagmite; Oxygen isotope; Early Holocene; Loess Plateau

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