

The Paleoclimatic records of stalagmite traced by stable isotopes from Liangfeng cave in Southwest, China

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Speleothems especially stalagmite are important repositories of Paleoclimatic and Paleoecological-Paleoenvironmental data. Based on the systematical studies of the sedimentary characteristics and the stable carbon (oxygen) isotopes, the Paleoclimatic Records of stalagmite from Liangfeng cave (E108°02'29", N25°16'21") in Southwest, China, have been made, which gives records from 14220 to 1570 aBP as follows:

14220-10500 aBP, Among Last Glaciation to Holocene, the $\delta^{13}\text{C}$ values of stalagmite varies from -9.314‰ to -7.290‰ , average -8.552‰ . The $\delta^{18}\text{O}$ values of stalagmite varies from -5.651‰ to -6.942‰ .

10500-9300 aBP, The temperature increased after the end of Younger Dryas, the $\delta^{13}\text{C}$ values of stalagmite varies from -10.377‰ to -9.267‰ , average -9.910‰ , the vegetation above Liangfeng cave be dominated by C_3 plants. The $\delta^{18}\text{O}$ values of stalagmite decreased obviously, varies from -7.420‰ to -6.077‰ , average -6.854‰ , rainwater increased and Southwest monsoon was strong.

9300-8300 aBP, The temperature fluctuates obviously along with the changes of $\delta^{13}\text{C}$ values (varies from -10.155‰ to -9.096‰ , average -9.712‰) of stalagmite, and the proportion of C_4 plants of vegetation above Liangfeng cave was unsteady. The $\delta^{18}\text{O}$ values of stalagmite varies from -6.796‰ to -6.260‰ , average -6.490‰ , the affect of East-Asian monsoon increased.

8300-3100 aBP, the temperature increased obviously, the $\delta^{13}\text{C}$ values of stalagmite is much low (average -9.910‰), the vegetation above Liangfeng cave be dominated by C_3 plants. The $\delta^{18}\text{O}$ values of stalagmite changes greatly, varies from -7.373‰ to -5.047‰ , average -6.261‰ , indicted that the climatic of monsoon is unsteady.

3100-1570 aBP, The $\delta^{13}\text{C}$ values and $\delta^{18}\text{O}$ values of stalagmite increased greatly, the $\delta^{13}\text{C}$ values varies from -12.097‰ to -6.495‰ , average -10.275‰ , the $\delta^{18}\text{O}$ values varies from -8.650‰ to -4.677‰ , average -6.184‰ , the vegetation above Liangfeng cave be dominated by C_3 plants mainly, the climatic of monsoon is unsteady.

Reference

- Liu Q. M. and Wang S.J., (2005), Chinese Journal of Ecology. 10. 1172-1176.
Yuan D. X., Cheng H. and Edwards R. L., (2004), Science. 304. 575-578.