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Multiple AMS ^{14}C dated stalagmite records from Yelang Cave in Central Guiyang of China: Climate and vegetation reconstruction since the last glaciation

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^{230}Th/U dating is not successful on stalagmites from Yelang Cave (26°2'28.00?N, 105°44'10.93?E) in central Guizhou of China due to very low U contents (<0.05ppm in general) and relatively high Th contents. Detailed AMS ^{14}C dating results on four stalagmites have built up their chronologies. The ^{14}C dating results indicate that dead carbon fraction (DCF) increases with enrichment of δ^{13}C, but generally less than 10% in the stalagmites. The "nuclei bomb carbon" can be found in modern cave calcite. The growth pattern of the stalagmites exhibits that (1) dark brown calcite formed during MOIS 3; (2) growth gap existed during LGM-deglaciation; (3) very slow deposition of dirty carbonate during Younger Dryas; (4) fast growth with non-transparent and pure calcite during Holocene Optimum; (5) growth gap appeared during middle Holocene (6∼7.5Ka); (6) slow or absent growth during 0.7∼5Ka; and (7) pure and transparent calcite continuously deposited fast over the past 700 years. The stalagmite δ^{18}O in Yelang Cave mainly reflects wetness changes with lighter δ^{18}O excursions corresponding to wet events; and vice versa. The stalagmite δ^{13}C chiefly registers vegetation changes on decadal or longer time scales, with heavier δ^{13}C trends recording poor vegetation conditions under dry climates. Combining the growth features and stable isotope records, the climatic and environmental variations during the past 60Ka can be described as following: (1) wet and dense vegetation during MIS 3; (2) cold and dry LGM; (3) dry and poor vegetation during Younger Dryas; (4) wet and dense vegetation during early Holocene corresponding to enhanced summer monsoon; (5) climate became dry from 4000 yr BP to 2000 yr BP under weakening of summer monsoon; (6) relatively wet and good vegetation between 2000 yr BP and 500 yr BP; (7) Climate turned to dry and vegetation strongly decreased over the past 500 years. PDO and N. Pacific condition affect strongly rainfall in the studying area.