



Climate of Late Glacial and Early Holocene in Southern Slovakia reconstructed on the basis of high resolution stable isotope record from cave speleothem

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The Central Europe is a key region to understand climate variability (temperature, precipitation, air circulation, NAO index etc.) in Europe during post-LGM period. We studied stable isotopic record from 826 mm long stalagmite collected in the Jaskyňa na Kečovských Lúkach cave located in the Slovakian Karst. The record was precisely dated with $^{230}\text{Th}/\text{U}$ dating method using mass spectrometry. Age-depth model was calculated using MOD-AGE software. Stable isotope record cover time from the termination of LGM (~ 21 kyr) until the Holocene climate optimum (~ 7 kyr). Changes of $\delta^{18}\text{O}$ concentration indicated rapid warming around 20.5 kyr. After that, oxygen isotopes oscillated with millennial mode similar to Bond events. The specific peak of lighter and heavier oxygen isotope composition correlated with cold and warm period of the Late Glacial, i.e. the Older and the Younger Dryas, the Bølling and the Allerød oscillations, respectively. Much stronger excursion to the heavier values of $\delta^{18}\text{O}$ indicates beginning of the Holocene. The Bond events can be also identified during the Holocene and next rapid change to the lighter oxygen isotopic composition point to the 8.2 kyr cold event. The carbon isotope composition correlates negatively with oxygen isotope record, with much heavier carbon during LGM and lighter carbon signal ~ 17 kyr and on the beginning of the Holocene.

The correlation between speleothem record and Greenland ice core records suggests that climate of Southern Slovakia after the LGM was formed mainly by Atlantic air circulation with significant Mediterranean influences during Late Glacial.