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Paleovegetation changes suggested by the stable isotope profiles of two Holocene speleothems from Romania

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The paper compares the isotopic profiles for oxygen and carbon of two Holocene stalagmites from two Romanian caves located in regions with similar relief and karstic settings, but with different climatic influences and, accordingly, different vegetation types. The first cave, *Ursilor Cave* (Bears Cave, sample PU2) is located at the outskirts of the Western Carpathians under mild and humid climate conditions that are mainly influenced by a WNW (Atlantic) air-circulation. The second one, *Poleva Cave* (sample PP9) is located in Banat Mountains, close to the western termination of the Southern Carpathians, in the vicinity of the Danube Gorge. The climate here is temperate with Mediterranean influences, favoring the predominance of xerophytic vegetation.

We consider that the different values of δ^{13}C determined for PP9 as compared with PU2 *are mainly caused by the different vegetal associations within the two karst areas*. Since the present-day value of δ^{13}C (–8.8‰) corresponds to a mixed plant association including C3 and C4 species, we may assume that higher values (around –6.5‰) are indicative for a dominant C4 association, while values below –9.5‰ would correspond to C3 plants. We may therefore conclude that the C3 vegetal association from the Western Carpathians did not change during the last 7000 years: the moderate variations recorded in the isotopic profile may be caused by other factors controlling the carbon cycle, such as the variation of the drip rate. On the contrary, in the case of southern Banat, we believe that the large carbon shifts (for example, from ca. –10‰ at ~8.8 ka to –6.5‰ at ~6.5 ka) *can only be explained by a major change in vegetal composition, from dominant C3 to dominant C4*. This might have been triggered by an atmospheric circulation creating a drier, meridional climate; possibly the same that has caused the first "Sahara Aridity" event approximately 6900 years ago.