



High-resolution of trace elements (Mg, U, Sr, Ba and Zn) in speleothems as Holocene palaeoclimatic proxies: Père Noël cave, Belgium

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Abstract

Speleothems are now regarded as valuable archives of climatic conditions on the continents, offering the advantages of absolute U-series dating relative to other continental climate proxy recorders such as lake sediments and peat cores. High spatial resolution measurements of Mg, U, Sr, Ba and Zn were realized by laser-ablation inductively coupled plasma mass spectrometry in the Belgian Père Noël cave Holocene stalagmite (Verheyden et al., 2000, 2008). The stalagmite of 65 cm long was deposited from ~12000 years to ~2000 years dated by U/Th method. Mg, Sr, Ba, U, and Zn are known as indicators for hydrological conditions (e.g. Ayalon et al., 1999; Fairchild et al., 2000). Mg, Sr, Ba concentrations are positively correlated ($r > 0.7$) with similar changes in the $\delta^{13}\text{C}$ implying similar processes influence their concentration changes. U has an inverse relationship with $\delta^{13}\text{C}$. The study suggests that trace elements in the Père Noël stalagmite have the potential to provide high resolution insights into variability in water recharge during the Holocene.

References

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