

## **Comparison of LA-ICP-MS and ICP-MS techniques for determining high-resolution trace element contents in Belgian speleothems**

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Speleothems, presented in Belgium, are now regarded as valuable archives of paleoenvironmental variability on the continents, offering a number of advantages relative to other continental climate archives such as lake sediments. They are reliable continental archives of high interest due to their dating possibilities and their possibility to preserve multi-proxy records of environmental and climatic dynamics. Establishing high-resolution trace element time-series in speleothems requires analytical techniques capable of representative sampling at sub-annual spatial resolution (on order of 22  $\mu\text{m}$  in this study). In the Belgian Père Noël cave (PN), high spatial resolution measurements of trace elements (e.g., Mg, Sr, Ba) were realized by using LA-ICP-MS and compared with results from lower resolution techniques (ICP-MS). The results from both techniques have been analysed in order to assess the capability of each technique to reconstruct climate changes at high resolution from PN stalagmite. Results showed that LA-ICP-MS technique allows a rapid analysis of multiple elemental concentrations, and uses minimal sample volume allowing for replicate sampling and availability of almost the entire original sample for other analyses.