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Stalagmite water content as a proxy for drip water supply in Switzerland

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For this pilot study, water was extracted from two Holocene stalagmite samples from Switzerland. The amount of water extracted per unit mass of stalagmite calcite so-called 'water yield', serves as a measure of the total water content (Vogel et al., 2013)

We analysed samples from Swiss stalagmites M6 from Milandre cave (400 m.a.s.l) and GEF1 from Grotte aux Fees cave (895 m.a.s.l) covering the climatic transitions Allerød–Younger Dryas–Holocene. Inclusion water was extracted from grain separates by crushing the sample in vacuum and subsequent heating of the powder to 260˚C (Vogel et al., 2013).

The amount of extracted water from stalagmite samples occur in a highly systematic manner. The observed changes in water yield within a stalagmite are attributed to the variation of the total water content of calcite, but not, e.g. to different crystal fabric of calcite (Vogel et al., 2013). The data also demonstrate that water yield records vary systematically with the regime shift. Therefore, we propose that for a stalagmite growing under the cold climatic conditions, its water yield record the (local) daily water supply and thus can be interpreted in terms of past precipitation rates.