



Environmental controls on the chemical signal of dripping waters and carbonates from Mallorca caves

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In order to establish the environmental controls on speleothem chemistry in caves from Mallorca four years monitoring exercise has been developed in three different caves. Samples of rain events, cave dripping waters and formed carbonate has been recovered together with some environmental parameters. This location in the Western Mediterranean was selected to represent Mediterranean semi-arid climatic conditions with a strong seasonal contrast in temperature and precipitation. Drip waters have been recovered at weakly resolution and carbonate precipitates represent seasonal periods. Caves are located in the eastern and south eastern sector of the island with different level of human activity in the surrounding section. The drip flow in all caves has a rather constant rate along the year even though the large contrast on rain flow, indicating a seepage flow behaviour. In contrast, chemical signal of the drip waters shows a rapid response (few days) to changes in rain patterns, but of relatively small magnitude. Isotopes and also trace elements in the carbonate precipitates present a seasonal signal associated to the cave environmental conditions but trends and intensity of the oscillations seem to reflect changes in drip water composition. This data set will be discussed in the context of the changing meteorological conditions of the last four years. Results reveals the potential of the Mallorca carbonates to record the long-term precipitation evolution of the island.