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Geochemical signal in drip waters and carbonates from three year monitoring of Drac Cave in Mallorca (Western Mediterranean)

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In order to establish the potential connection between climatic conditions over Mallorca and the chemistry of speleothem growths, a still ongoing monitoring exercise is in development in Drac Cave in Mallorca (Spain) starting from April 2013. This location in the Western Mediterranean was selected to represent Mediterranean semi-arid climatic conditions within a wider monitoring plan covering a transect across the northern part of the Iberian Peninsula, from the Catabric realm, across the Pyrenees and Iberian ranges until the Mediterranean, within the framework of the OPERA research project. Drip waters have been recovered at weakly resolution and carbonate precipitates represent seasonal periods. This monitoring is complemented with drip water and carbonate collection at seasonal scale in another cave close to Drac Cave. This second cave was selected in order to represent comparable climatic conditions but far of any human land-intervention since the Drac cave is partially located under an urban developed area, although drip water and carbonate collection is performed in a location bellow autochthonous forest. First results show that drip flow has a rather constant rate along the year even though the large contrast on rain availability. 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 in the carbonate precipitates present a seasonal signal and trend that reflect changes in the drip water composition. This data set, although preliminary, will be discussed in the context of the changing meteorological conditions of the last three years.