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How will climate change affect the isotope composition of meteoric water in the Mediterranean area?

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The relationship between the isotopic composition of precipitation in the Mediterranean Sea, the atmospheric circulation patterns over the region and groundwater properties has been topic of investigation in recent years. Overall, the link between the isotopic composition of precipitation and the Mediterranean climate raises the question of how future climate change could affect the isotope ratios of precipitation and groundwater. Past and future atmospheric properties (i.e. humidity, evaporation, precipitation and winds) over the Mediterranean region can be used to investigate the past and possibly understand future characteristics of meteoric water isotope composition. In order to evaluate how the climate change will affect the isotope composition of meteoric water, we re-evaluated previous rain events in light of well-defined climate framework. The main objective is to retrieve information on the atmospheric circulation systems based on ERA5 reanalysis and relate climate features with the isotope composition of selected rain events. This will allow to identify the most appropriate parameters needed to constrain the circulation systems responsible for those events and their isotope composition. Preliminary results to infer scenario-based considerations on the evolution of the meteoric recharge will be shown and discussed.