

Spatial and temporal variation in precipitation isotopes at 2 locations in southwest Spain

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Abstract

The $\delta^2\text{H}$ and $\delta^{18}\text{O}$ composition of 77 precipitation samples collected between January 2014 and April 2019 from two sites across the Guadalquivir Basin, SW Spain, were analyzed. Sampling was performed within intervals of at least 14 days basis if rain occurred but frequently intervals were longer according to the rainfall incidence. Precipitation weighted averages and local meteoric water lines are presented for use in hydrological applications. $\delta^2\text{H}$ and $\delta^{18}\text{O}$ values show a remarkably high variability attributed to the influence of Atlantic and Mediterranean vapor sources. Precipitation weighted average d-excess values of 12.5-13 ‰. Temperature and amount effects were found to be weak but significant influence of secondary evaporation for single rainfall events during summer was identified by reduced d-excess values and enriched isotopic signatures plotting close or below the Global Meteoric Water line (GMWL). Isotopic signatures of both sites are very similar in general and any temperature related urban effects of Seville city compared to the rural site Doñana could not be identified with the present data

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