



Isotope fractionation trends of surface waters in the mountains of Corsica (western Mediterranean)

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Surface waters from creeks, lakes, and sources, sampled between 2004 and 2006 in Corsica, have been measured for their oxygen and hydrogen isotopic composition. The local altitude effect in the range of 1.7 ‰, $\delta^{18}\text{O}/13\text{‰}$, $\delta\text{D}/\text{km}$ elevation is less steep than in the Alps, even if a “relief effect” of $\sim 0.56\text{‰}$, $\delta^{18}\text{O}/9\text{‰}$, δD per km elevation difference, substituting the continentality effect, is added. In contrast, the gradient of the latitude effect of $\sim 1\text{‰}$, $\delta^{18}\text{O}/13\text{‰}$, δD per $\sim 1^\circ$ at 42°N latitude is unusually steep which indicates that during the wet season (November to April) a boundary between subtropical and polar air masses frequently crossed southern Corsica during the sampling period. Pseudo-altitude and amount effects are weak and insignificant. A newly defined “exposure effect” in creek waters of south-exposed catchments in the range of 0.5 ‰, $\delta^{18}\text{O}/2\text{‰}$, δD causes a relative decrease in fractionation.