

D-excess isotopes for precipitation sampled at between the Osaka Plain and the south Ikoma Mountains, Osaka prefecture, Japan

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Purpose and Method

The purpose of this study is to clarify relationship between stable oxygen and hydrogen isotopic ratios of precipitation and topography from flatland to mountain. Thus, precipitation was sampled and δD , $\delta^{18}O$ and d-excess were measured for each event from May in 2014 to December in 2015 from the Osaka Plain to the Ikoma Mountains covering Osaka plain and surrounding mountain area.

D-excess change for altitude

Distance from cloud to ground was clarified to be an important parameter to determine isotope values. A slope of meteoric line, $\delta D/\delta^{18}O$ ratios in precipitation was 8. However, δD and $\delta^{18}O$ in water increases with evaporation but $\delta D/\delta^{18}O$ ratios decrease with increasing air temperature [1]. Air temperature decreases with increasing altitude. $\delta D/\delta^{18}O$ ratios of precipitation decrease during dropping of precipitation from cloud to ground. Thus, d-excess decreased with dropping distance from cloud to ground as shown in figure 1.

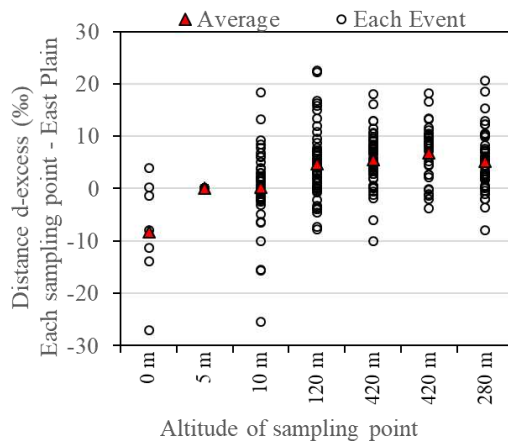


Figure.1 Relationship between d-excess and altitude

[1]Yamashita & Ii (2016) GEOMATE 11-26, 2659-2664.