

## Stable isotopic composition of meteoric waters in the Kanto and Koshinetsu Districts, Japan

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Some 700 meteoric water samples (springs, rivers with small catchment areas, and shallow wells) from the Kanto and Koshinetsu Districts, central Japan, were analyzed for their oxygen and hydrogen isotopic ratios to know the regional patterns of  $\delta^{18}\text{O}$  and  $\delta^2\text{H}$  contents.

As a result, it was found that continentality and altitude exert important controls on the isotopic contents of meteoric waters in these regions. Waters in inland areas with high relief (Gunnma, Tochigi, and Saitama Prefectures;  $-88.7$  to  $-54.8$ ,  $-84.4$  to  $-47.3$ , and  $-76.2$  to  $-43.4$  per mil in  $\delta\text{D}$ , respectively) have more depleted isotopic values compared with those from coastal areas (Ibaraki and Chiba Prefectures; in the range  $-59.1$  to  $-27.1$  per mil in  $\delta\text{D}$ ), reflecting the general trajectories of rain-producing air masses from the Pacific Ocean and the orographic cooling experienced by air masses moving over high mountain ranges.

Although an isotopic ratio vs. altitude plots indicate a remarkable difference from one prefecture to another, the altitude effect itself was nearly the same irrespective of geographic location of the prefectures, being in the range  $-1.4$  to  $-1.5$  per mil in  $\delta\text{D}$  per 100 m increase in elevation. As for Gunnma Prefecture, the altitude effect ( $\delta\text{D}$ ;  $-2.0$  per mil per 100 m rise in elevation) on high mountain areas of more than 1000 m in elevation was found double relative to that in low elevation areas ( $\delta\text{D}$ ;  $-1.0$  per mil per 100 m), suggesting the difference of origin of recharge water. This kind of difference in altitude effect depending on the elevation was also confirmed in Tochigi Prefecture where more contribution of snow to groundwater recharge is supposed on higher elevation areas.

These information on the isotopic content of meteoric waters will be useful to investigate the origins and flow processes of ground waters in the Kanto Plain.