Oxygen and hydrogen isotopic ratios of major rivers in Kanto District

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To determine the contribution of river water to groundwater recharge in the Kanto Plain, spatial and temporal distributions of oxygen and hydrogen isotopic ratios of the 12 major rivers in Kanto District were investigated at the points where mountain rivers flow into the Kanto Plain.

The oxygen and hydrogen isotopic ratios of river waters tend to have higher values for the Kokai , Iruma, Omoi and Hata rivers, and lower values for the Tone, Kanna, Ara, Tama and Kinu rivers. The oxygen and hydrogen isotopic ratios are dependent on the mean elevations of catchment areas. Although the mean elevations of Kanna and Ara river basins are lower than the Tone, Tama and Kinu rivers by about 250-300m, those isotopic ratios are found nearly the same as or below those of the Tone, Tama and Kinu rivers. The oxygen and hydrogen isotopic altitude effects of river waters are double the altitude effects determined by spring waters in and around Kanto District. The oxygen and hydrogen isotopic altitude effects of river waters tend to have seasonal fluctuations with higher values in summer and lower values in winter.

Oxygen and hydrogen isotopic ratios show very complicated seasonal fluctuations, which are thought to be attributable to the difference in characteristics (e.g. catchment area, elevation and geomorphology) and/or human activities in the respective catchments.