Characteristics of oxygen and hydrogen isotopic ratios of river waters in the Kinki district

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Isotopic ratios of oxygen and hydrogen of surface waters were measured to obtain the background data and to determine the characteristics of river waters in the Kinki district. Samples of water were collected at 143 stations around the 8 large river systems on July 1999 and July 2000. The oxygen isotopic ratios of river water flowing into Japan Sea are lower than those flowing into Seto Inland Sea as well known at the other river basins in Japan. Most high isotopic ratios were observed in the basin having an average low latitude and a low amount of annual precipitations. This indicates that the river water in these basins is recharged by a precipitation falling on a low land area and also irrigation water having high isotopic ratios.The oxygen and hydrogenisotopic ratios of river waters rose linearly with a gradient of 2 to 5. These results suggest that the river waters are dominated by contributions of irrigation water or groundwater seepage from the paddy fields. Altitude effect for oxygen isotopic ratios, except the data which is plotted on the evaporation line, was about 0.2 - 0.5 permil per 100m in the upper streams. However, it is not clear in the small drainage basins with high latitude. This seems to be that the groundwater recharged at the mountain area discharges into the river at the lowland area.