

Groundwater recharge by infiltrating river water in the Sho-river alluvial fan, Toyama Prefecture, Japan

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Contribution of infiltrating river water in the shallow groundwater formation was investigated in the Sho-gawa river alluvial fan in Toyama Prefecture, Japan. Groundwater samples from 25 bores of depth with less than ca. 50 m deep, and river and spring water samples were analyzed for hydrogen/oxygen and carbon isotopes as well as water quality. A two end-member mixing analysis based on the isotopes made it clear that infiltrating river water showed the highest contribution along the river and its contribution decreased with an increased distance from the river. The results obtained from hydrogen/oxygen isotopes and carbon isotope indicated a very similar pattern of river water contribution. However, the figures of river water contribution are inconsistent with each other; 70% in the immediate vicinity of the river to 30% at the end of a 3 km course of flow for the hydrogen/oxygen isotopes, whereas 100% near the river to 80% for the carbon isotope. The reason why this discrepancy comes about depending on the isotopes is the focus of our future study.

Keywords: Sho-river alluvial fan, hydrogen/oxygen isotope, carbon isotope, infiltrating river water, groundwater recharge