

## **Geochemical flow model of groundwater in Sho River fan, Toyama Prefecture for heat usage by geothermal heat**

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Groundwater flow model is discussed with chemical and isotopic (D, O) compositions of 56 water samples in Sho River fan, Toyama, northern part of central Japan to apply to geothermal heat usage for room air-conditioning and melting of road snow by geothermal heat pump (Geo-HP). Groundwaters are a mixture of two big river waters (Sho and Oyabe) and precipitation. Deep groundwaters from observation wells are characterized to be high pH and enriched in HCO<sub>3</sub> compared to the shallow groundwaters. These features may indicate that shallow groundwater originated from a mixture of river water and precipitation moving to the north and becoming confined due to the presence of an impermeable layer. Groundwaters become high pH due to ion exchange reaction with rocks containing clay minerals, where HCO<sub>3</sub> concentration also increases.