

Stable and radiogenic isotope ratios of bottled water in South Korea

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This study investigated the stable (H, O) and radiogenic (Sr) isotope ratios of bottled water in South Korea to trace its origins and understand the hydrogeochemical water-rock interactions within aquifers. A total of 81 bottled water samples were collected from across the country. The $\delta^2\text{H}$, $\delta^{18}\text{O}$, $^{87}\text{Sr}/^{86}\text{Sr}$ ratios, and Sr contents of bottled water samples sourced from groundwater and deep-ocean water in South Korea range from -68‰ to -1.6‰, -10‰ to 0.1‰, 0.7050 to 0.8112, and 12 to 407 $\mu\text{g/L}$, respectively. The stable isotope ratios (H, O) indicate spatial variations with latitude, while the radiogenic isotope ratios (Sr) show a strong correlation with aquifer geology or geographical location. The integration of stable and radiogenic isotope ratios may thus provide a detailed understanding of water-rock interactions, which can be used to accurately authenticate water sources. Isotopic data of bottled water in South Korea may be useful in estimating the geographical and geological characteristics of well locations.