

## Stable isotopic map of spring water and surface water in the Shirakami Mountains, Japan

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The Shirakami Mountains is the general name given to an extensive mountainous region of 130,000 hectares ranging from the southwest of Aomori to the northwest of Akita prefecture. Within this area are 16,971 hectares of land, enclosing virgin forests of Japanese beech, which were registered as a world heritage region in December 1993. However, environmental impact by acid rain at the Shirakami Mountains is becoming an issue these days. Acid rain deposits nitrates that can lead to increases in nitrogen in forests. So we have studied about the chemical and isotopic compositions of river and spring waters in the Shirakami Mountains area, to clarify origin and geochemical characteristics since 2011.

The result of the investigation was that delta-18O and delta-D of water samples showed -8.8 to -11.5 permil and -48.8 to -64.8 permil, respectively. Stable isotope composition of the samples roughly resemble those of meteoric water ( $\delta\text{-D} = 8\delta\text{-18O} + 20$ ), thereby indicating that these are local meteoric water. The least-squares regression line for all data is:  $\delta\text{-D} = 5.7\delta\text{-18O} + 1.7$  ( $R^2 = 0.88$ ). On the other hand, the regression line calculated with data from NW-part is:  $\delta\text{-D} = 6.0\delta\text{-18O} + 0.5$  ( $R^2 = 0.98$ ). Characteristics of two regression line suggest that these water origin were brought by rain from different air mass, respectively.

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