

Material transport from forest to the low land area via rivers in the eastern Toyama prefecture

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River water has higher concentration of dissolved components than precipitation, because dissolved components are added when precipitation passes through forest areas interacting with rocks and vegetation.

In this study, we focused on catchment areas and conducted research at river upstream areas in eastern Toyama prefecture where there is little human influence. In the study, we sampled river water and Epilithic Organic Matter (EOM) in October 2016 and May 2017. Water sample was measured for major ion concentration, and analyzed for oxygen isotope ratios ($\delta^{18}\text{O}$) and hydrogen isotope ratios (δD). EOM was analyzed for carbon isotope ratios ($\delta^{13}\text{C}$) and nitrogen isotope ratios ($\delta^{15}\text{N}$). We used these measured data and terrain data calculated using GIS software, and obtained the following results.

- 1) Judging from $\delta^{18}\text{O}$ values and δD values, river water was composed by a mixture of precipitation in summer and precipitation in winter. And river water consists of precipitation from the altitude of 300m-2000m. It was found that the recharge source altitude was higher in water sampled in May.
- 2) There was a correlation between $\delta^{13}\text{C}$ values of EOM and both Calcium and bicarbonate concentration. This may suggest that it reflects the degree of weathering of the rocks the water had passed through.
- 3) Nitrate concentration measured in October ran nearly parallel to the proportion of deciduous trees. This suggests that $\delta^{15}\text{N}$ values of EOM is bounded at the altitude of 1500m and reflects the vegetation within catchment areas. Nitrate concentration in river water collected in May correlated with the proportion of dry soil and this may show influence of the activity of microorganisms in the soil.