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Stable isotopic composition of nitrate in stream and river water of the southeastern Shirakami Mountains

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Recently, volume of nitrogen load has been increasing in mountainous area because of acid rain. The concentration of T-N keeps increasing in the water of Subari Lake in the Shirakami Mountains at Akita Prefecture. To elucidate of nitrogen cycle in forest is importance problem in view of effects of ecosystem in the Shirakami Mountains. Then, in this study, We have studied about the chemical and nitrate-nitrogen (d15N-NO3-) and oxygen (d18O- NO3-) stable isotopic compositions of stream and river waters in the southeastern area of the Shirakami Mountains, to verify the loaded nitrate source in investigation basin and spatial distribution of nitrogen isotope values originated from forest.

Water sampling ware collected from 22 streams and rivers in Fujikoto river basin, Kohinai river basin and Kasuge river basin on May, 2012 to November, 2012 in the southeastern area of the Shirakami Mountains. The main water sampling points were in the river, stream, spring, lake and marsh. Chemical components were analyzed using ion chromatograph.

NO3- concentration ranged from 0.5mg/L to 3.1mg/L. but almost samples around 1mg/L, there is almost the same results as those obtained in the 2011. However, 2 spring water showed relatively high NO3- concentration (more than 2.0mg / L - 3.0mg / L) in Kasuge river area.

Keywords: shirakami mountains, nitrate, nitrate-nitrogen and oxygen isotope ratio, acid rain