

Analysis of transportation and consumption processes of atmospheric nitrate in forested watershed by using oxygen isotop

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Some studies reported that atmospheric nitrogen deposition into terrestrial ecosystem has recently increased due to increase of anthropogenic emission of nitrogen compound into atmosphere. However, dynamics of atmospheric nitrogen deposition in forested watersheds is not clearly understood. Moreover, that leads our poor understanding of influence of increasing atmospheric nitrogen deposition on nitrogen cycle in forested ecosystem and nitrogen discharge from forested ecosystem. The purpose of this study is to clarify the mechanisms of transportation and consumption of atmospheric nitrate deposition in forested ecosystems. We collected rainfall, throughfall, surface water, soilwater (10cm, 30cm), groundwater, spring water and streamwater at a forested watershed planted with Japanese cypress in central Japan at biweekly. Samples were analyzed for total nitrogen, dissolved nitrogen, nitrate, ammonium, nitrite, and oxygen isotope of nitrate. Isotope analysis was conducted at ICRE in University of Yamanashi. We also collected soil at several month intervals, and measured nitrate, ammonium in soil and net mineralization rate, and net nitrification rate. We are planning to present transportation rate of nitrogen compounds and atmospheric nitrate through the forested watersheds and discuss the interaction between nitrogen cycle and atmospheric nitrate deposition in forested ecosystem.

Keywords: oxygen isotope of nitrate, transportation and consumption processes of nitrogen, forested watershed