

The use of natural abundances of stable isotopes to elucidate the nitrogen dynamics in plant-soil systems

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Nitrogen (N) dynamics in terrestrial ecosystems are quite complex because of its high turnover due to the high biological N demand by plants and microbes. The uses of the natural abundance of stable N and oxygen (O) isotopes have been carried out in many ways to elucidate the N dynamics in intact terrestrial ecosystems. The methodological progress ("denitrifier method") can allow us to measure not only N but also O isotope ratios with samples with low N amounts. We applied this analytical method to elucidate the fate of nitrate. Among many fates of nitrate in terrestrial ecosystems, plant nitrate uptake is quite difficult to evaluate. In this talk, I will introduce our results on the uptake of the soil nitrate by tundra plants where soil net nitrification rates are quite low.

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