

Stable isotope techniques for better understanding of N cycles and redox conditions

Keisuke Koba[1]

[1] Tokyo University Agric Tech

Nitrogen often limits productivity in terrestrial ecosystems due to high N requirements by biota with low N availability. Nitrogen compounds can have a wide range of oxidation status, which provides some opportunity to get insight into redox condition of a system where the nitrogen compound is produced and consumed. It is important to understand the redox condition of ecosystems, for example, because of its strong effects on global warming gases. However, high spatial and temporal heterogeneity of the redox condition in terrestrial ecosystems (e.g. soils and sediments) often prevents us from understanding regulations of such conditions.

Recently, stable isotope technique becomes familiar and an amount of sample required for isotopic analysis is dramatically decreasing, which allows us to use this technique to study nitrogen dynamics in terrestrial ecosystems. In my talk, I will briefly review the isotope techniques available for those who are studying nitrogen cycles and introduce the possibility to use this technique together with microsensing methodology to explore the in-situ redox condition that regulates nitrogen dynamics.