

N cycling at a larch stand on the permafrost in central Siberia

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It has been hypothesized that nitrogen (N) is a limiting factor for biomass increment in arctic central Siberian forest ecosystems. Because N deposition caused by anthropogenic influences has gradually increased over the past few decades, it is important to examine the effects of N deposition on N cycling and the related biogeochemistry in the region. Furthermore, the change of N status in the Siberian forest will affect the carbon (C) fixation rate, which relates to global warming. In this study, N dynamics in soils were examined by estimating N pool size, net mineralization, and the nitrification rate, using a buried-bag method and an ion exchange resin, in a larch stand in central Siberia. N deposition was about 2.1 kg N/ha/year and N loss from the stream was estimated less than 0.1 kg N/ha/year. It seems that N fixed and accumulates in the larch forest ecosystem. The inorganic N pool size was similar to the pool size in a temperate region, where N is relatively abundant and fluctuated year to year. The net N mineralization and nitrification rates were highly variable among years. N leaching from 10cm was less than 1.8 kg N/ha/year.