



## Experimental warming effects on C and N mineralization in an Austrian mountain forest soil

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An increase in soil temperatures substantially increases soil respiration rates as both processes are positively correlated. This has been demonstrated in a wide range of manipulative field and laboratory studies. However, the response of gross and net nitrogen (N) mineralization rates to enhanced soil temperatures has rarely been investigated. Previous studies ascribed the increased carbon (C) mineralization rates under elevated soil temperatures to enhanced microbial metabolic activity.

We conduct a laboratory incubation experiment to determine gross and net N mineralization rates as well as CO<sub>2</sub> production rates to test the hypothesis that elevated soil temperatures lead to an increase in gross and net N mineralization rates likewise as observed in C mineralization. We expect that gross N mineralization has a different temperature sensitivity than C mineralization.

Soil samples were taken from the Achenkirch (Austria) soil warming experiment. Warmed and control plots were established in a mixed spruce-beech forest stand each with three replications in 2004. Soil temperature was enhanced in the warmed plots by 4°C above ambient temperature during the vegetation period. Due to anthropogenic deposition this site is highly N-saturated. Soil samples were taken in two depths (0/10 cm). Gross ammonification and nitrification rates were measured by the <sup>15</sup>N pool dilution technique, net N and CO<sub>2</sub> production rates were determined in lab incubations over 12 weeks. First results of this study will be presented.