# N cycling in two contrasting peat bogs

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Freshwater wetlands are unique natural habitats. They also help to regulate the contents of greenhouse gases in the atmosphere. Wetlands cover mere 4 % of the Earth's land surface, yet they store an equivalent of half of the carbon that is present in the atmosphere as $CO_2$. They also store 15 % of the world's soil nitrogen. At present, peatlands have a cooling effect on the atmosphere. There are fears that climatic warming may lead to peat degradation, due to higher peat decomposition rates. Peat thinning will be accompanied by higher emissions of greenhouse gases ($CH_4$, $CO_2$, $N_2O$), and the cooling effect of peatlands may be reversed. Higher emissions of greenhouse gases may lead to accelerated warming. High atmospheric inputs of pollutant N may have a detrimental effect on the peatland C and N store, just like climatic warming. In rain-fed *Sphagnum* bogs, pollutant N may penetrate into deeper layers and cause an invasion of vascular plants, substrate aeration and peat degradation. Here we present data on N cycling in a highly polluted peat bog in the northern Czech Republic, and a less polluted peat bog in the southern Czech Republic. A biogeochemical comparative study along a pollution gradient may provide a quantitative insight into the response of peat bogs to increasing N pollution in the future. The southern site was characterized by faster peat accretion. The average N concentration in peat cores was 1.2 wt. % in the north and 0.8 wt. % in the south. There was a trend toward lower N concentrations with an increasing peat depth. At both sites, a typical vertical $\delta^{15}N$ profile started at the peat surface close to -6 per mil, and first increased with an increasing depth. Across the sites, 5 out of 6 vertical $\delta^{15}N$ profiles ended with decreasing values downcore.