

Abstract

CARBON AND NITROGEN POOLS AND FLUXES OF TWO FOREST ECOSYSTEMS IN THE ORE MOUNTAINS

With increasing atmospheric CO₂ concentrations, forest ecosystems are considered for their sequestration ability. However, there are differences between coniferous and deciduous tree species in their impact on the carbon (C) and nitrogen (N) fluxes within forest ecosystems, which influence soil carbon and nitrogen pools. In natural beech and monoculture spruce stands on research sites of Czech Geological Survey in the Ore Mountains, C and N fluxes and pools were investigated. There were investigated ecosystem inputs (C, N, in throughfall, litterfall) as well as outputs (soil respiration, concentrations of C, N in seepage water discharge). Further, C and N pools of living biomass and soils were determined. Throughfall DOC was significantly higher in the spruce stand, on the other hand litterfall C flux showed the opposite relationship. At output, DOC, DON and NH₄⁺ discharge fluxes from O horizon were significantly higher in the spruce stand whereas in the beech stand higher NO₃⁻ flux from mineral soil was recorded. Soil respiration was quite similar in the both stands, however different parts of original sources of respiration among tree species were different. Beech stand has larger pools of carbon and nitrogen in biomass and soil.

Key words: carbon, nitrogen, tree species, nutrient cycling, soil, biogeochemistry