logging residue piles of different tree species, and control plots without logging residues, were subsequently established. Effects of logging residue piles were monitored: leaching as N concentrations in soil percolating water, and N_2O emissions with closed chamber technic over two growing season. Soil denitrification activity and the contribution of nitrification and denitrification to N_2O production were determined in laboratory experiment, as well as nitrogenase activity in the logging residues. Logging residue piles increased nitrate (NO_3-N) concentrations in soil percolation water. In addition logging residues piles tended to stimulate N_2O fluxes although in general the fluxes were low. Logging residues showed some nitrogenase activity. Currently we study the effects of large logging residue storage piles on N mobilization and losses.

Nitrogen addition to nitrogen rich forests: effects on soil nitrogen content

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Human activities have altered the pools and fluxes of nitrogen (N) in the forest soil. In southern Sweden, a substantial deposition of air-borne N pollution has been going on for several decades. During the most recent decades up to 15–25 kg ha^{-1} yr^{-1} of N has been deposited in forested areas. At present the major part of deposited N is retained in the soil. However, there are concerns that the input of N into forest ecosystems will lead to so called N-saturation. Generally, the N cycle in Swedish forests is closed and the small amount of leaching that occurs is mainly of organic N. However, quite high leaching of inorganic N has occasionally been observed in some areas, especially in southwestern Sweden. In order to simulate effects of an elevated N deposition a series of experiments was established in forest in the southern part of Sweden including annual addition of low N doses (20 kg ha^{-1} yr^{-1}). The experiments were established in stands of two different site productivity classes within two regions with differences in N deposition. The main aim of the project is to study effects on several forest ecosystem properties of low N dose addition as well as of conventional practical forest N fertilization. Here we report on changes in soil N content in the upper soil layer following addition of low-dose N application by a series of soil samplings, in order to estimate how much of the added N is retained there.

Is there a niche complementarity for nitrate uptake among savannah shrub and tree species in a very deep Brazilian soil?

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Belowground niche complementarity between deep-rooted and shallow-rooted species in mixed forests may result in a more complete exploitation of soil resources than in monocultures. Our study aimed to assess 1) the maximum distance (horizontally and vertically) where the fine roots from common Cerrado species take up mobile nutrients in deep Ferralsols, and 2) whether there is a niche complementarity in nitrate uptake between some Cerrado species. Our study was carried out in a closed-canopy forest with dense woody understory (cerradão) at Bauru (Sao Paulo State); 15N-NO_3- was injected at the onset of dry and rainy seasons at 6 depths (0.1, 1.5, 3, 6, 9 and 12 m) with 3 plots per depth and a distance > 50 m between each injection depth. Leaves were sampled 4 months after tracer injection in 3 frequent species in each plot located at 4 intervals of distance from the tracer injection point (0-2 m; 3-6 m; 7-10 m; ≥ 12 m) and 15N atom% was determined. Great differences in 15N tracer uptake between the studied species showed a niche complementarity in this native savannah. *Xylopia aromatica* exhibited a strong 15N uptake at 6 m of depth, irrespective of the season. This species seems to exploit a much larger soil volume than the others, both vertically and horizontally (15N taken up at 5 m from the injection point). *Miconia albicans* and *Coussarea hydrangeifolia* showed similar behaviours, with a strong 15N uptake in the topsoil and down to 1.5 m depth, within 2 m from the injection point.

Litterfall production and litter decomposition at several forests considering climate and litter quality in South Korea

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We investigated litterfall production and litter decomposition, which are the major pathway for carbon and nutrients in forest ecosystem, at a couple of different forests considering climate and litter quality. Litterfall production has been observed at several deciduous or evergreen forests for about ten years across temperate and sub-tropical region in Korea. Leaf litter translocation experiments have been carried out covering 14 °C – 17 °C range of mean annual temperature and 1,200 mm - 1,400 mm range of mean annual precipitation. The results showed that total litterfall was much higher at evergreen broadleaf forest (903 gm^{-2} yr^{-1}) than others (698 gm^{-2} yr^{-1}), but was annually fluctuated. Litterfall production in evergreen forest was the highest at spring season, but for deciduous forest fall season was the maximum. Litter decomposition follows the similar decomposition trend, but decomposition was much faster in forests which has higher temperature during winter season. Litter decomposition was diverse by litter quality and average temperature during winter season. Although the effect of forest type, climate, and litter quality on litter production and litter decomposition is complex, this experiment will give an overview how these factors influence on carbon and nutrient cycling by modifying litterfall production and litter decomposition.

Post-logging management and soil type can affect litter layers in Amazon tropical forest?

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Litter is one of the main carbon and nutrient pools in the terrestrial ecosystem. However, the litter structural organization and the characteristics of its horizons, especially in humus forms perspective, that enables us to understand the topsoil processes of tropical forest ecosystem functioning are not well understood. We hypothesize that the soil class affects the soil macro and microbial activity and fertility, and thus the humus forms horizons. Likewise, the logging practices and the producer-decomposer forest processes altering the decomposition rates and litter input was evaluated. We used morpho-functional approach (Zanella et al., 2017) to describe the humus forms horizons on two different soil types (Ferralsols and Gleysols), under two post-logging practices of management (with