Logging residues accelerated carbon and net nitrogen mineralization. In addition, in the second summer, there was intensive net nitrification under all types of logging residues. Logging residue clearly increased the amount of mineral nitrogen. Changes in microbial biomass C and N were negligible in all treatments. Some changes due to logging residues were also observed in mineral soil. There were signs of differences between tree species. In addition, losses of nitrogen via leaching and N_2O emissions are studied in the same field experiment.

[1] Lindroos A.-J. et al. 2016. Effect of clear-cutting and the amount of logging residue on chemical composition of percolation water in spruce stands on glaciofluvial sandy soils in southern Finland. Boreal Env Res. 21, 134–148.

Quantification, distribution and major predictors of soil nitrogen content along a range of forest ecosystems and climatic conditions

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Nitrogen is known to affect on the carbon cycle, therefore affecting future climate change scenarios. While there is an abundance of carbon data collected to fulfill the requirements of the Kyoto protocol, limited data are available regarding soil N accumulation and storage in relation to forest type and altitudinal gradients. Data collected during the third phase of the Italian National Forest Inventory at 1472 sampling plots were utilized to calculate the nitrogen content and C/N ratio of the different soil layers to a depth of 30 cm. Boosted Regression Trees models were then applied to investigate the main determinants of soil N distribution and C/N ratio. Forest category was shown to be the main contributor for eleven out of fourteen soil N models whereas latitude emerged to be the second most important. Forest category mostly affected the superficial soil layer N variables, whereas mineral layers were more influenced by site-related variables, such as soil bulk density. The average total N content to a depth of 30 cm was quantified to be 581.3±318.7 g N m^{-2} (mean±standard deviation), of which more than 90% was stored in the mineral layers. This quantity is comparable with the values found in similar studies, however the range is larger (12.5–2064.2 g N m^{-2}). Our study included a wide range of Temperate and Mediterranean forest ecosystems, spread along a latitudinal gradient of 10°, therefore, the dataset presented combined with other nitrogen related variables (*e.g.,* N deposition) could serve as a reference for the investigation of N-related processes (*e.g.,* N leaching, N saturation) in a wide range of environments.