



Comparative study on carbon accumulation in soils under managed and unmanaged forests in Central Balkan Mountains

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Each soil has a carbon storage capacity, which depends on many factors including type of soil, vegetation, precipitation and temperature. The aim of this work is to compare the carbon accumulation in forest floor layers and mineral soil horizons under managed and unmanaged spruce and beech forest ecosystems developed on Cambisols in Central Balkan Mountains, Bulgaria. We have investigated two managed and two unmanaged forests - pure stands of European beech (*Fagus sylvatica* L.) and Norway spruce (*Picea abies* Karst.). In each experimental site one representative soil profile was prepared with additional 4 sampling profiles for more precise determination of spatial variability of soil characteristic at site level. The forest floor was sampled in 3 repetitions per site, by a plastic frame (25:25 cm). The textural composition of soil, bulk density, coarse fraction content, pH, carbon and nitrogen content were analysed for forest floor layers and soil at different soil depths (0–10 cm, 10–20 cm, 20–30 cm and 30–50 cm). Both European beech and Norway spruce stands had higher accumulation of organic matter in the forest floor and the Ah horizon under unmanaged conditions. When managed, carbon contents tended to be higher in deeper horizons of the mineral soil, probably due to differences in microclimate after cutting. However, the variability in carbon storage was higher in managed sites which may reflect a higher degree of disturbance. Further work will analyse the soil carbon dynamics using radiocarbon as a tracer.