

EGU22-7762

<https://doi.org/10.5194/egusphere-egu22-7762>

EGU General Assembly 2022

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



A large-scale study of the carbon stock of Hungarian forest soils

András Bidló, Péter Végh, and Adrienn Horváth

University of Sopron, Sopron, Hungary (bidlo.andras@uni-sopron.hu)

Temperate forest ecosystems store significant amounts of organic carbon. Site conditions, species composition, and age of stands largely influenced the amount of stored carbon. International and Hungarian studies have shown that nearly half of the carbon stored in the soil in organic matter forms in forest ecosystems. The main goal was to determine the amount of carbon stored in loess soil. Our preliminary studies have shown that climatic conditions (and the forest composition determined) have a huge effect on the carbon stock of soils. To demonstrate this effect, forest stands on loess bedrock under different climatic conditions were selected for the study. Soil drilling was performed in 40 stands and soil samples were taken by 10 cm layers from 0-110 cm depth. In addition to the soil samples, we also determined the litter mass and composition of the forest stand.

Results showed that the loess soil was leached under the forest stands, so its pH was 5.8 on average (min: 3.9; max.: 8.5). Only deeper levels contained 13% CaCO₃ (min: 1.1%; max.: 37%) in the profiles. The texture of the soils was loam or clayey loam with good water holding capacity; therefore, the soil types were Luvisol and Cambisol soils. The average amount of carbon stored in the soils was 1.04 % (min.: 0.02%; max.: 7.3%) In the future, we will try to clarify the relationship between soil organic carbon stocks and weather conditions.

Project no. 141603 has been implemented with the support provided by the Ministry of Innovation and Technology of Hungary from the National Research, Development and Innovation Fund, financed under the MEC_R_21 funding scheme.