Geophysical Research Abstracts
Vol. 16, EGU2014-13493, 2014
EGU General Assembly 2014

The impact of climate change on carbon storage of urban soils

András Bidló, Borbála Gálos, and Adrienn Horváth
University of West-Hungary, Institute of Environmental and Earth Sciences, Sopron, Hungary (abidlo@emk.nyme.hu)

The soil carbon stock has a very significant role in the global carbon cycle. In many ecosystems the carbon content of soils is higher, than what is stored in plants and this is typical for urban soils too. In order to investigate the carbon content of the soils we have collected samples from the upper layer of sampling sites in the following Hungarian towns: Sopron, Szombathely, Székesfehérvár. In these towns there are significant differences in land use, as besides the old downtown there are also younger suburbs and suburban forests, vineyards, pastures, gardens and agricultural areas. Cause the location of towns will be another determining factor the effect of climate change in future. Samples were collected from soil spots from 0-10 and 10-20 cm depth as well as from soil profiles, where samples were taken from each of the profile layers. First we selected the appropriate method for the measurement of the soil carbon content, as there are several possible methods for this. Carbon content cannot be determined in calcareous soils using the C/N/S apparatus, thus we used wet-burning methods with potassium-permanganate. The results of the field and laboratory measurements were represented in a GIS system (Digiterra Map). The highest average carbon content has been determined in the upper layer of forest lands of Sopron (4.6 % C). The lowest values have been measured in both layers on the agricultural areas of Székesfehérvár (1.72 % C). Differences between carbon results can be explained by the effects of the vegetation and land use. Land use is also significantly determined by ecological conditions and now the whole ecological system depends on effect of climate change.

Research was supported financially by the TÁMOP-4.2.2.A-11/1/KONV-2012-0013 project.