



## **Mapping soil organic carbon stock in the area of Neamtu Catchment, Northeastern Romania**

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The quantification of soil organic carbon stocks and its spatial extent is directly influenced by the land cover. The aim of the study is to quantify both the spatial distribution of soil organic carbon and stocks under different soil types and land uses in an area of 41.808,04 ha in northeastern part of Romania. It has been studied the evolution of carbon stocks over time, taking into account the change of land use between 1990-2012 under 5 classes: forests, pastures, arable land, orchard and built spaces. Common soils are Cambisols, Fluvisols, Phaezems, and Luvisols, forest being the predominant land use. The most important loss of soil organic carbon occurs as a result of changes in the supply of biomass supplying litter and therefore the process of bioaccumulation. The samples were collected from 100 representative soil profiles and analyzed with Analytik Jena multi N/C 2100 with HT 1300 solid module. Based on the soil organic carbon, C/N ratio and texture the values of those parameters varied from high values in Ao and Bv horizons to lower values in C horizon. In order to model soil organic carbon concentration were used different interpolation techniques (regression and ordinary -kriging, IDW) at different sampling densities for each depth to 100 cm, using a Gaussian approach to estimate the uncertainty. It is noticeable that soil organic carbon had a positive correlation with different types of land uses and a negative correlation with the elevation, being a decreasing trend of the carbon stocks sequestered in biomass, litter and soil. In the upper part of the profiles, the soil organic carbon stock considerably varied for forest land between 6.5-7.23 kg C/sqm) and agricultural land (3.67-4.65 kg C/sqm). The kriging regression evidenced a good variability of the calculated root mean square errors of the predicted soil organic carbon stocks.