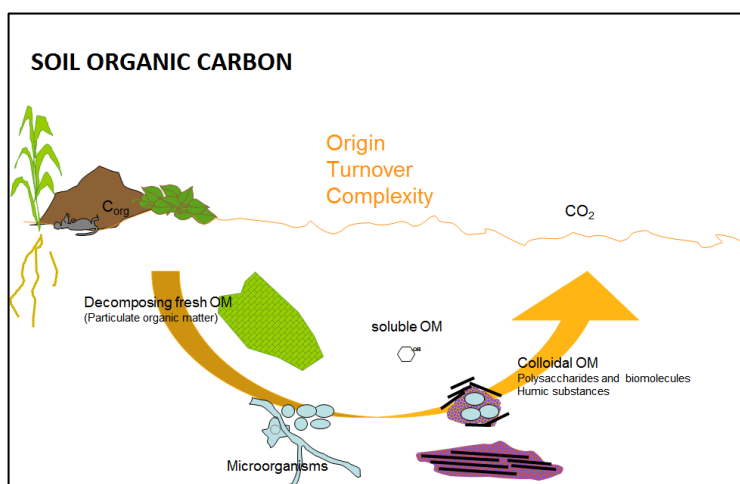




Soil Transformation of European Catchments (SoilTrEC)- Project Fact Sheet (www.soiltec.eu)

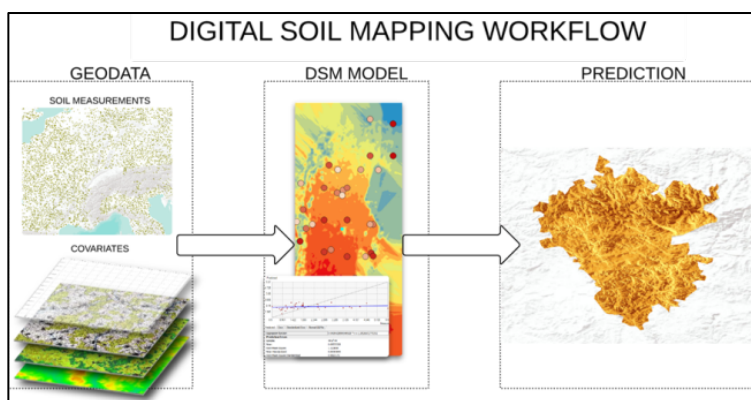
SOIL ORGANIC CARBON

Soil organic carbon, the major component of soil organic matter, is extremely important in all soil processes. Organic material in the soil is essentially derived from residual plant and animal material, synthesised by microbes and decomposed under the influence of temperature, moisture and ambient soil conditions. The decline in soil organic carbon (SOC) is recognized as one of the eight soil threats identified in the European Union Thematic Strategy for Soil Protection. One of the key goals of the strategy is to maintain and enhance soil organic carbon



levels. Soil resources play a major role as a terrestrial sink of carbon and can contribute to climate change mitigation and adaptation. However, around 45 % of the mineral soils in Europe have low or very low organic matter content (0 to 2% organic carbon) and 45% have a medium content (2 to 6% organic carbon) and soil organic matter in Europe is currently diminishing. Several factors are responsible for the decline in soil

organic matter and many of them relate to human activity. These factors include conversion of grassland, forests and natural vegetation to arable land; deep ploughing of arable soils; drainage, liming, nitrogen fertiliser use; tillage of peat soils; crop rotations with reduced proportion of grasses.



MODELLING SOIL ORGANIC

CARBON: Digital soil mapping is an approach to find out relations between known soil data and environmental parameters to produce soil maps. Numerous environmental and socio-economic models require soil parameters as inputs to estimate and forecast changes in our future life conditions. However, the availability of soil data is limited on both national

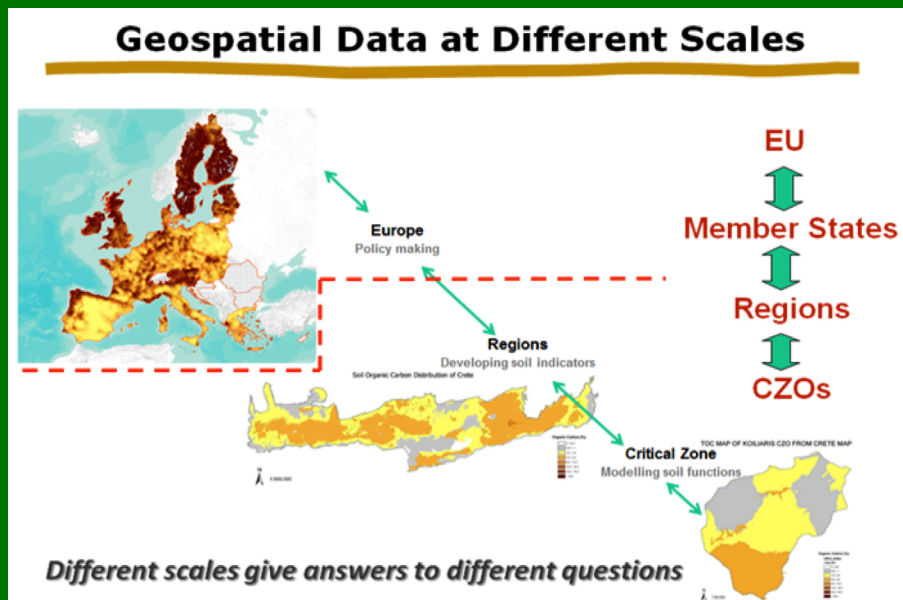
and European scales. Soil information is either missing at the appropriate scale, its meaning is not well explained for reliable interpretation, or the quality of the data is questionable.

UPSCALING SOIL DATA

When dealing with areas of different sizes and with information available at different scales, policy makers and decision makers need to either upscale their evaluations and simulations from small to large scale or downscale from large to small scale. Environmental indicators are dependent upon data availability and also upon the scale for which policy statements are required. As these may not match, changes in scales may be necessary. Moreover, changing in scale may be requested in research and modeling where an indicator is used as input parameter in a model. It has been recognised that the quality of indicators relies on the scale which they represent. The quality of the state of the environment at a local scale, for example, requires different information compared to the state of the environment at national scale.

MEUSIS PROJECT

MEUSIS is a project that provides data for the assessment of soils at different levels of detail and make available a structure so that coherent and complementary data, available at a nested set of geographical scales, can fit together. The outputs of the WP4 studies are serving data and methodologies on a soil organic carbon modelling platform with Multi-Scale European Soil Information System (MEUSIS). For the purpose, The SoilTrEC Researchers have developed models in Geographical Information Systems (GIS) platform to predict soil organic carbon at multi scales. To carry out these studies, digital soil mapping techniques were used to predict soil organic carbon in the critical zone observatories, and to transfer processes from small reference areas to larger regions. The study focused on two applications; “Regional Modelling” with an objective to transfer the processes for Soil Organic Carbon from Critical Zone Observatories (CZOs) to larger areas around the CZOs, and “European upscaling” with an objective to upscale the CZOs data values in combination with European larger datasets and develop pan-European maps of SOC.



For more information visit SoilTrEC website: www.soiltrec.eu

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