Determining the main controlling factors of subsoil organic carbon for modeling the subsoil carbon storage and its spatial distribution

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Agreenskills

V.L. (Titia) Mulder / Determining the main controlling factors of subsoil organic carbon for modeling the subsoil carbon storage and its spatial distribution
Soils are not an unlimited resource

Importance of soil carbon

- Carbon pool – mitigation and adaptation to climate change
- Food security

Topsoil well modelled (only 30% of the global soil carbon stock)

- Methods: Kriging, Regression tree modelling

Subsoil modelling

- Decrease in model performance
- Lack of understanding on controlling factors of SOC within large areas
- Data availability

This work aims to:

- Improve the understanding of SOC controls
- Determine which data is specifically needed to improve subsoil SOC models
- Deliver high-resolution soil carbon maps for France
Current state and ongoing research

Major findings

* Shift in controlling factors both in space and depth
  * Carbon controlled by Soil-Landscape characteristics
  * Human influence on Soil-Landscape relations
  * Climate – precipitation/water availability
  * Subsoil data availability needs to be improved, current data relates poorly to subsoil SOC

Ongoing research

* Improvement of data on controlling factors
  * Geostatistical modelling for large datasets (Kriging)
  * Soil depth and soil texture
  * Development of up-to-date database with remote sensing data and products
Thank you all!

Essentially, all life depends upon the soil. There can be no life without soil and no soil without life; they have evolved together.

American naturalist Charles Kellogg, 1938.

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