e-SOTER
Regional pilot platform as EU contribution to a Global Soil Observing System

Enhanced SOTER database for a study area in the UK
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Introduction

- Recommended terrain approaches for UK window
- Physiographic units
- Enhanced SOTER databases
Terrain component #1

- Based on homogenous objects (Dragut et al., 2010)
- Low-high distinction on level 1
- Clustering objects level 2 independently within low and high
  - Slope – mean, 1st and 99th percentile
  - Elevation – mean, range, 1st and 99th percentile
- Hammond legend applied
- Post-processing:
  - Generalisation to match “Hammond scale” – polygons of the size 9650x9650m eliminated
  - Smoothing of polygons
Terrain component #2

- Based on intersection of physical entities (MacMillan, 2003):
  - Peak sheds
Parent Material component

DiGMapGB - 625
Geology map at the scale 1:625 000
British Geological Survey
with applied SOTER parent material classification
Physiographic unit #1

Terrain component intersected with parent material. 142 mapping units
Physiographic unit #2

Terrain component intersected with parent material.
Sliver polygons <156.25 ha eliminated into neighbours.
142 mapping units
Soil component

NSI point data
• Soil series correlated into WRB
• Regular grid 5x5km
• 3082 data points
Methodology

- Assignment of a Physiographic Unit to each soil data point
- Creation of contingency table with PUs as row and soil types as column labels
- Calculation of percentage contents of soil types within each PU
- Exclusion of PUs with less than 3 soil observations (set as NoData)
- Listing the soils in descending order according to % contents in each PU. In case of same % alphabetical order is used.
- For simplicity, % contents is classified into ranges: 0-5%, 5-20%, 20-40%, 40-70%, 70-100%
- Soils falling into a particular range are listed.
Enhanced SOTER database #1

- Delineation based on homogenous objects (Dragut et al., 2010)
- Small mapping scale 1:1M or less
Enhanced SOTER database #2

- Delineation based on physical entities (MacMillan, 2001)
- Medium mapping scale 1:250k
Structure

IDnum – unique row identifier

tp_hamm – landform type

cls_hamm – landform class

scs_hamm – landform subclass

pm4 – parent material

pmscshamm – parent material intersected with landform subclass

soil_1 – WRB soil with the first highest % contents

range_1 – % range of contents of each soil found within the mapping unit

prcnt_1 – actual % contents of a particular soil
Comparison to SGDBE v4 beta

SGDBE

Large scale database
Discussion

• Terrain component
  – Inclusion of object based approaches add the physical dimension to the database
  – Variability of soils depicted in second and further soil components.

• Parent material
  – Coarse resolution
  – Helps to identify major landforms

• Soil data
  – Conversion of soil series to tier 1 WRB soil type coarsened the possible resolution of the database

• Method
  – Robustness of the database largely dependant on availability of soil observations
Summary

Both presented approaches add value to the SOTER database

Inclusion of terrain component based on physical entities appropriate for 1:250 000 scale mapping

Terrain component based on homogenous objects appropriate for small scale maps (1:1 – 1:5 M)

The accuracy of the database in terms of provision of soil information affected by the accuracy of parent material data and soil observations.
References:


Thank you!