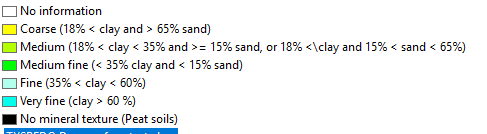
EU Soil Database Specifications

ESDAC Soil Database contains, among others, the following thematic layers:

* Soil Major Group soil code (1990 FAO)
* 2nd Level Soil code (1990 FAO)
* Depth to rock
* Depth to impermeable layer
* Depth of texture change (depth of first horizon)
* Dominate top and subsurface texture classes
* 
* Top and Subsurface CEC
* Top and subsurface base saturation: low (<50%), medium (50-75%, high (>75%)
* Top Organic Matter: very low (< 1%), low (1-2%), medium (2-6%), high (> 6%)

ESDAC Topsoil Physical Properties (Not currently using these)

* Clay (%)
* Sand (%)
* Silt (%)
* Coarse Fragments (%)
* Bulk Density
* Available Water Capacity
* USDA Texture

EU Soil Hydro Grids v1.0

* saturated water content
* water content at field capacity and wilting point
* saturated hydraulic conductivity and Mualem-van Genuchten parameters for the description of the moisture retention
* unsaturated hydraulic conductivity curves

WEPP Soil Input File Routine

**Soil Parameters**

a) soil name for current OFE or channel - character (slid)

Fullname of soil is FAO90-Level 1 Classification (FAO-LEV1)

TEXT-DEP-CHG  
----------------  
0 No information --> **200 mm if second horizon exists, otherwise 400 mm**  
1 Textural change between 20 and 40 cm depth --> **300 mm**  
2 Textural change between 40 and 60 cm depth --> **500 mm**  
3 Textural change between 60 and 80 cm depth --> **700 mm**  
4 Textural change between 80 and 120 cm depth --> **100 mm**  
5 No textural change between 20 and 120 cm depth --> **1200 mm**  
6 Textural change between 20 and 60 cm depth --> **400 mm**  
7 Textural change between 60 and 120 cm depth --> **900 mm**

b) soil texture for current OFE or channel - character (texid)

texture class: sand loam, loam, silt loam, clay loam (this four class texture I call “simple texture”)

determined by the Surface Dominate Texture Classification (TEXT-SRF-DOM)

0 No information --> **None**  
9 No mineral texture (Peat soils) --> **???**  
1 Coarse (18% < clay and > 65% sand) --> **sand loam**  
2 Medium (18% < clay < 35% and >= 15% **sand**  
 or 18% < clay and 15% < sand < 65%) --> **loam**  
3 Medium fine (< 35% clay and < 15% sand) --> **silt loam**  
4 Fine (35% < clay < 60%) --> **clay loam**  
5 Very fine (clay > 60 %) --> **clay loam**

c) number of soil layers for current OFE or channel - integer (nsl)

1 or 2 based on ESDAC soil database parameters TEXT-SRF-DOM and TEXT-SUB-DOM

d) albedo of the bare dry surface soil on the current OFE or channel - real (salb)

Based on landuse. If it is forest then salb is 0.06, otherwise it is set to 0.15. (*Values from WEPP forest soils database.*)

e) initial saturation level of the soil profile porosity (m/m) - real (sat)

Based on landuse. If it is forest then sat is 0.75, otherwise it is set to 0.5. (*Values from WEPP forest soils database.*)

f) baseline interrill erodibility parameter (kg\*s/m4) - real (ki)

Based on simple texture of surface and landuse.

if srf\_simple\_texture == 'clay loam':  
 if is\_forest:  
 ki = 400000.0  
 else:  
 ki = 1500000.0  
elif srf\_simple\_texture == 'loam':  
 if is\_forest:  
 ki = 400000.0  
 else:  
 ki = 1000000.0  
elif srf\_simple\_texture == 'sand loam':  
 ki = 400000.0  
elif srf\_simple\_texture == 'silt loam':  
 ki = 1000000.0  
else:  
 ki = None

(*Values from WEPP forest soils database.*)

g) baseline rill erodibility parameter (s/m) - real (kr) h) baseline critical shear parameter (N/m2) - real (shcrit)

Based on 5 class ERODIBILITY classification and the range of values from the WEPP forest soils database.

kr = 0.00002 \* float(erodibility)

i) effective hydraulic conductivity of surface soil (mm/h) - real (avke)

Based on EU Soil Hydro Grids sl1 depth for ksat

**Surface Horizon Parameters**

a) depth from soil surface to bottom of soil layer (mm) - real (solthk)

based on TEXT-DEP-CHG classification

b) percentage of sand in the layer (%) - real (sand)

based on simple texture class WEPP Forest Soil values

c) percentage of clay in the layer (%) - real (clay)

based on simple texture class WEPP Forest Soil values

d) percentage of organic matter (volume) in the layer (%) - real (orgmat)

based on OC-TOP

OC\_TOP = Topsoil organic carbon content.  
H = High ( > 6 %) --> **6.5%**  
M = Medium (2 - 6 %) --> **4%**  
L = Low (1 - 2 %) --> **1.5%**  
V = Very low ( < 1 %) --> **0.5%**

**5%** if OC-TOP information is not available.

e) cation exchange capacity in the layer (meq/100 g of soil) - real (cec)

based on CEC-TOP

CEC\_TOP = Topsoil cation exchange capacity.  
H = High ( > 40 cmol(+)/kg) --> **45**  
M = Medium (15-40 cmol(+)/kg) --> **15 if silt loam or sand loam, 20 otherwise**  
L = Low ( < 15 cmol(+)/kg) --> **10**

f) percentage of rock fragments by volume in the layer (%) - real (rfg)

based on simple texture class WEPP Forest Soil values

**Subsurface Horizon Parameters**

Two horizon soils are created when TEXT-SUB-DOM is specified. In some locations information for a second horizon is not available and only a single horizon is generated.

a) depth from soil surface to bottom of soil layer (mm) - real (solthk)

based on Impermeable Layer (IL) classification

IL  
----------------  
0 No information --> **400 mm**  
1 No impermeable layer within 150 cm --> **1500 mm**  
2 Impermeable layer between 80 and 150 cm --> **1150 mm**  
3 Impermeable layer between 40 and 80 cm --> **600 mm**  
4 Impermeable layer within 40 cm --> **400 mm**

b) percentage of sand in the layer (%) - real (sand)

based on simple texture class WEPP Forest Soil values

c) percentage of clay in the layer (%) - real (clay)

based on simple texture class WEPP Forest Soil values

d) percentage of organic matter (volume) in the layer (%) - real (orgmat)

based on simple texture class WEPP Forest Soil values

e) cation exchange capacity in the layer (meq/100 g of soil) - real (cec)

based on CEC-SUB

CEC\_SUB = Topsoil cation exchange capacity.  
H = High ( > 40 cmol(+)/kg) --> 45  
M = Medium (15-40 cmol(+)/kg) --> 15 if silt loam or sand loam, 20 otherwise  
L = Low ( < 15 cmol(+)/kg) --> 10

f) percentage of rock fragments by volume in the layer (%) - real (rfg)

based on simple texture class WEPP Forest Soil values