



Bundesamt für Wasserwirtschaft - Petzenkirchen
Institut für Kulturtechnik und Bodenwasserhaushalt



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Soil Science and Conservation Research Institute - Bratislava

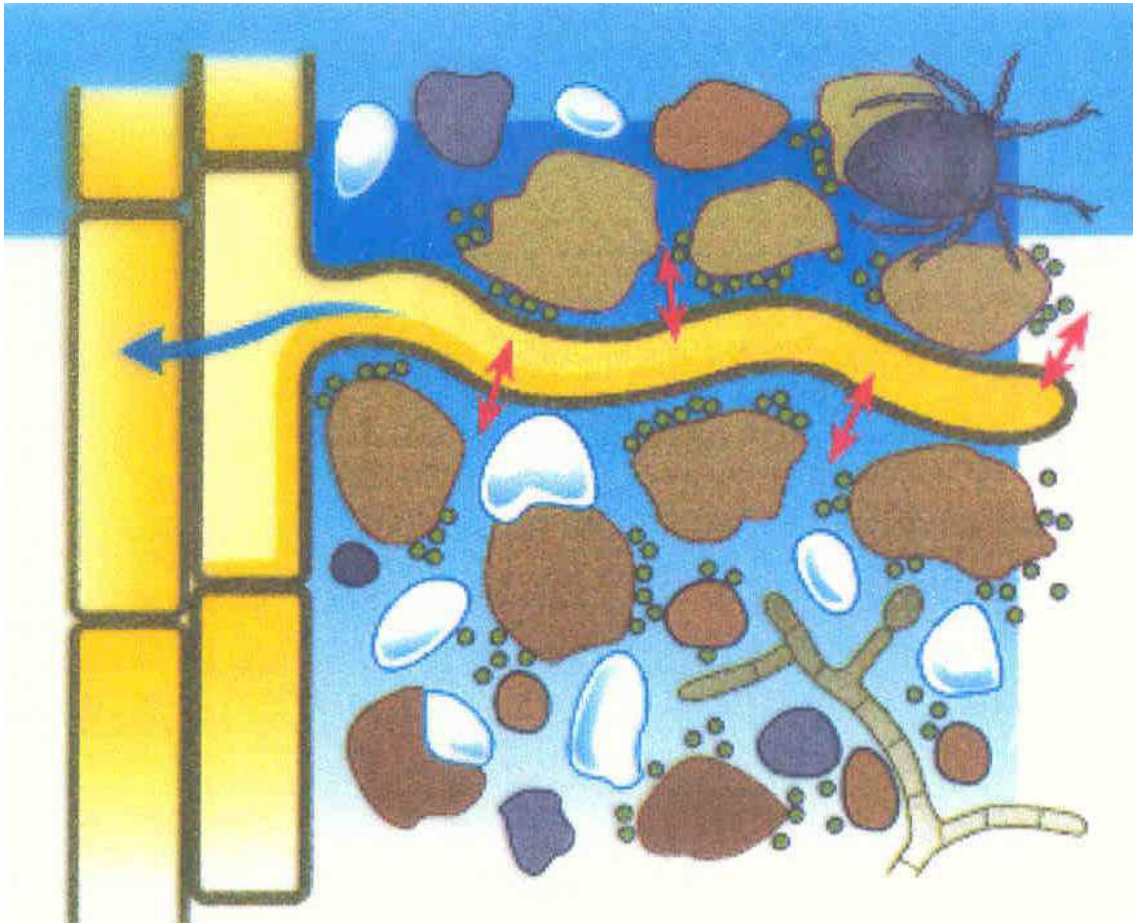
Water retention capacity of agricultural soils in AT/SK

Need for Harmonisation

Peter Strauss, Beata Houšková, Erwin Murer

Water retention – why is it important?

Soil is an open system composed of



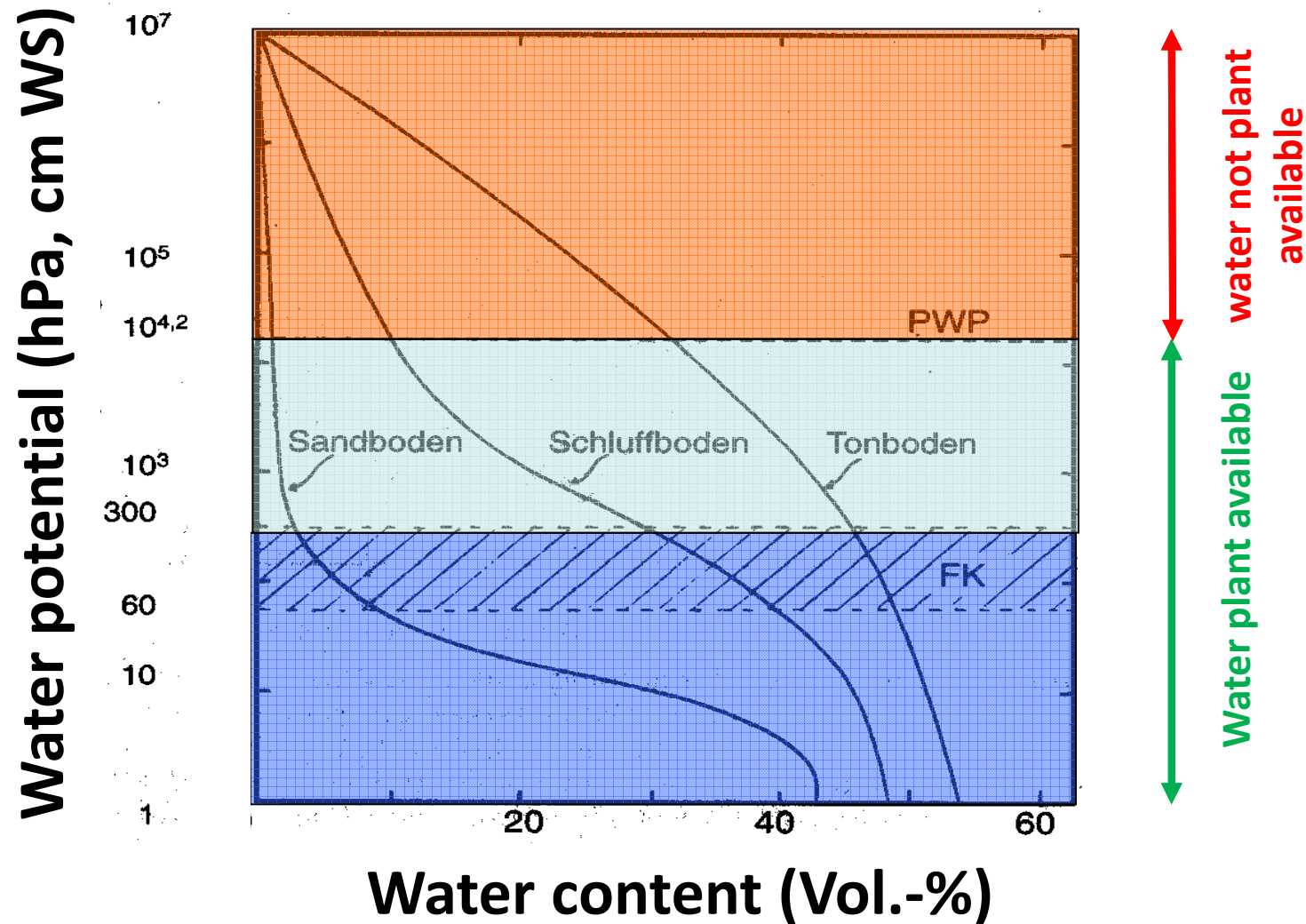
Soil Air
Soil Water
Soil Solid Matter

All soil components interact

- Water availability in soil is not only depending on the total amount of water but also on the energy (potential) which is needed to move the water
- This energy (potential) in turn is depending on the amount and the way, soil air (pores) is structured
 - Water in large pores ($> 50 \mu\text{m}$) freely drains (drainage water)
 - Water in mesopores ($50 - 0.2 \mu\text{m}$) is plant available
 - Water in fine pores ($< 0.2 \mu\text{m}$) is not plant available

The relationship between water content of the soil and the water potential = characteristical property of a particular soil

Relationship water potential – water content for different soils



Some practical consequences



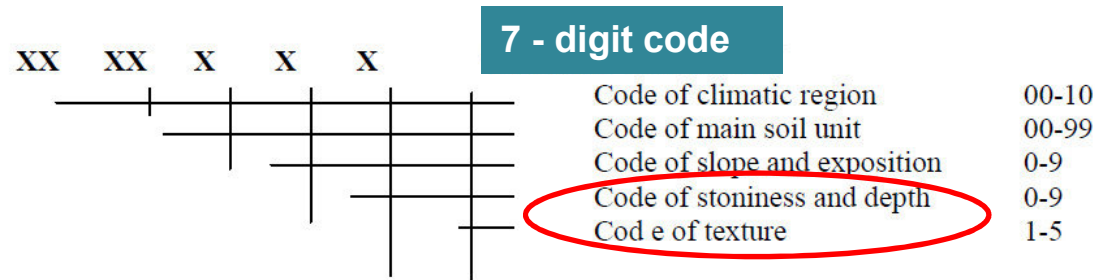
Howard F.

5358733

Methodology of Slovak water capacity calculation

Soil Ecological Units (SEU) according to 7 digit code

Map 1 : 5.000



Evaluation of soil depth - generalisation

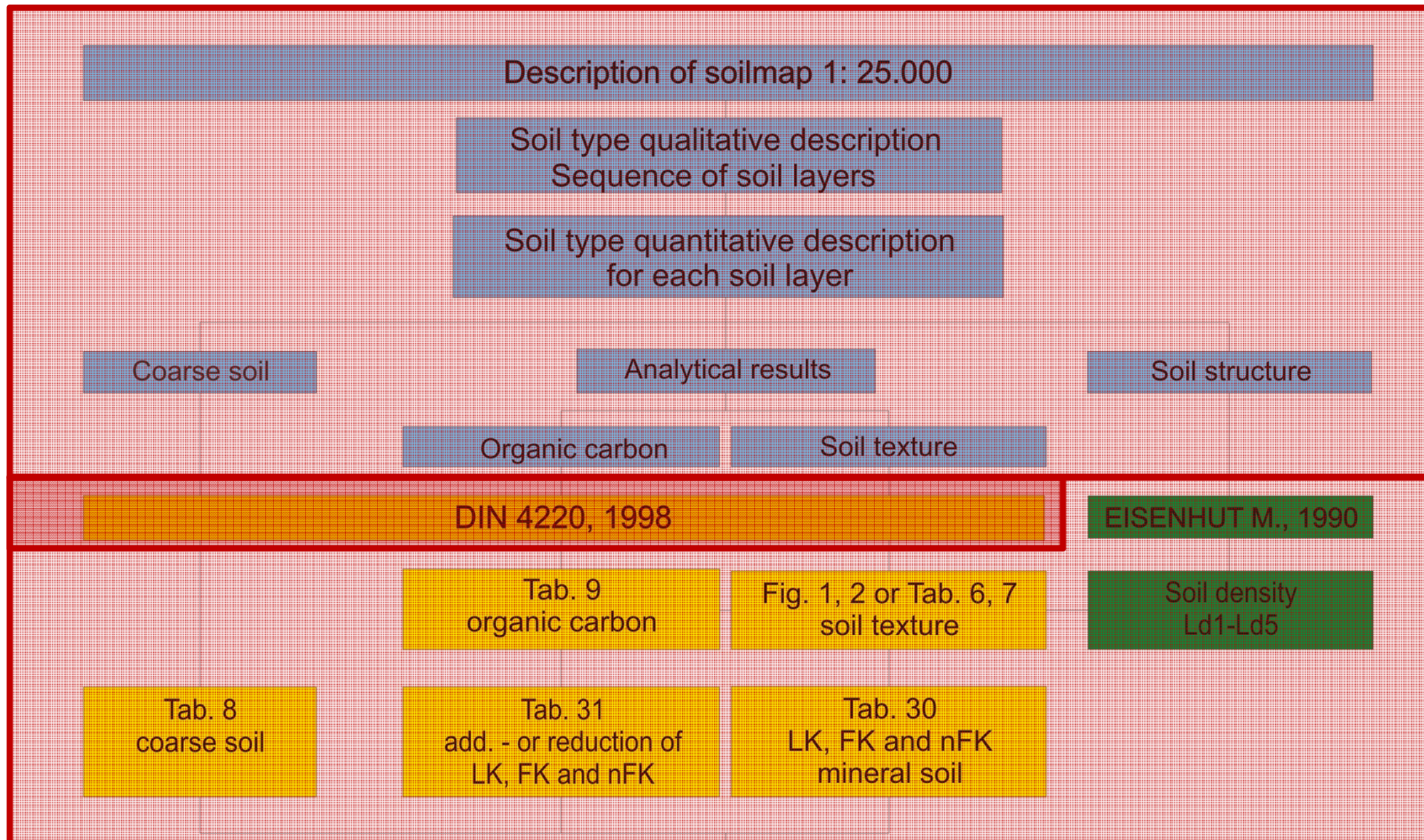
Code	Depth	Explanation
0	> 60 cm	Deep soil
1	30 – 60 cm	Medium deep soil
2	< 60 cm	Shallow soil

Evaluation of soil texture - generalisation

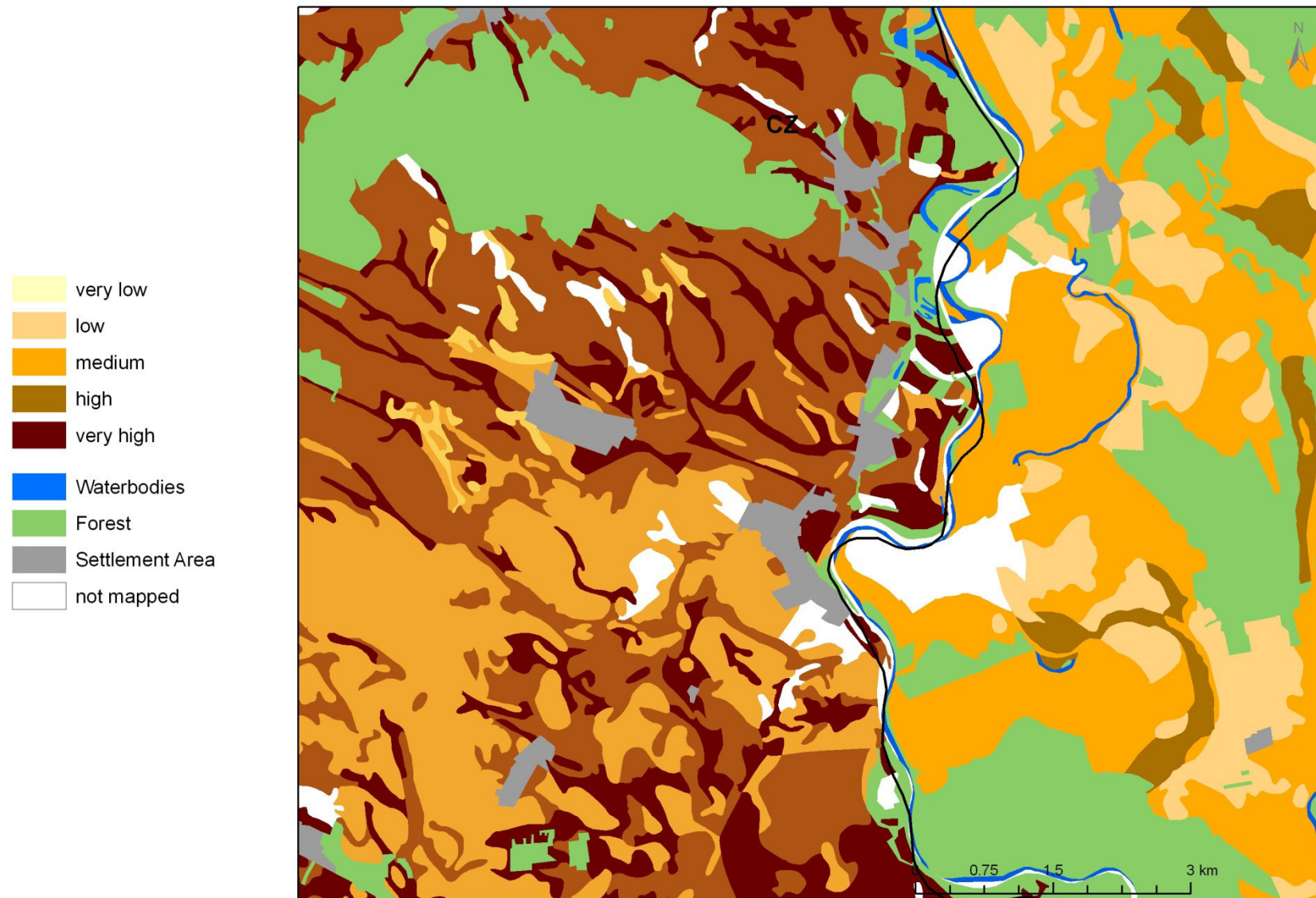
Textural code	Kind of soil	Soil holding capacity (SHC)	SHC(θ)
1	Sandy, loamy-sandy	Very low	10
5	sandy-loamy	Low	20
2	loamy	Medium	35
3	clay-loamy	High	40
4	clayey	Very high	45

Total amount of soil ecological units - SEU = 113 138

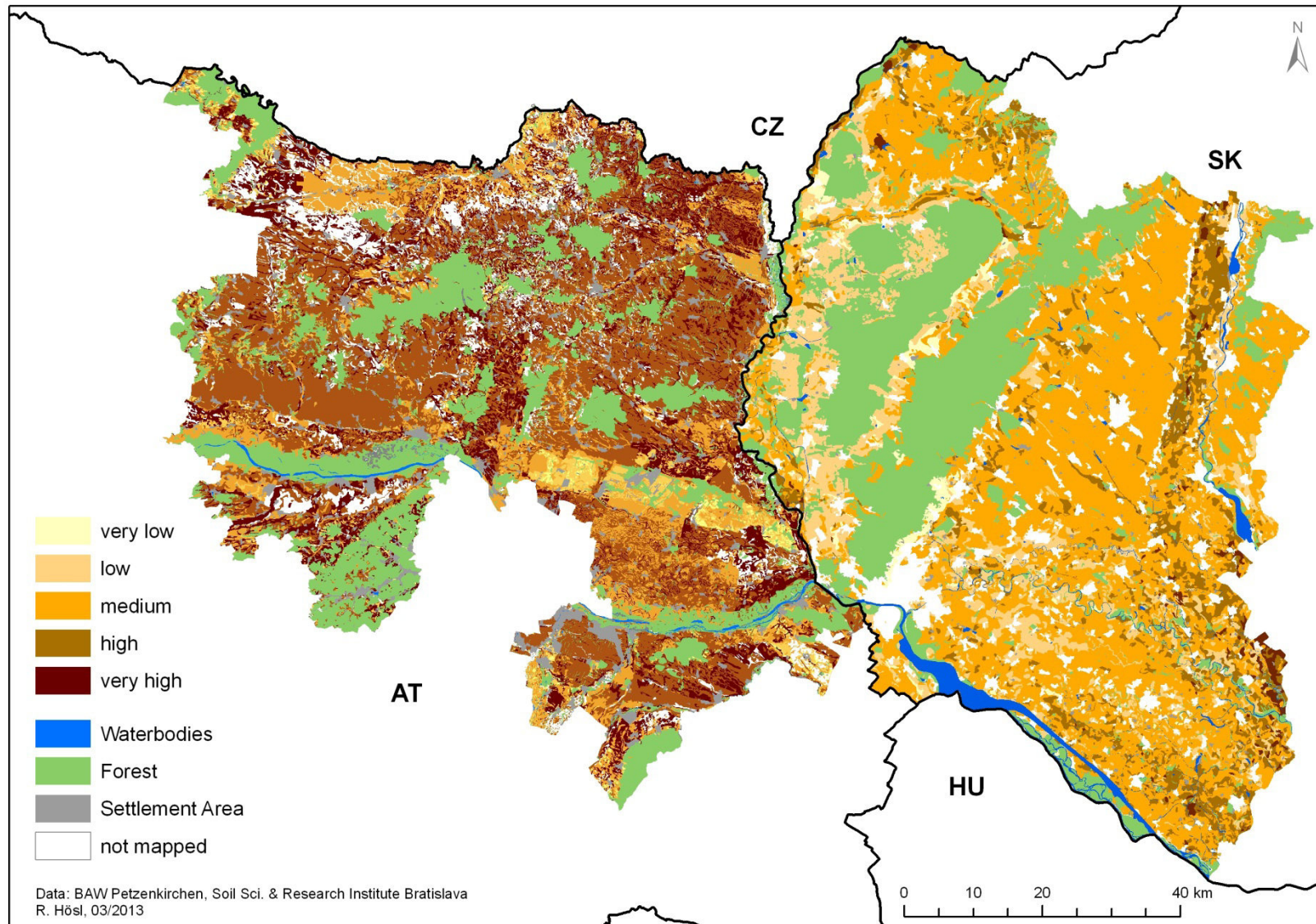
Methodology of Austrian water capacity calculation



Water content at field capacity – detail at the Slovak-Austrian border



Water content at field capacity – Eastern Austria versus Western Slovakia



- Level of mapping details different due to
 - Different scale of mapping
 - Aggregation of results
- Level of absolute values different
 - Different soils
 - Different methodological approaches

For a true generation of soil information at regional scale harmonisation is needed!!



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Thank you for your attention!