Table 1. Major landforms (geomorphologic regions)

Relief intensity in m/2 km	Major landform types						
0–30	PL	PL	LL	HL	HL	X	X
31–50	PL	PL	LL	HL	HL	ML	X
51–75	PL	PL	LL	HL	HL	ML	X
76–100	LF	LF	LF	HF	HF	MF	MF
101–150	LF	LF	LF	HF	HF	MF	MF
151–200	LF	LF/LD	LD	HD	HD	MD	MD
201–300	LF/LD	LD	LD	HD	HD	MD	MD
301–450	LD	LD	LD	HD	HD	MD	MD
451–600	X	LD	LD	HD	HD	MD	MD
> 600	X	X	LD	HD	HD	MD	MD
Hypsometry (m above sea level)	0–200	201–450	451–600	601–750	751–900	900–1 200	> 1 200

In the map of SOTER units generated by means of the computer technique from the soil map at a scale 1:250 000, the following indication was used:

a) for grouped soil parent materials

01 – gravelly sands, sandy gravels of terraces, eolian sediments over terraces, coarse textured deep deposits, 02 – loess and loesslike sediments, 03 – polygenetic and glacial loamy deposits, 04 – sandy clays, clayey sands, 05 – marls and clays, often with coarser textured covers, 06 – fluvial sediments, 07 – skeletal or shallow parent materials;

08–19 – transported weathering products of: 08 – granites and similar acid rocks, 09 – gneisses, 10 – micaceous schists and phyllites, 11 – neutrals rocks, 12 – basalts and similar rocks, 13 – mafic intrusives and metamorphites, 14 – limestones, 15 – carbonaceous and non-carbonaceous cretaceous and flysch slates, 16 – carbonaceous and non-carbonaceous sandstones, 17 – coarse textured sedimentary rocks, 18 – medium textured sedimentary rocks, 19 – fine textured sedimentary rocks, 20 – peats, 21 – anthropogenic parent materials

b) for grouped soils

f – fluvisols, r – arenosols, k – cambisols of terraces, c – chernozems and phaeozems, b – luvisols, l – albeluvisols, g – stagnosols, x – rendzinas, pararendzinas (rendzic leptosols), m – modal cambisols, t – eutrophic cambisols, d – dystric cambisols (hyperdystric), p – pelosols, s – podzols, cryptopodzols, o – histosols, q – gleysols, w – pelogleys, u, y, z – urban, dumpsite, cultizemic anthroposols

The following SOTER units were delineated in the territory of the Czech Republic.

A – in plains (and flat lowlands) covered with deep unconsolidated sediments (28 major units)

1. AV alluvial valleys
   parent materials: 06
   soils: f, q, c
2. TE terrace plains
   parent materials: 01
   soils: r, c, b, l, k, g, s
3. PA plains (flat lowlands) covered with eolian and polygenetic sediments
   parent materials: 02, 03
   soils: c, b, l
4. PW plains (flat lowlands) covered with eolian and polygenetic sediments, with waterlogging
   parent materials: 02, 03, (04)
   soils: g, c
5. PC plains and flat lowlands with marls or clays
   parent materials: 05
   soils: c, p
6. CW plains and flat lowlands with clays, sandy clays and clayey sands or marls, with waterlogging
   parent materials: 04, 05
   soils: w, p, c

B – on slope deposits of compact and consolidated rocks, often in more dissected regions of lowlands, highlands and mountains (124 major units)

7. PL plains
8. LL level areas in lowlands
9. LF flat lowlands
10. LD dissected lowlands
    parent materials: (03, 04), 08–19
    soils: x, t, m
11. HL level areas in highlands
12. HF flat highlands
13. HD dissected highlands
    parent materials: (03, 04), 08–19
    soils: x, t, d, s (from 16, 17)
14. ML level areas in mountains
15. MF flat mountains
16. MD dissected mountains
    parent materials
    soils: t, d, s

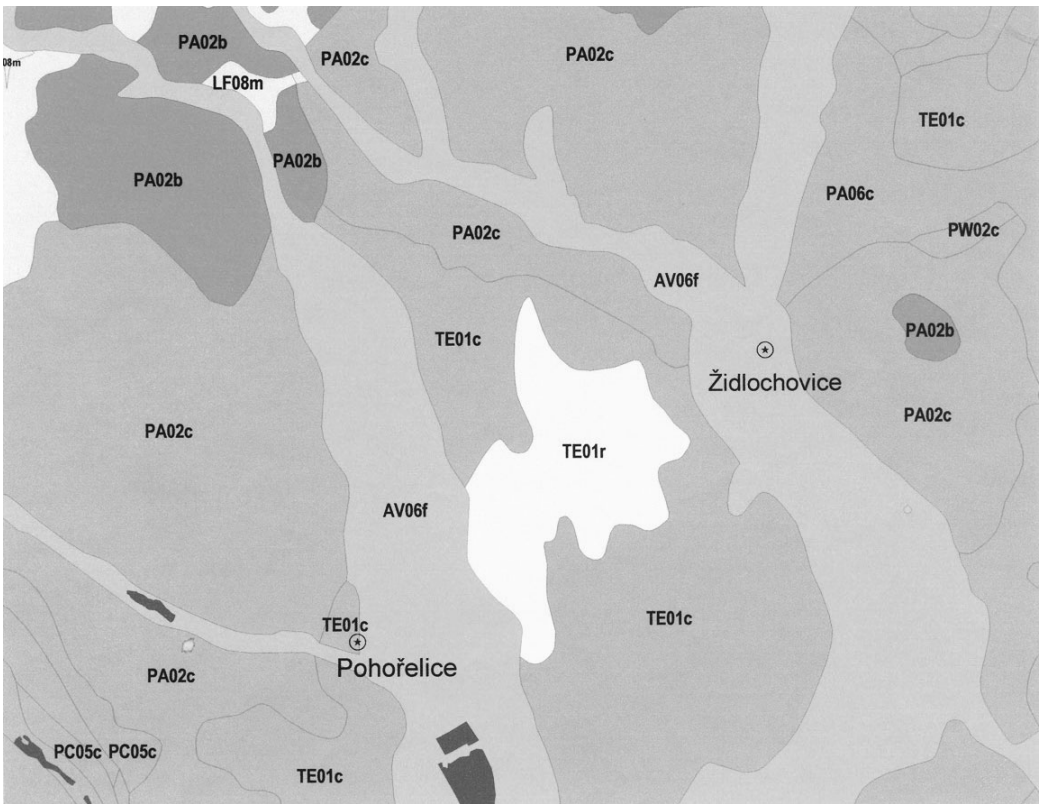

Figure 1. SOTER units of plains (alluvial valleys, terraces, eolian plains); soils are derived from deep quarternary deposits

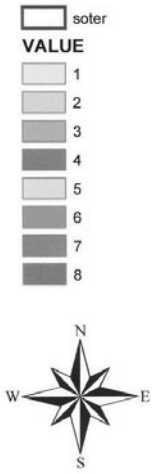

Figure 2. Slope gradients enable a more detailed insight into the local landscape features, especially in flat territories (1:0–1, 2:1–3, 3:3–5, 4:5–8, 5:8–15, 6:15–25, 7:25–35, 8: > 35; in °)

Figure 3. SOTER units in territories with soils from slope deposits of compact or consolidated rocks reflect the original SOTER concept of their delineation: geomorphology – lithology – soils

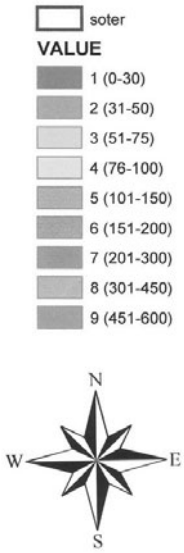

Figure 4. In dissected territories SOTER units conform distinctly with a relief intensity (m/2 km)

C – locally occurring soils

17. HY gleysols and histosols
parent materials: 03, 04, 05, (18–19), 20
soils: q, o

18. AN anthroposols
parent materials 21 (or 1–19 in case of z)
soils: u, y, z

SOTER units are indicated on soil maps in the SOTER system in the following way (see examples in Figures 1 and 2) e.g. TE 01 r terraces, sands, arenosols, PA 02 c plains covered with loess, chernozems.

Figure 1 demonstrates a soilscape that includes the alluvial valley, terraces and plains covered with loess. The role of soils and their parent materials in the diagnostics of SOTER units prevails in the mentioned flat landscapes. Figure 2, which displays the same territory as Figure 1, allows a more detailed insight into the landscape features. Figure 3 shows a predominantly dissected landscape where the geomorphology prevails in the identification of SOTER units. Their delineation conforms at the most with the relief intensity, presented in Figure 4.

The descendent approach proposed for the original compilation of the SOTER soil map at a scale 1:250 000 (Finke et al. 2000) starts from the major landform units and soil regions. We prefer the ascendent way to the original one. The SOTER units will be grouped into landscape megaregions. This kind of work requires some non-computerised effort. Soil regions delineated in the Czech Republic in the past (Němeček and Tomášek 1983, Němeček and Zuska 1989) will become the basis for the delineation of soil megaregions. Their concept will be harmonised with international proposals (Finke et al. 2000).

The soil map in the SOTER system was already used in the framework of the SOVEUR project, which is focused on the vulnerability of soils to contamination.

REFERENCES

Batjes N.H., Engelen V.W.P van (eds.) (1997): Guidelines for the compilation of a 1:2.5 mil. SOTER Data-base (SOVEUR Project). ISRIC, Rep. 97.

Demek J. (1965): Geomorfologie českých zemí. ČSAV, Praha.

Dudal R., Bregt A.K., Finke P.A. (1993): Feasibility study on the creation of a soil map of Europe at a scale of 1:250 000. CEC, DG Environ., EEA. Inst. Land Wat. Manag., Leuven Belgium, Winand Star. Cent. Integ. Land, Soil Wat. Res. Wageningen.

Engelen V.W.P. van, Pulles J.H.M. (eds.) (1991): The SOTER manual. ISRIC Wageningen.

Finke P. et al. (2000): Georeferenced soil database for Europe. Manual of procedures. v. 1.1. Eur. Soil Bur. Sci. Commit.

Kozák J., Němeček J. (2000): CZESOTER. Mapa v měřítku 1 : 1 mil. v rámci projektu SOVEUR ISRIC.

Kudrnovská J., Kousal M. (1971): Výšková členitost reliéfu České republiky 1:500 000. ČSAV, Praha.

Němeček J., Kozák J. (2003): The status of soil surveys, inventory and soil monitoring in the Czech Republic. In: Jones B. et al.: Status of soil surveys, inventory and monitoring in Europe. Eur. Soil Bur. Rep. EC-JRC (submitted).

Němeček J., Kozák J., Buchvaldková K. (2000): Contribution of the Czech Republic to the SOVEUR project. In: Batjes N.H.: Soil degradation status and vulnerability assessment for Central and Eastern Europe. FAO, RISSA, ISRIC: 39–41.

Němeček, J., Tomášek M. (1983): Geografie půd ČR. Studie ČSAV 23. Academia, Praha.

Němeček J., Zuska V. (1989): Půdní regiony ČR. [Závěrečná zpráva.] VÚMOP, Praha.

Němeček J. et al. (2001): Taxonomický klasifikační systém půd České republiky. ČZU, VÚMOP, Praha.

Němeček J. et al. (1970–1973): Půdní mapa ČR 1 : 200 000. VÚRV, Praha.

Novák P. et al. (1989–1993): Syntetická půdní mapa ČR v měřítku 1 : 200 000. VÚMOP, VÚGTK, MŽP, MZe ČR, Praha.

UNEP, ISSS, ISRIC, FAO (1995): Global and national soils and terrain digital database (SOTER). World Soil Res. Rep. 74, Rep. 1.

World Reference Base for soil resources (1998): FAO, ISRIC, ISSS, M-41.

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ABSTRAKT

Přístup k řešení půdní mapy České republiky 1 : 250 000 v systému SOTER

Půdní mapa v měřítku 1 : 250 000 byla sestavena transformací publikované a později digitalizované syntetické půdní mapy ČR 1 : 200 000. V legendě této půdní mapy byl využit nový klasifikační systém českých půd, který lze snadno korelovat s mezinárodním referenčním klasifikačním systémem FAO-WRB. Dalším krokem byla transformace do systému SOTER, který propojuje půdní pokryv s geomorfologií. Modifikace originální metodologie SOTER se zakládá na opuštění důsledné hierarchie geomorfologie – litologie – půdní asociace. Pouze v oblastech charakterizovaných středně hlubokými svahovinami nad pevnými a zpevněnými horninami byl původní princip dodržen. V plochých územích s hlubokými pokryvy sedimentů určuje hranice jednotek SOTER půdní pokryv (mozaiky taxonomických jednotek a jejich substrátových forem). Bylo vymezeno 10 (po redukci 7) geomorfologických regionů na základě intenzity reliéfu a nadmořské výšky. Mapa svažitosti umožňuje podrobnější pohled na geomorfologii území. Jednotky SOTER jsou definovány kombinací 10 geomorfologických typologických celků, 21 seskupených substrátů a 19 seskupených půdních jednotek. Výsledkem je 158 jednotek SOTER.