



# Serbian Environmental Protection Agency

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## Serbia

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Head of department for indicators and reporting



# SEPA – what we do...

“ ... Development, harmonization and management of the National Environmental Information System – monitoring of the State of Environment using environmental indicators ... ”

soil

reporting

indicators

IS PRTR

pressures

SoE

waste

PRTR

EMC

information system



# SEPA – what we do...

## reporting

- 10 years of cooperation with EEA
  - 81 National Indicators
    - \* 54 indicators in SoE
    - \* SOER 2010/2015
    - \* NRC/PCP
  - \* 78% in 2013/2014 data flow cycle
  - \* National Eionet Portal

## information system

waste

PRTR

Република Србија  
Министарство енергетике, развоја и заштите животне средине

ИЗВЕШТАЈ О СТАЊУ ЗЕМЉИШТА  
У РЕПУБЛИЦИ СРБИЈИ ЗА 2012. ГОДИНУ



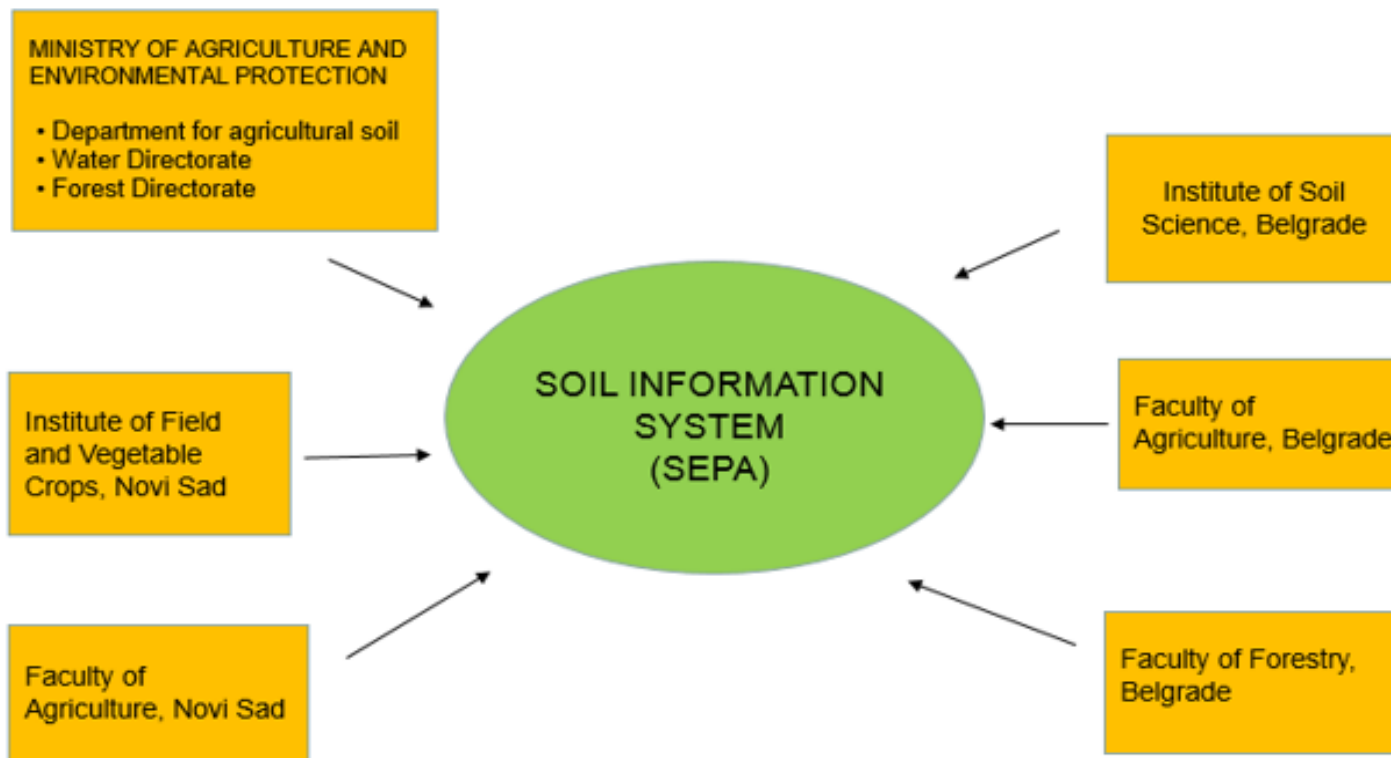
Агенција за заштиту животне средине



БЕОГРАД, 2013. ГОДИНЕ



# Soil information system





## Soil databases

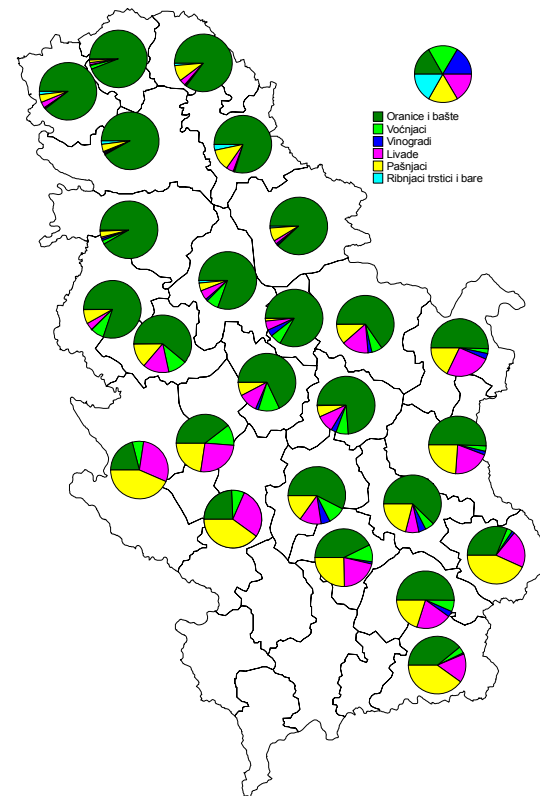
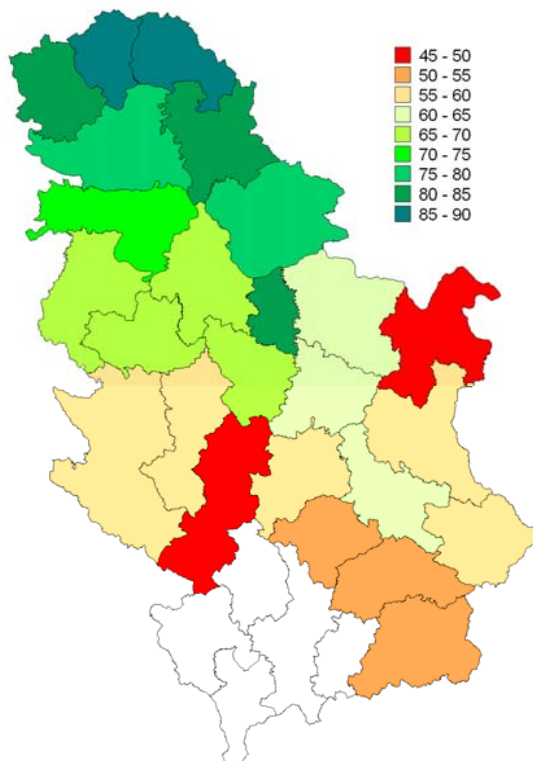
- Soil fertility and harmful and hazardous substances (acidity, carbonates, quantity of humus and presence of phosphorus and potassium, microbiological activity of soil, heavy metals and micro-elements concentration, remains of 17 active ingredients of pesticides in soil)
- Contaminated sites (contaminated localities identified on the basis of laboratory analysis of soil and groundwater in the near vicinity of localized pollution sources)
- Database of soil fertility in private ownership (owner, cadastar parcel, land use, crop, pH value,  $\text{CaCO}_3$  content, humus content, available phosphorus, available potassium)
- **Soil profile database (profile description parameters, horizon measurement parameters)**
- Land cover – Corine Land Cover 1990, 2000, 2006





# LAND USE IN SERBIA

- 5 109 177 ha of agricultural land, (65.85 % of its total surface).
- It consists mostly of arable land and gardens with 3 298 470 ha, (64.56 % of total surface).



% of agricultural land in relation to the total surface

Agricultural land by categories of use





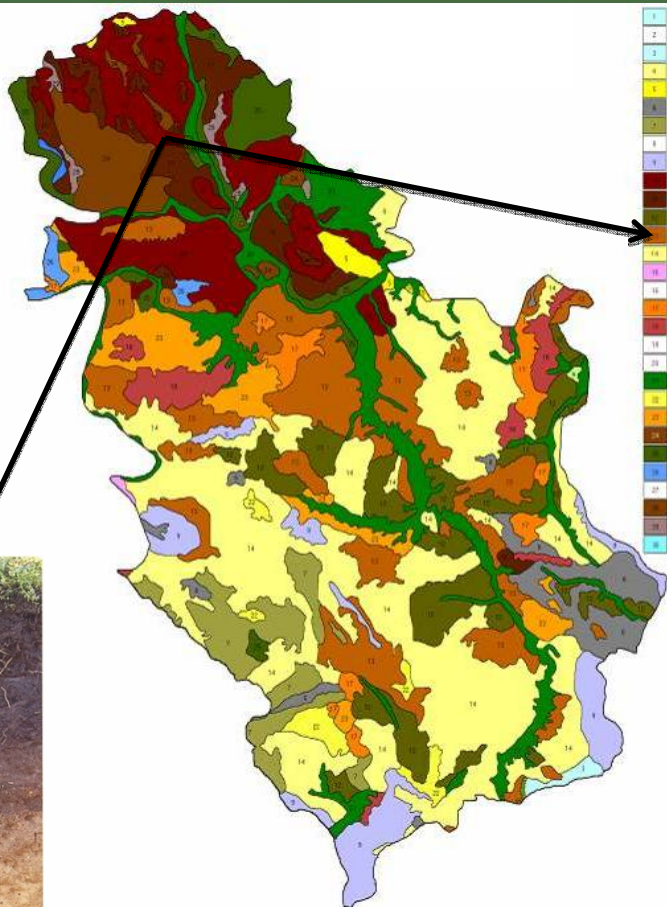
## Danube

- 92.6 % of the territory of Serbia belongs to the Danube River Basin
- 588 km
- Serbia participates with 10.3% in the territory of the Danube River Basin's macro region.
- With this percentage Serbia is sharing with Austria the 3rd and the 4th place among the countries of the Danube River Basin, after Romania (28,9%) and Hungary (11,7%).
- The European Union Strategy for Danube Region (EUSDR), is of strategical importance for Serbia.





# SOIL MAP OF SERBIA

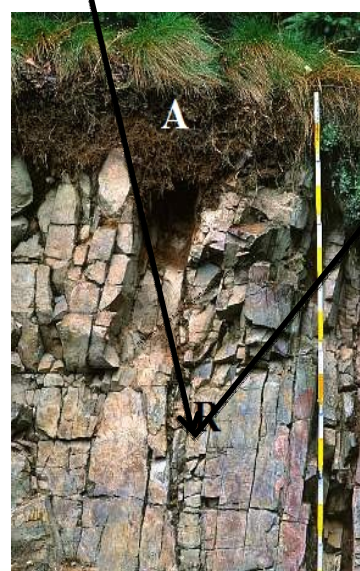
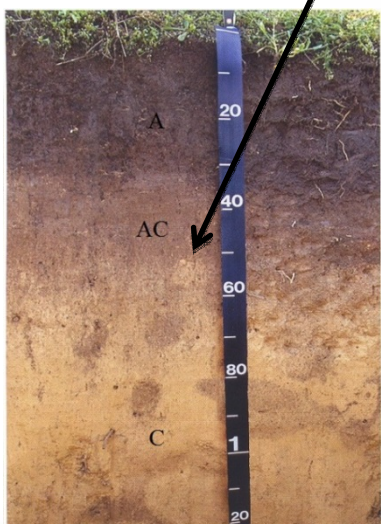


1. Karst (rocky soil) with spots of terra rossa, brown soil and lithosols
2. Lithosols and eutric cambisol
3. Lithosols on acid rocks and rankers
4. Regosols, rendzinas and eutric cambisols
5. Arenosols and Eutric cambisol on sand
6. Lime dolomite black soils, lithosols and rendzinas
7. Lime dolomite black soils, cambisols and terra rossa
8. Rendzinas and regosols
9. Rankers and distric cambisols
10. Chernozem on loess
11. Chernozem and chernozem-semigley soil
12. Sironitzas
13. Eutric cambisol
14. Distric cambisols, luvisols and calcocambisols
15. Cambisols, luvisols and calcamelanosols
16. Terra rossa (limenized) and calcocambisols
17. Luvisols and eutric cambisols
18. Luvisols
19. Pseudogley soils and rendzinas
20. Acric soils and cambisols on limestone
21. Fluvisols and eugleys
22. Pseudogleys
23. Pseudogleys and limenized pseudogley soils
24. Chernozem-semigley soil
25. Humogleys
26. Gley and semigley soils
27. Eugleys
28. Histic soils
29. Halomorphic soils



Ranker

Chernozem



ID	Soil_Type	WRB	AREA
1	Chernozem na zračnoj oporuci u litu	Chernozem	11272109.32
2	Chernozem karbonatni (incertum) na lesonj platu	Chernozem	2501330.30
3	Chernozem karbonatni (incertum) na lesonj terasi	Chernozem	16272193.70
4	Flaka crnica bezkarbonatna	Gleyzol	1564965.90
5	Flaka crnica	Gleyzol	7165606.20
6	Chernozem (spagulašeni)	Chernozem	1721421.00
7	Chernozem (spagulašeni)	Chernozem	7277963.00
8	Flaka crnica (svetlo) pešakasti na pesku	Chernozem	1204002.20
9	Flaka crnica karbonatna na lesonj platu	Chernozem	5566523.24
10	Chernozem karbonatni (incertum) na lesonj platu	Chernozem	2716364.14
11	Plavljivo zemljište na pesku (mekimolno žuti pesak)	Luvisol	2652073.50
12	Chernozem na zračnoj oporuci u litu	Chernozem	6543445.12
13	Chernozem na pešakastom litu	Chernozem	562044.60
14	Flaka crnica karbonatna na lesonj platu	Chernozem	14163631.00
15	kolončar	Solončak	4756612.20
16	kolončar	Solončak	8717693.10
17	Chernozem karbonatni (incertum) na lesonj platu	Chernozem	20997420.80
18	kolončar	Solončak	654142.20
19	Chernozem karbonatni (incertum) na lesonj platu	Chernozem	2130323.70
20	Chernozem karbonatni (incertum) na lesonj platu	Chernozem	36622627.00
21	Chernozem karbonatni (incertum) na lesonj terasi	Chernozem	4962746.60
22	Flaka crnica bezkarbonatna pešakasta	Gleyzol	5430646.44
23	kolončar	Solončak	5326217.10
24	fluvisol zabavano zemljište	Fuvisol	39611137.80
25	spagulaš i flaka acida	Cambisol	8311051.87
26	Chernozem karbonatni (incertum) na lesonj terasi	Chernozem	88731860.82
27	Flaka crnica bezkarbonatna	Gleyzol	3428212.60
28	fluvisol stapašo zemljište na pesku (sivo razvedeno)	Luvisol	757420.00
29	fluvisol pešakasto zemljište	Fuvisol	1214364.60
30	Chernozem (spagulašeni)	Chernozem	4012100.00
31	fluvisol akvularni - fluvisol zemljište	Fuvisol	1852014.00
32	fluvisol zabavano zemljište	Fuvisol	2243656.38
33	fluvisol (akvularni) fluvisol - fluvisol na arginitu	Luvisol	2665665.07
34	fluvisol i spagulašeni	Luvisol	4095273.20
35	fluvisol u spagulašeni	Fuvisol	4853971.80
36	spagulaš	Cambisol	1530271.98
37	fluvisol i spagulašeni	Cambisol	11388470.52
38	fluvisol nenas nekarbonatni	Fuvisol	4720603.42
39	fluvisol (akvularni) fluvisol - fluvisol na arginitu	Luvisol	4368095.90
40	fluvisol	Fuvisol	1746749.90
41	fluvisol i posredna rendzina na pesku (svetlo)	Luvisol	5194.70
42	fluvisol i fluvisol na lesonj platu	Luvisol	1362769.36
43	fluvisol i fluvisol	Luvisol	4095273.20
44	fluvisol i fluvisol na arginitu	Cambisol	1530273.18
45	fluvisol i fluvisol na arginitu	Cambisol	2089050.62
46	fluvisol i fluvisol na arginitu	Cambisol	4672171.26
47	fluvisol i fluvisol	Luvisol	317879.70
48	fluvisol i fluvisol	Luvisol	2469729.90

- soil map of Serbia (1:2,000,000), - classification of soils of Yugoslavia (Škorić et al., 1985).





## Soil map

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- From the late 1970s to mid 1980s
- During the period from the late 1970s to mid 1980s, soil mapping in Yugoslavia was intensively conducted resulting in:
  - The soil map of Yugoslavia (in a scale 1:1,000,000);
  - The soil map of the Vojvodina Province (1:100,000);
  - The soil map of Yugoslavia (1:50,000).
- 700,000ha of soils (region of South Serbia) have been mapped during the period 2005-2007.

Scale 1:50,000

- 12 299 Polygons, Min 12.2 km<sup>2</sup>

### **Soil database:**

- 1500 soil profile data
- More than 3000 not georeferenced profile data, connected with soil survey map, with descriptive locations (region, municipality, village..)



## Soil database: profile description parameters

Identifier	Description
Profile_id	This ID will be identical with original one used in each country and unique for data provided
WRB_GRP	WRB soil group code
WRB_ADJ1	WRB soil adjective code 1
WRB_ADJ2	WRB soil adjective code 2
WRB_SPE	WRB soil unit specifier code
FAO_MG	Soil Major Group code
FAO_UNI	Soil Unit code
Code_national	National soil classification system, list of codes used needed
Profile_mat	Parent material on type level
Profile_obst	Reason and depth to obstacle for roots
Profile_sm_X	X-coordinate representative soil profile (eastern longitude). Unit: Decimal Degrees 5 dec. places
Profile_sm_Y	Y-coordinate representative soil profile (northern latitude). Unit: Decimal Degrees 5 dec. places
Profile_sm_alt	Surface altitude (m above s. l., potentially below s. l. (Measurement Unit: meter). Minus (-) sign in case below sea level
Profile_sm_dep_w	Average depth to water table. Water table deeper than 2 m. (Measurement Unit: <b>dm</b> )
Profile_hor_num	Total amount of soil horizons provided per one profile (point) information

Identifier	Description
<b>Profile_id</b>	This ID will be identical with original one used in each country and unique for data provided
<b>Profile_hor</b>	Soil horizon code
<b>Profile_hm_top</b>	Soil horizon starting depth. (Measurement Unit: cm)
<b>Profile_hm_bot</b>	Soil horizon ending depth. (Measurement unit: cm)
<b>Profile_hm_clay</b>	Clay content (Measurement unit: %, decimal indicator is dot.)
<b>Profile_hm_clayQ1</b>	Country, laboratory and year of analysis.
<b>Profile_hm_clayQ2</b>	Quality estimate of analysis
<b>Profile_hm_silt</b>	Silt content. (Measurement unit: %, decimal indicator is dot.)
<b>Profile_hm_siltQ1</b>	Country, laboratory and year of analysis.
<b>Profile_hm_siltQ2</b>	Quality estimate of analysis
<b>Profile_hm_sand</b>	Sand content. (Measurement unit: %, decimal indicator is dot.)
<b>Profile_hm_sandQ1</b>	Country, laboratory and year of analysis.
<b>Profile_hm_sandQ2</b>	Quality estimate of analysis
<b>Profile_hm_stgr</b>	Stone, gravel abundance and size
<b>Profile_hm_stgrQ1</b>	Country, laboratory and year of analysis.
<b>Profile_hm_stgrQ2</b>	Quality estimate of analysis
<b>Profile_hm_om</b>	Organic matter content. (Measurement unit: %, decimal indicator is dot.)
<b>Profile_hm_omQ1</b>	Country, laboratory and year of analysis.
<b>Profile_hm_omQ2</b>	Quality estimate of analysis
<b>Profile_hm_hum</b>	Humus content. (Measurement unit: %, decimal indicator is dot.)
<b>Profile_hm_humQ1</b>	Country, laboratory and year of analysis.
<b>Profile_hm_humQ2</b>	Quality estimate of analysis



## SOTER database ...WHAT WE ARE MISSING

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- Terrain component data (texture of non-consolidate parent material, dept to badrock, drainage, flooding..)
  - Soil component data (degree of erosion, sensitivity to capping..)
  - Horizon data (some chemical analysis..)
  - Technical capacity (training)
-



www.sepa.gov.rs

Министарство пољопривреде и заштите животне средине  
**Агенција за заштиту животне средине**



Земљиште / 2015 - Међународна година

Здраво земљиште за здрав живот

Наша земљишта су у опасности због проширења градова, сече шума, неодрживог коришћења земљишта и праксе управљања земљиштем, загађења, прекомерне ислаше и климатских промена. Тренутна стопа деградације земљишта прети потребама будућих генерација. Све док је земљиште под ризиком, одржива пољопривреда, безбедност хране и пружање екосистемских услуга су доведени у питање. (преузето са: <http://www.fao.org/soils-2015/en/>)

ЕЕА о земљишту

Обележавајући 5. децембар Светски дан земљишта, Европска Агенција за животну средину је интервјуисала неколико руководилица пројекта у Агенцији. Шта су они рекли о земљишту можете видети на снимку.



Thank you!

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