



HAL
open science

Assessment of harmonised soil information in Europe

Mark Kibblewhite, Robert J.A. Jones, Mark Stephens, Rainer Baritz, Sigbert Huber, Dominique D. Arrouays, Erika Micheli

► **To cite this version:**

Mark Kibblewhite, Robert J.A. Jones, Mark Stephens, Rainer Baritz, Sigbert Huber, et al.. Assessment of harmonised soil information in Europe: Integrated soil research in FP6. ENVASSO - "Environmental Assessment of Soil for Monitoring", Nov 2007, Bordeaux, France. 15 p. hal-02817164

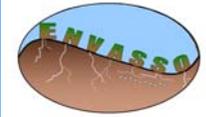
HAL Id: hal-02817164

<https://hal.inrae.fr/hal-02817164>

Submitted on 6 Jun 2020

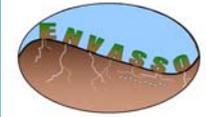
HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Assessment of harmonised soil information in Europe

- integrated soil research in FP6



ENVASSO – “Environmental Assessment of Soil for Monitoring”

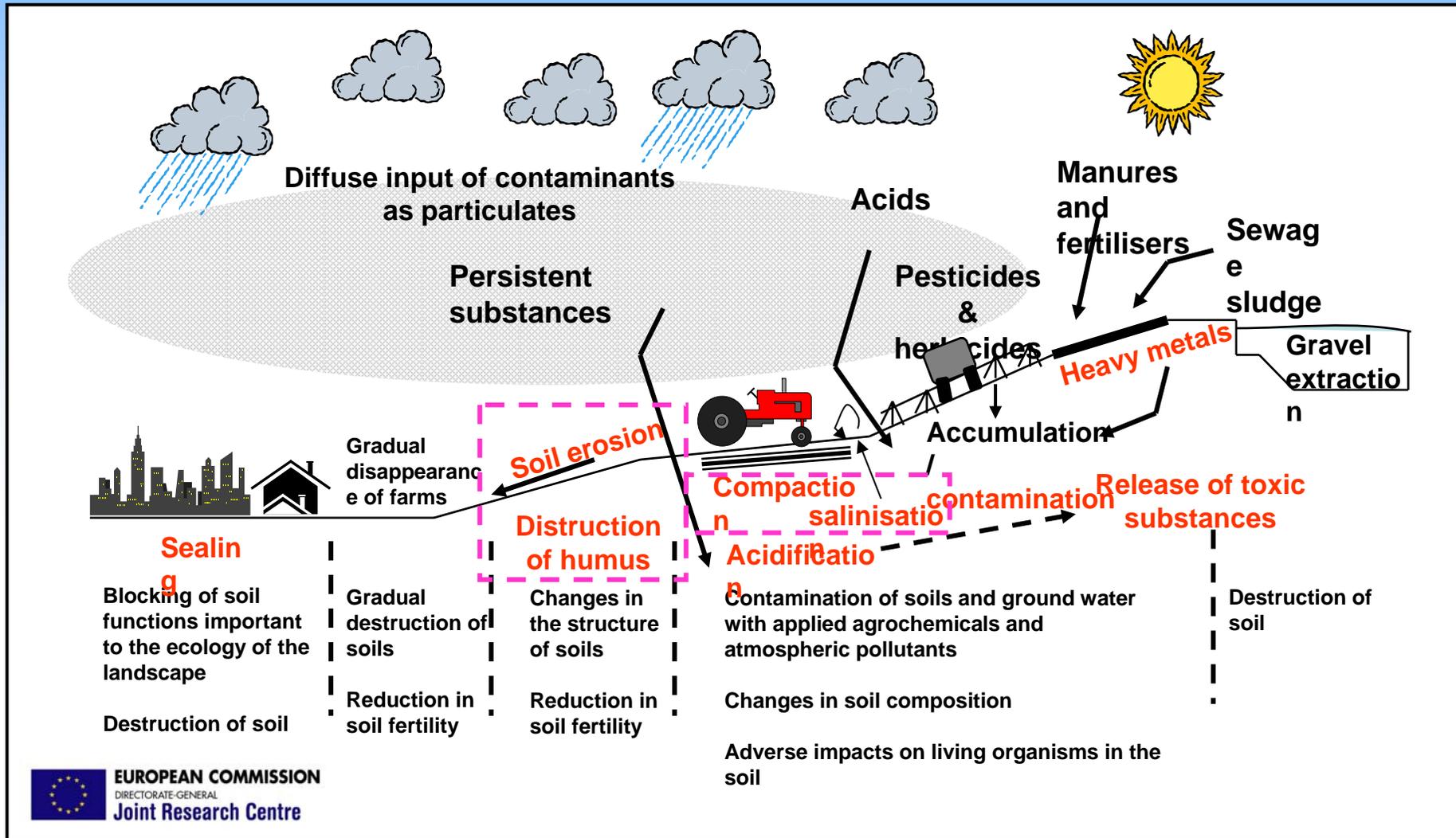
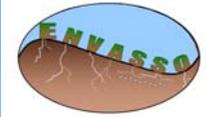
FP6: Jan. 2006 – Dez. 2007

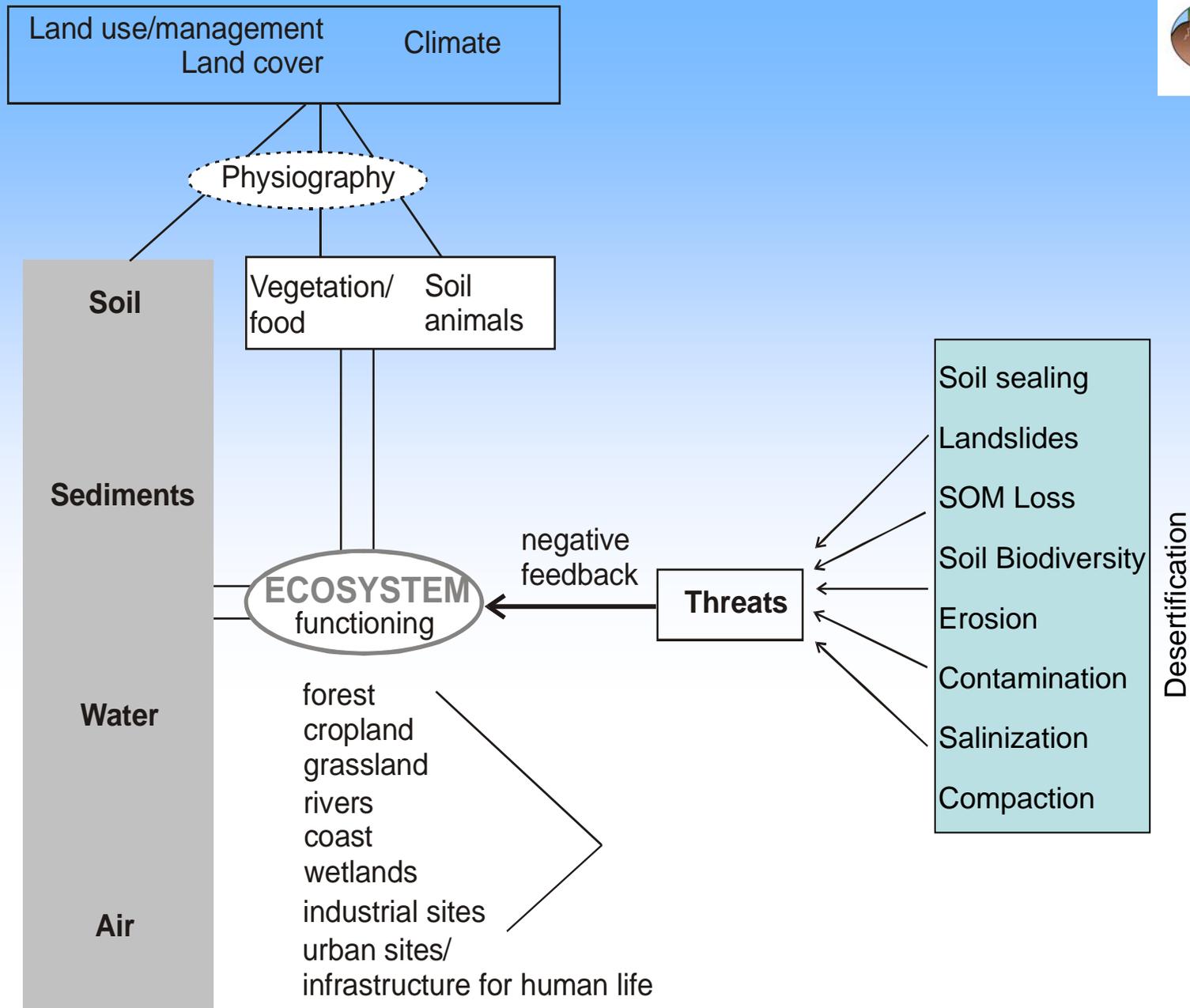
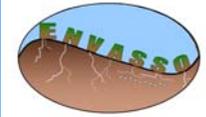
Project core partners:

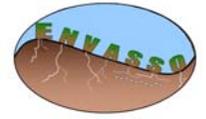
Mark Kibblewhite¹, Robert J.A. Jones¹, Mark Stephens¹, Rainer Baritz², Sigbert Huber³, Dominique Arrouays⁴, Erika Micheli⁵

- 1) National Soil Resources Institute, Cranfield University, UK
- 2) Bundesanstalt für Geowissenschaften und Rohstoffe (BGR), Germany
- 3) Umweltbundesamt, Austria
- 4) Institut National Recherche Agronomique (INRA), France
- 5) Szent Istvan Egyetem (SIU), Hungary

The impact of human activities on soil

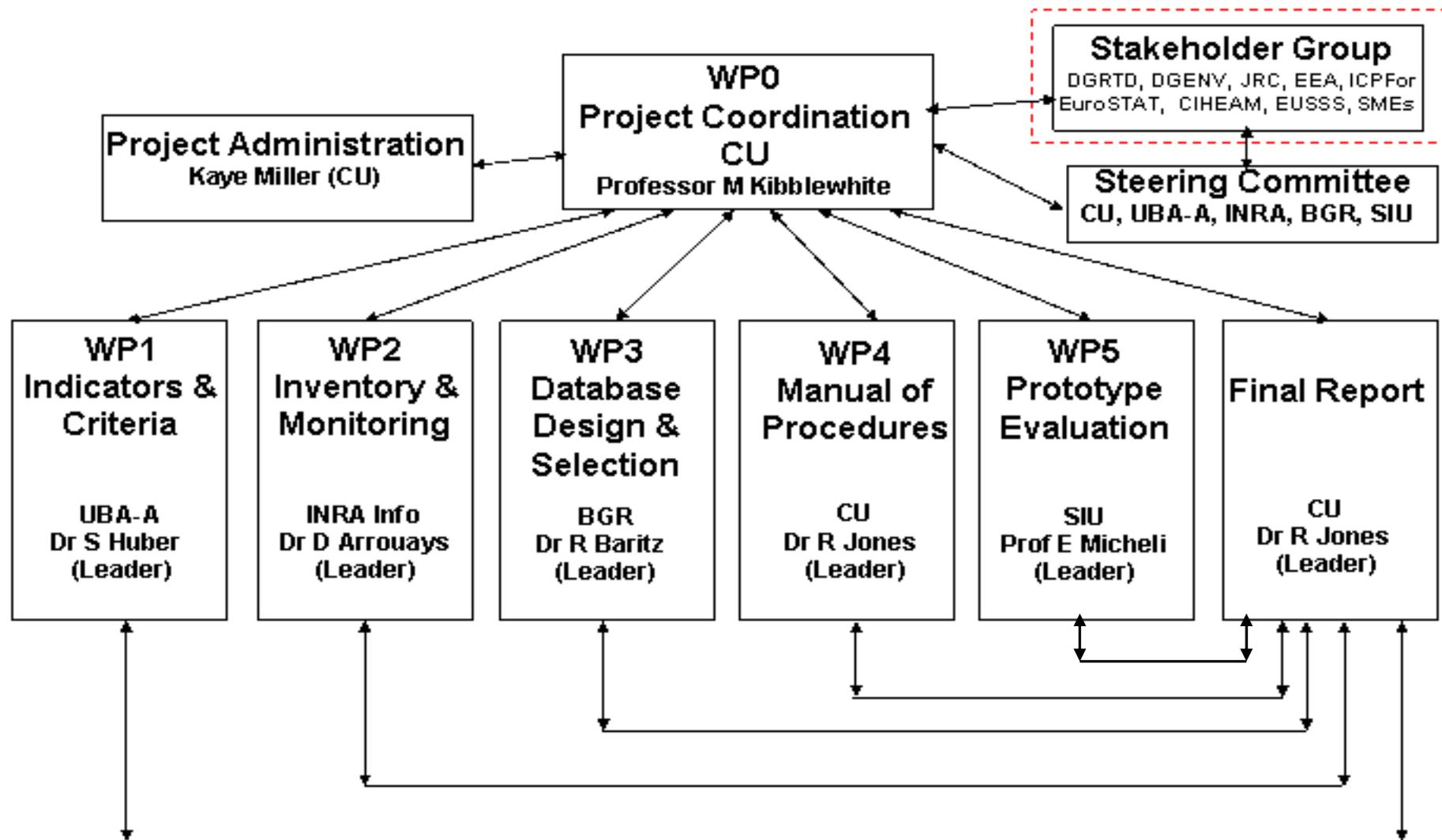




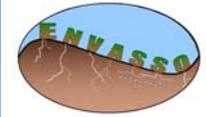


ENVASSO Objectives

- **scientific basis** for **European-wide harmonised characterisation of soils**
- **evaluation of soil status** through **representative measurements of soil indicators**
- development of a **single, integrated, EU-wide and operational set of measurable indicators**



Project Structure and Organisation



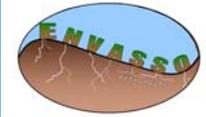
WP1: Criteria & Indicators

- Literature review
- **Selection of key issues (n=25) and indicators**
(n=62; priority/TOP3 threats: n=26) related to soil threats
- **Baselines and Thresholds**
- **Data and user requirements**

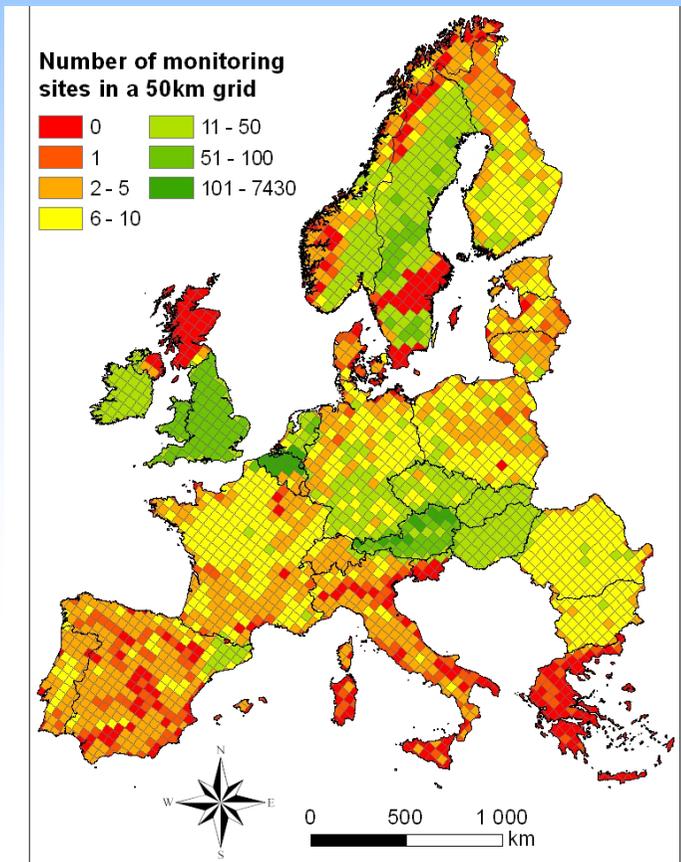


Fact sheets
for priority indicators

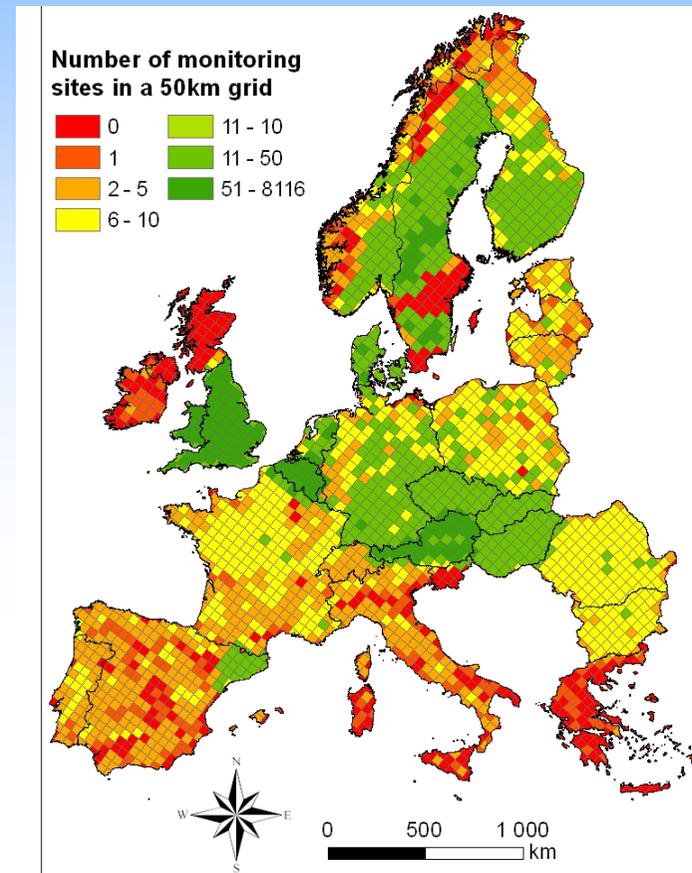
WP2: Sites designated for investigating soil threats



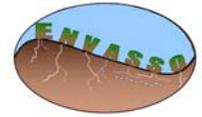
Lead content



Organic carbon content C

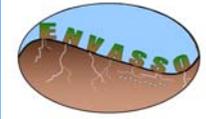


WP3: Data Base Design and Selection



Structural analysis of existing soil data bases/ information systems

- **data/system holders vary: universities, research facilities, national and regional agencies**
- **several data bases exist, which do not share common standards, and which are not linked**
- **where information systems exist: different objectives, structures, data types and nomenclatures are used**



WP3: Data Base Design and Selection

Data communication: XML-based soil information exchange

Guidelines for soil descriptors - World Reference Base - WRB

Registration, location

profile number		description status	date of description yymmdd	author	location - pointer to permanent feature			elevation [m]	map Sheet number
location letter code (admin. units)	profile number code				object	distance [m]	direction		

atmospheric climate and weater conditions

climate				weather conditions			soil moisture
monthly mean temperature [°C]	monthly mean precipitation[mm]	length of growing period [d]	present cond.	present air temperature	former cond.		

rock outcrops

rock outcrops		coarse surface fragments		erosion		
surface cover	distance	surface cover	fragment size	category	area affected	degree
none 0 [%]	none	none 0 [%]	none	no evidence of erosion	0 [%]	none

horizon boundary

nr	topdepth		distinctness	topography	horizon designation	fine earth texture	clay content [%]	ab
	from surface [cm]	botdepth from surface [cm]						
			abrupt 0-2 [cm]	smooth-nearly plane surface		send (unspecified)		none 0 [%]

Horizont hinzufügen
 Selektierten Horizont löschen
 Selektierten Horizont anzeigen
 Selektierten Horizont ersetzen

Genetic and systematic interpretation (classification)

humus form

none

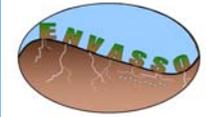
```

- <DATAROOT xsi:noNamespaceSchemaLocation="3623_GEHRDEN.xsd">
- <profile_3623_GEHRDEN>
  <nom>ka4_simple</nom>
  <pid>5797</pid>
  <application>ctest.exe</application>
  <status>0</status>
  <date_of_proc>060927</date_of_proc>
  <profile_nr>1</profile_nr>
  <map_leg_unit>1</map_leg_unit>
  <map_leg_portion>4.1</map_leg_portion>
  <clc_land_use>211</clc_land_use>
- <horizon_3623_GEHRDEN>
  <hor_nr>1</hor_nr>
  <hor_topdepth>0</hor_topdepth>
  <hor_botdepth>20</hor_botdepth>
  <hor_desc>Ap</hor_desc>
  <cl_organic_matter>h1</cl_organic_matter>
  <cl_rock_fragments>1</cl_rock_fragments>
  <cl_fine_earth_texture>Ut2</cl_fine_earth_texture>
  <cl_bulk_density>Rt2</cl_bulk_density>
  <pH_CaCl2>5.9</pH_CaCl2>
</horizon_3623_GEHRDEN>
- <horizon_3623_GEHRDEN>
  <hor_nr>2</hor_nr>
  <hor_topdepth>20</hor_topdepth>
  <hor_botdepth>75</hor_botdepth>
  <hor_desc>Bvs</hor_desc>
  <cl_organic_matter>h0</cl_organic_matter>
  <cl_rock_fragments>1</cl_rock_fragments>
  <cl_fine_earth_texture>Ut2</cl_fine_earth_texture>
  <cl_bulk_density>Rt3</cl_bulk_density>
  <pH_CaCl2>5.6</pH_CaCl2>
</horizon_3623_GEHRDEN>
- <horizon_3623_GEHRDEN>
  <hor_nr>3</hor_nr>
  <hor_topdepth>75</hor_topdepth>
  <hor_botdepth>200</hor_botdepth>
  <hor_desc>Cv</hor_desc>
  <cl_organic_matter>h0</cl_organic_matter>
  <cl_parent_material>gm</cl_parent_material>
  <cl_rock_fragments>2</cl_rock_fragments>
  <cl_fine_earth_texture>Su2</cl_fine_earth_texture>
  <cl_bulk_density>Rt4</cl_bulk_density>
  <pH_CaCl2>5.4</pH_CaCl2>
</horizon_3623_GEHRDEN>
</profile_3623_GEHRDEN>
</DATAROOT>
  
```

Participation in ISO/TC/SC 1/WG3 "Data codification and management"

rainer.baritz@bgr.de

WP3: Data Base Design and Selection



Project soil data portal as the platform for a prototype web soil service (WSS)

Following OGC-standards, and rules set by INSPIRE

The screenshot shows a web browser window displaying a map application. The browser title is "Mapserver FISBo BGR - Microsoft Internet Explorer provided by MS-Isa-2004-V5.2". The address bar shows "http://wwwtest-bgr/app/_fisbobgr_mapserver/index.php?netmode=2".

Legend:

- autorefresh: refresh map
- Kartengrundlagen**
 - Schattiertes Höhenrelief der EU
 - Hillshaded SRTM3 mosaik b/w
 - Hillshaded SRTM3 mosaik col.
 - NASA - Landsat7 Daten
- Climatic_Maps**
 - Climatic Areas of Europe
 - subpolar climate
 - subpolar-oceanic to boreal-oceanic climate
 - boreal-oceanic climate
 - boreal-continental climate
 - boreal-mountainous climate
 - boreal-oceanic to temperate-oceanic climate
 - boreal-suboceanic to temperate-suboceanic climate
 - boreal-subcontinental to temperate-subcontinental climate
 - boreal-continental to temperate-continental climate
 - boreal-mountainous to temperate-mountainous climate
 - temperate-oceanic to warm temperate-oceanic climate
 - temperate-oceanic to warm temperate-oceanic up to temperate-suboceanic climate, partly submediterranean climate
 - temperate-oceanic to temperate-suboceanic climate
 - temperate-oceanic to temperate-suboceanic climate influenced by mountains
 - temperate-suboceanic climate
 - temperate-suboceanic climate influenced by mountains
 - temperate-suboceanic to temperate-subcontinental climate
 - temperate-suboceanic to temperate-subcontinental climate influenced by mountains
 - temperate-subcontinental climate
 - temperate-subcontinental climate influenced by mountains
 - temperate-subcontinental to temperate-continental climate
 - temperate-continental climate
 - temperate continental climate influenced by mountains
 - temperate-mountainous climate
 - mediterranean to warm temperate climate
 - mediterranean-mountainous to warm temperate-mountainous climate
 - mediterranean-oceanic climate

Project ENVASSO

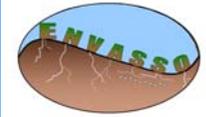
Subject	Theme	Specification	Viewport
Soil Science	Climatic maps	Climatic Regions of Europe 1 : 5,000,000	Climatic Areas of Europe
Meteorology			
Geomorphology			

Loading Map - Please Wait

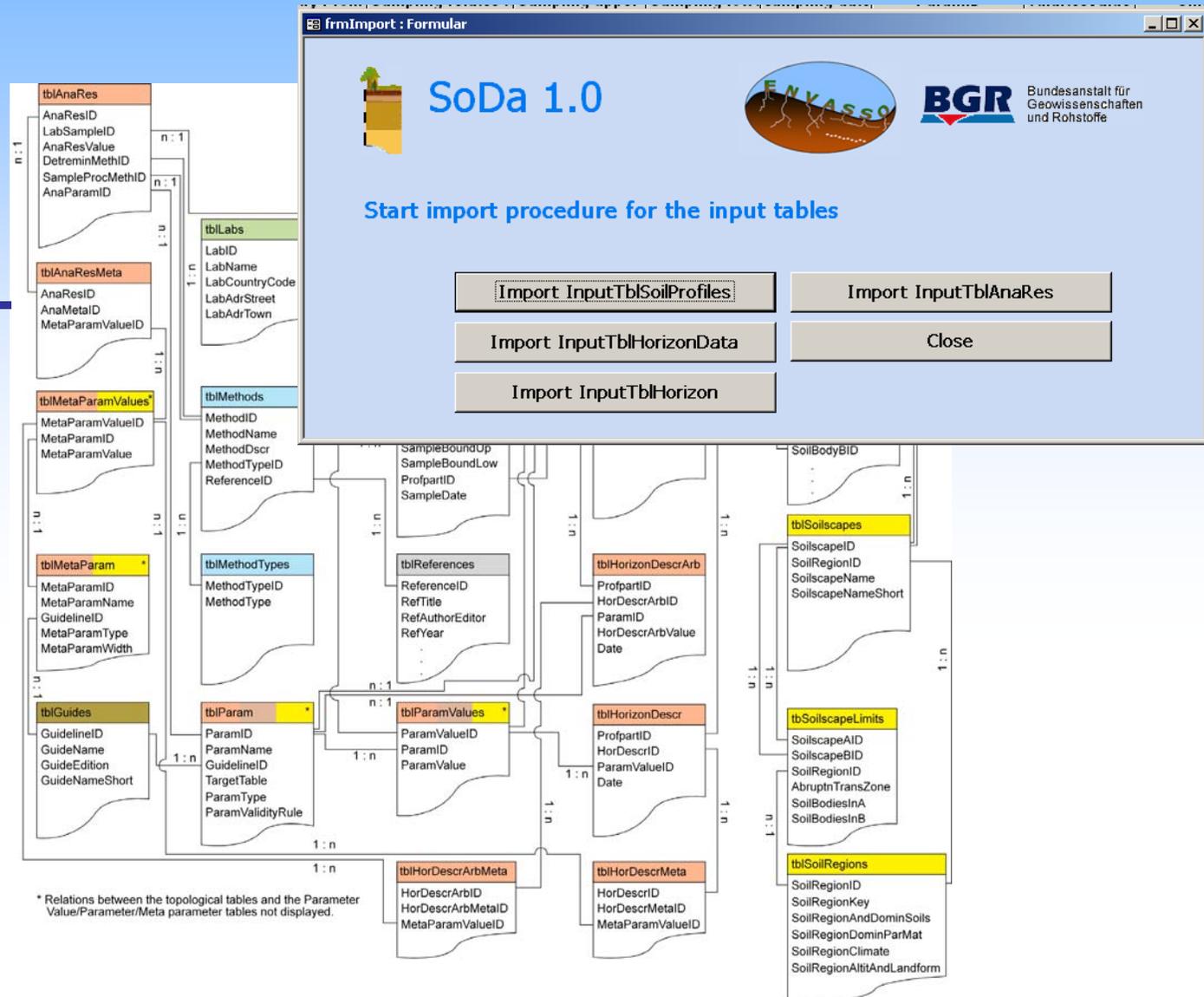
Map of Europe showing climatic regions. Scale 1:13414900. © BGR 12/2004.

Fachinformationssystem Bodenkunde der Bundesanstalt für Geowissenschaften und Rohstoffe (FISBo BGR). Lokales Intranet

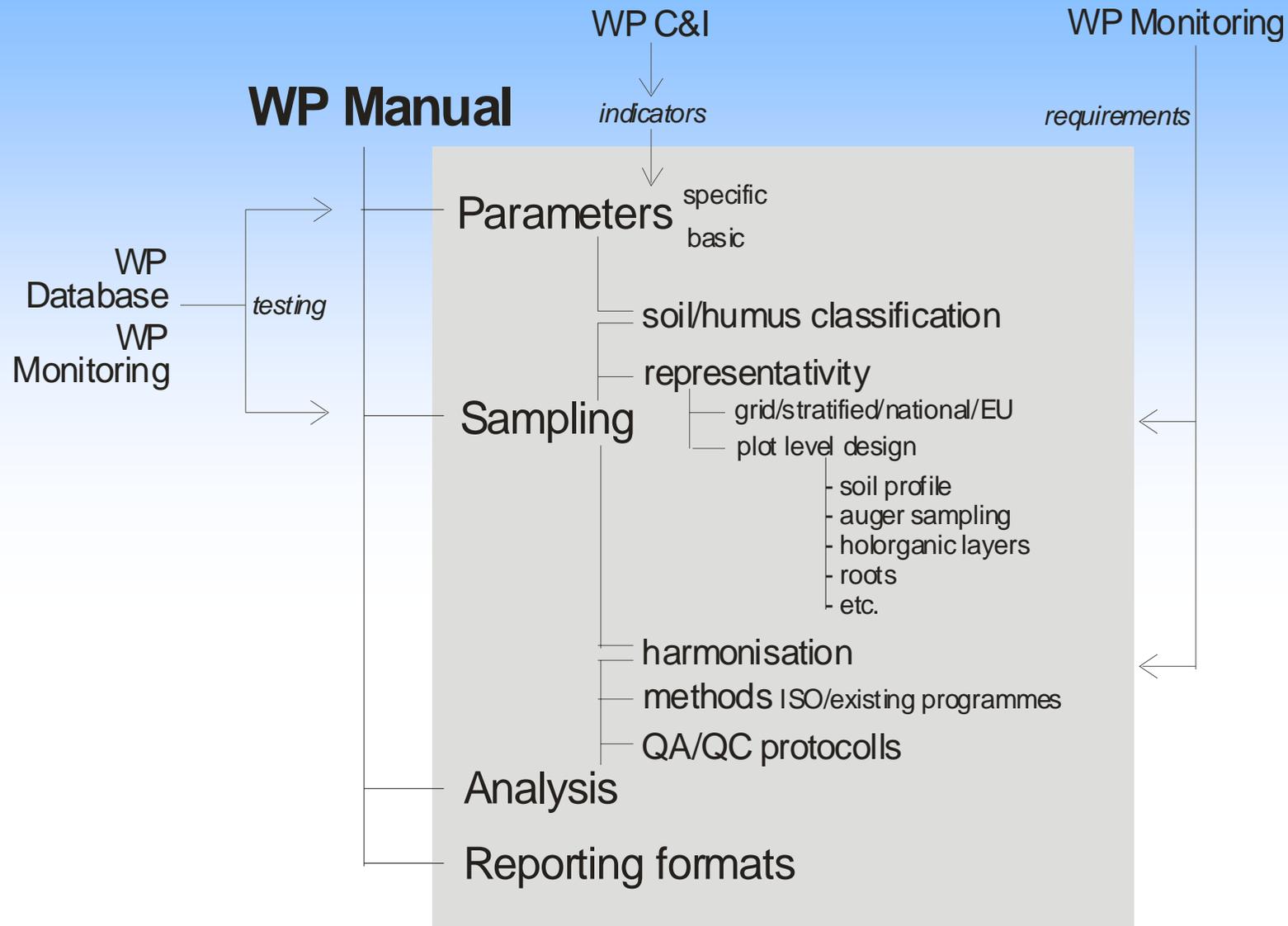
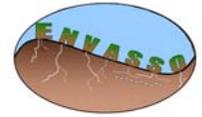
WP3: Data Base Design and Selection



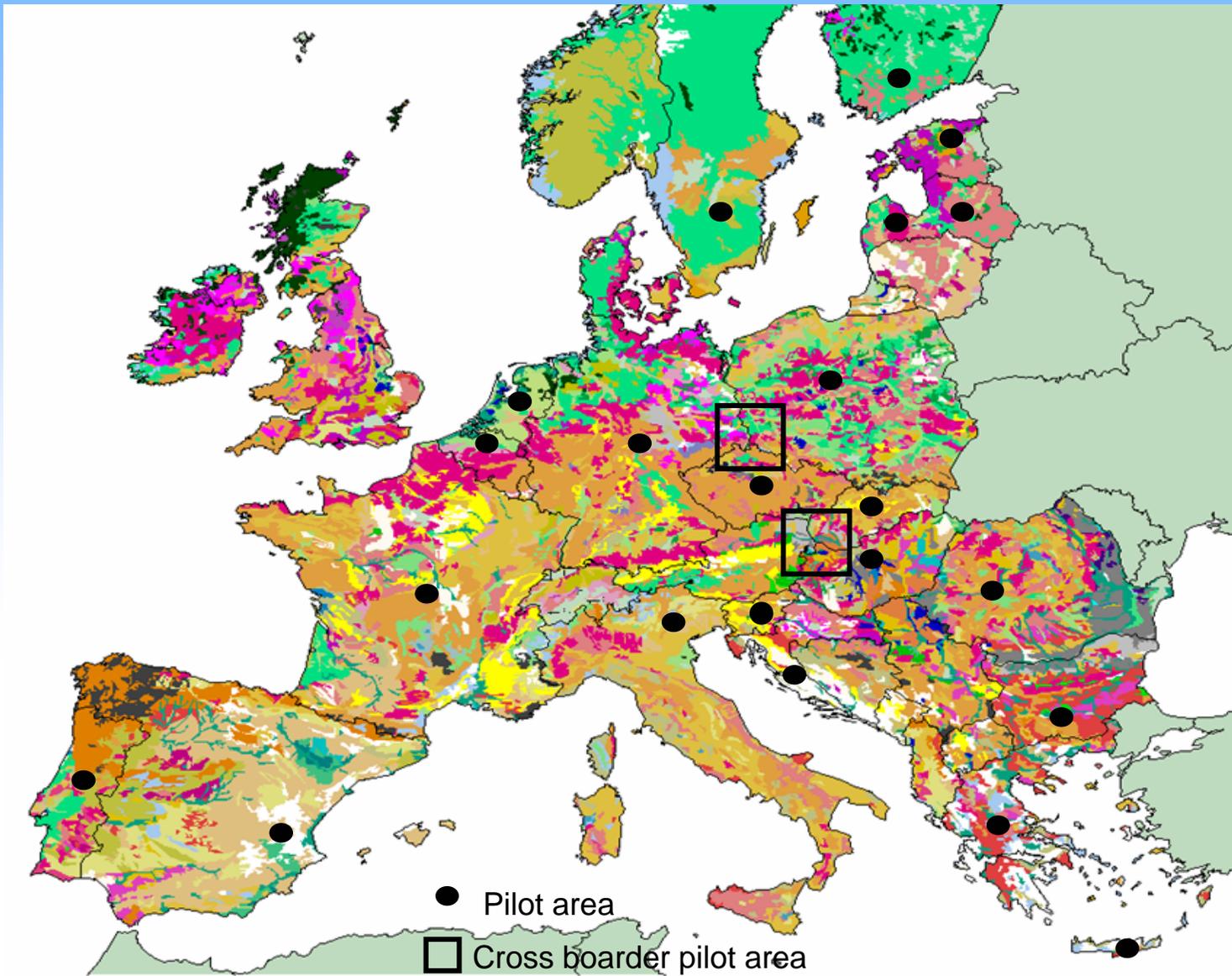
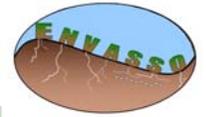
Development and testing of a data model for soil monitoring data



WP4: Manual development



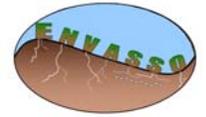
WP5: Pilot areas



rainer.baritz@bgr.de

Outlook for developing soil observing systems

from the 'data base design' point-of-view:



- **data assembling units:** systems for soil monitoring networks at various measurement intensities and auxiliary data uptake
- **standards development:** classifications, data formats, (online) data communication
- **data storage and QA/QC units:** harmonization, data documentation and access
- **data processing units:** method development: pedotransfer functions, models, up-/downscaling, dynamic linkage of semantic and geometric typological soil data