

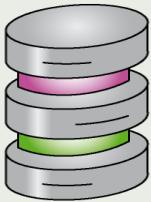
Vision de l'organisation/orientations nationales

Rainer Baritz

(Agence européenne de l'environnement)

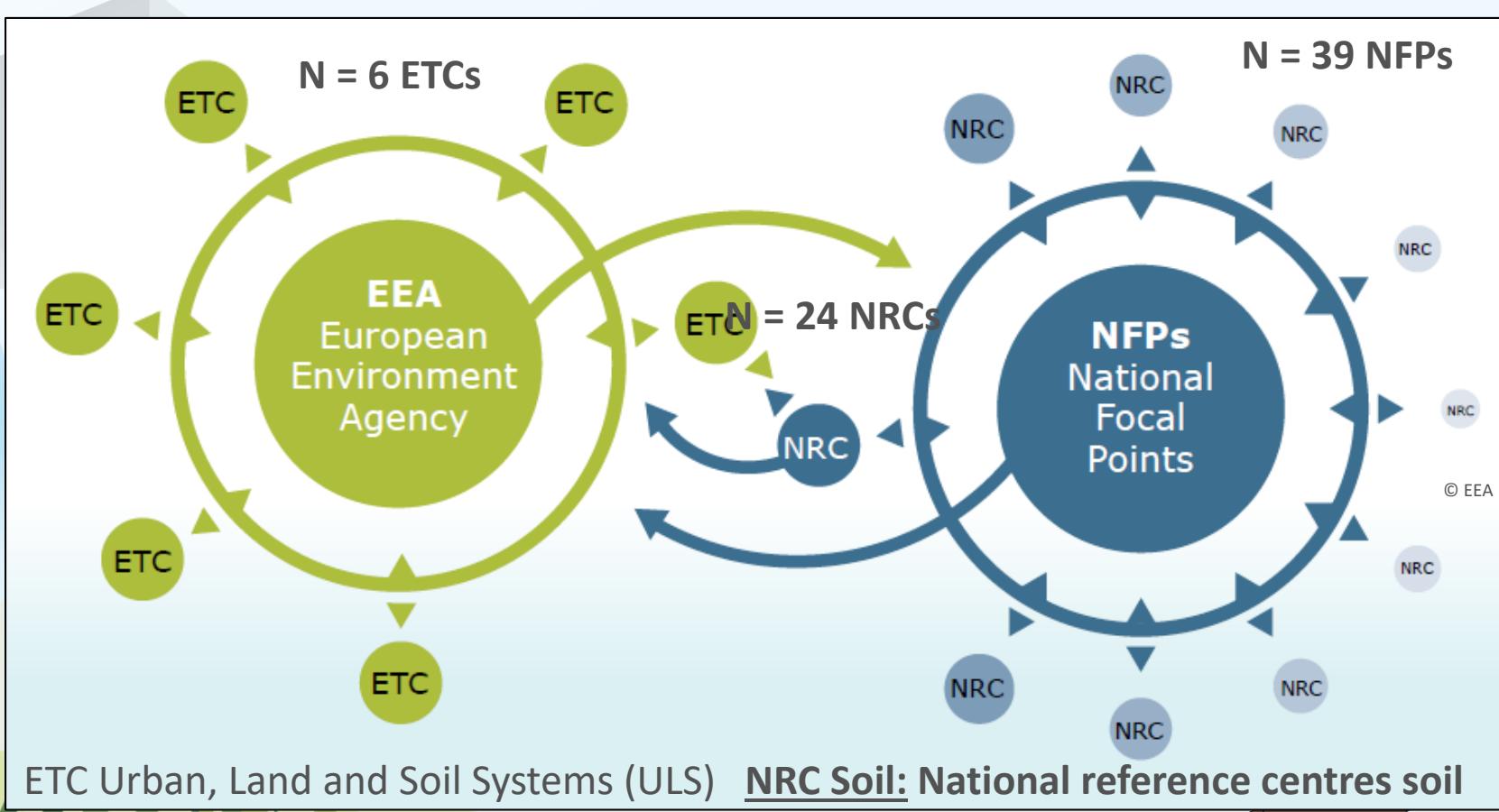


Rainer Baritz (EEA)



Le modèle EEA et Eionet

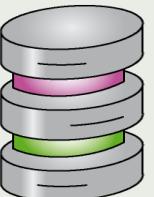
Eionet: Réseau européen d'information et d'observation
1800 experts (39 pays, > 400 institutions nationales)



2022 ff:
EIONET Group Land Systems
WG Soil Quality

Expert teams:

- Soil Contamination
- Soil Monitoring (link European Soil Observatory)



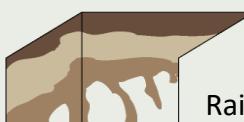
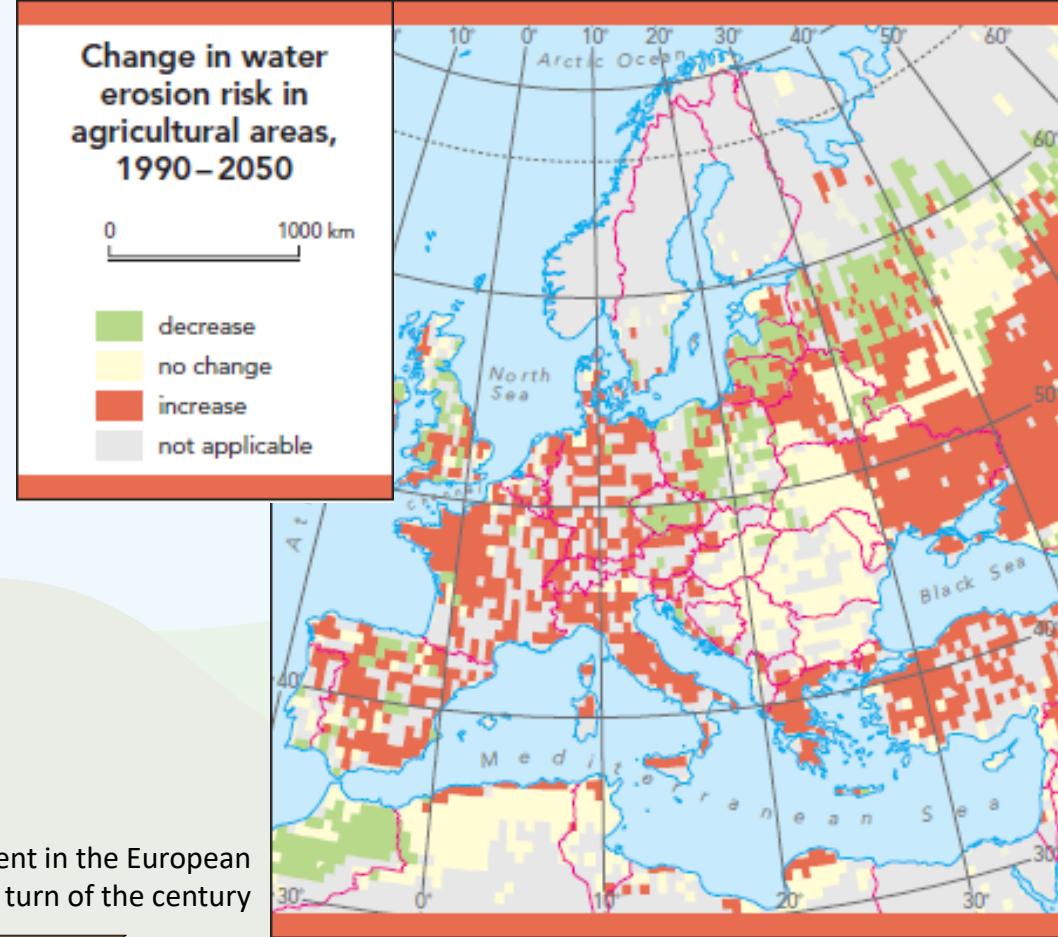
Reflection sur le cooperation avec les delegate du sol de France

Computerisation of Land Data Group (since 1982), **Soil and GIS Support Group** (since 1990, *re-namend to Soils Information Focal Points*), **European Soil Bureau (Network) (ESB/ESBN** since 1996):

- 1982: Computerisation of Land Data Group (2nd meeting in Montpellier; Jean-Paul Legros)
- 1985: Soil Map of the European Communities, 1:1,000,000 (7 map sheets, EC-12) contributors for France: J. Dupuis, M. Jamagne, A. Mori, E. Servat)
- 1991: Mapping methods for the 1990s and beyond (Jamagne, M. and D. King)
- The 1:1 Million European Soil Database Group (chair: M. Jamagne)**
- 1992: Soil Information System Development Committee (chair: D. King)**
- 1995: The EU Soil Geographical Database (and its extension): D. King, C. Le Bas, et al.
- 1994-1996: Pedotransfer rules project (J. Daroussin): AML toolbox built by INRA is accessible to your Arc/Info
- 1996-2000: European Topic Centre on soils: CSIC/CIDE (Spain), Teagasc (Ireland), GEUS (Denmark), SSLRC (UK), UBA (Austria), INRA (France), BGR (Germany), JRC (EE.UU)
- 1999: Attribute Coding and metadata for the Soil Profile Analytical Database of Europe (Joel Daroussin)
- 2006: Soil Profile Analytical Database for Europe (SPADEF) (J. Daroussin):

L'évolution des données du sol en informations

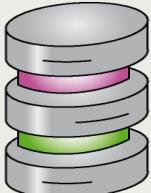
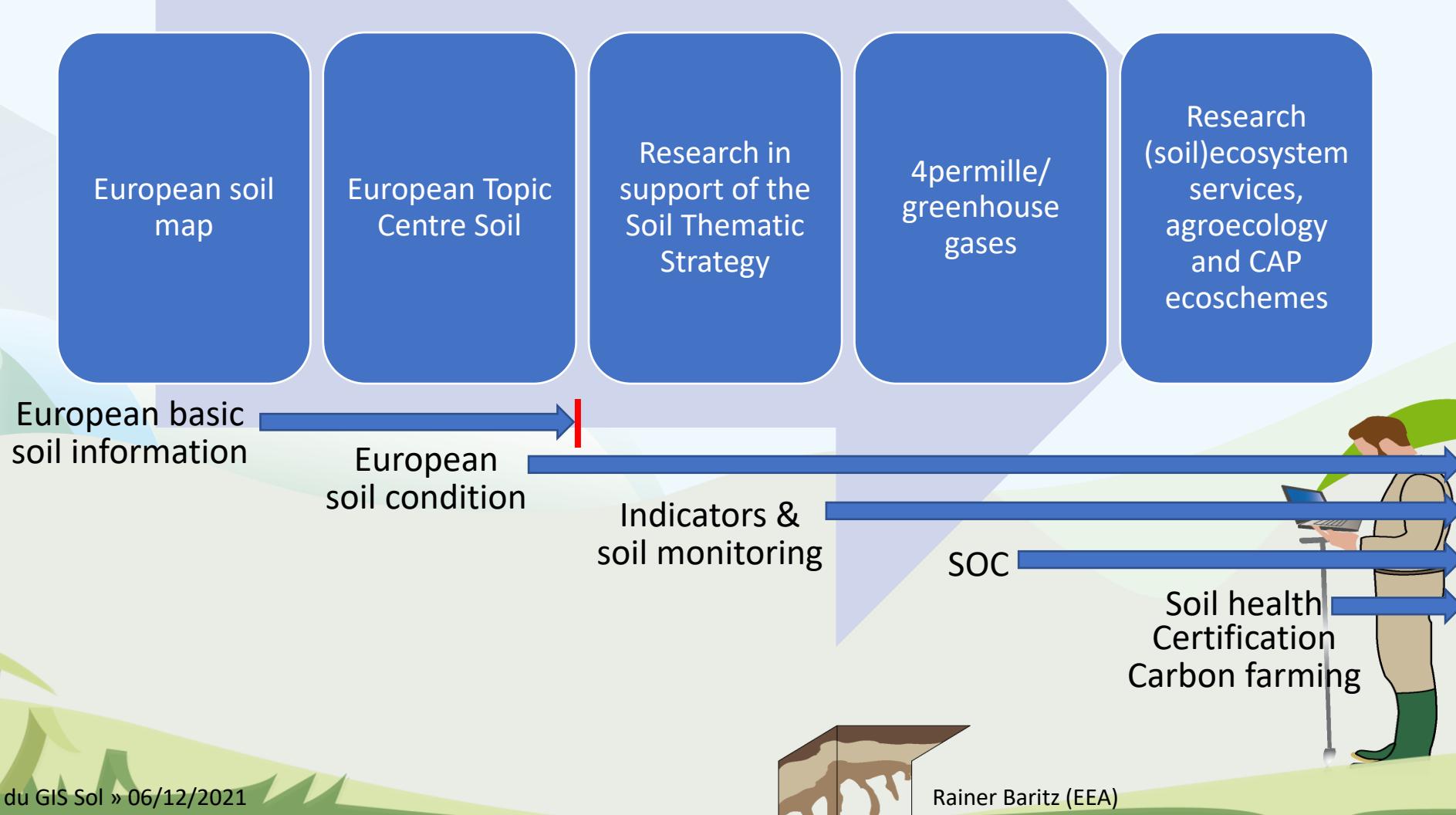
- L'INRAE (Unité de Science du Sol/GisSol) a été un pilier dans le développement de la carte européenne des sols et des bases de données associées (polygones de sols, profils de sols, méthodes)
- L'INRAE a été un partenaire clé dans le développement des premiers indicateurs européens des sols



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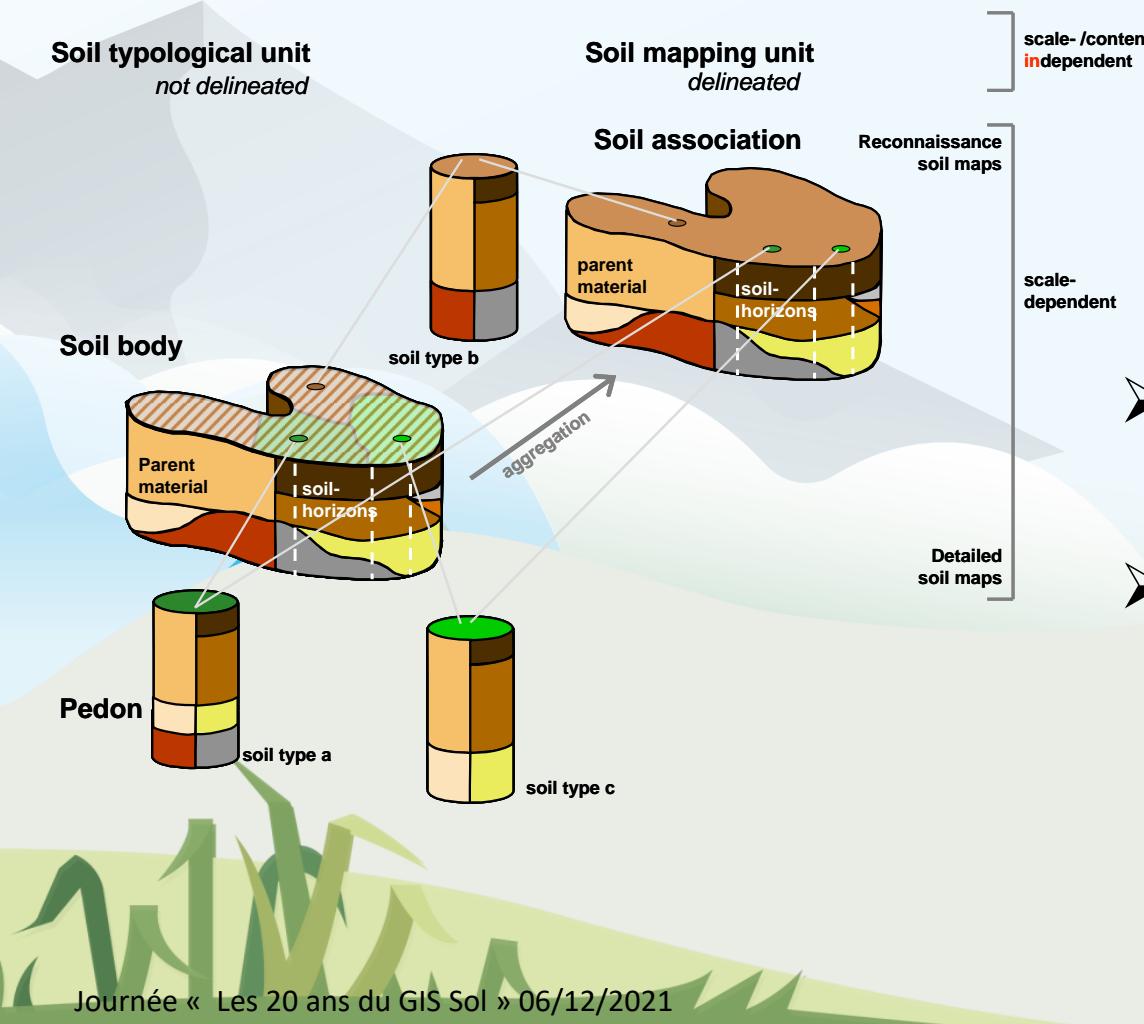


Défis et besoins en informations sur les sols



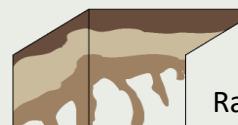
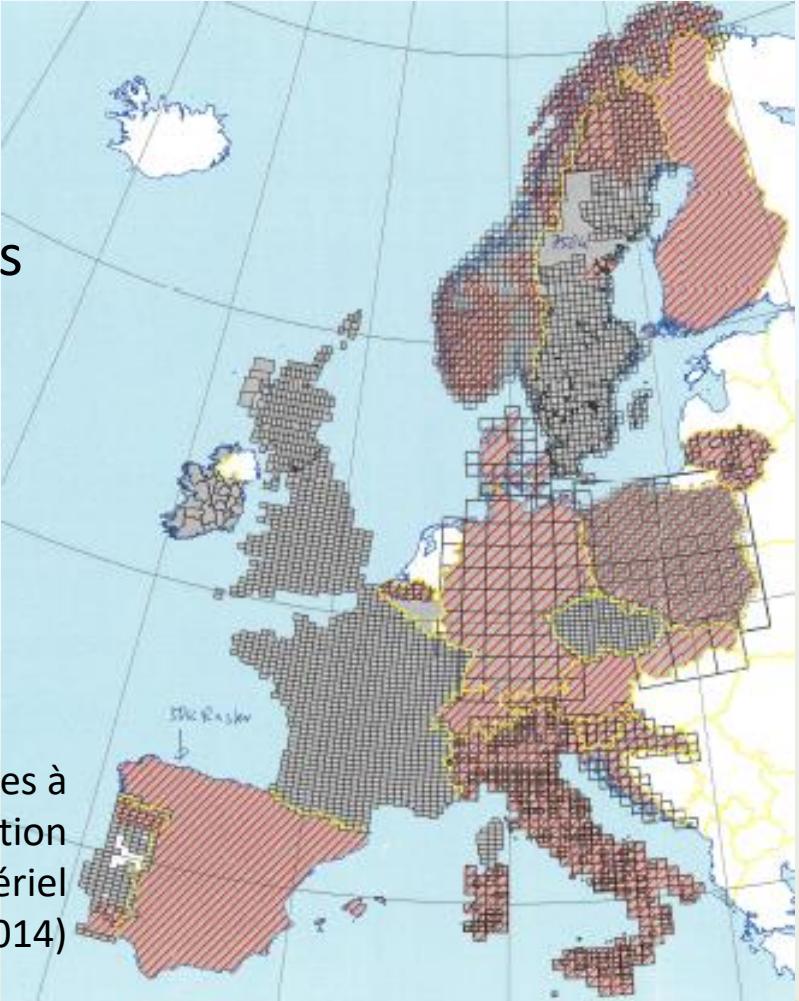


La base d'information « oubliée » ?



- Les données de base solides dans les dimensions générales ne sont pas disponibles dans toute l'Europe
- 1:50,000 – 1:400,000 (~ 1:250,000)
- Bases de données de méthode?

Cartes nationales à haute/moyenne résolution montrant le matériel parental (EGS, 2014)



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GS Soil

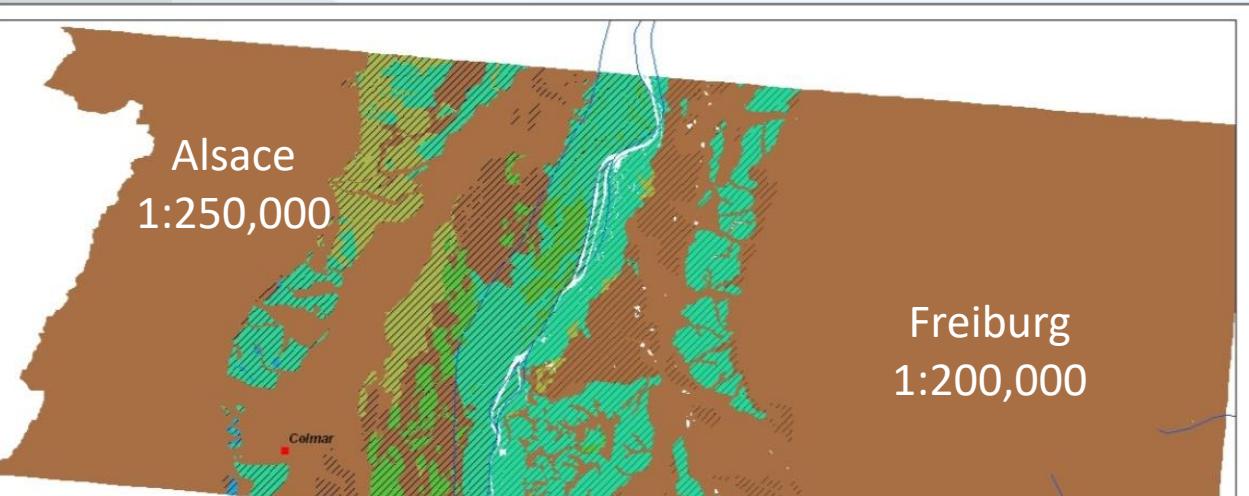
Harmonisation transfrontalière



Journée
Mondiale
des Sols

1:1 Taxonomic comparison WRB (1998)

Harmonized carbonate content classes according to FAO

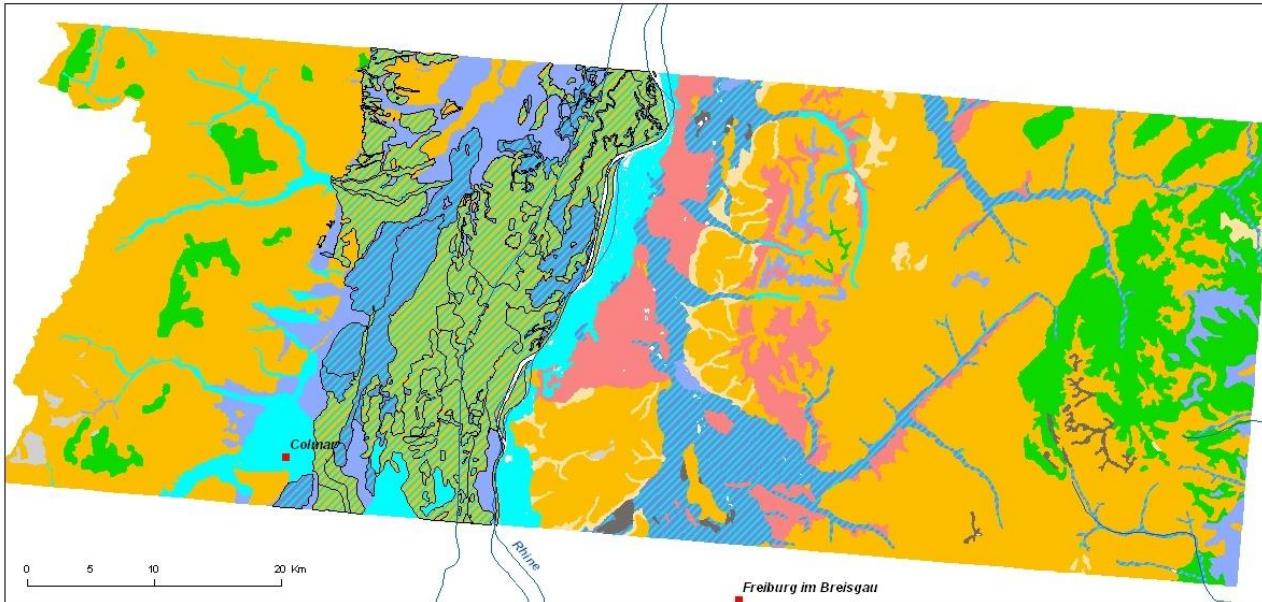


	Identification	% CaCO ₃	FAO	Identification	DONES OL	Identification
0	No reaction	0	N	No detectable visible or audible effervescence	0	No reaction (no bubbles)
1	Very weak reaction, not visible but audible	< 0,5	SL	Audible effervescence but not visible	1	Slight reaction (some bubbles visible)
2	Weak reaction, slightly visible	0,5 - 2			2	Moderate reaction (continues generation of bubbles, single layer)
3	Not persistent effervescence	2 - 10	MO	Visible effervescence	3	Strong reaction (thick layer of foam)
4.2	not persistent but weak visible effervescence	2 - 4			4	Extremely strong reaction. Thick foam forms quickly
4.3	not persistent but clearly visible effervescence	4 - 7				
4.4	not persistent but strong visible effervescence	7 - 10				
4	Strong, persistent effervescence depending on added amount of HCl	10 - 25	ST	Strong visible effervescence. Bubbles form a low foam	3	Extremely strong reaction. Thick foam forms quickly
5	Strong, persistent effervescence depending on added amount of HCl	25 - 50	EX	Extremely strong reaction. Thick foam forms quickly	4	
6	Strong, persistent effervescence depending on added amount of HCl	> 50	EX	Extremely strong reaction. Thick foam forms quickly		

Carbonate Content in Subsoil

Carbonate Content in Topsoil [%]

- N 0 (non-calcareous)
- SL 0 - 2 (slightly calcareous)
- MO 2 - 10 (moderately calcareous)
- ST 10 - 25 (strongly calcareous)
- EX > 25 (extremely calcareous)

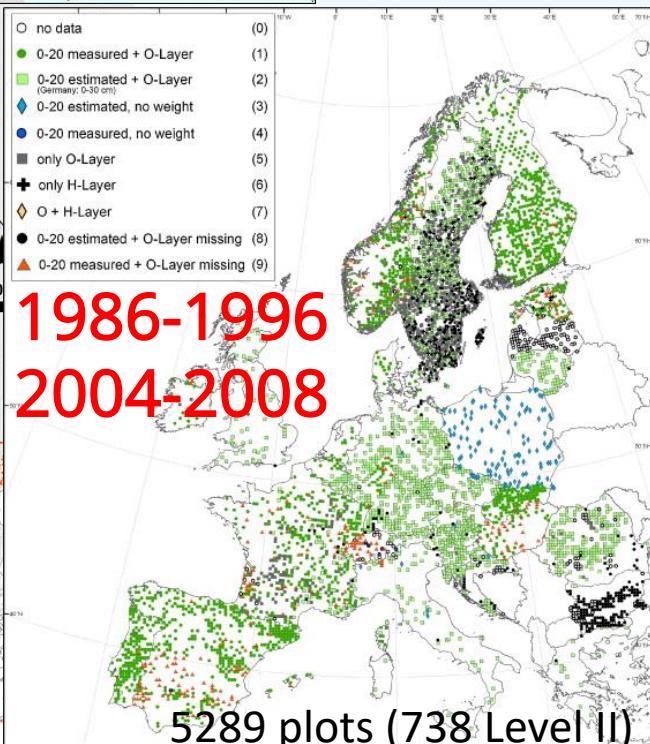
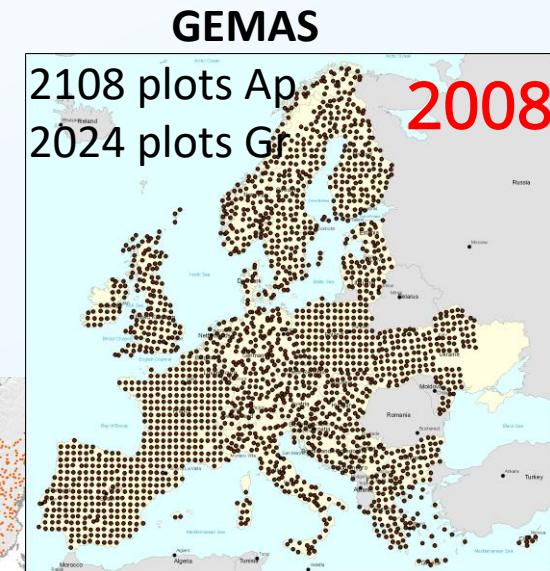


Intégration des réseaux de surveillance des sols : national-UE

LUCAS Soil

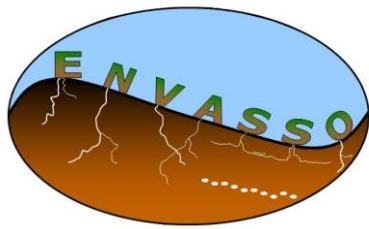
2009/12
2015
2018
2021...

22,000+ plots



Représentativité
Changement
moyen détectable

WP2 Inventory and Monitoring
Arrouays et al. (2008)

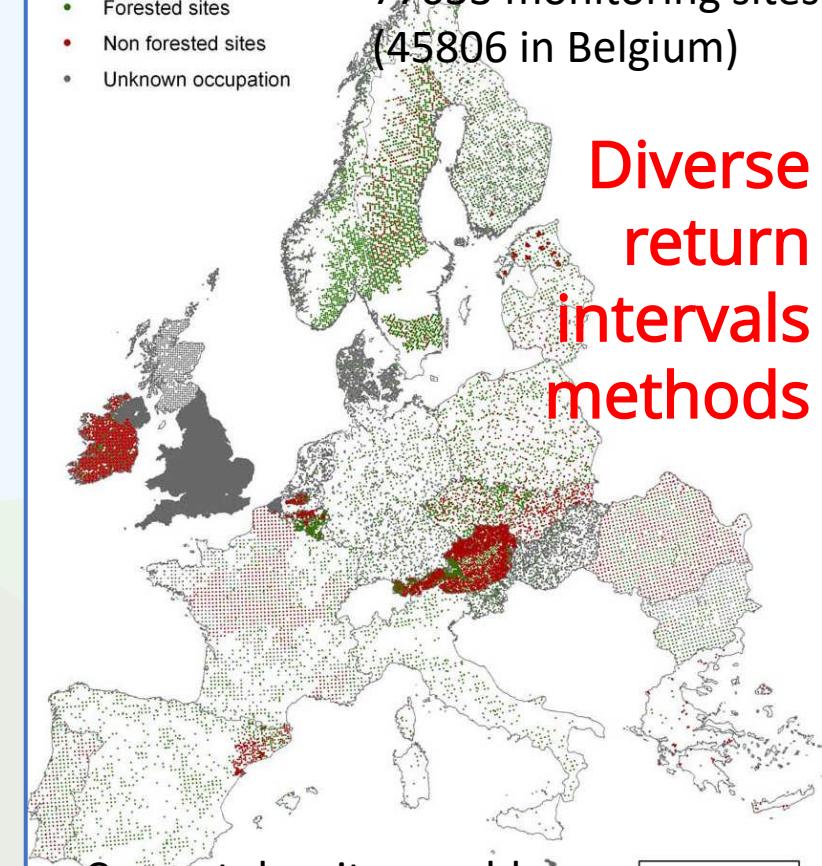


National soil monitoring sites

- Forested sites
- Non forested sites
- Unknown occupation

77633 monitoring sites
(45806 in Belgium)

Diverse
return
intervals
methods



Indicateurs fonctionnels du sol et limites critiques



Journée
Mondiale
des Sols

Soil threat indicators

- SOC loss
- Soil nutrient loss – N and P
- Soil acidification
- Contaminants in soil
- Soil biodiversity loss
- Soil erosion
- Soil compaction
- Salinization**
- Soil sealing

Soil functional indicators

[tentative list]

- Biomass productivity (i.e. soil quality rating)
- Water storage capacity
- Soil moisture deficit
- Groundwater reproduction
- Carbon storage capacity
- Nutrient mobilization and buffering capacity
- Habitat provision capacity

effect on soil functions
↔
Conditioning the extend of soil threats

Thresholds
Critical levels

↓

Soil health

"dynamic (actual) soil quality"
related to soil functions

Soil functions

[simplified]

- Food production (soil fertility)
- Water retention
- Water purification & regulation
- Carbon pool & climate regulation
- Nutrient dynamics
- Habitat

Ecosystem services

Provisioning

Regulating

Supporting

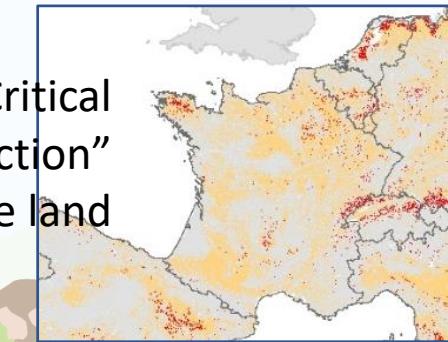
Regional, site-specific thresholds
Validation

Impact

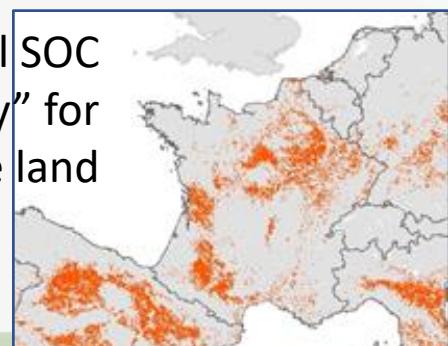
"Critical rate of soil loss by water erosion" for arable land



"Critical compaction" for arable land



"Heavy metal exceedances" for arable land



"Functional deficiency" for arable land



Coopération future

- GisSol/INRAE est un partenaire de premier plan dans la recherche européenne et le développement de l'information sur les sols
- La coopération avec les partenaires européens est bien établie (EIONET, programmes de recherche de l'UE, Observatoire européen des sols, ISO/CEN)
- Nouveaux défis: surveillance de la santé des sols dans le contexte des services écosystémiques et de la biodiversité (des sols): indicateurs fonctionnels des sols et impact de la dégradation des sols à travers les limites critiques



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