



**Saving our soil information, making our soil map more understandable, usable and useful in the digital area:
Contribution of the Digital Soil Map of Wallonia Project**

Thematic Day of the Soil Science Society of Belgium
Bruxelles, 7th December 2011

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Contents

- Context
- Misuse/underuse of the Soil Map of Belgium
- The Digital Soil Map of Wallonia Project
- Contribution of the Project : selected examples





CONTEXT



Context

- Need for soil information
 - The future lies in new soil data acquisition ?!
 - The SMB and the digital soil maps as a « Holy Grail » ?!
- ➔ **The Soil Map of Belgium** : an essential resource, with a **underused/misused wealthy potential**



Misuse/underuse of the Soil Map of Belgium

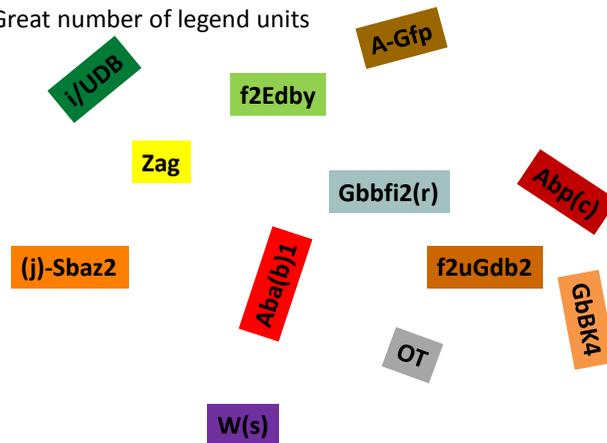


Misuse/underuse of the SMB

- Complexity of the map and its legend

Misuse/underuse of the SMB

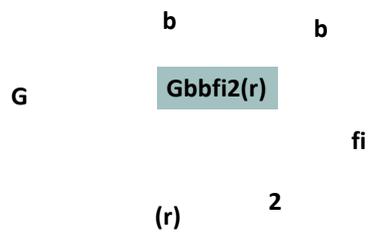
- Complexity of the map and its legend
- Great number of legend units



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Misuse/underuse of the SMB

- Complexity of the map and its legend
- Great number of legend units
- « Symbol by symbol » use of the map, with strict definition



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Misuse/underuse of the SMB

- Complexity of the map and its legend
- Great number of legend units
- « Symbol by symbol » use of the map, with strict definition
- The map has a history...
 - regional nuance, implicit information, evolution of concepts and legend

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Misuse/underuse of the SMB

Presence of **FRAGIPAN**

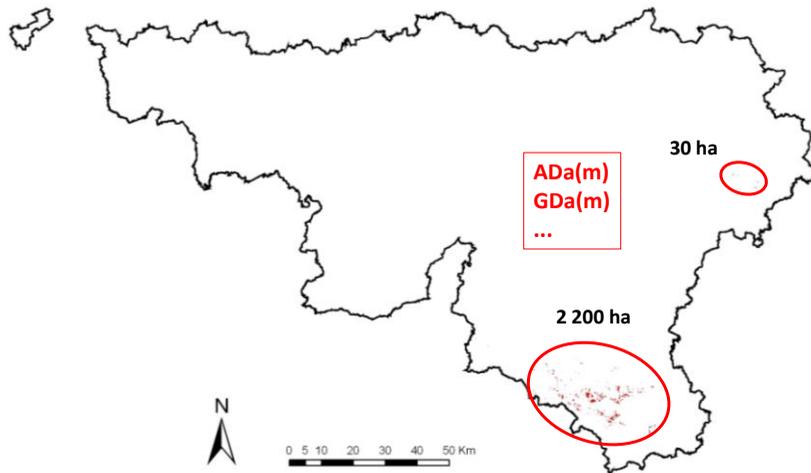
- ✓ Explicit :
 - ❖ dedicated symbol : **var. dev. « (m) »** (*fragipan*)

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Misuse/underuse of the SMB

CNSW - Var. dev. "(m)" (fragipan)



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Misuse/underuse of the SMB

Presence of **FRAGIPAN**

✓ Explicit :

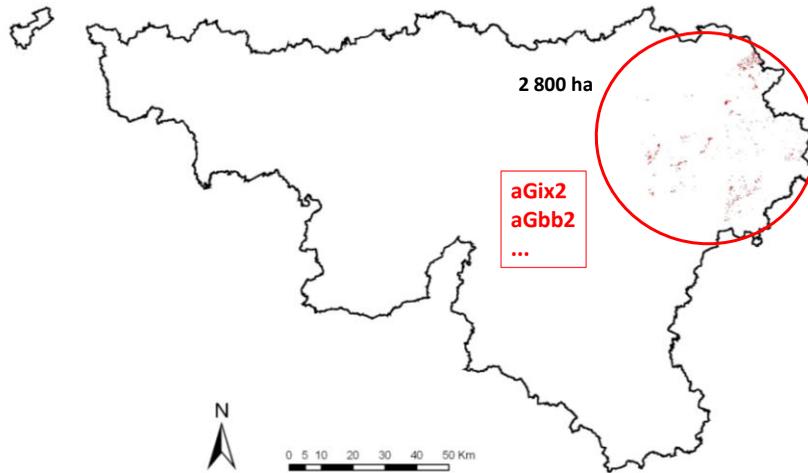
- ❖ dedicated symbol : **var. dev. « (m) »** (*fragipan*)
- ❖ « diverted » symbol : **subst. « a »** (*deeply weathered*)

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Misuse/underuse of the SMB

CNSW - Substrat "a" - few stony (5-15 %) soils



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Misuse/underuse of the SMB

Presence of **FRAGIPAN**

✓ Explicit :

- ❖ dedicated symbol : **var. dev. « (m) »** (*frapipan*)
- ❖ « diverted » symbol : **subst. « a »** (*deeply weathered*)

✓ Implicit :

- ❖ related symbol : **prof. dev. « c »** (very spotted Bt) with **text. « A »**
 → **Abc** in the Soignes Forest (*Albeluvisols*)

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Misuse/underuse of the SMB

Presence of **FRAGIPAN**

✓ Explicit :

- ❖ dedicated symbol : **var. dev. « (m) »** (*frapipan*)
- ❖ « diverted » symbol : **subst. « a »** (*deeply weathered*)

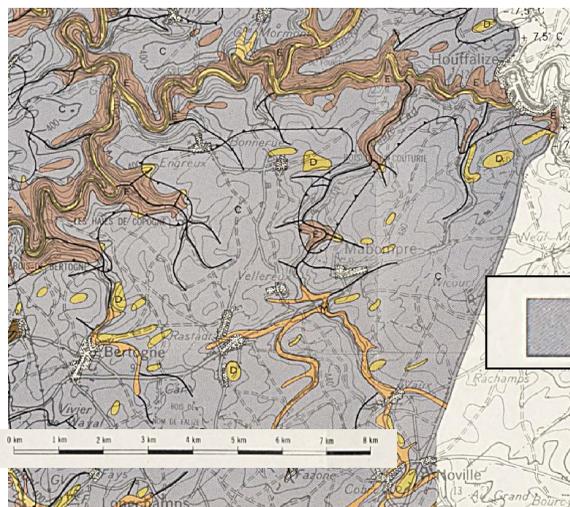
✓ Implicit :

- ❖ related symbol : **prof. dev. « c »** (very spotted Bt) with **text. « A »**
- ❖ inferred from regional context (hypothesis to confirm in the field)
→ **loamy soils (ADa0, ...)** in the Haute-Marlagne wood, ...

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Misuse/underuse of the SMB

CARTE DES ORDRES, SOUS-ORDRES, GRANDS GROUPES ET SOUS-GROUPES DE SOLS SUIVANT LA VIIth APPROXIMATION



Deckers these

C Fragiochrept

→ Gbb, Gbbr2, ...

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Misuse/underuse of the SMB

- Complexity of the map and its legend
- Great number of legend units
- « Symbol by symbol » use of the map, with strict definition
- The map has a history...
- **Soil field observation !!!**

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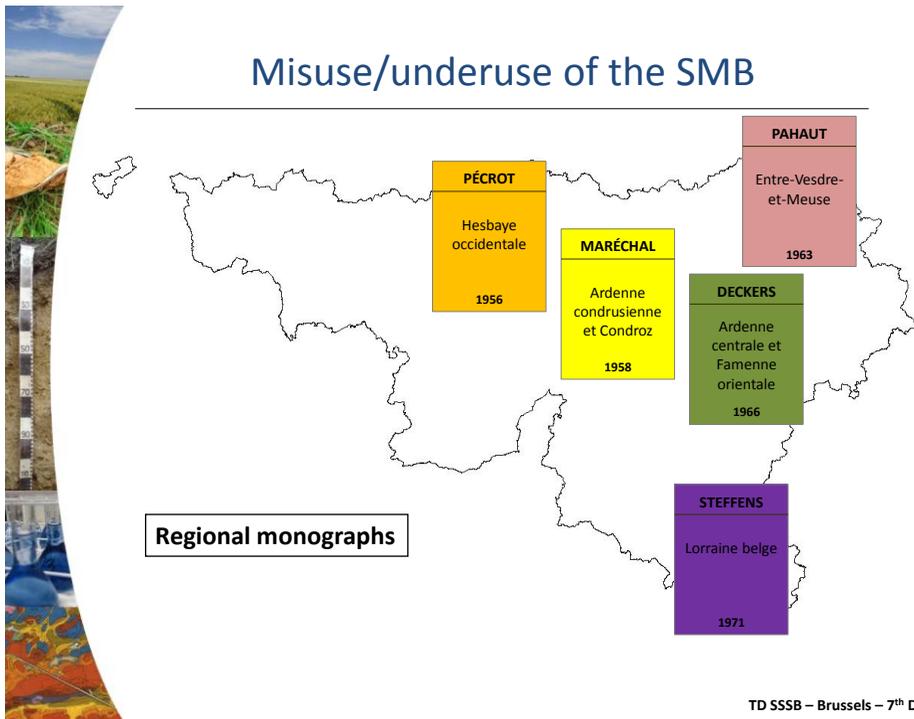


Misuse/underuse of the SMB

- Complexity of the map and its legend
- Great number of legend units
- « Symbol by symbol » use of the map, with strict definition
- The map has a history...
- Soil field observation !!!
- **The soil map + legacy data**

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Misuse/underuse of the SMB



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The Digital Soil Map of Wallonia Project





The Digital Soil Map of Wallonia Project

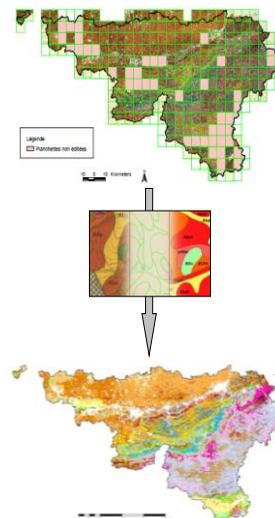
2001-2004 Digitisation of the map → DSMW

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The Digital Soil Map of Wallonia Project

1.1 Scanning
1.2 Georeferencing
1.3 Quality control (QC)
2.1 Outlines vectorisation
2.2 QC
2.3 Building topology
2.4 QC
2.5 Labeling polygons
2.6 QC
2.7 Final QC (restitution)
3.1 Geometrical corrections
3.2 Creating seamless map
3.3 Merging in a unique vector layer
3.4 Unique and homogeneous legend
3.5 Final QC (Integration)
4. Integration in a geodatabase



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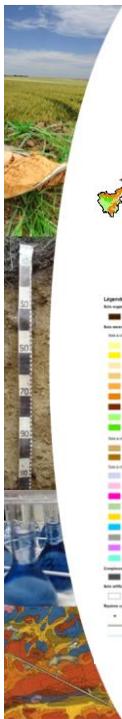


The Digital Soil Map of Wallonia Project

2001-2004 Digitisation of the map → DSMW

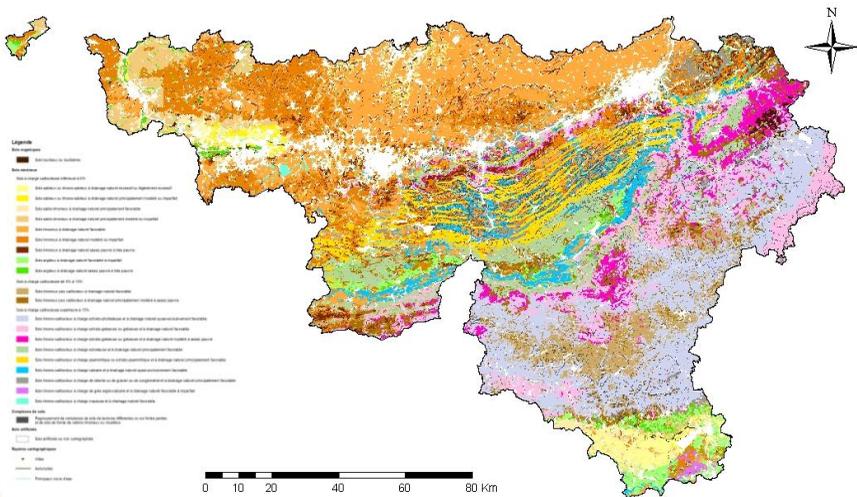
2004-2007 Valorisation of the map

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The Digital Soil Map of Wallonia Project

Map of the Main Soil Types of Wallonia (1:250,000)

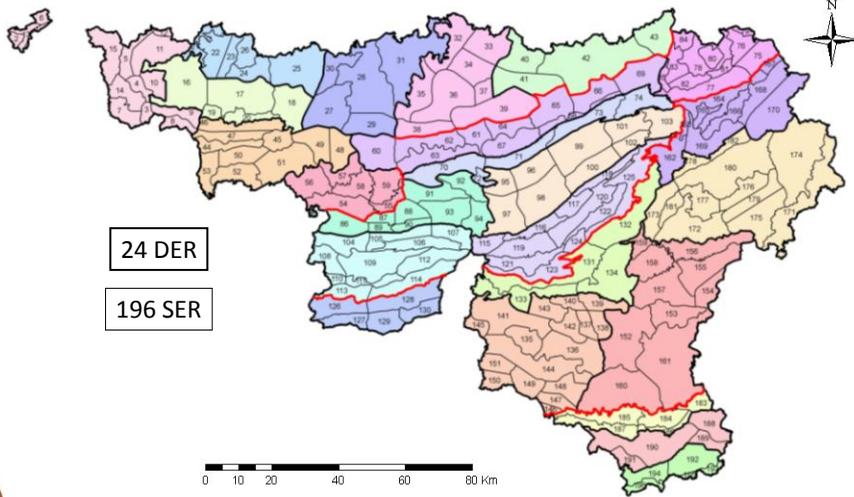


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The Digital Soil Map of Wallonia Project

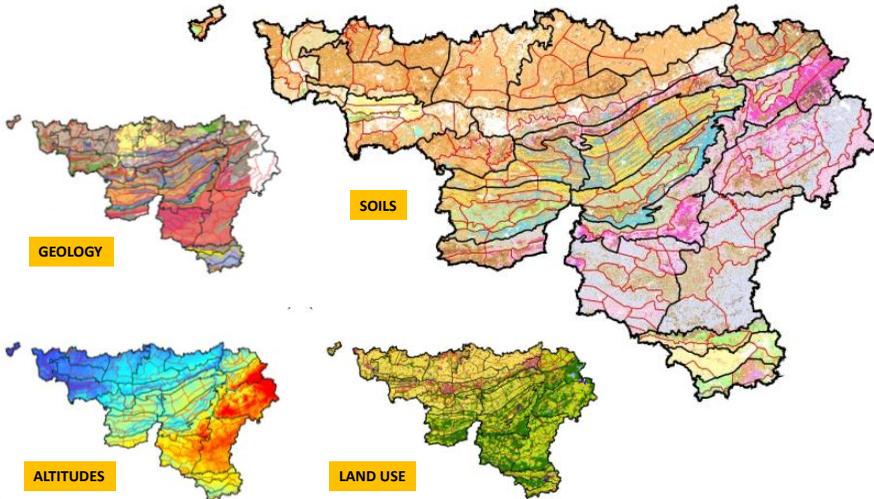
Districts (DER) and Sectors (SER) of Rural Space



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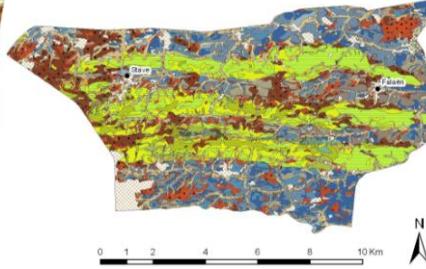
The Digital Soil Map of Wallonia Project



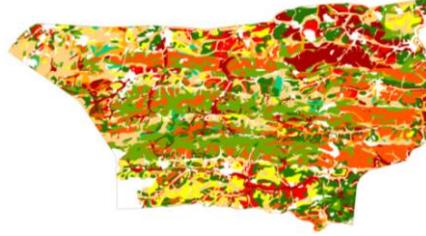
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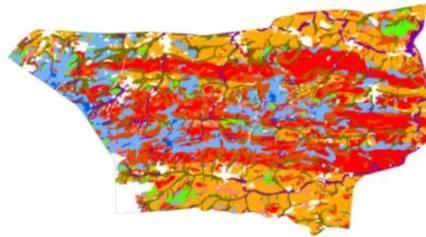
MST at 1:100,000



Soil capability for culture



Soil limitation for spreading



Derived maps

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The Digital Soil Map of Wallonia Project

Import/modify

Livret: 2-Sol-Diff
IRISIA: Tous
Chap.: Ch 2
TITRE: Tous
Séries: Cal: Série
Paragraphe/structure: Tous
VERSION: Toutes

2.1.1.1. Soils limoneux profonds
 M 1) : S179M (S 2, 385, 245) (N° 1)
 Série ABA : sols limoneux à horizon B textural
 M 1) : S179M (S 2, 385, 245) (N° 1)
 ABA0 : phase à horizon A épais (>40 cm)
 ABA1 : phase à horizon A mince (<40 cm)
 (p)ABA : phase moyennement profonde (80-125 cm)
 M 1) : S179M (S 2, 385, 245) (N° 1)
 Cette série comprend les sols bruns lessivés à drainage favorable.
 M 1) : S179M (S 2, 385, 245) (N° 1)
 On observe rarement ABA0. L'horizon A se répartit sous forêt en :
 M 1) : S179M (S 2, 385, 245) (N° 1)

Horizon	Description
Ab	Horizon noirâtre, friable, structure grumeleuse, épaisseur 5 cm environ.
A1	limon léger, humifère, brun grisâtre foncé, friable, structure grumeleuse ou feuilletée, épaisseur 10 cm environ.
A2	limon léger, brun jaunâtre, friable, structure feuilletée, épaisseur 20 cm environ, surmontant l'horizon BBA0.

Exploitation tools

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Contribution of the Project *selected examples*

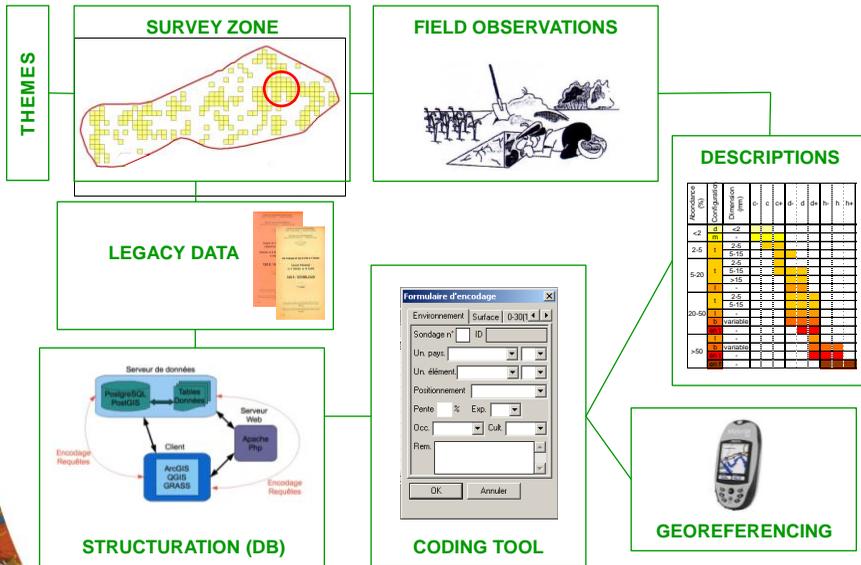


Contribution of the Project

- Back to the field !
 - « permanent » operational team (6 p.)



Contribution of the Project



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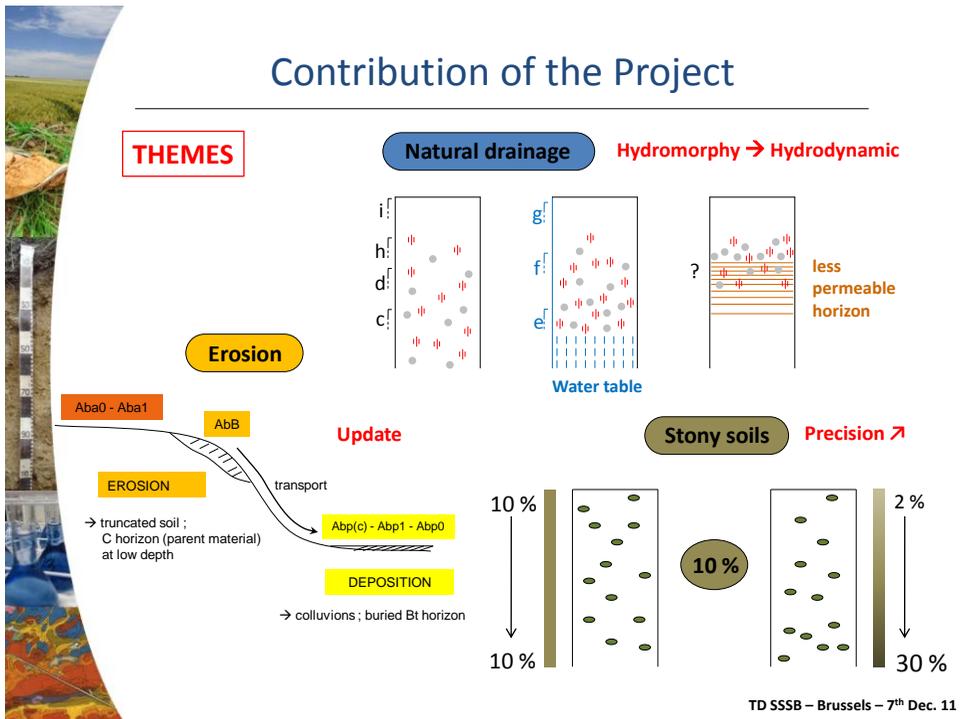


Contribution of the Project

- Back to the field !
- Thematic revision of the soil map

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Contribution of the Project



Contribution of the Project

- Back to the field !
- Thematic revision of the soil map
- Acquisition of new data
 - missing data
 - linked to soil typology
 - sampling strategy
 - « permanent », intrinsic parameters
 - order of magnitude for main soils in all regions

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Contribution of the Project



Samples in relation with main soil parent materials

- I - Loess from Hainaut (Aba, AbB)
- II - Loess from Brabant (Aba, AbB)
- III - Loess from Hesbaye (Aba, AbB)
- IV - Sandy loam from North-west Hainaut (Lda, Ldc)
- V - Micaceous sandstone weathered products (Gbak, aGbak)
- VI - Residual clays from limestone decarbonation (GbBK)
- VII - Residual clays with chert stoniness (Gbax)
- VIII - Clays from Fagne-Famenne weathered shale (Edky, E.py)
- IX - Slate weathered products (Gbbf0_1, Gbbfia0_1)
- X - Slightly stony loamy soils (Gbb)
- XI - Hettangian marl - Jamoigne Formation (EDBy, UDR, EDpy, UFP)
- XII - Sinemurian sand - Luxembourg Formation (wLba2, j-wLba2, L.p, Sba)

- 120 sampling points
- > 120 surface samplings (Ap/A1)
- 18 intermediate samplings (B)
- 120 deep samplings (B/C)



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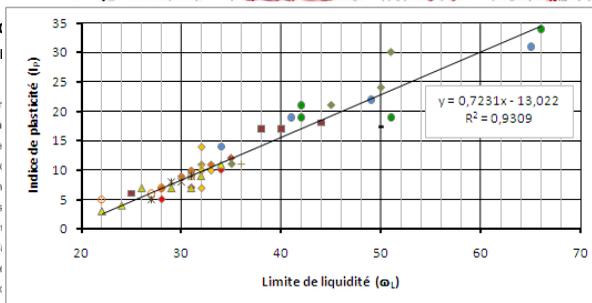
Contribution of the Project



Samples in relation with main soil parent materials

- I - Loess from Hair
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- Back to the field !
- Thematic revision of the soil map
- Acquisition of new data
- Gathering, archiving and documenting historical documents related to the soil map (from chief cartographers, ...)
 - field notes, unpublished reports, minutes of meetings, letters, draft maps, ...

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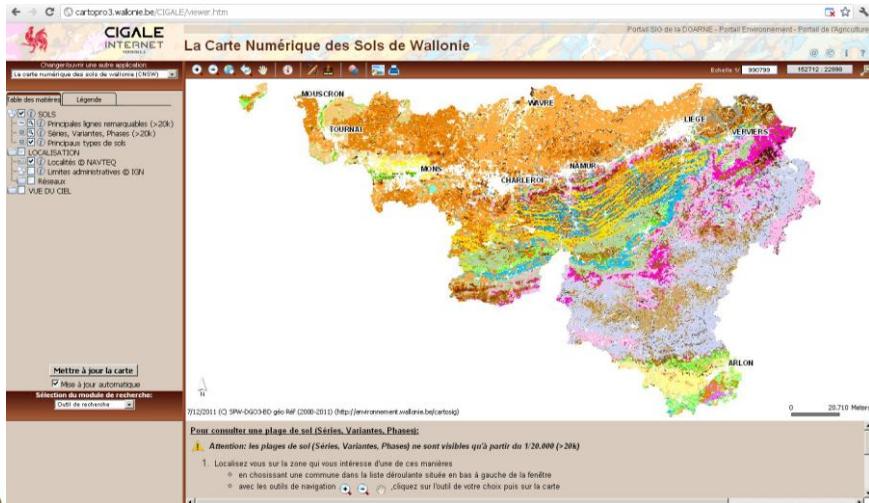


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- Making the soil map more accessible, understandable, usable and useful
 - Web viewer : cartopro3.wallonie.be/CIGALE

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 - New booklets based on physically based zones (compilation, update + **soil organisation model, catena, illustration, regional nuance, ...**)

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 - Formation, vulgarisation field days, ...

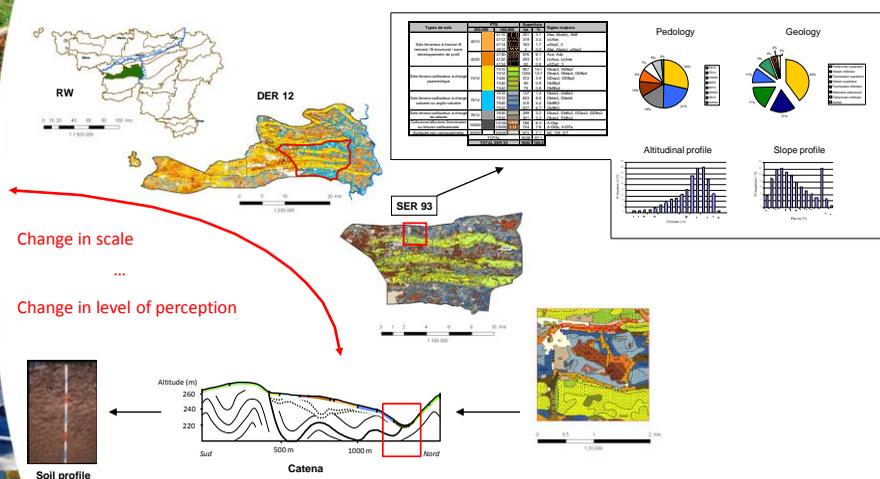
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- Back to the field !
- Thematic revision of the soil map
- Acquisition of new data
- Gathering, archiving and documenting historical documents related to the soil map (from chief cartographers, ...)
- Making the soil map more accessible, understandable, usable and useful
- Toward multi-scale regional Soil Information Systems

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Contribution of the Project



Toward multi-scale regional Soil Information Systems

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Contribution of the Project

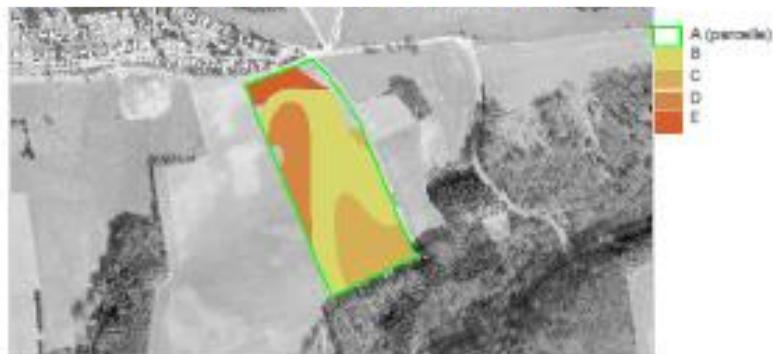
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- Toward multi-scale regional Soil Information Systems
- Collaborations

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La révision de la CNSW

RÉQUASUD → Réquacarto

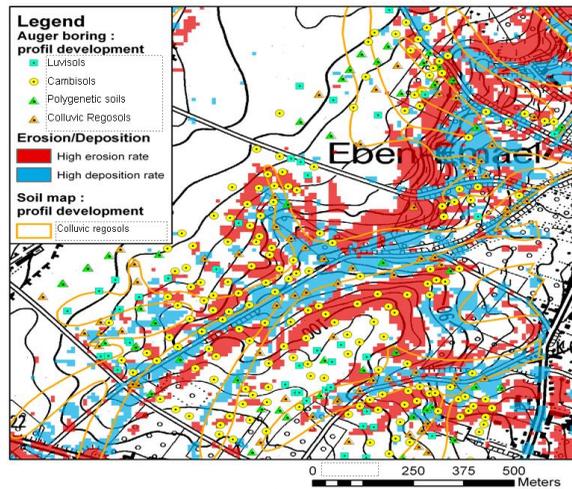
sampling homogeneous zones



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La révision de la CNSW

HHA → USPED model validation



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Thanks for your attention...

... dedicated to the mans who made the map ...

... and to the mans who get it lived ...

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