



INSPIRE a digital Europe: Thinking out of the box

Sustainable management of natural resources and natural capital

Mayenne's soil cartography within everyone's reach with geomayenne.fr!

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Departmental Council of Mayenne - France





- 1. Background
- 2. Soil data sharing
- 3. Use of soil data Conclusion

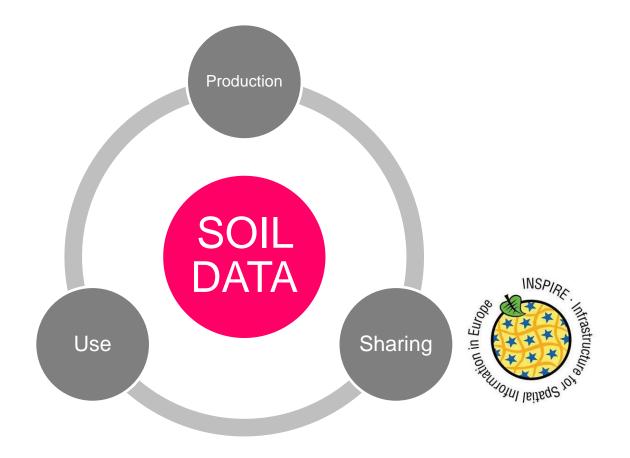
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Introduction

The effects of the INSPIRE Directive on the use of soil data in the department of Mayenne





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1. Background



Mayenne: a department in northwestern France and part of the region of Pays de la Loire



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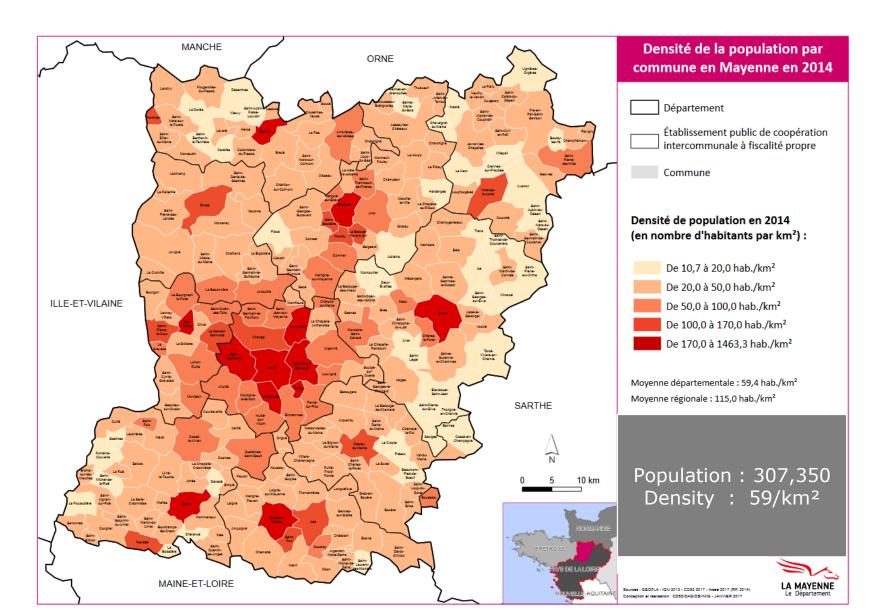
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1. Background

Mayenne: a rural territory, with 76% of land used for agriculture





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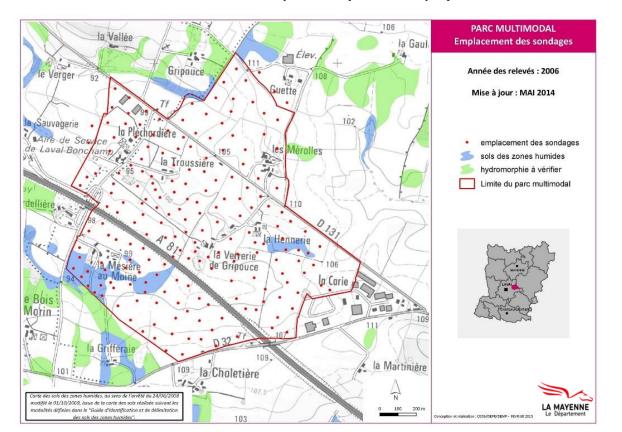
1. Background

Soils: a key factor for both agriculture and environmental management

An ambitious soil survey program at 1:10,000 scale for all the communes of Mayenne!

- 1980 : launch of the soil mapping program by the Departmental Council of Mayenne
- 1987: digitization of maps
- 2016 : full coverage achieved for all the communes of Mayenne (261 maps)

Intensive field observations: 1/ha





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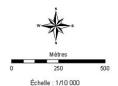
Example of a soil map



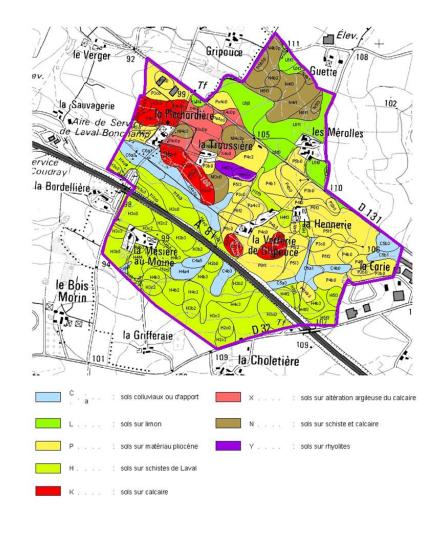
PARC LOGISTIQUE MULTIMODAL LAVAL-MAYENNE

Carte des sols

LÉGENDE Quatre symboles rendent compte du contenu des unités de sols 1) Une lettre majuscule pour la roche-mère 3) Une lettre minuscule pour la succession d'horizons C : Colluvions a : sol peu différencié L : Limon r ranker P : Pliocène b : sol brun Pa: pliocène argileux c : sol brun calcique Ps: pliocène sableux I : sol brun lessivé Pg: pliocène graveleux H : Schistes de Laval f ; sol brun faiblement lessivé K : Calcaire 4) Un chiffre pour la profondeur d'apparition de X : Altération argileuse du calcaire I'hydromorphie N : Schiste et calcaire 0 : sain NI: altération argileuse 1 : quelques taches au-delà de 70 cm Y: Rhyolite 2 : taches au-delà de 50 cm 3 : nombreuses taches au-delà de 30 cm 2) Un chiffre pour la profondeur d'apparition de quelques taches dès la surface l'horizon d'altération 5 : nombreuses taches dès la surface 0 : affleurements 6 : matrice de l'horizon de surface réduite 1 : horizon C apparaissant à moins de 20 cm 2 : horizon C apparaissant entre 20 et 40 cm Critères complémentaires 3 : horizon C apparaissant entre 40 et 60 cm p : galets de quartz 4 : horizon C apparaissant entre 60 et 90 cm y : cailloux de rhyolite 5 : horizon C apparaissant entre 90 et 120 cm x : cailloux de quartz abondants 6 : horizon C apparaissant à plus de 120 cm



Sources : IGN © - SCAN 2006 - CG53 2014 Direction de l'environnement et de la prévention des risques Direction eau, milieux et paysages - FEVRIER 2014





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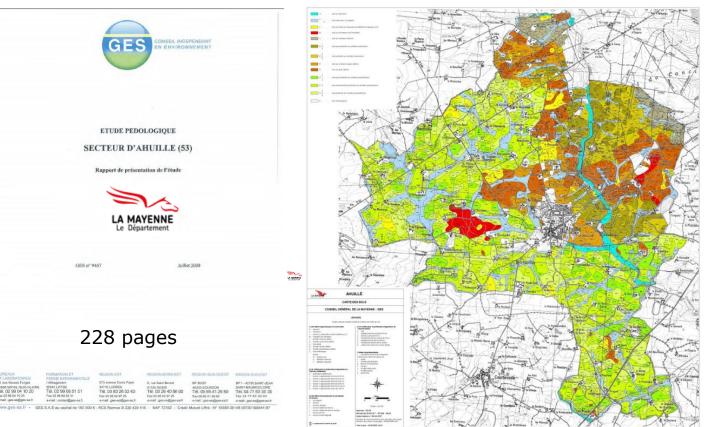
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2. Soil data sharing

From paper...

Printed documents (i.e. maps and reports) led to significant workload and costs



AHUILLÉ CARTE DES SOLS CONSEIL GÉNÉRAL DE LA MAYENNE - GES LÉGENDE [TYPE_SOL] [CRI_COM]



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2. Soil data sharing

... to digital files on geomayenne.fr

https://www.geomayenne.fr/portail/

All documents available online to all stakeholders (private, state agencies, communes, consultants, etc.) since 2015



Maps and reports in the map library



Spatial database of soil properties registered in the catalogue



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2. Soil data sharing

...in accordance with the INSPIRE Directive

Discovery Services



Catalog Service for the Web (CSW)

Etude des sols sur la commune de Beaulieu-sur-Oudon en Mayenne Propriétaire : Département de la Mayenne Mise à jour : 04/04/2017 cartes pédologiques ♦ cd53 ♦ beaulieu-sur-oudon ♦ grand public ♦ mayenne ₹ XML Télécharger Lien et Ressources 💂 ♀ Zone géographique Résumé Etude des sols réalisée sur la commune de Beaulieu-sur-Oudon située dans le département de la Mayenne - PROGRAMME 2001- bureau d'études GES materique de la donnée ■ Attributs (9) ■ Conditions d'accès et d'utilisation (1) △ Limitations (1) Informations techniques P Qualité (1) Contacts (1)



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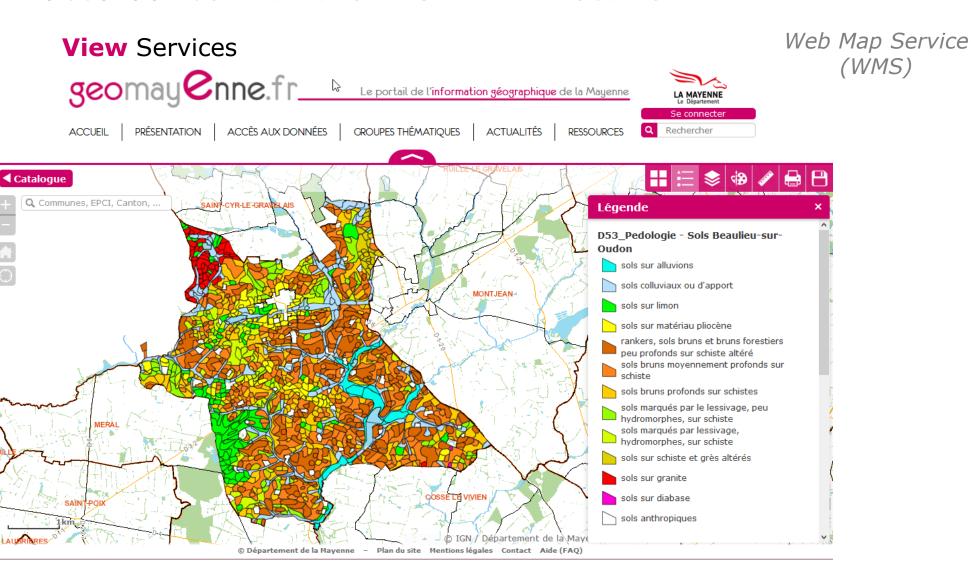
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2. Soil data sharing

...in accordance with the INSPIRE Directive





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2. Soil data sharing

...in accordance with the INSPIRE Directive

Download Services

Panier de téléchargement X Cette donnée a bien été ajoutée à votre panier de téléchargement Continuer la navigation Accéder au panier de téléchargement Panier de téléchargement × X Etude des sols sur la commune de Beaulieu-sur-Oudon en Mayenne Format Vecteur Shapefile - SHP V Système de projection Fougeres ¥ RGF93 LAMBERT 93 Zone d'extraction : Téléchargement complet O Extraction sur le territoire d'un EPCI O Extraction par emprise dessinée En cochant cette case, vous acceptez les conditions d'utilisation Vider le panier Lancer le téléchargement Fermer

Web Feature Service (WFS)



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3. Use of soil data (1)

Increasing the use of soil data

Over time, the use of soil data has been diversified and intensified due to the strengthening of French environmental regulation.

<u>geomayenne.fr</u> enhances a better knowledge of Mayenne's soils properties to address the increasing environmental issues :

- drainage
- irrigation
- fertilization
- water quality
- application of organic effluents
- species choice for reforestation
- wetlands
- urban planning
- land development...



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3. Use of soil data (2)

For agriculture

Useful information for:

- The settlement of young farmers (e.g.: control of soil performance and potential, redrawing of plots, facilitating crop management sequence...)
- The control of agricultural practices and fertilization (e.g.: knowledge of ability to store nutrients, water-holding capacity, depth, etc.)



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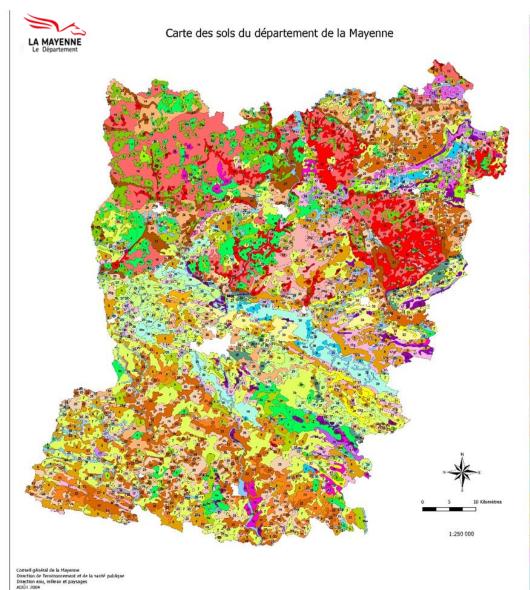
Conclusion

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Simplified soil map of Mayenne



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- 2. Soil data sharing
- 3. Use of soil data

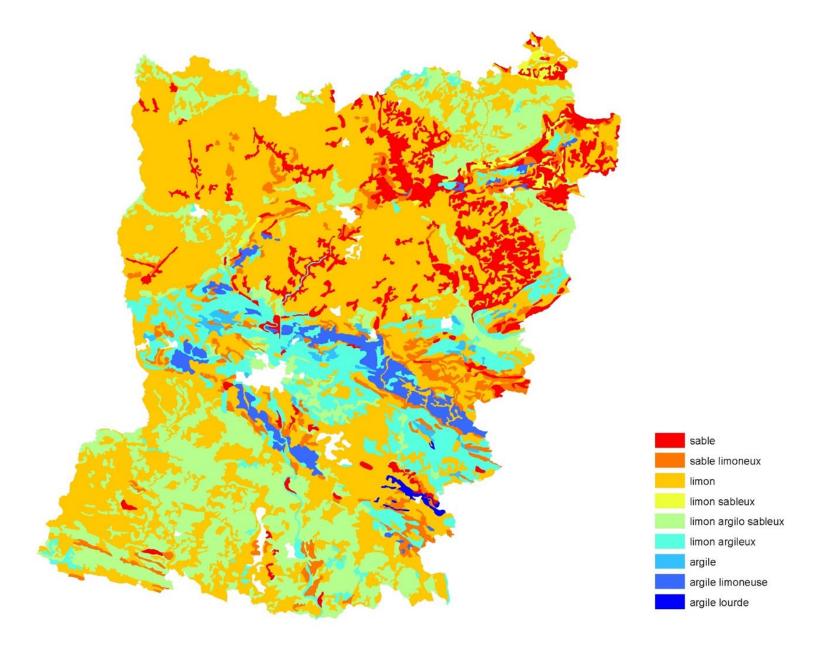
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Soil texture





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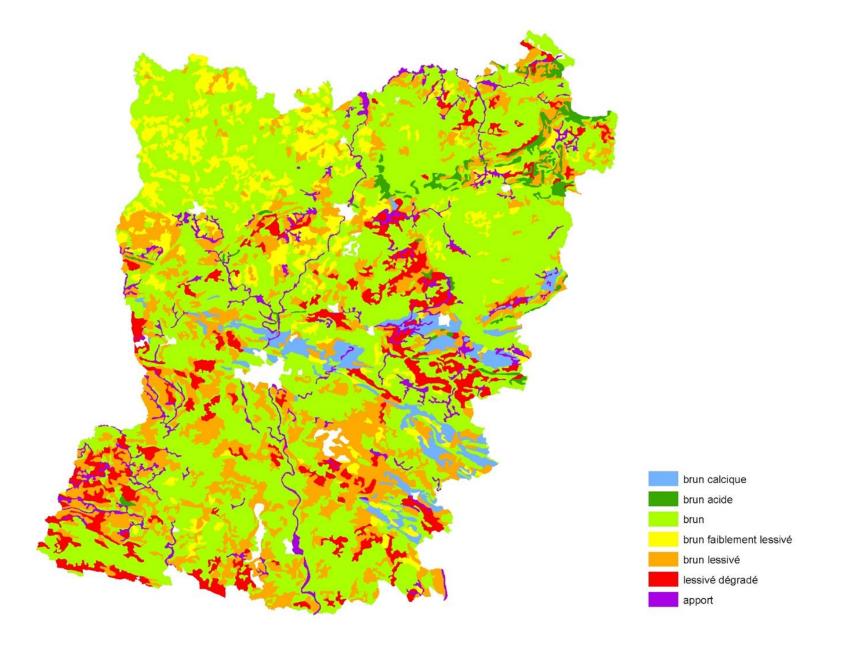
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Soil types





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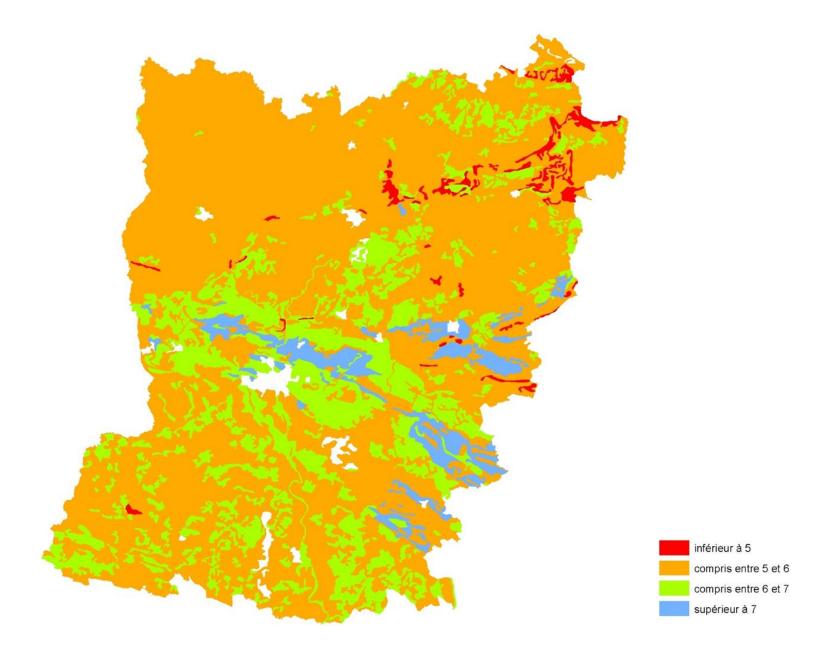
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Soil pH





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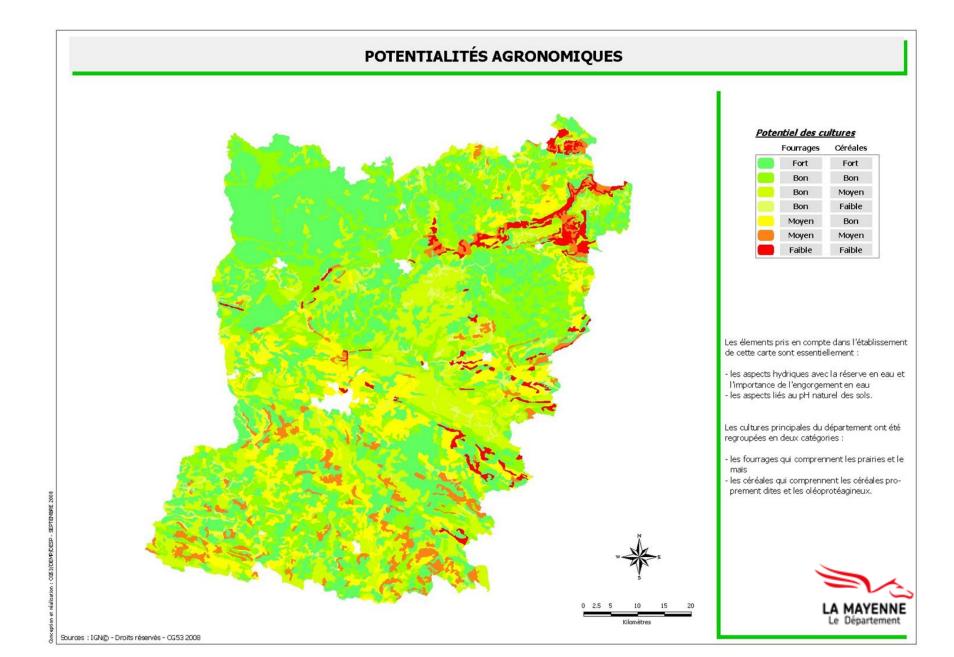
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Agricultural potential





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3. Use of soil data (3)

For the management of effluent application

Useful information for:

- Meeting regulatory requirements for effluent application in agriculture
- Protecting water resources from pollutant transfer



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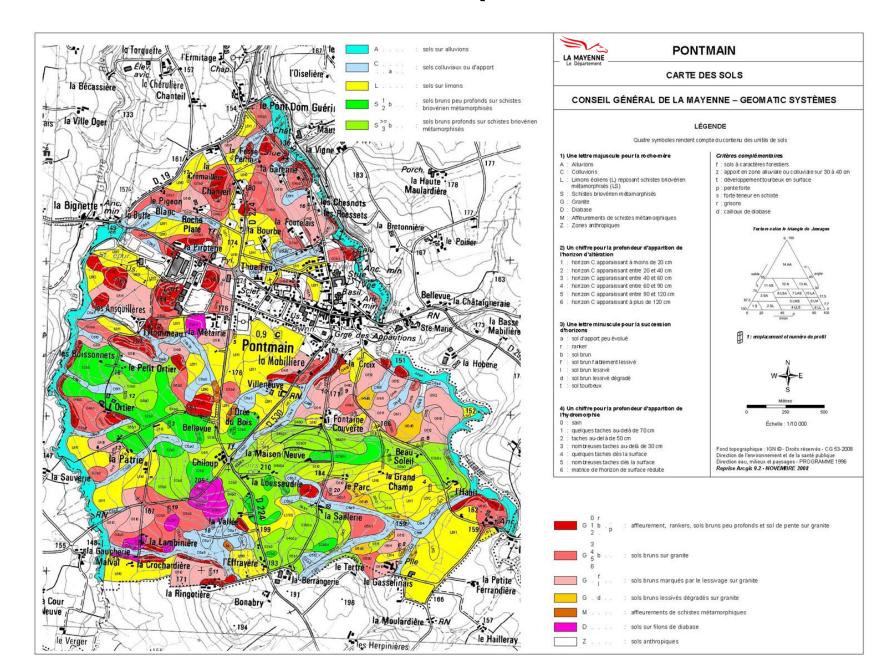
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Soil map





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Effluent management



PONTMAIN Aptitude des sols à l'épandage d'effluents

Seul le critère sol est utilisé pour l'établissement de cette carte.

Les aspects règlementaires (R.S.D., I.C., Directive nitrate, etc...) doivent être pris en compte pour connaître les possibilités réelles d'épandage.

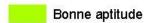


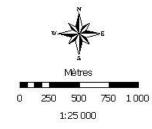


Épandage possible en période de déficit hydrique et en automne sur prairie après drainage

Aptitude moyenne

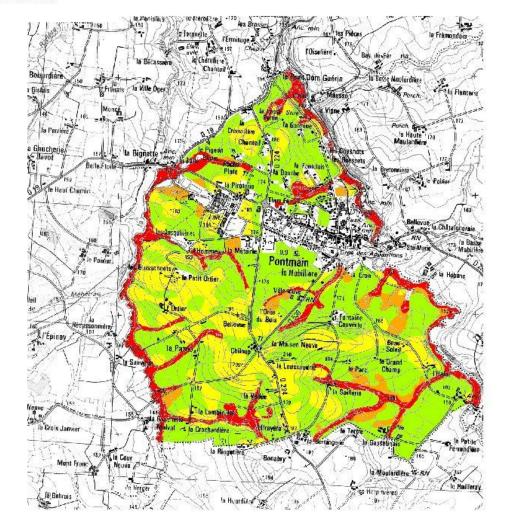
Épandage possible sur prairie et en période de déficit hydrique sur culture





Fond topographique : IGN @- Droits réservés - CG 53-2008 Direction de l'environnement et de la santé publique Direction eau, milieux et paysages - PROGRAMME 1996

Reprise Arcais 9.2 - NOVEMBRE 2008





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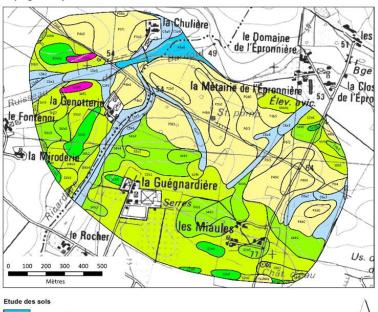
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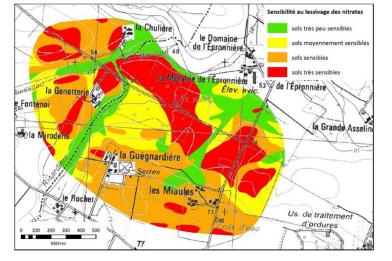


Drinking water source area

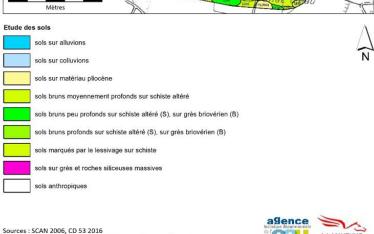
Captage de l'Épronnière - SIAEP de LIVRÉ-LA-TOUCHE

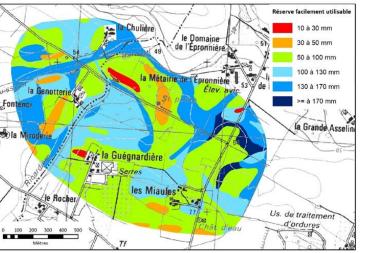
Conception et réalisation : DEPR/DEMP - ATD'EAU53 - FÉVRIER 2016





Sensitivity to nitrate leaching





Readily available water capacity



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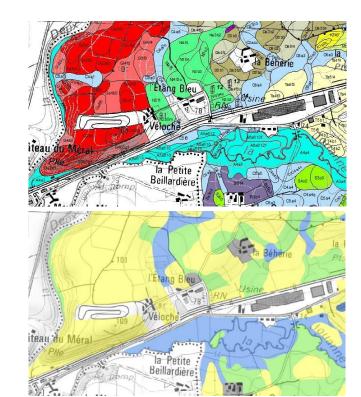


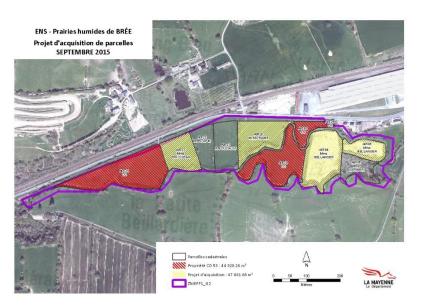
3. Use of soil data (4)

For land development

Useful information for:

- Choosing reference parcels for land classification (e.g.: high-speed rail project, road construction,...)
- Locating and adapting compensatory measures.







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3. Use of soil data (5)

For the identification of wetlands areas

Useful information for:

- Identification of wetlands within the framework of the French Water Framework Law of 2006
- Zoning in urban planning for the local governments
- Environmental assessment for spatial planning or land management



Identifier les zones humides et les prendre en compte dans les documents d'urbanisme



Classification de l'hydromorphie des cartes pédologiques du Conseil Général	Correspondance avec l'arrêté du 24 juin 2008 modifié
pas de traces d'hydromorphie traces d'hydromorphie peu intense traces d'hydromorphie d'intensité moyenne traces d'hydromorphie d'intensité moyenne à forte	Zone non humide
4 - traces d'hydromorphie de forte intensité	Secteur à expertiser
 5 - hydromorphie marquée dès la surface mais la réduction n'affecte pas 50% de la matrice 6 - hydromorphie marquée dès la surface et la réduction affecte plus de 50% de la matrice 	Zone humide



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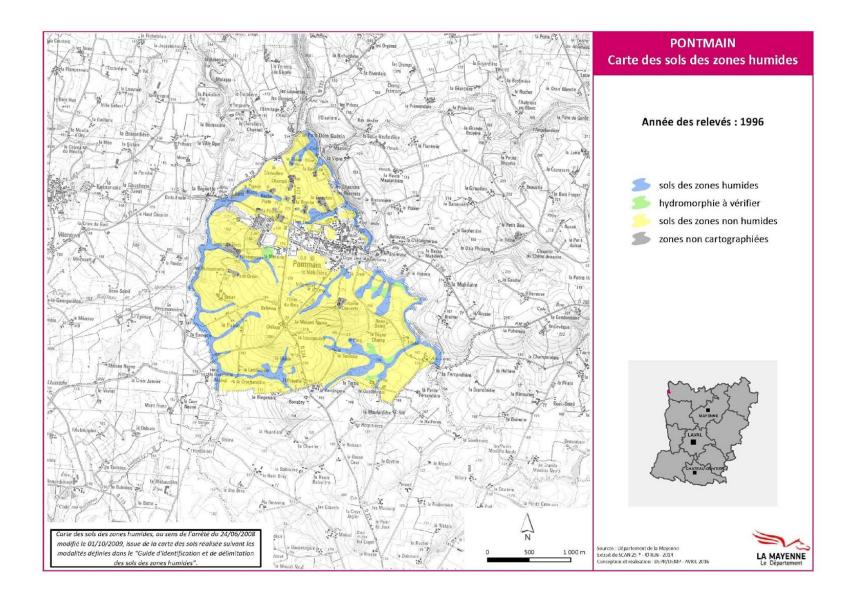
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Wetland soils





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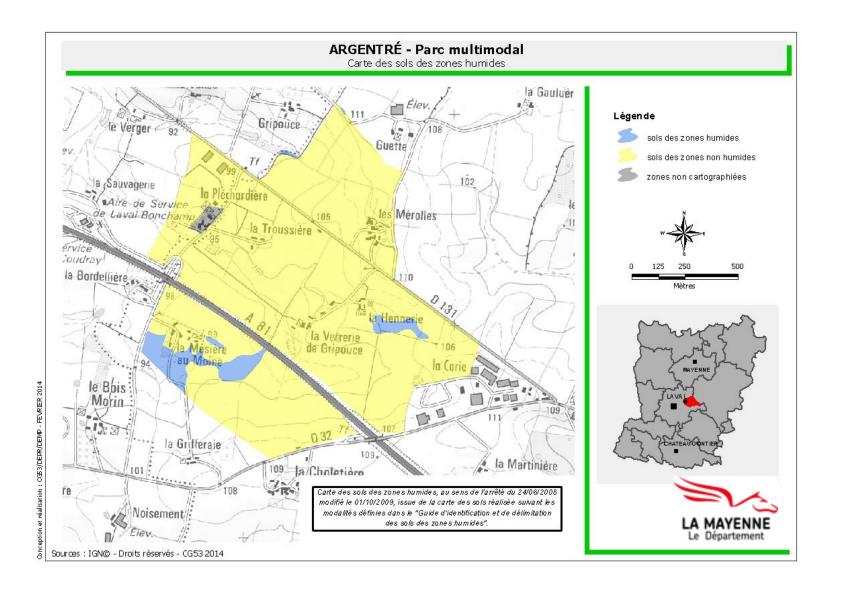
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Wetland soils





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Conclusion

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Conclusion

Soil is an essential element of sustainable development, considering all the services it renders to us:

- food or energy production
- regulation
- storage of water or carbon
- water purification
- reservoir of biodiversity

Soil data also provides important information to address increasing environmental issues.

Soil misuse leads to unavoidable disorders and costs for the coming generations.

Public dissemination of soil data therefore makes sense to promote the **environmental protection**!

However, the use and interpretation of soil data may require technical expertise for complex analysis.





Thank you for your attention...

Any question ?

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