



Urban Geochemical Background (UGB project) and the French database for urban soils analyses (BDSolU)

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Context

- > **Urban soils: poorly known**
- > **No soil guidance values in France**
- > **Compare (potentially) contaminated soils**
 - to uncontaminated neighbour soils
 - to the geochemical background.
- > **Need of data to determine geochemical background**

Determination of Urban and Industrial pedo-geochemical backgrounds (UGB project)

> 2 agreements ADEME-BRGM

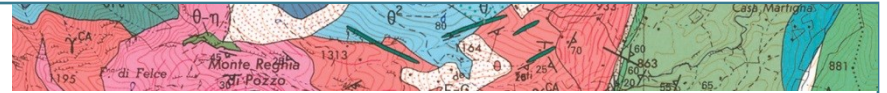
> 2010-2014

- Determination of anthropic pedo-geochemical background in the main French urban areas
- based on data collected during the national campaign of soil diagnoses on schools located on former industrial sites
- Driver : Management of (potentially) contaminated sites

> 2014-2017

- Extended objectives: Assessment of urban soil and subsoil geochemical quality to meet also other stakeholders needs, mainly to enhance excavated soil reuse
- Development of the Urban Soil Analyses Database: **BDSolU**





Results

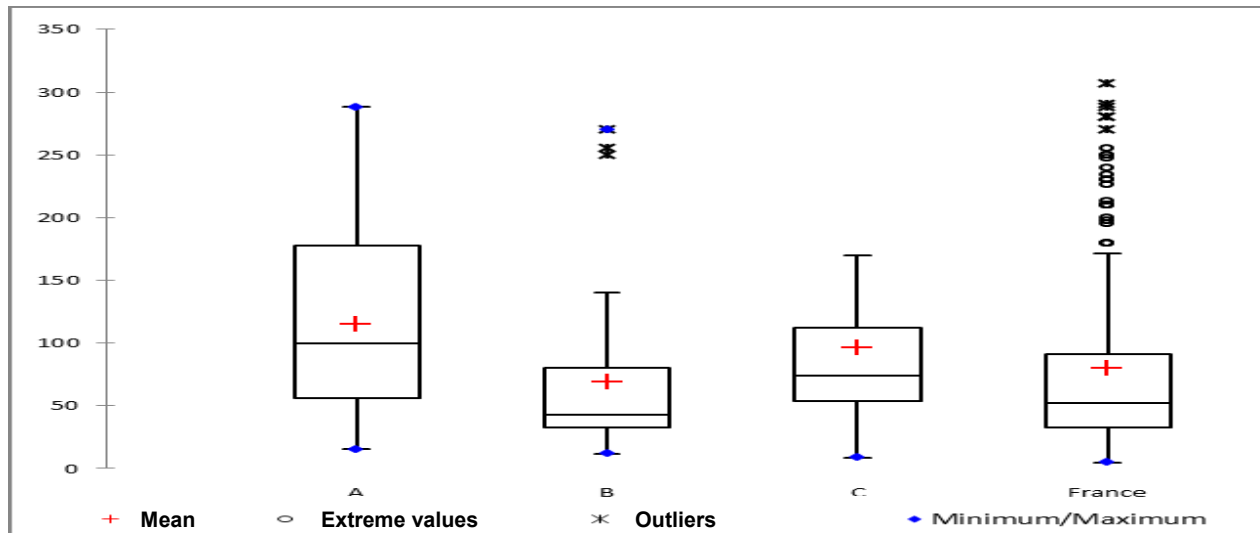


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The example of lead for 3 urban areas

Pb mg/kg	A	B	C	France
Available results	30	49	28	425
Maximum	288,1	270,0	410,0	720,0
Upper whisker	288,1	140,0	170,0	171,4
90 ^e percentile	213,5	131,0	170,0	165,0
Median	99,0	43,0	73,0	52,0
Mean	115,1	68,8	95,6	79,8
10 ^e percentile	24,0	22,8	40,4	22,0
Minimum	15,3	12,0	8,7	5,0



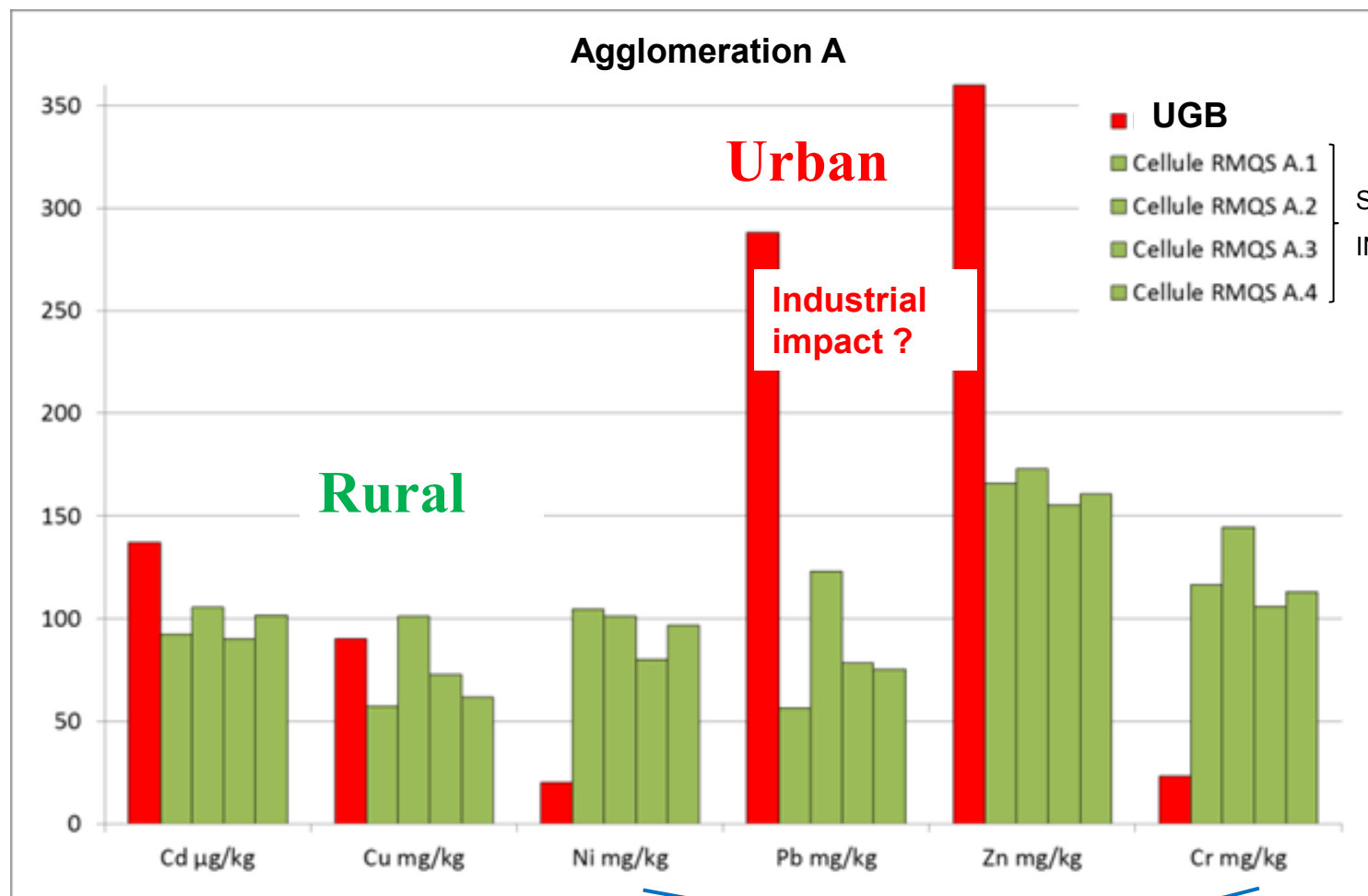
Local backgrounds more relevant than a national one



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Urban vs rural data



Source:
INRA-Infosol

Sample
preparation ?

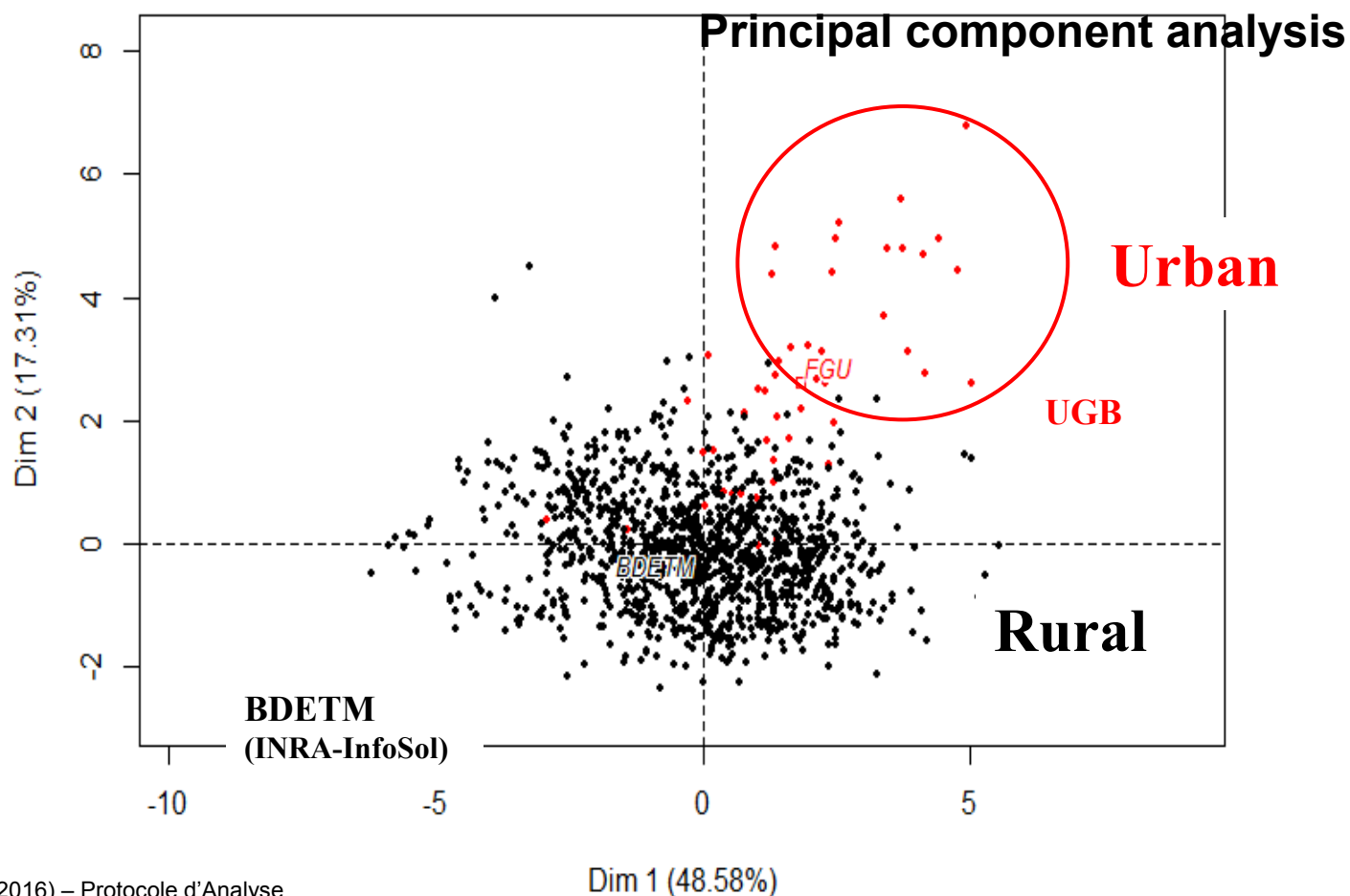


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Urban vs rural data : same sample preparation

Aqua regia mineralization

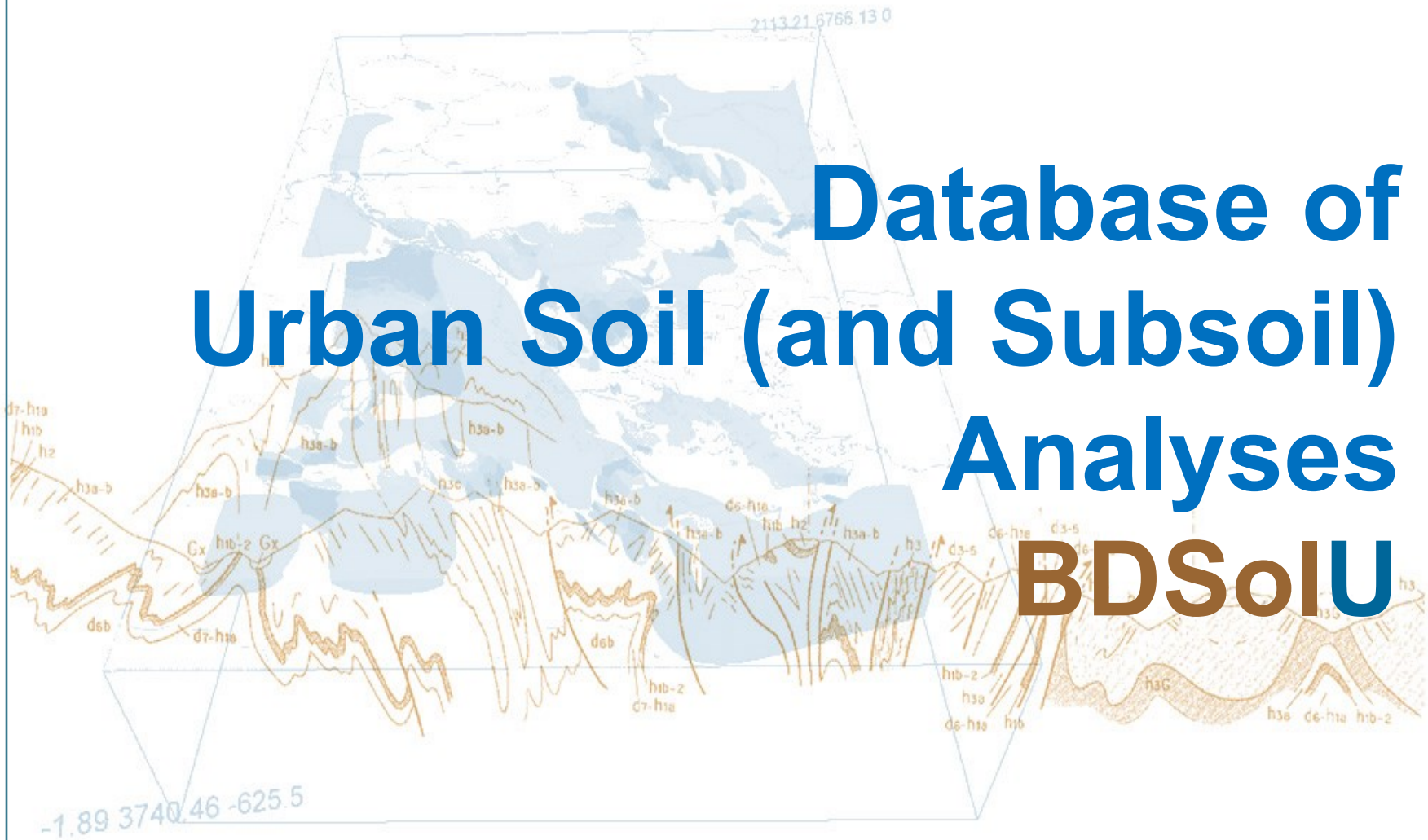


Sancho L. (2016) – Protocole d'Analyse Statistique pour la construction d'un Fond Pédologique-Géochimique Anthropisé des Sols Urbains.
Rapport final. BRGM/RP-66501-FR, 118 p., 12 tab., 23 fig., 3 ann.

**Different geochemical backgrounds
between urban and rural areas
Need of more urban data**



Database of Urban Soil (and Subsoil) Analyses BDSolU

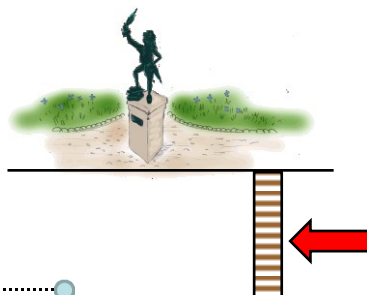


BDSolU: metadata about

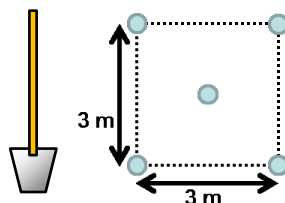
- Sampling location



- Sampling method/depth

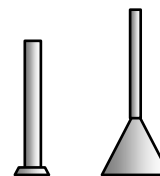


- Sample
Unique/composite

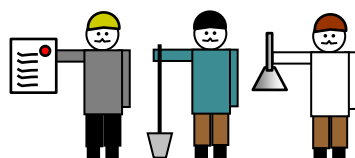


In addition to analytical results

- Sample preparation and analytical method



- Stakeholders



BDSolU

- Uses known standards



European Environment Agency



ISO/FDIS 18400-107 – Soil quality – Sampling
Part 107 : Recording and Reporting

- Ensures consistency with existing database



BSS

Banque de données du sol et du sous-sol

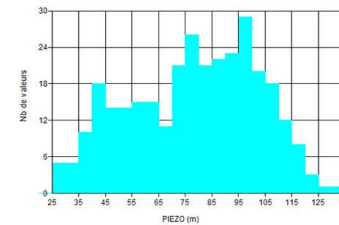
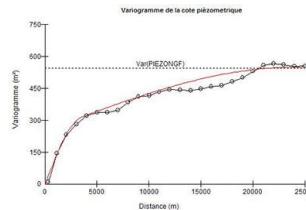
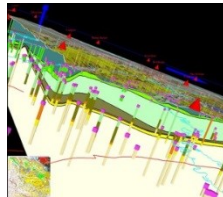


Inventaire historique de sites industriels
et activités de service



Inspection des installations classées S3IC

- Allows data interpretation with 3D GDM software



- Will follow the INSPIRE Directive requirements (formalization, interoperability, diffusion)



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Feeding BDSolU

ACCUEIL | ACTUALITES | Rechercher

BDSolU

BASE DE DONNÉES DES ANALYSES DE SOLS URBAINS

BRGM Géosciences pour une Terre durable

ADEME

PROJET | BDSOLU | BANCARISATION | EN SAVOIR PLUS

REALISATION

Porté par l'ADEME et le BRGM :

un projet de bancarisation des analyses de sols urbains

Découvrir...

Mieux connaître les sols urbains

La base de données BDSolU des analyses de sols urbains contient des analyses chimiques de sols prélevés en milieu urbain et les informations qui servent à décrire ces prélèvements. BdSolU est développée par le BRGM dans le cadre d'une convention de recherche avec l'ADEME.

Les données recueillies améliorent la connaissance de la qualité géochimique des sols en milieu urbain et des valeurs du fond géochimique anthropisé. Ce site Internet présente le projet et permet la bancarisation en ligne des analyses de sols produites par les fournisseurs déclarés.

Toutes les actualités

21/03/2017
Mise en ligne du site internet BDSolU

Toutes les actualités

Le Projet

La base de données BDSolU

Bancarisation

PROJET	BDSOLU	BANCARISATION	EN SAVOIR PLUS
Le Projet BDSolU Origine Réalisation Perspectives	Objets Construction Alimentation	Bancariser Déposer un bordereau	Résultats Les actions en cours

Nous contacter | Mentions légales / Crédits | Conditions générales d'utilisation

Flux RSS

- A dedicated website presents
 - UGB project framework
 - the « Geochemical Background » ADEME Working Group,

www.BDSolU.fr

(in french only)

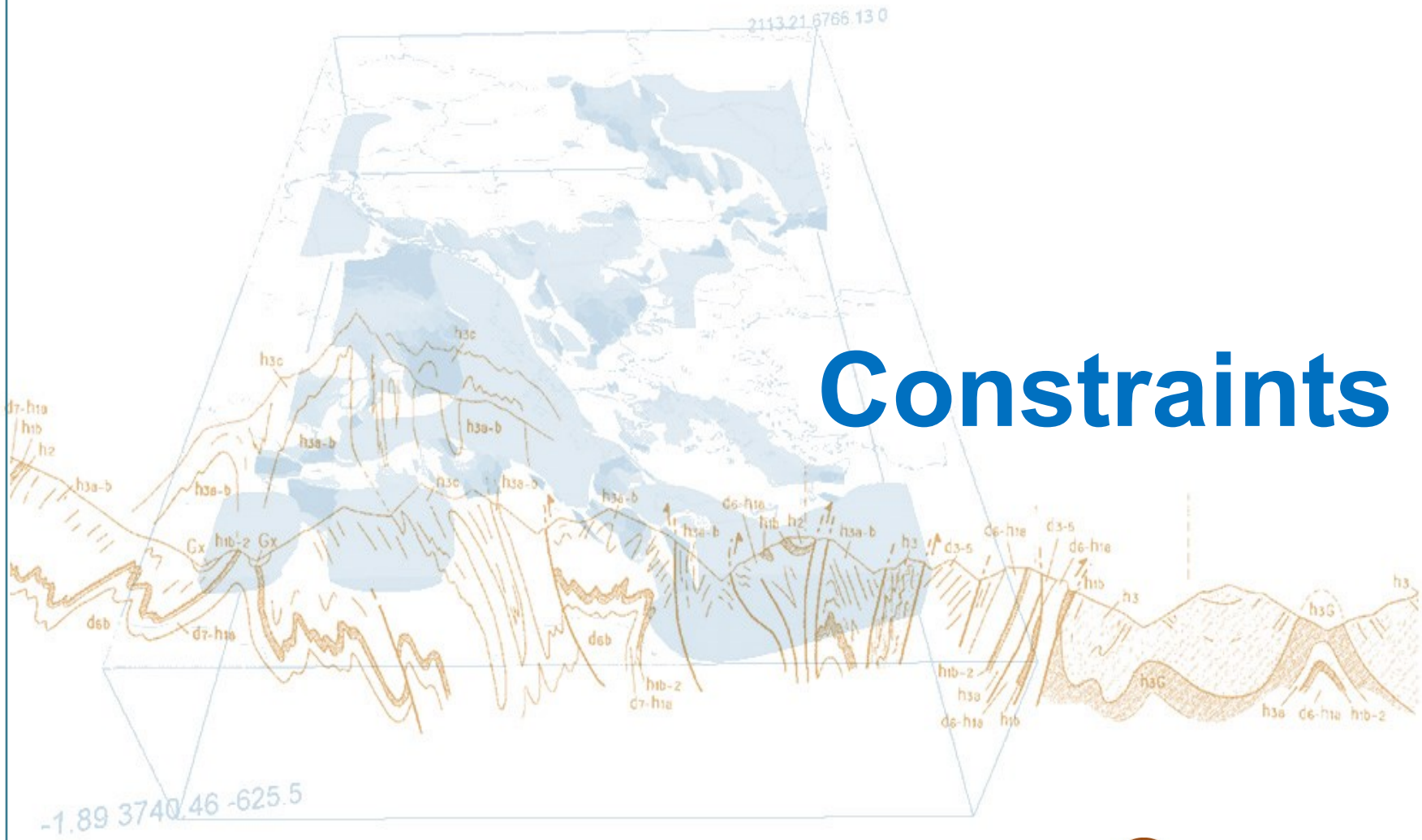
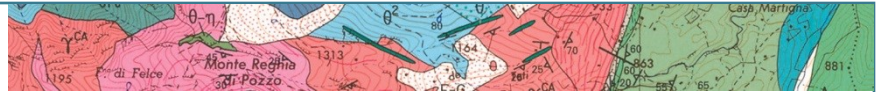
- Spreadsheets containing soil analyses are uploaded by data owners

BDSolU goals

BDSolU aims to offer a better knowledge of soil (and subsoil) quality in towns in order to help urban stakeholders to deal with:

- Diagnoses of (potentially) contaminated soils
- Excavated soils management
- Urban planning
- Health protection
- Impact studies
- State of play
- Post-accident reviews





Constraints



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Technical constraints

- Industrial waste fillings (potentially) containing metals, hydrocarbons are often found in urban soils
- Important spatial variability of concentration over short distances
- Heterogeneous data originating from several suppliers or studies complicate interpretation



Technical constraints

Statistical treatment should be adapted to:

- A small number of available analyses according to the spatial scale chosen
- High rate of values below quantification limits

Compounds Family	Rate of values below quantification limit (%)	
	Min	Max
Metals/metalloid	0	40
HAP	8	88
PCDD/PCDF	4	95
PCBi	75	99
Aliphatic Hydrocarbons TPHW	93	100
Aromatic Hydrocarbons TPHW	95	100

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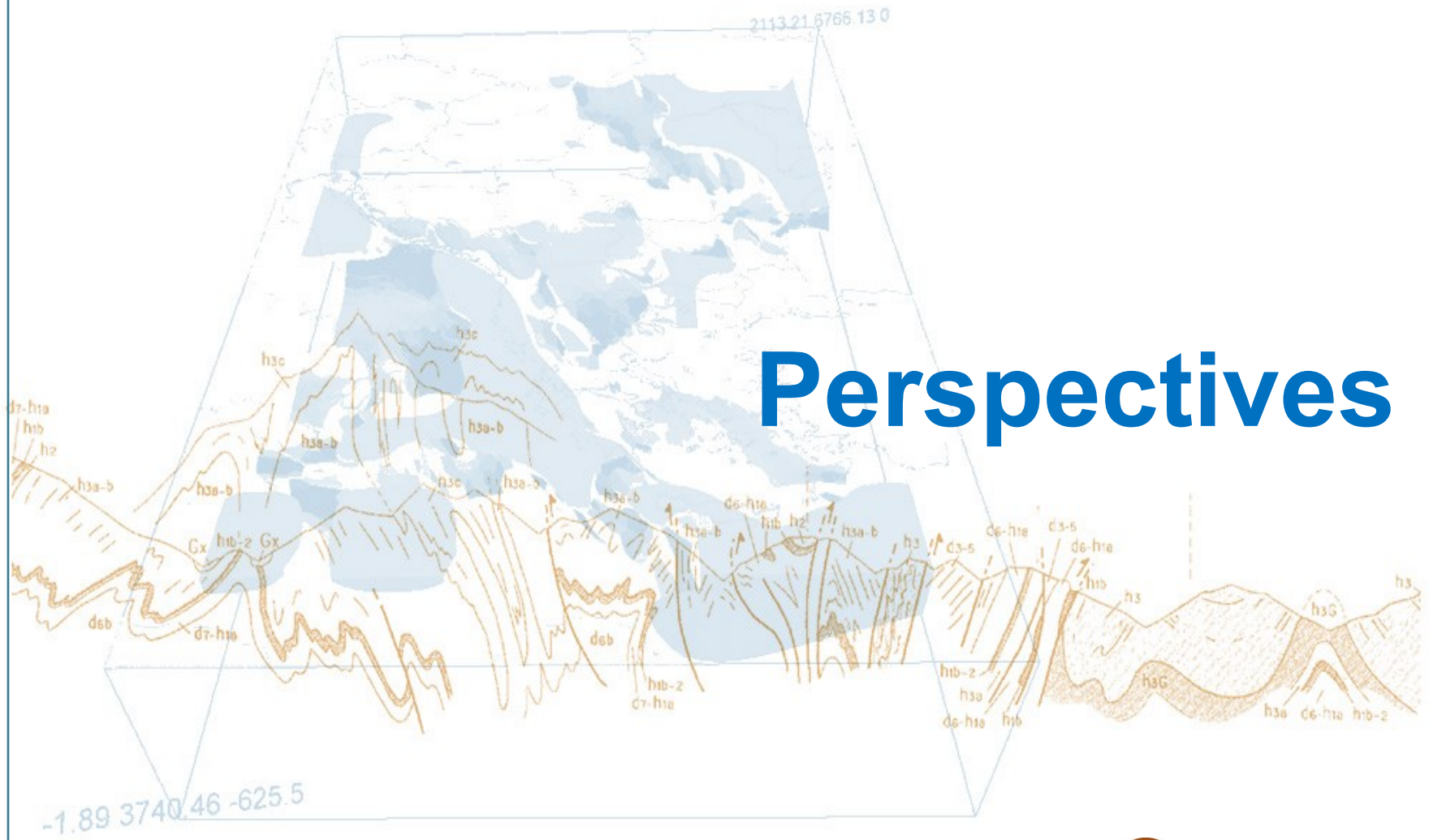
Compounds Family	Substance	Population	Rate of values below quantification limit (%)
Metals/metalloid	Arsenic	30	10
Metals/metalloid	Lead	30	0
Metals/metalloid	Cadmium	30	30
HAP	Acenaphtylen	30	80
PCBi	PCB#138	30	70
PCDD	1,2,3,7,8,9-HxCDD	12	42
PCDF	2,3,7,8-TCDF	12	33
PCDF	OCDF	12	17

Engaging partnerships

Adapted agreements have to be proposed to each data owner wishing to contribute to **BDSolU**.

Detailed rules must be found for:

- the feeding of **BDSolU** (duration, data volume and nature...)
- Data use and dissemination



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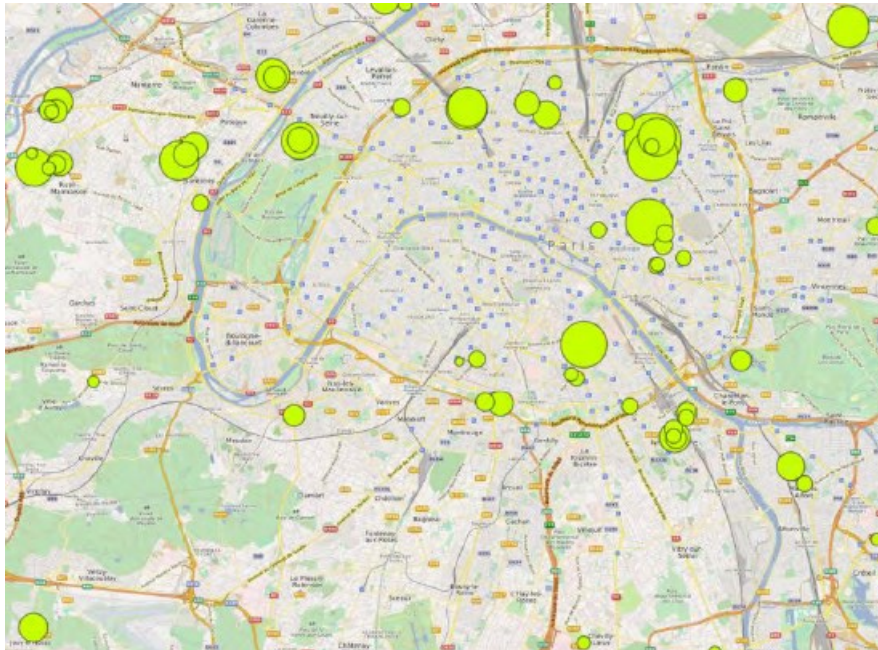
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Perspectives for **BDSolU** feeding

- Data from (re)development of neighborhoods and local geochemical backgrounds determination with the help of BRGM
- Implementation of the methods advocated by the WG in a test city (Toulouse) with the support of the Ministry for ecological and solidarity Transition
- Participation to national projects GEOBAPA and MATRICE
- Partnerships with public data owners: e.g. municipalities/agglomerations

Perspectives for **BDSolU** development

- Dissemination of public data online
- Valuation of data with GIS and statistical/geostatistical treatment
- Development of an interactive online interface for querying database





Thank you for your attention

BDSolU@brgm.fr



26–30 June 2017 | Lyon, France | www.aquaconsoil.org

