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## Is there a role of EU national soil data organizations in contributing to EUSO? The French example

Antonio Bispo, Christine Le Bas

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# Is there a role of EU national soil data organizations in contributing to EUSO? The French example

Antonio Bispo and Christine Le Bas, INRAE  
on the behalf of GIS Sol



# GIS Sol a Scientific Interest Group on soils dedicated to collect, use and give access to soil data in France

- **Participants:**

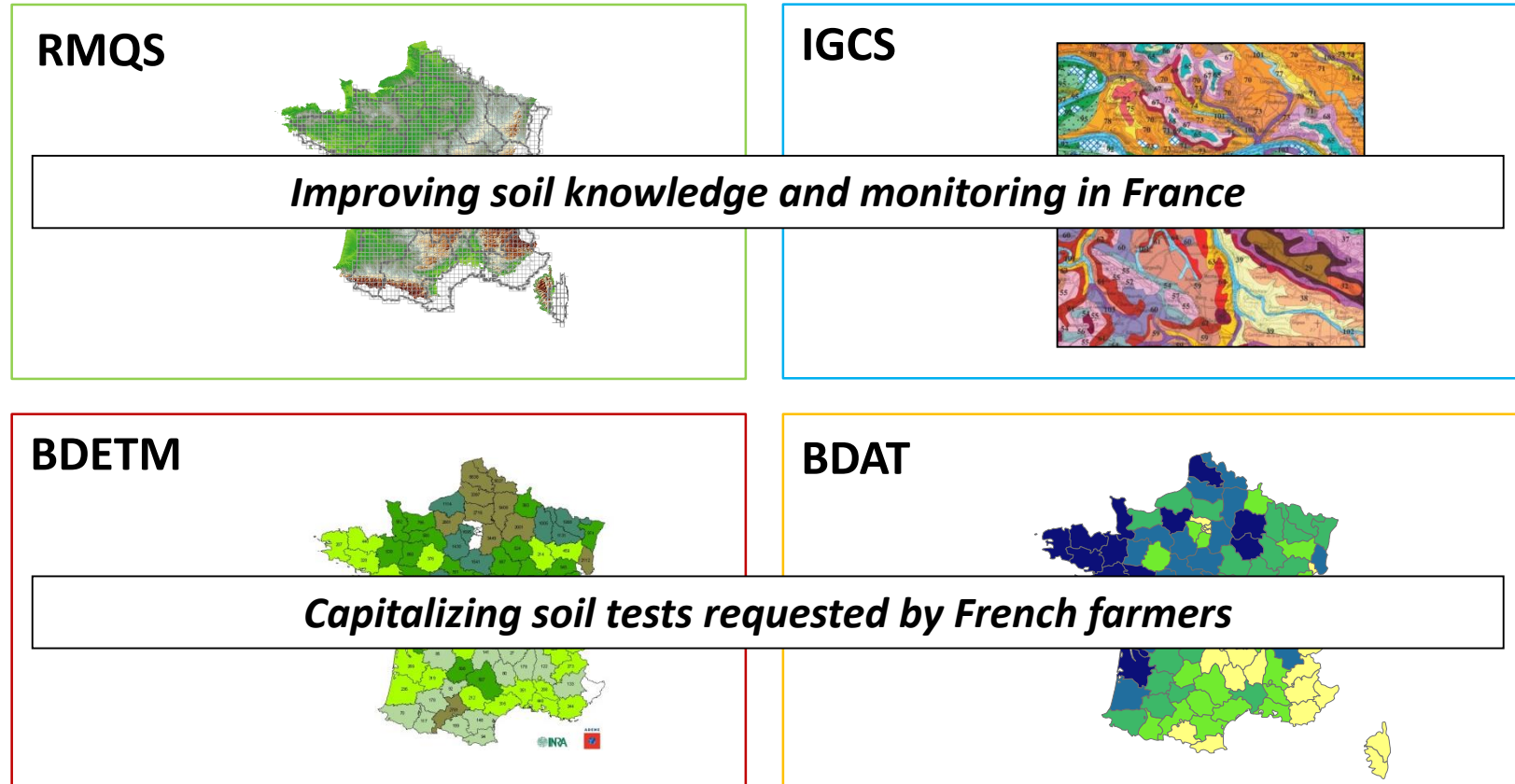
- 2 ministries (Agriculture and Environment),
- 2 national agencies (Environment and Biodiversity)
- 4 research institutes (INRAE, IRD, IGN and BRGM)
- INRAE InfoSol: coordination of programs and databases

- **Main aims:**

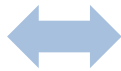
- Survey and monitor French soils
- Organize and store soil samples and soil information
- Give access to soil information and samples
- Support public policies



# Four main soil survey and monitoring programmes



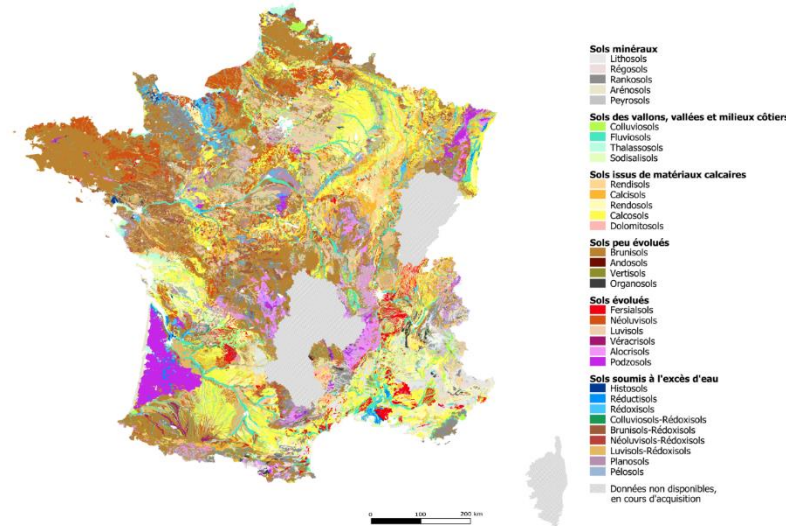
**BDSolU**  
On going  
(urban soil data)



# Main soil databases – IGCS

- **Soil mapping database**

- Identify, describe and locate soil types across France
- Develop databases and maps (based on existing data on soil profiles and on new soil sampling campaigns)
- Mainly “classical soil” parameters as C, pH, texture...
- Several scales (from national to field, finishing the 1:250000 scale)
- Lots of possible uses (e.g. food production, less favoured areas for CAP, water protection, land use planning, biodiversity)



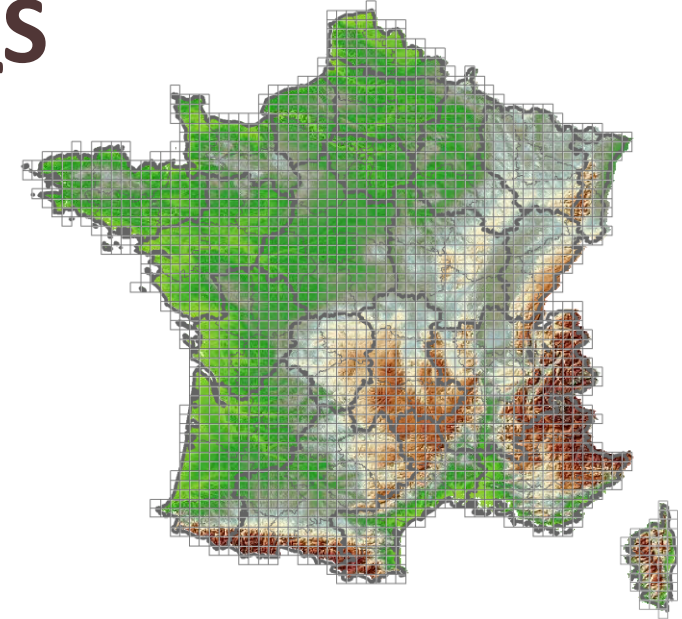
- **Data ownership**

- INRAE owns part of the data
- Regional/Local public/private partners also developed databases and maps with the support of the Ministry of Agriculture
- A common procedure and a database were developed by INRAE-InfoSol (information is gathered, harmonized and quality control is ensured)
- InfoSol may use the partners' data for public policies at national scale but for local requests/applications, the owner of the database remains the contact point.

# Main soil databases – RMQS

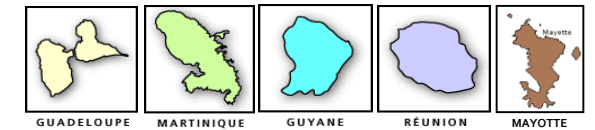
- **Soil monitoring database**

- Describes the status of French soils and monitor their evolution
- Samples are taken every 15 years on more than 2 000 georeferenced sites (16kmx16 km grid)
- “Classical soil” parameters as C, pH, texture... and also contamination data (e.g. trace elements, organic contaminants), biodiversity
- 100% of the financial support is coming from the GIS Sol (public bodies)



- **Data ownership and access**

- **Public support**
- Contracts are made with the public/private partners (call for tenders) for soil sampling and description, collecting soil management data
- Contractors follow a handbook and INRAE InfoSol controls them regularly
- Data gathered in the national database
- Point data can be seen as personal data (GDPR regulation). Data available on open repository but with theoretical coordinates.
- Results of data analysis are accessible



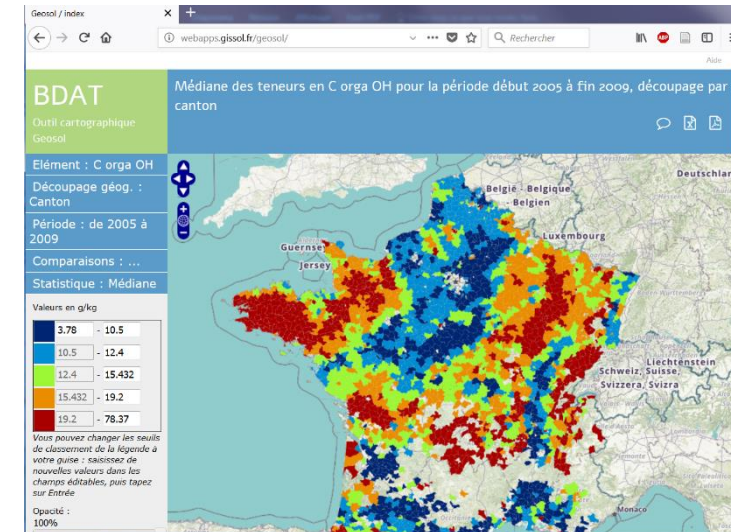
# Main soil databases – Soil test results (BDAT/BDETM)

- **Soil tests databases**

- Soil tests are requested by farmers, agricultural corporations, to manage soil fertility (around 250 000 / year), to deal with sewage sludges spreading...
- Analyses are made by referenced labs
- With the funds of the French Ministry of Agriculture we recover the analyses (without the georeferenced information)
- We collect, store and analyze the data since 2000 at national scale

- **Data ownership and access**

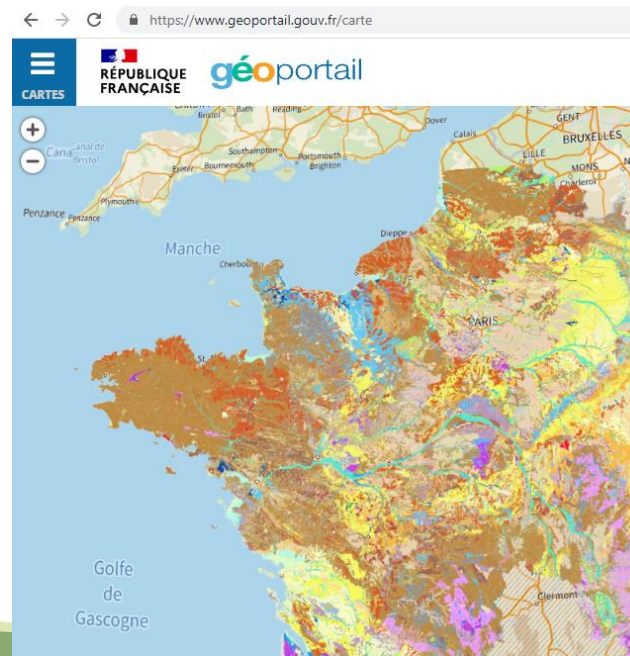
- Analytical labs should inform their clients (owners / farmers / corporations...) that data may be reused for another purpose
- Laboratories do not want the raw data to be downloadable... (GDPR regulation + unfair competition)
- Only results of the data aggregation are made available



# Public access to soil data/information

- GIS Sol website: <https://www.gissol.fr>
- Access to data/maps/statistics:
  - National geoportal: <https://www.geoportail.gouv.fr/carte>
  - INRAE geoserver: <https://agroenvgeo.data.inrae.fr/>
  - BDAT portal: <https://webapps.gissol.fr/geosol/>
  - Dataverse: <https://data.inrae.fr>
  - BDSolU: <http://www.bdsolu.fr/>

The screenshot shows the INRAE Geoportal search results for 'Manganèse échangeable'. The left sidebar contains filters for 'TYPE DE RESSOURCE', 'THEMES', 'MOTS-CLES', 'CONTACT DE LA RESSOURCE', 'FOURNI PAR', 'ANNÉES', 'FORMATS', and 'TYPES DE REPRÉSENTATION'. The main content area displays several map thumbnails with titles like 'Cartogramme des teneurs en Manganèse échangeable' and 'Carte des teneurs en Bore extractible par canton'. Each thumbnail includes a brief description of the data source and a 'Visualiser' button.



The screenshot shows the GIS Sol website homepage. The header includes the GIS Sol logo and the tagline 'Partageons la connaissance des sols'. The navigation menu includes 'PRÉSENTATION', 'THÉMATIQUES', 'DONNÉES', 'OUTILS', 'PUBLICATIONS', and 'ÉVÉNEMENTS'. The main content area features a large banner for 'En 2021, le Gis Sol fête ses 20 ans avec trois événements' and several smaller images related to soil science, such as 'Carbone et matières organiques des sols', 'Erosion des sols', 'Propriétés des sols de France', and 'Thématiques'.

The screenshot shows the Dataverse website interface. The main content area displays a dataset titled 'Seuils de détection d'anomalies pour 8 éléments traces métalliques (RMQS)'. The dataset is provided by 'GisSol' and 'INRA - Institut National de la Recherche Agronomique'. The page includes a 'Metrics' section showing '1,623 Downloads' and a 'Contact' button. The dataset description includes the authors 'Sabty, Nicolas; Villanneau, E.; Toutain, B.; Arrouays, D.' and the year '2019'. The dataset is available in 'Version 1.1'.

# May the data/information be shared with EUSO?

Database	Ownership	Accessibility* of the (point) data	Accessibility* of the results, maps, statistics
IGCS-Soil mapping	Multiple (public and private bodies)	No for the point data	Yes for INRAE, partly for others following owners rules
RMQS-Soil monitoring	Public	Accessible with theoretical coordinates only (webservices)	Yes
Soil tests- BDAT/BDETM	Multiple (public and private bodies)	No	Yes for consultation, No for download (BDAT)

\*Open data

# Conclusion

- **Soil data in France**
  - Several databases, all managed / harmonized by INRAE concerning agricultural and forest soils (for industrial, polluted and urban soils, databases are managed by BRGM)
  - Except for the monitoring program, we are facing a multiple ownership of soil data
  - Point data are considered as personal data (not easy to share !)
- **What can be shared and how?**
  - Results/statistics can be shared in open data (e.g. GSOC map for FAO, statistics for French soils)
  - Other data accesses (e.g. point data) will require a decision at country level (e.g. GIS Sol)
  - Present data are currently accessible by web services and we are working on data sharing using semantic web technologies
- **Suggestions:**
  - Countries may be involved in the sharing of EU products (at least regarding their country)
  - EUSO may become a hub to access to national data