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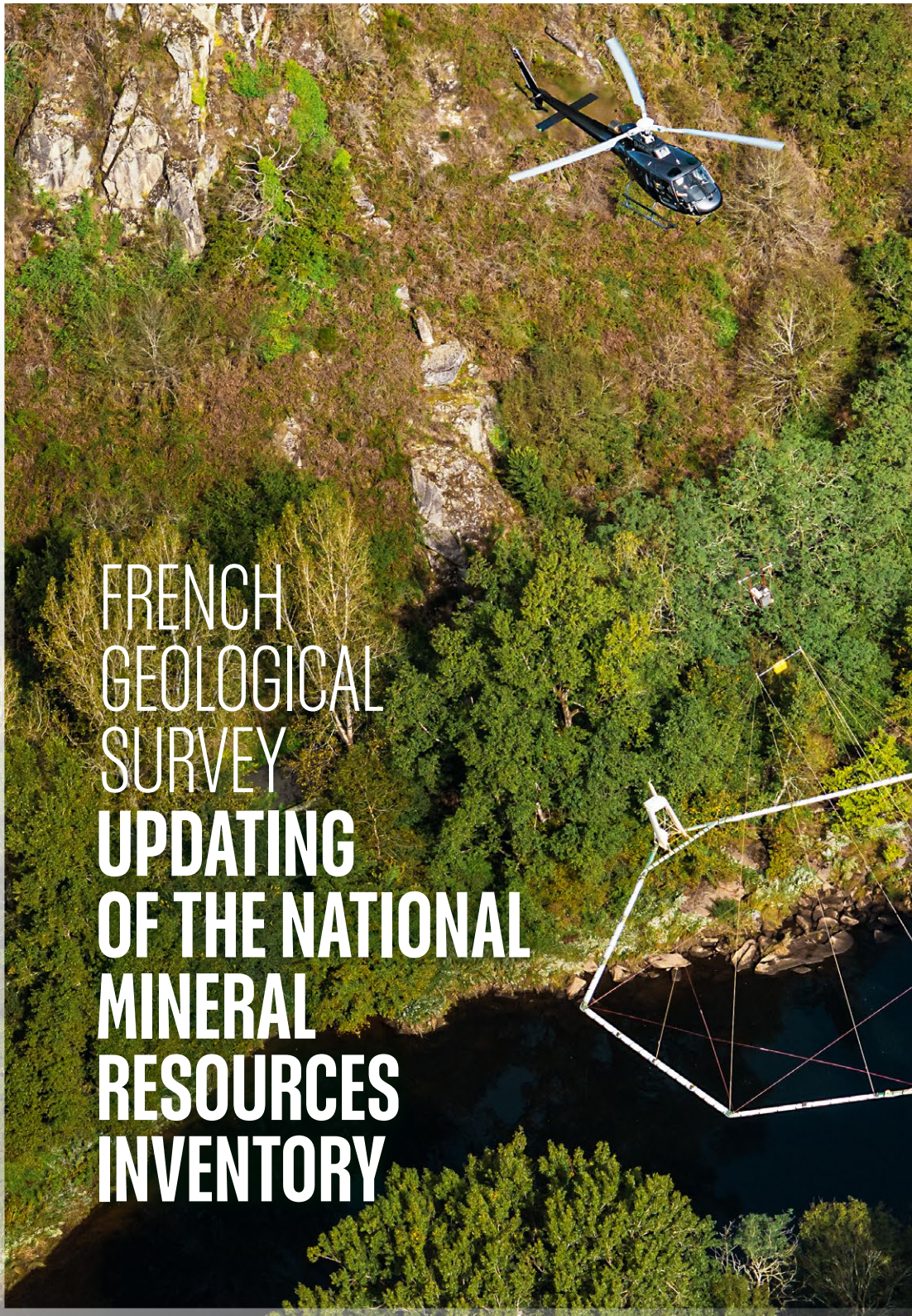
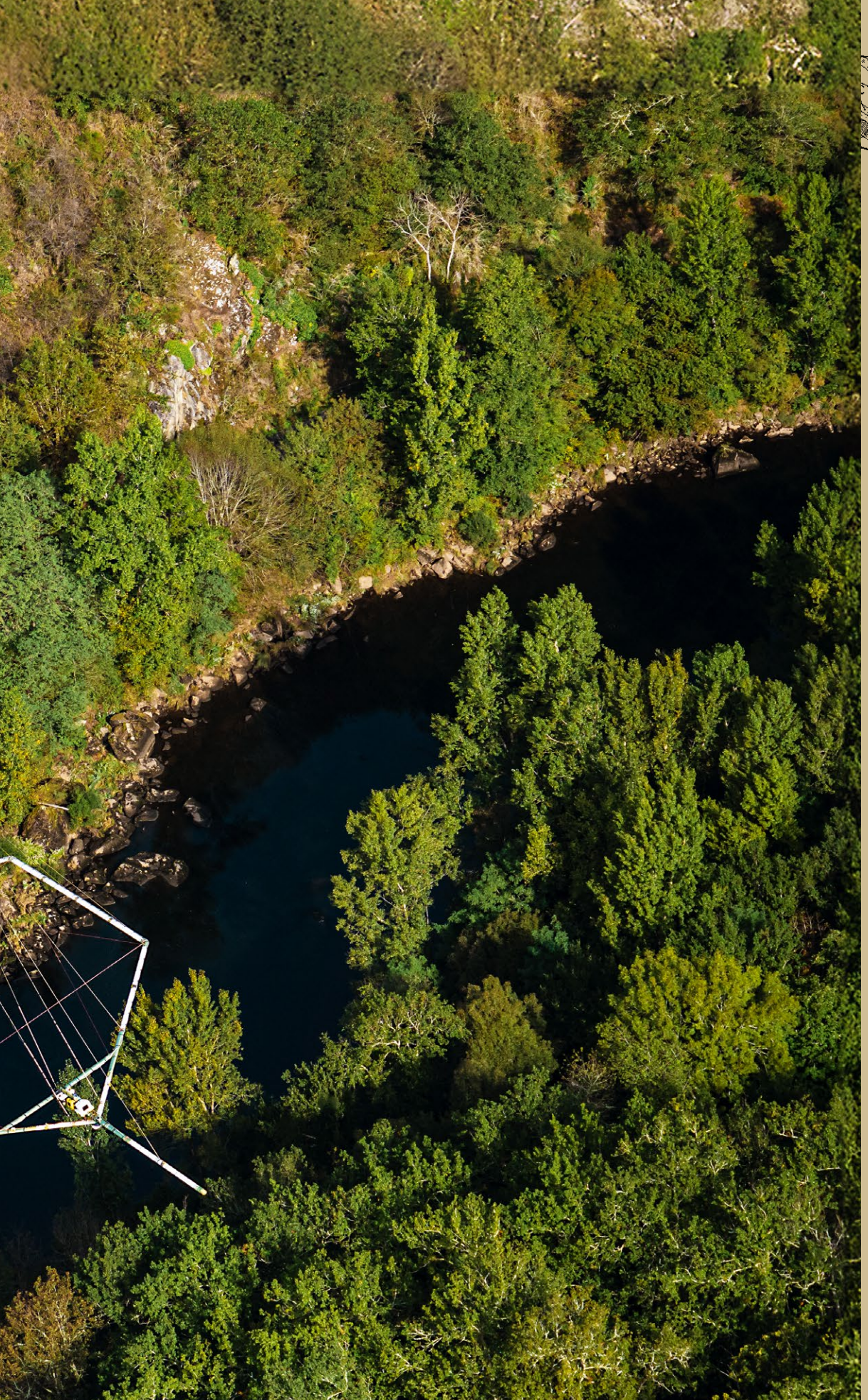
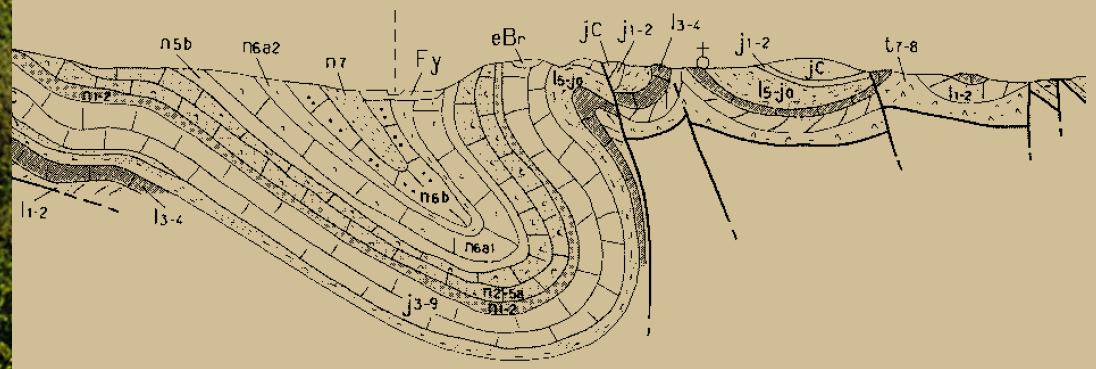


# FRENCH GEOLOGICAL SURVEY
# UPDATING OF THE NATIONAL MINERAL RESOURCES INVENTORY






# Reducing our dependence and securing supply chains, a matter of national sovereignty

**In order to meet the need for French and European strategic sovereignty** with regard to the supply of critical mineral resources, the National Inventory of French Subsurface Mineral Resources is now being updated. This initiative, taken by the President of the Republic, has been entrusted to the French Geological Survey, BRGM (*Bureau de Recherches Géologiques et Minières*). Several strategic regions have been identified for future data acquisition campaigns. The project is initially planned to last five years and is being funded by the ANR as part of France 2030.

**This project is also in line with sustainable resource management**, thereby contributing to the resilience of the national economy. This update follows the adoption of the Critical Raw Materials (CRM) Act (European Directive on the supply of strategic materials to the European Union) by the European Union in December 2023 and echoes the French policy guidelines initiated following the "Varin Report". At the Ecological Planning Council meeting in September 2023, the French President announced this initiative, aimed at identifying areas with potential mineral resources of strategic interest. The aim is to reduce our dependence on imported raw materials, while reinforcing secure supply chains. ●

◀ **Heli-borne geophysical campaign in the Massif Central.**
© BRGM

# An ambitious project to explore France's mineral resources

## Update and complete the current inventory, which has become obsolete

The current inventory, carried out between 1970 and 1995, has become obsolete for a number of reasons:

• **More than 30% of the "areas of prospective interest" had not been investigated**. The entire area had not been covered by a geophysical method. The maximum depth of investigation was only 300 metres, and was limited to boreholes.

• **Exploration techniques have evolved considerably** since the 1980s, with major technological advances, particularly in geophysics (large-scale surveys, with depths of investigation of up to 1 km) and geochemistry (analytical techniques).

• **The inventory was limited to 22 priority substances at the time**. Today, **55 materials have been defined as critical** and strategic (lithium, tantalum, caesium, germanium, etc.).

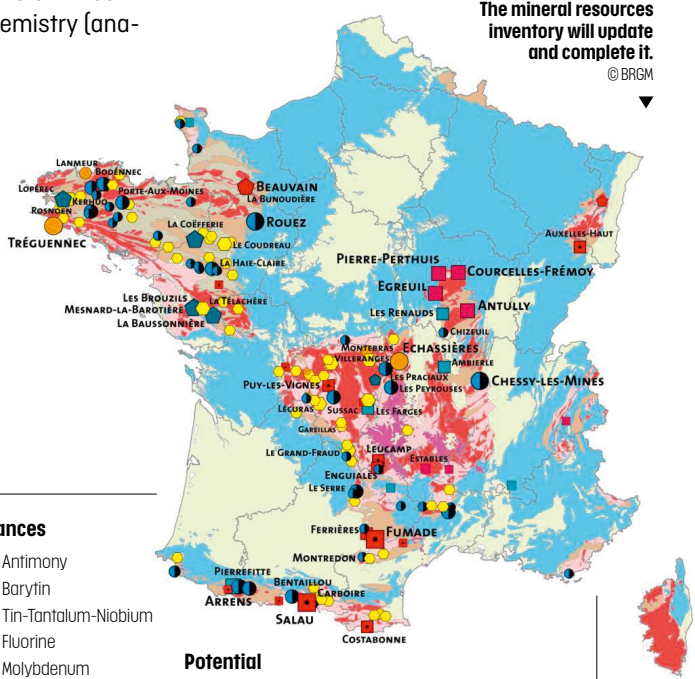
**The new inventory will focus on strategic exploration phases** to identify the most favourable sectors. It will produce maps of anomalies likely to constitute future deposits.

**More than**

**30%**

**of "areas of prospective interest"**
have not been studied
for so-called strategic metals

**Potential for base metal mining in mainland France. The mineral resources inventory will update and complete it.**
© BRGM




**Geology**

- Recent volcanic activity
- Cenozoic, Quaternary
- Mesozoic
- Palaeozoic
- Proterozoic
- Metamorphic rocks
- Granitoid rocks

**Substances**

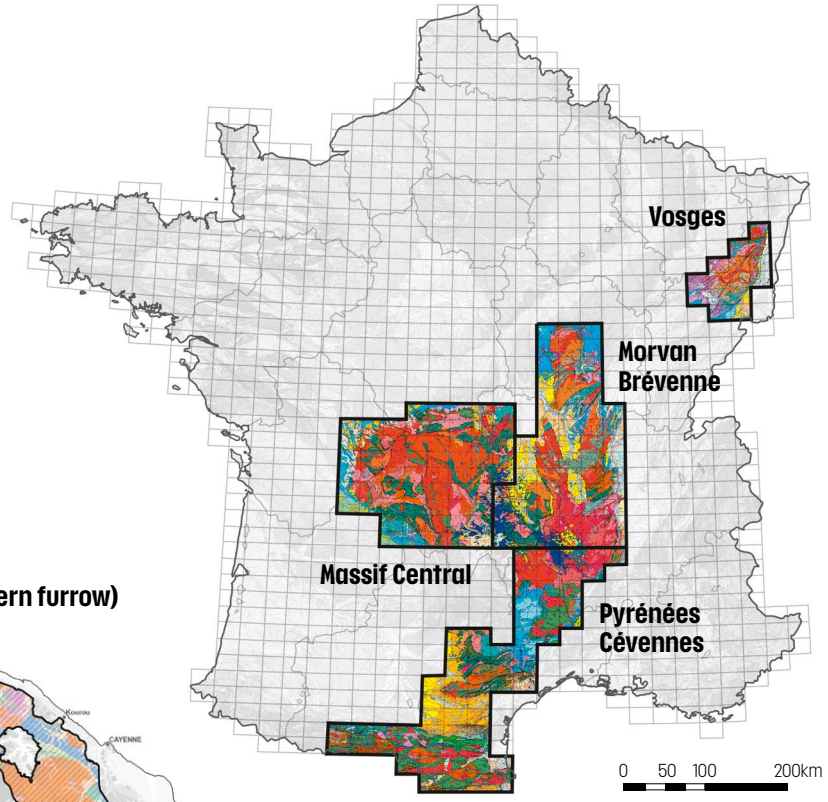
- Antimony
- Barytin
- Tin-Tantalum-Niobium
- Fluorine
- Molybdenum
- Gold
- Lead-Zinc-(Silver)
- Tungsten

**Potential**

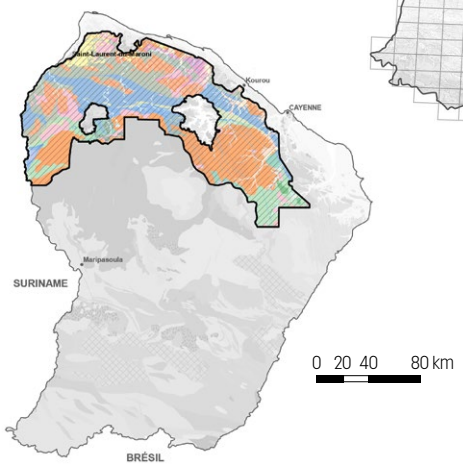
- High potential
- Moderate potential
- Low potential

0 100 200km

## A project covering 5 regional zones




**French Guiana**
***Sillon nord*** **(northern furrow)**




## Mobilising resources to meet the challenges

To achieve this vast national project, a number of challenges will have to be met:

- **Carrying out logistically significant ground and airborne acquisition campaigns** in five target areas of France (Vosges, Massif Central, Morvan-Brévenne, Pyrénées Cévennes and the *Sillon nord* in French Guiana);
- **Mobilising and coordinating a French mining ecosystem** that has become scattered after three decades of inactivity;
- **Creating added value** through innovation and partnerships;
- **Ensuring effective communication and scientific mediation** to explain the economic and societal issues and the technical aspects of the project.

## A scientific programme designed with regional public policies in mind

BRGM worked on the preliminary design of the national mineral resources inventory in collaboration with the French Inter-ministerial delegation for the supply of strategic minerals and metals (DIAMMS), the General Directorate for Spatial Planning, Housing and the Natural Environment (DGALN) and the General Secretariat for investment (SGPI).

The IRM's technical programme was drawn up with scientific and public policy priorities in mind, with the aim of maximising the identification of deposits while respecting regional policies.

▲
**Geochemical sampling campaign.**
© BRGM

**Heli-borne geophysical campaign in the Massif Central.**
© BRGM
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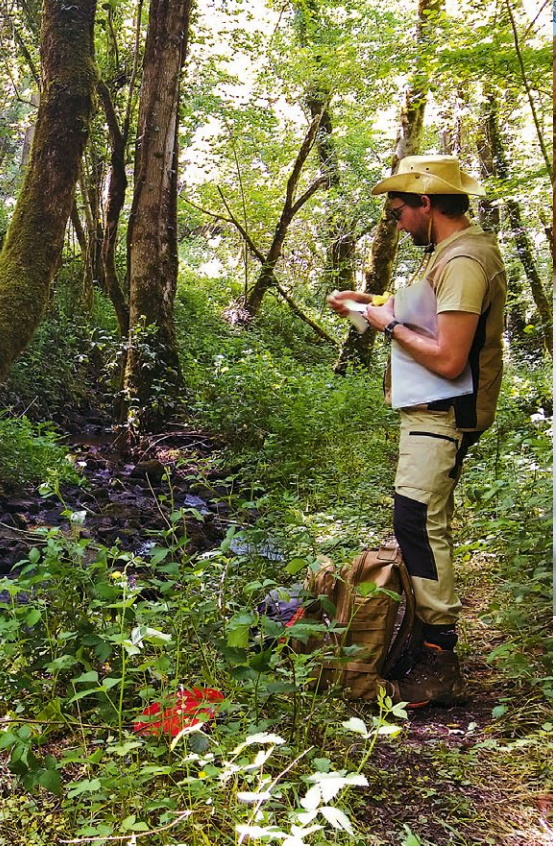
## Identify new mineral resources of strategic interest

Various methods (geophysical, geochemical, geological) will be used to identify deposits that are not detectable on the surface (hidden under cover) and that have not yet been identified, or extensions at depth of deposits that have already been identified.

Consequently, the project has been designed to take account of the following points:

- **Rapid operational implementation**, starting at the end of 2024 and taking five years to complete;
- **Regular publication** of results throughout the process;
- **Adoption of the most effective and innovative approaches and technologies** to optimise the quality of results, particularly in the field of artificial intelligence and data sciences.

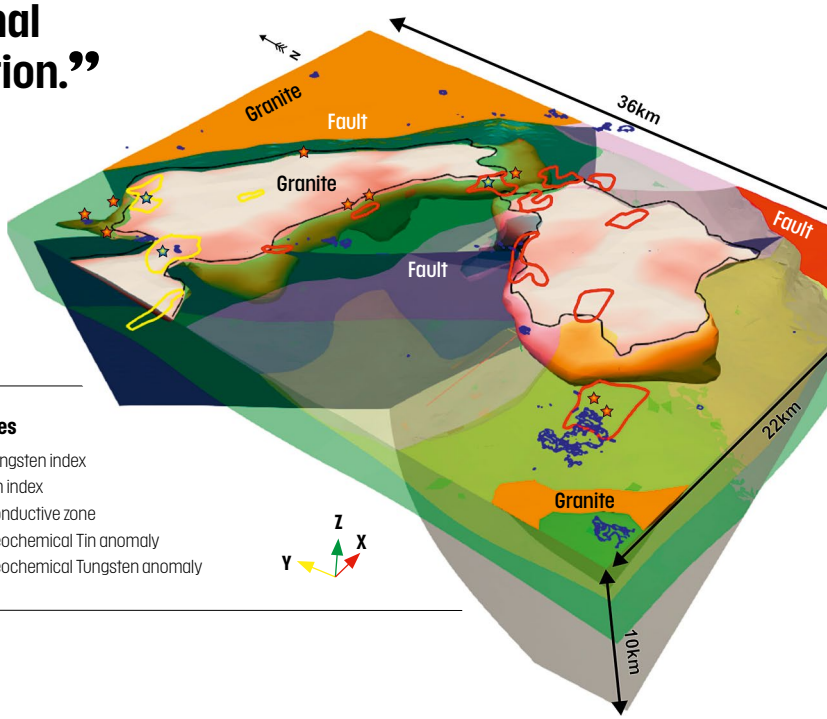


**Soil characterisation and X-ray diffractometry operation.**
© TERRA - LAURENT MIGNAUX

## BRGM, project leader

BRGM will lead this programme, relying in particular on its subsidiary, **BRGM Explore**, to implement it. It will call on specialist sub-contractors for tasks such as airborne flights and the collection and analysis of sediment samples. BRGM will oversee all administrative, financial and scientific aspects of the project.

> **“BRGM will lead this programme, relying in particular on its subsidiary and the local ecosystem for operational implementation.”**




**3D modelling of regional geological objects, showing mineral deposits**
© BRGM - DUBREUIL ET AL.

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