



**GSEU**  
GEOLOGICAL | FOR  
SERVICE | EUROPE

# EUROPEAN CRITICAL RAW MATERIALS



Funded by  
the European Union

 **EuroGeoSurveys**  
European Geoscience for Society  
The Geological Surveys of Europe



# European Critical Raw Materials

Critical Raw Materials (CRM) are indispensable for the production of modern technologies that drive innovation, economic growth, and the transition to a sustainable future. Recognising their strategic importance, the European Union has identified and prioritised the study, extraction, and sustainable management. The CRM Act has accelerated this focus, aiming to strengthen supply chain resilience and drive economic development.

This book provides a comprehensive overview of the distribution and mineral potential of CRM across Europe.

It is structured into four key sections:

**1 Pan-European Maps:** Offering a macro-level perspective on the distribution of CRM deposits across the continent. These maps highlight areas of strategic mineral interest.

**2 Commodities Maps:** These maps focus on selected individual elements, detailing specific CRM occurrences and current mining activity status.

**3 Country-Specific Insights:** Highlighting CRM deposits at a national level, this section provides granular data for policy makers, industry stakeholders, and researchers.

**4 Favourability Maps:** These maps assess regions with high mineral potential for future CRM discoveries, guiding exploration, and investment efforts. While these maps provide valuable geological insights, it is crucial to remember that they do not account for economic, social, and environmental considerations.

Developed through collaboration between the [Geological Service for Europe](#) partners and [EuroGeoSurveys](#) Mineral Resources Experts Group, this book integrates data from various past and present scientific studies and databases. It reflects Europe's commitment to fostering sustainable resource management while addressing the global challenges of supply security and mitigating social and environmental impacts.

The maps and analyses presented here are vital tools for aligning resource development with Europe's Green Deal and industrial strategies. They serve as a roadmap for advancing resource independence and supporting Europe's transition to a low-carbon economy.

## CONTENT

4

**Pan-European Maps**

13

**Commodities Maps**

42

**Countries Maps**

73

**Favourability Maps**



# Pan-European Maps

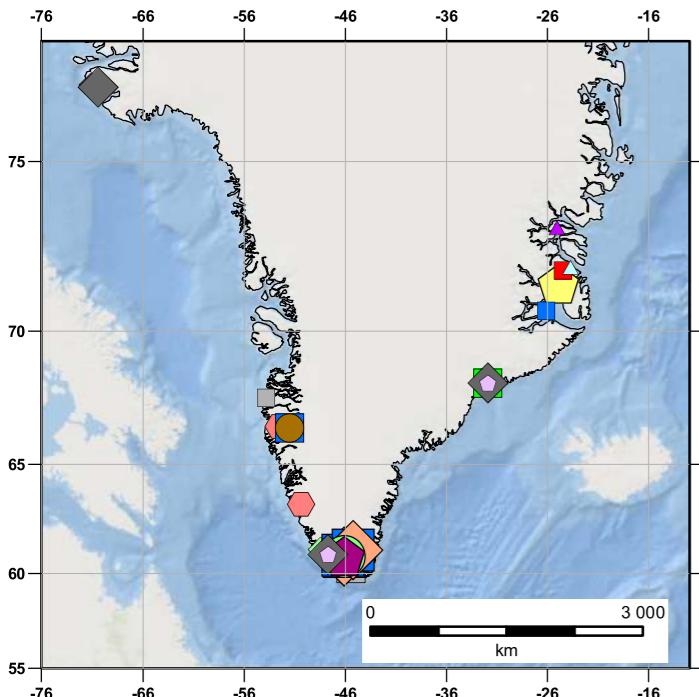
# CRITICAL RAW MATERIALS HARD ROCK DEPOSITS OF EUROPE

Based on the 2023 CRM list  
of the European Commission

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France

\*\* EuroGeoSurveys, Brussels, Belgium



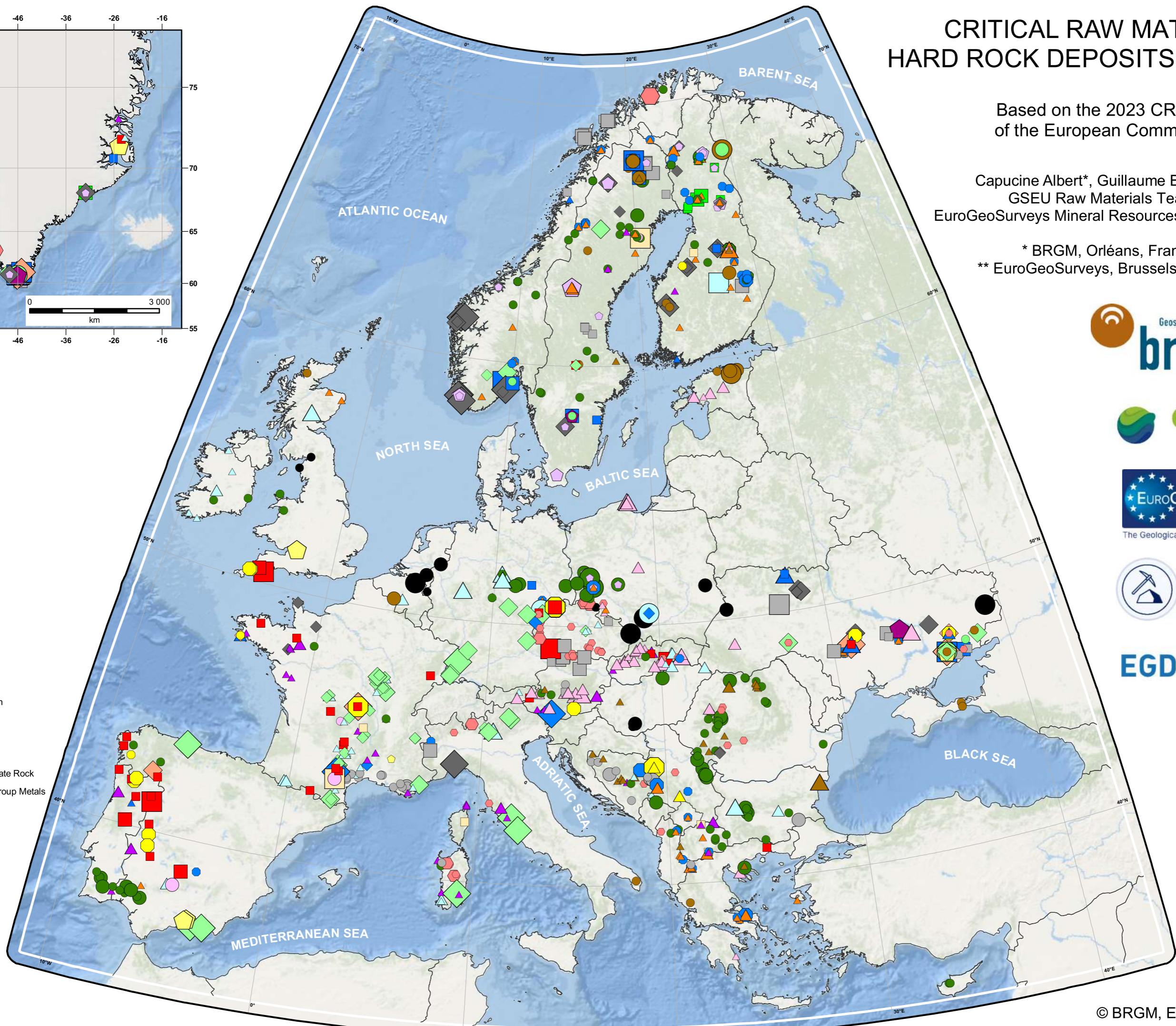
## Commodity

- Aluminium
- ▲ Antimony
- Arsenic
- △ Barite
- ▲ Beryllium
- Bismuth
- ▲ Borate
- Cobalt
- Coking Coal
- Copper
- Feldspar
- Fluorite
- Gallium
- Germanium
- Graphite
- Hafnium
- Lithium
- ▲ Magnesite, Magnesium
- Manganese
- ▲ Nickel
- Niobium
- Phosphorous, Phosphate Rock
- Platinum, Platinoids Group Metals
- Rare Earth Elements
- Scandium
- Strontium
- Tantalum
- Titanium
- Vanadium
- Tungsten

## Deposit Size \*

- Class A (Super Large)
- Class B (Large)
- Class C (Medium)

\* Remaining + extracted amount of the commodity



© BRGM, EuroGeoSurveys, 2024

The designation of Kosovo is without prejudice to positions on status,  
and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.



# **CRITICAL RAW MATERIALS OFFSHORE OCCURRENCES OF EUROPE**

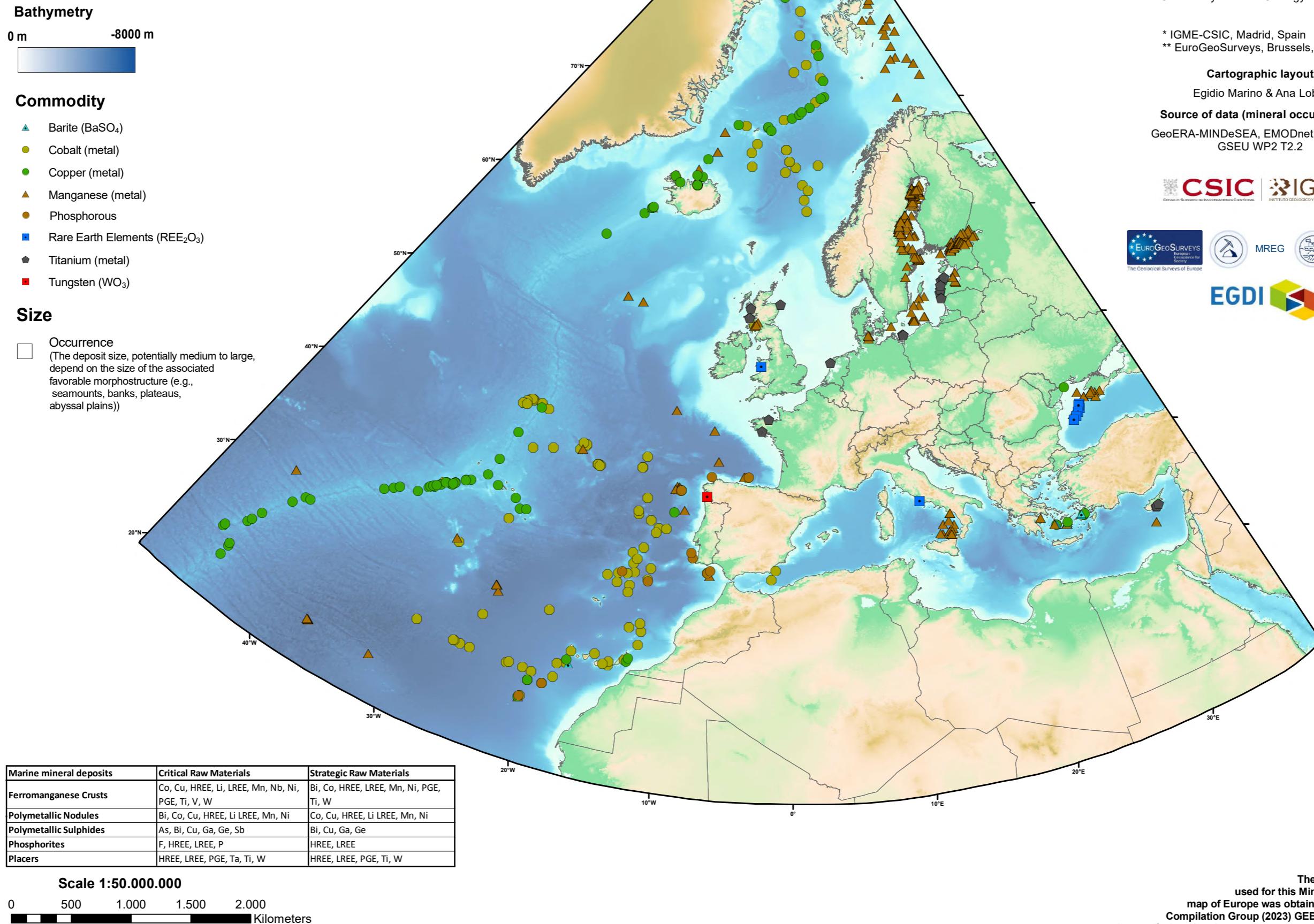
Based on the 2023 CRM list of the European Commission



**GSEU**  
GEOLOGICAL FOR  
SERVICE EUROPE



Funded by  
the European Union



Marine mineral deposits	Critical Raw Materials	Strategic Raw Materials
<b>Ferromanganese Crusts</b>	Co, Cu, HREE, Li, LREE, Mn, Nb, Ni, PGE, Ti, V, W	Bi, Co, HREE, LREE, Mn, Ni, PGE, Ti, W
<b>Polymetallic Nodules</b>	Bi, Co, Cu, HREE, Li LREE, Mn, Ni	Co, Cu, HREE, Li LREE, Mn, Ni
<b>Polymetallic Sulphides</b>	As, Bi, Cu, Ga, Ge, Sb	Bi, Cu, Ga, Ge
<b>Phosphorites</b>	F, HREE, LREE, P	HREE, LREE
<b>Placers</b>	HREE, LREE, PGE, Ta, Ti, W	HREE, LREE, PGE, Ti, W

**Scale 1:50.000.000**

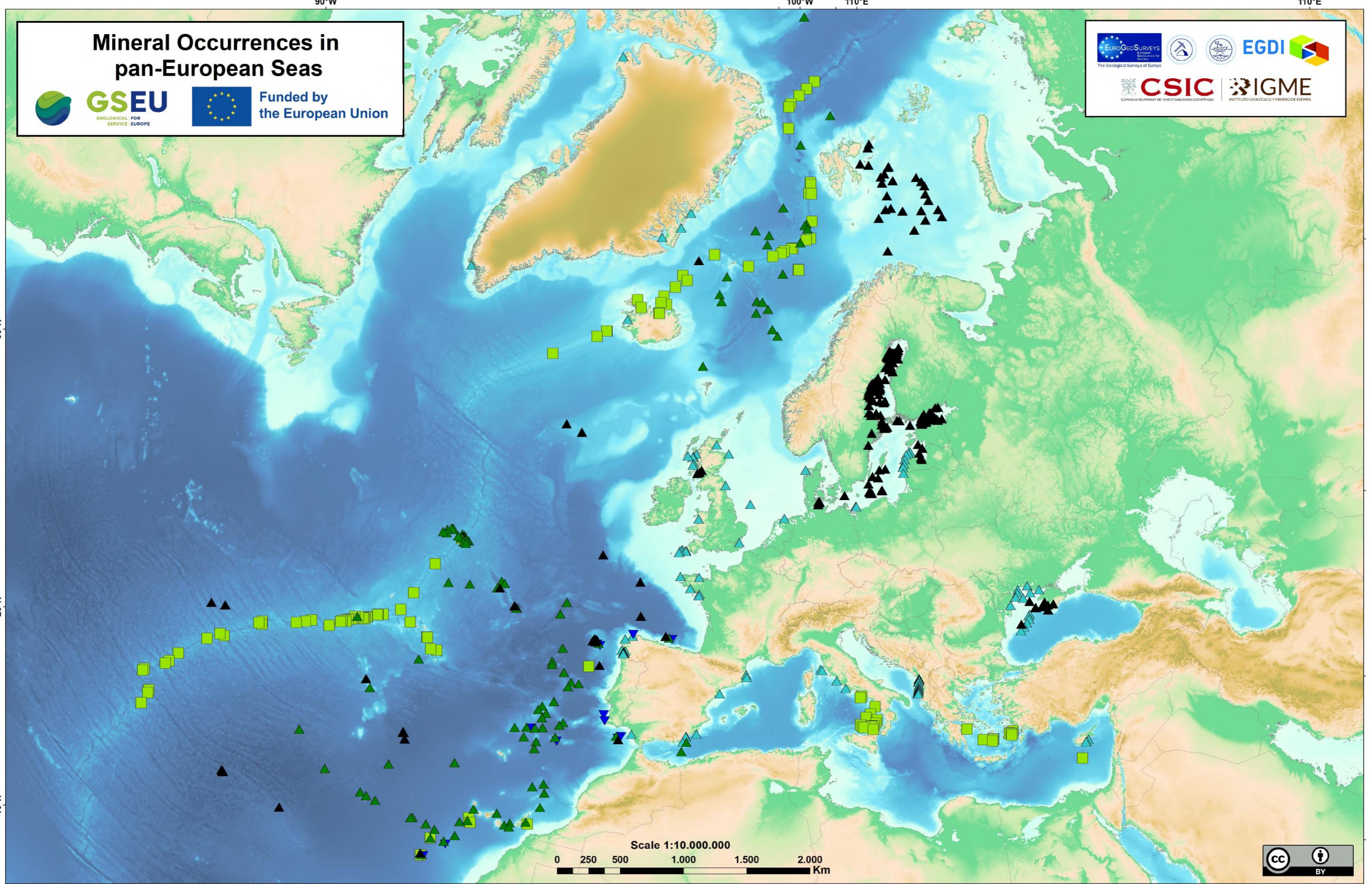


0      500      1.000      1.500      2.000 Kilometers

Polyconic Projection, Central Meridian n : 16° E, FE = 0, Latitude of origin : 0, DATUM WGS84

Version 3 - January 2024

**WARNING:**  
The bathymetric data used for this Mineral Occurrences map of Europe was obtained by the GEBCO Compilation Group (2023) GEBCO 2023 Grid doi: 10.5285/f98b053b-0cbc-6c23-e053-6c86abc0af7b). Given the polymetallic nature of marine minerals deposits only is represented in the map the main commodity, having the potential to contain various Strategic and Critical Raw Materials.



**Bibliographic Reference:** Marino, E.<sup>1</sup>, González, F.J.<sup>1</sup>, Lobato, A.<sup>1</sup> and GSEU WP2-T2.2 Group. 2024. Mineral Occurrences in pan-European Seas.

<sup>1</sup> Geological Survey of Spain (IGME-CSIC), Madrid, Spain; [www.igme.es](http://www.igme.es)

#### Scientific Coordination

Francisco Javier González Sanz\* & Egidio Marino\*

#### Cartographic Layout

Egidio Marino\* & Ana Lobato\* \*\* EuroGeoSurveys, Brussels, Belgium

#### Authors

GSEU Mineral Resource team,  
EuroGeoSurveys Mineral Resources Expert Group\*\* &  
EuroGeoSurveys Marine Geology Expert Group\*\*

#### Source of Data (Mineral Occurrences)

GSEU WP2 T2.2, GeoERA-MINDeSEA & EMODnet Geology; Update September 2024

Datum: WGS\_1984; Projection: ETRS\_1989\_LAEA

The bathymetric data used for this Mineral Occurrences map of Europe was obtained by the GEBCO Compilation Group (2023) GEBCO 2023 Grid doi:10.5285/f98b053b-0cbc-6c23-e053-6c86abc0af7b.

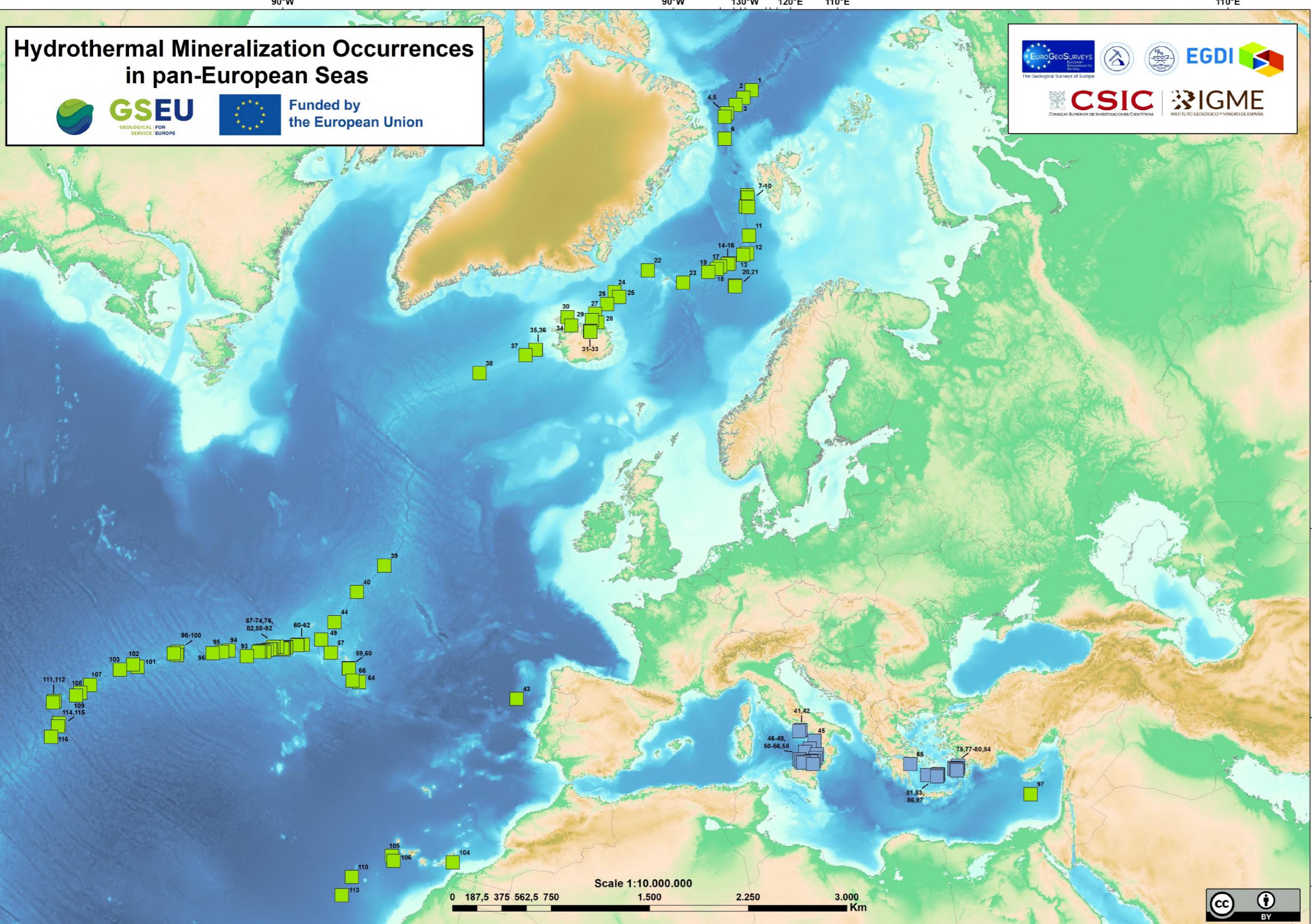
Copyright © GSEU. This Project has received funding from the European Union's Horizon Europe programme under grant agreement No. 101075609.

#### Legend

- ▲ Polymetallic Nodules
- ▲ FeMn Crusts
- ▼ Phosphorites
- Hydrothermal Mineralization
- △ Marine Placers

#### Bathymetry





**Bibliographic Reference:** González, F.J.<sup>1</sup>, Marino, E.<sup>1</sup>, Brekke, H.<sup>2</sup>, Schiellerup, H.<sup>3</sup>, Lobato, A.<sup>1</sup> and GSEU WP2-T2.2 Group. 2024. Hydrothermal Mineralization Occurrences in pan-European Seas.

<sup>1</sup> Geological Survey of Spain (IGME), Madrid, Spain; [www.igme.es](http://www.igme.es)

<sup>2</sup> Norwegian Offshore Directorate (NOD), Norway; [www.sodir.no](http://www.sodir.no)

<sup>3</sup> Geological Survey of Norway (NGU), Trondheim, Norway; [www.ngu.no](http://www.ngu.no)

#### Scientific Coordination

Francisco Javier González Sanz\* & Egidio Marino\*

#### Cartographic Layout

Egidio Marino\* & Ana Lobato\*

#### Authors

GSEU Mineral Resource team,  
EuroGeoSurveys Mineral Resources Expert Group\*\* &  
EuroGeoSurveys Marine Geology Expert Group\*\*

\* IGME-CSIC, Madrid, Spain

\*\* EuroGeoSurveys, Brussels, Belgium

#### Source of Data (Mineral Occurrences)

GSEU WP2 T2.2, GeoERA-MINDeSEA & EMODnet Geology; Update September 2024

Datum: WGS\_1984; Projection: ETRS\_1989\_LAEA

The bathymetric data used for this Mineral Occurrences map of Europe was obtained by the GEBCO Compilation Group (2023) GEBCO 2023 Grid doi:10.5285/f98b053b-0cbc-6c23-e053-6c86abc0af7b).

Copyright © GSEU. This Project has received funding from the European Union's Horizon Europe programme under grant agreement No. 101075609.

#### Legend

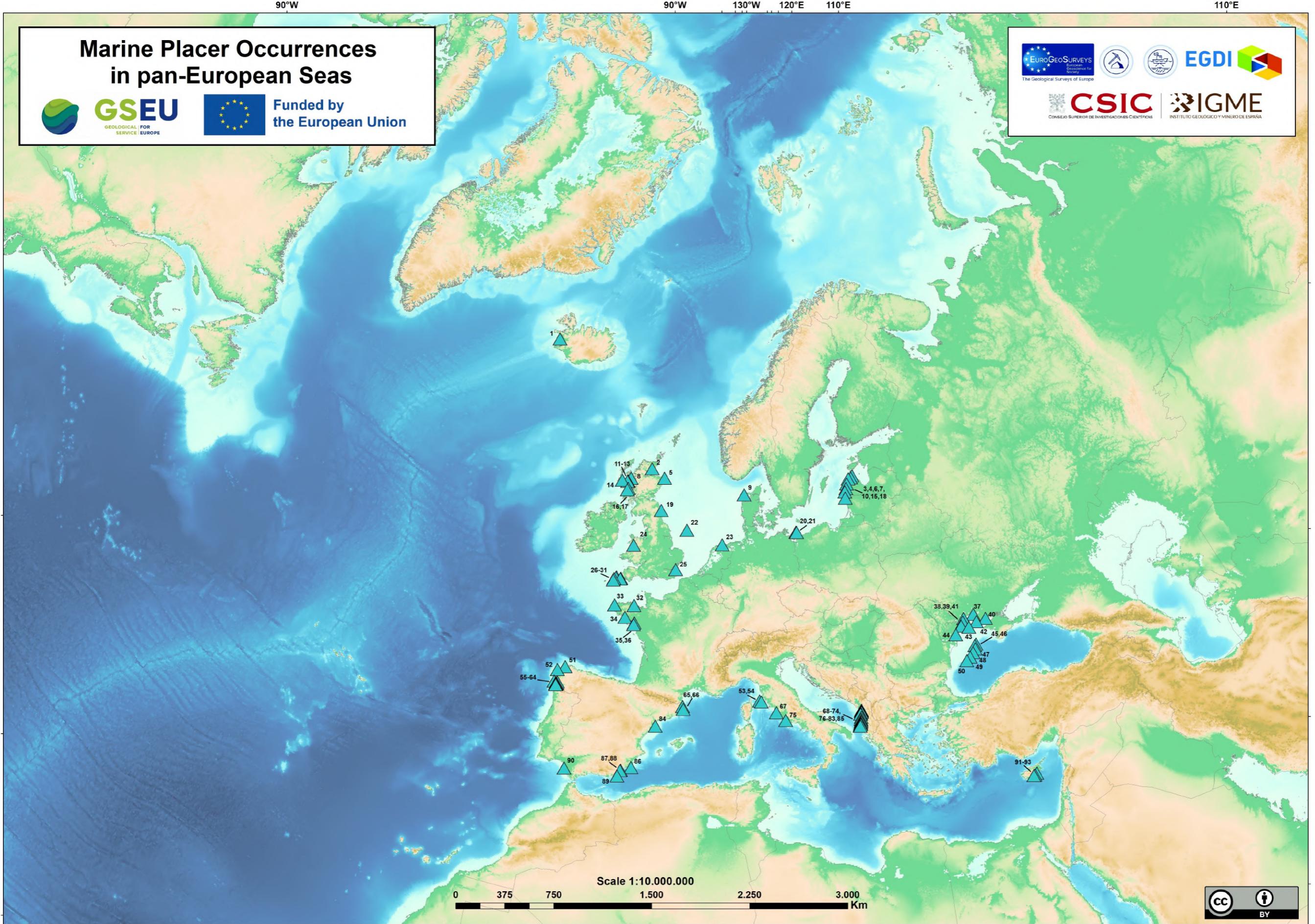
- Mafic Hydrothermal Mineralization Occurrences
- Bimodal-Felsic Hydrothermal Mineralization Occurrences

#### Bathymetry

0m -8000m

OCCURRENCES: N=116

- Gakkel Ridge 7.5 E
- Gakkel Ridge Site 3
- Gakkel Ridge Site 2
- Circle 17
- Aurora
- Lucky B
- Knipovich Ridge 77 40'N
- Jetul Field
- Sundvor Volcano
- Knipovich Ridge 76 48'N
- Knipovich Ridge 75 N
- Loki's Castle
- Mohns' Treasure MS2
- Favne
- Favne
- Gnitahai
- Copper Hill
- Aegir
- Mohns Ridge 72 N
- Troll Wall
- Soria Maria
- Seven Sisters Vent Field
- Perle & Bruse
- Squid Forest
- Kolbeinsey Ridge
- Squid Forest
- Kolbeinsey Field
- Grimsey Field
- Saltsteinshver West of Grimsey
- Isafjardardjup bay
- Arnárnæs Eyjafjörður
- Eyjafjörður
- Ystavík Eyjafjörður
- Tangahrygur Steingrímsfjörður
- Reykjaness Ridge
- Steinhall Vent Field
- Reykjaness Ridge Area A
- Reykjaness Ridge
- Moylirra
- MAR 43 N
- Capo Miseno-Lucrino
- Ischia Island-Castello Aragonese
- Iberian abyssal plain\_01
- South Kurchatov
- Capo Palinuro-Grotta Sulfurea
- Palinuro Seamount
- Marsili Basin
- Lamitini Seamount
- Mid-Atlantic Ridge\_01
- Stromboli volcano
- Sisifo
- Panarea-La Calcaria
- Emaretto Smt.
- Secca del Capo Area
- Salina Volcanic Island
- Eolo Seamount
- Espalamaca
- Vulcano-Bala de Levante
- Don Joan De Castro Bank
- Joao de Castro Seamount
- North Menez Gwen
- Menez Gwen Vent Field
- Bubblylon
- Ribeira Quente
- Methana-Thiafi Bay
- Monaco Bank
- Lucky Strike vent field
- White Castle
- Tour Eiffel
- Ewan
- Menez Hom
- Lucky Strike segment; southern end
- South Lucky Strike
- FAMOUS Area
- Kos-Bros Thera
- FAMOUS Area
- Kos-Kephalos Bay
- Paradise Bubble Beach
- Kos south
- Yali-Yali Bay
- Milos
- South FAMOUS Area
- VC7
- Nisiros- Lefkos Bay
- Saldanha vent field
- Kolumbo
- Kolumbo crater floor
- Santorini- Santorini Caldera
- Mid-Atlantic Ridge\_02
- Mid-Atlantic Ridge\_03
- Mid-Atlantic Ridge\_04
- Mid-Atlantic Ridge\_05
- Mid-Atlantic Ridge\_06
- Mid-Atlantic Ridge\_07
- Mid-Atlantic Ridge\_08
- Mid-Atlantic Ridge\_09
- Mid-Atlantic Ridge\_10
- Eratosthenes Seamount
- Mid-Atlantic Ridge\_11
- Mid-Atlantic Ridge\_12
- Lost City
- MAR 30 N
- Broken Spur
- East Lanzarote Seamount
- Tagoro Submarine Volcano
- Henry Seamount
- MAR 27 N
- TAG
- MAR 25 50'N
- Drago Seamount
- MAR 24 30'N
- MAR 24 20'N
- Tropic Seamount
- MAR 23 35'N
- Snake Pit
- MAR 22 30'N



**Bibliographic Reference:** González, F.J.<sup>1</sup>, Marino, E.<sup>1</sup>, Zananiri, I..<sup>2</sup>, Lobato, A.<sup>1</sup> and GSEU WP2-T2.2 Group. 2024. Marine Placer Occurrences in pan-European Seas.

<sup>1</sup> Geological Survey of Spain (IGME), Madrid, Spain; [www.igme.es](http://www.igme.es)

<sup>2</sup> Hellenic Survey of Geology and Mineral Exploration (HSGME), Acharnae, Greece; <https://www.eagme.gr/>

#### Scientific Coordination

Francisco Javier González Sanz\* & Egidio Marino\*

#### Cartographic Layout

Egidio Marino\* & Ana Lobato\*

#### Authors

GSEU Mineral Resource team,  
EuroGeoSurveys Mineral Resources Expert Group\*\* &  
EuroGeoSurveys Marine Geology Expert Group\*\*

\* IGME-CSIC, Madrid, Spain

\*\* EuroGeoSurveys, Brussels, Belgium

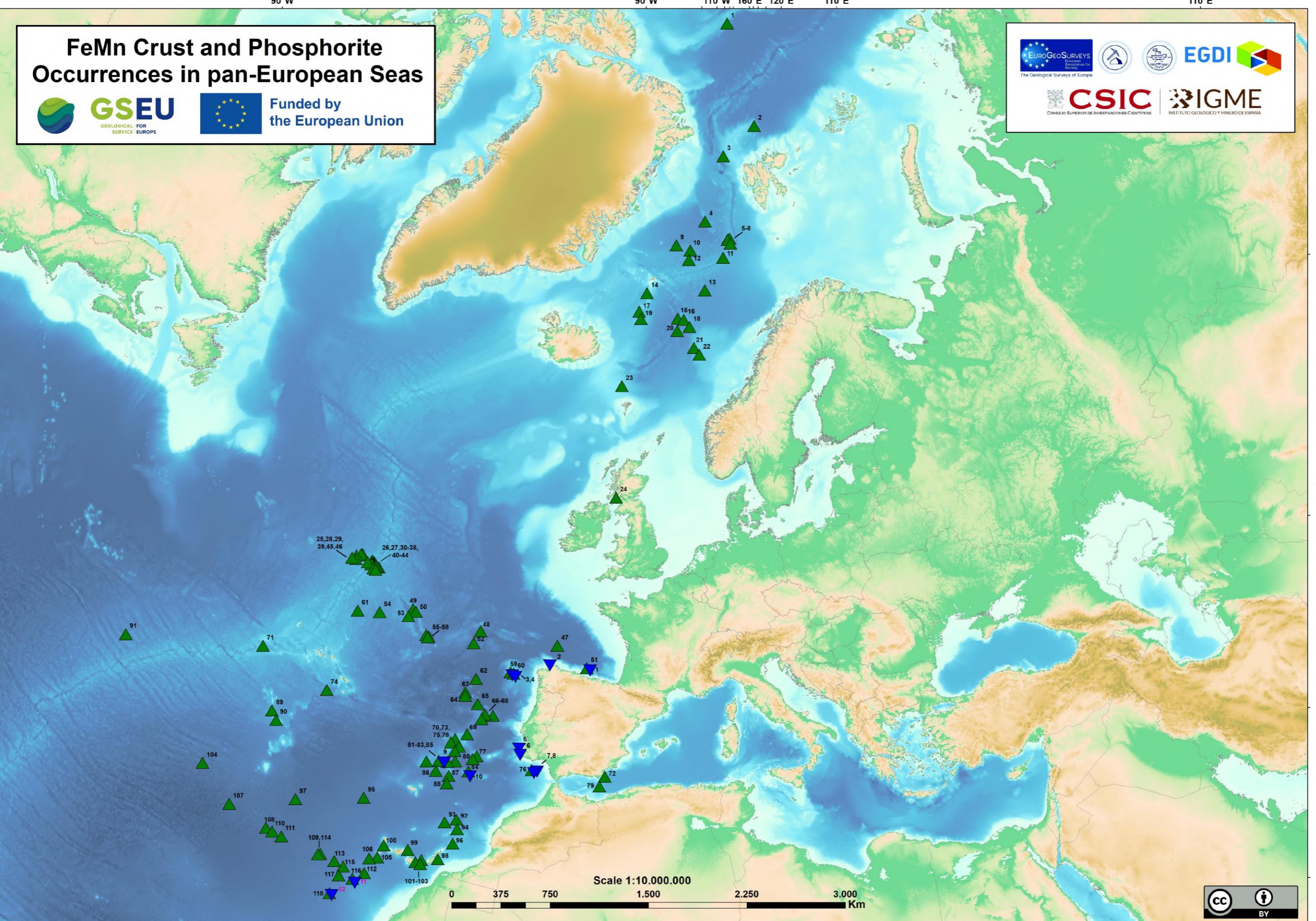
#### Source of Data (Mineral Occurrences)

GSEU WP2 T2.2, GeoERA-MINDeSEA & EMODnet Geology; Update September 2024

Datum: WGS\_1984; Projection: ETRS\_1989\_LAEA

The bathymetric data used for this Mineral Occurrences map of Europe was obtained by the GEBCO Compilation Group (2023) GEBCO 2023 Grid doi:10.5285/f98b053b-0cbc-6c23-e053-6c86abc0af7b).

Copyright © GSEU. This Project has received funding from the European Union's Horizon Europe programme under grant agreement No. 101075609.



**Bibliographic Reference:** Marino, E.<sup>1</sup>, González, F.J.<sup>1</sup>, Lobato, A.<sup>1</sup>, and GSEU WP2-T2.2 Group. 2024. FeMn Crust and Phosphorite Occurrences in pan-European Seas.

<sup>1</sup> Geological Survey of Spain (IGME-CSIC), Madrid, Spain; [www.igme.es](http://www.igme.es)

#### Scientific Coordination

Francisco Javier González Sanz\* & Egidio Marino\*

#### Cartographic Layout

Egidio Marino\* & Ana Lobato\*

#### Authors

GSEU Mineral Resource team,  
EuroGeoSurveys Mineral Resources Expert Group\*\* &  
EuroGeoSurveys Marine Geology Expert Group\*\*

\* IGME-CSIC, Madrid, Spain

\*\* EuroGeoSurveys, Brussels, Belgium

#### Source of Data (Mineral Occurrences)

GSEU WP2 T2.2, GeoERA-MINDeSEA & EMODnet Geology; Update September 2024

Datum: WGS\_1984; Projection: ETRS\_1989\_LAEA

The bathymetric data used for this Mineral Occurrences map of Europe was obtained by the GEBCO Compilation Group (2023) GEBCO 2023 Grid doi:10.5285/f98b053b-0cbc-6c23-e053-6c86abc0af7b).

Copyright © GSEU. This Project has received funding from the European Union's Horizon Europe programme under grant agreement No. 101075609.

#### Legend

- ▼ Phosphorite\_Occurrence
- ▲ FeMn\_Crusts\_Occurrence

#### Bathymetry

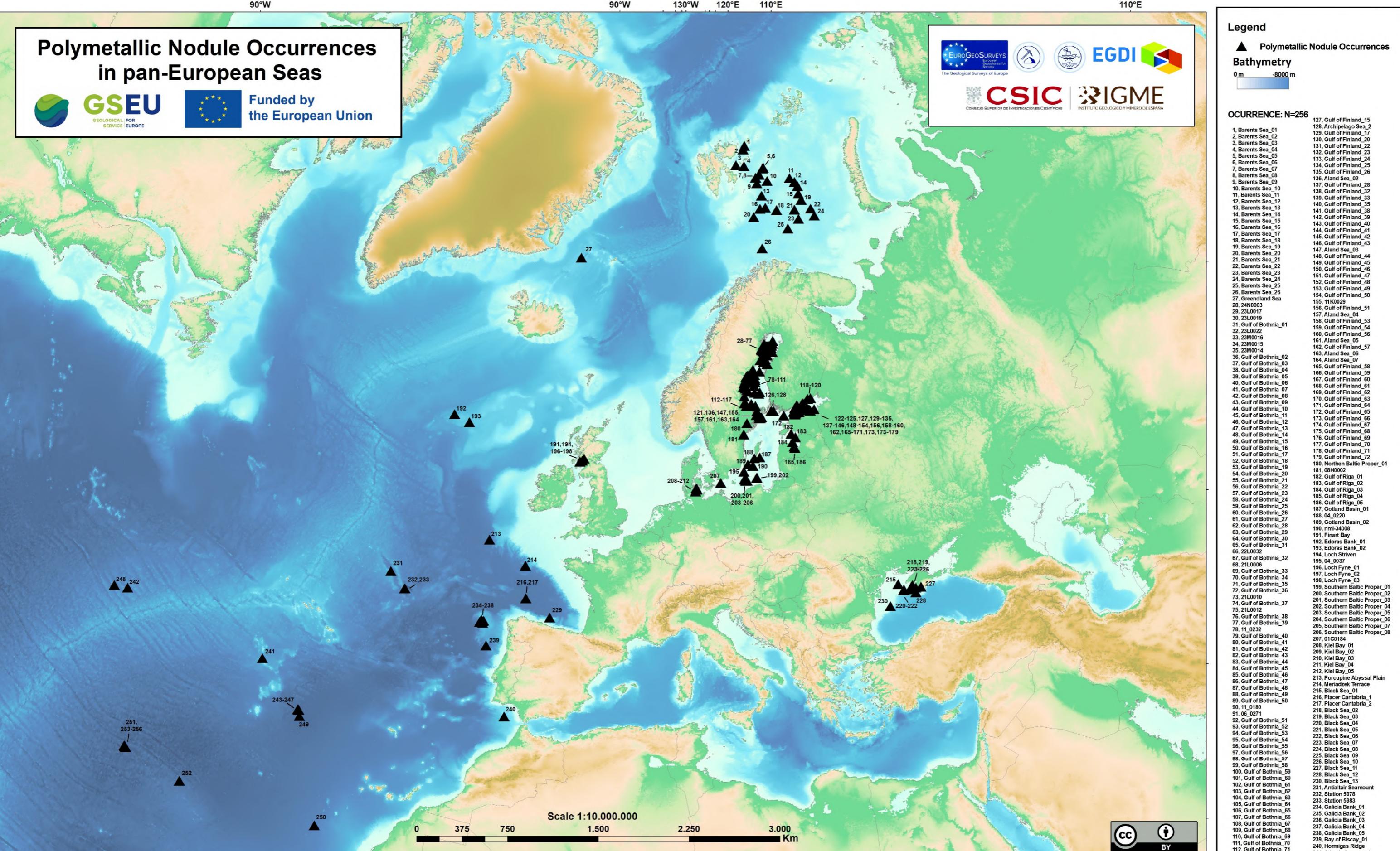
0 m -8000 m

#### PHOSPHORITE OCCURRENCES: N=12

- 1, Le Danois Bank
- 2, Ortegal Terrace
- 3, Galicia Bank
- 4, Sancho Seamount
- 5, Principe de Avis Seamounts
- 6, Descobridores Seamounts
- 7, Faro Plateau
- 8, Guadalquivir Bank
- 9, Lion Seamount
- 10, Ampère Seamount
- 11, Echo Seamount
- 12, Tropic Seamount

#### FeMn CRUST OCCURRENCES: N=118

- 1, Circle 9
- 2, Little Trough
- 3, Barents Sea\_01
- 4, Greenland Sea\_01
- 5, Knipovich Ridge\_01
- 6, Knipovich Ridge\_02
- 7, Knipovich Ridge\_03
- 8, Knipovich Ridge\_04
- 9, Greenland Sea\_02
- 10, Greenland Sea\_03
- 11, Norwegian Sea\_01
- 12, Greenland Sea\_04
- 13, Lofoten Basin
- 14, JM Ridge N
- 15, Voring Spur South Flank
- 16, Norwegian Sea\_02
- 17, JM Ridge S
- 18, Norwegian Sea\_03
- 19, Iceland Sea\_01
- 20, Norwegian Sea\_04
- 21, Norwegian Sea\_05
- 22, Voring Plateau
- 23, JM Trough
- 24, West Coast of Scotland
- 25, Mid-Atlantic Ridge\_01
- 26, Mid-Atlantic Ridge\_02
- 27, Mid-Atlantic Ridge\_03
- 28, Mid-Atlantic Ridge\_04
- 29, Mid-Atlantic Ridge\_05
- 30, Mid-Atlantic Ridge\_06
- 31, Mid-Atlantic Ridge\_07
- 32, Mid-Atlantic Ridge\_08
- 33, Mid-Atlantic Ridge\_09
- 34, Mid-Atlantic Ridge\_10
- 35, Mid-Atlantic Ridge\_11
- 36, Mid-Atlantic Ridge\_12
- 37, Mid-Atlantic Ridge\_13
- 38, Mid-Atlantic Ridge\_14
- 39, Mid-Atlantic Ridge\_15
- 40, Mid-Atlantic Ridge\_16
- 41, Mid-Atlantic Ridge\_17
- 42, Mid-Atlantic Ridge\_18
- 43, Mid-Atlantic Ridge\_19
- 44, Mid-Atlantic Ridge\_20
- 45, Mid-Atlantic Ridge\_21
- 46, Mid-Atlantic Ridge\_22
- 47, Galicia Margin\_01
- 48, NE Atlantic\_01
- 49, NE Atlantic\_02
- 50, NE Atlantic\_03
- 51, Le Danois Bank (El Cachorro)
- 52, CDRC002832
- 53, Antialtar Seamount
- 54, NE Atlantic\_04
- 55, NE Atlantic\_05
- 56, NE Atlantic\_06
- 57, NE Atlantic\_07
- 58, CDRC002843
- 59, Galicia Bank
- 60, Sancho Seamount
- 61, Mid-Atlantic Ridge\_23
- 62, CDRN00965
- 63, CDRN001076-CDRN001077
- 64, Salvador Correia Passage
- 65, Tore Seamount
- 66, Tore Seamount
- 67, Tore Seamount
- 68, Tore Seamount
- 69, Gago Coutinho Seamount
- 70, MTR Seamount
- 71, FAMOUS Area
- 72, Macizo de la Palanca
- 73, Azores-Gibraltar Rise
- 74, Azores Seamount
- 75, Josephine Seamount
- 76, Guadalquivir Bank
- 77, Hirondelle II Seamount
- 78, Josephine Seamount
- 79, Al Mansour Seamount
- 80, Horseshoe Seamount
- 81, Josephine Seamount
- 82, Nameless Seamount
- 83, Lion Seamount
- 84, Ampère Seamount
- 85, Dragon Bank
- 86, Godzilla Seamount
- 87, Unicorn Seamount
- 88, Seine Seamount
- 89, Plato Seamount
- 90, Plato Seamount
- 91, Mid-Atlantic Ridge\_24
- 92, Annika Seamount
- 93, Dacia Seamount
- 94, N. Conception Bank
- 95, Amuley Seamount
- 96, Conception Bank
- 97, CDRC002690
- 98, M1 Mount (E Lanzarote)
- 99, North Flank Tenerife Island
- 100, South La Palma Ridge
- 101, Amanay Seamount
- 102, El Banquete
- 103, El Hierro Ridge
- 104, Eastern flank of MAR
- 105, South El Hierro Ridge
- 106, Las Hijas Seamount
- 107, CDRN001122
- 108, CDRC003292
- 109, Gaire Seamount
- 110, NE Atlantic\_08
- 111, CDRC003258
- 112, Bimbache Seamount
- 113, Pelicar Seamount
- 114, CDRC003061
- 115, The Paps Seamount
- 116, Echo Seamount
- 117, Drago Seamount
- 118, Tropic Seamount



**Bibliographic Reference:** González, F.J.<sup>1</sup>, Marino, E.<sup>1</sup>, Ferreira, P.<sup>2</sup>, Magalhaes, V<sup>3</sup>, Lobato, A.<sup>1</sup> and GSEU WP2-T2.2 Group. 2024. Polymetallic Nodule Occurrences in pan-European Seas.

<sup>1</sup> Geological Survey of Spain (IGME-CSIC), Madrid, Spain; www.igme.es

<sup>2</sup> National Laboratory of Energy and Geology (LNEG), Amadora, Portugal; www.lneg.pt

<sup>3</sup> Portuguese Institute for Sea and Atmosphere (IPMA), Lisboa, Portugal; www.ipma.pt

**Scientific Coordination**

Francisco Javier González Sanz\* & Egidio Marino\*

**Cartographic Layout**

Egidio Marino\* & Ana Lobato\*

#### Authors

GSEU Mineral Resource team,  
EuroGeoSurveys Mineral Resources Expert Group\*\* &  
EuroGeoSurveys Marine Geology Expert Group\*\*

\* IGME-CSIC, Madrid, Spain

\*\* EuroGeoSurveys, Brussels, Belgium

#### Source of Data (Mineral Occurrences)

GSEU WP2 T2.2, GEORA-MINDeSEA & EMODnet Geology; Update September 2024

Datum: WGS\_1984; Projection: ETRS\_1989\_LAEA

The bathymetric data used for this Mineral Occurrences map of Europe was obtained by the GEBCO Compilation Group (2023) GEBCO 2023 Grid doi:10.5285/f98b053b-0cbc-6c23-e053-6c86abc0af7b).

Copyright © GSEU. This Project has received funding from the European Union's Horizon Europe programme under grant agreement No. 101075609.

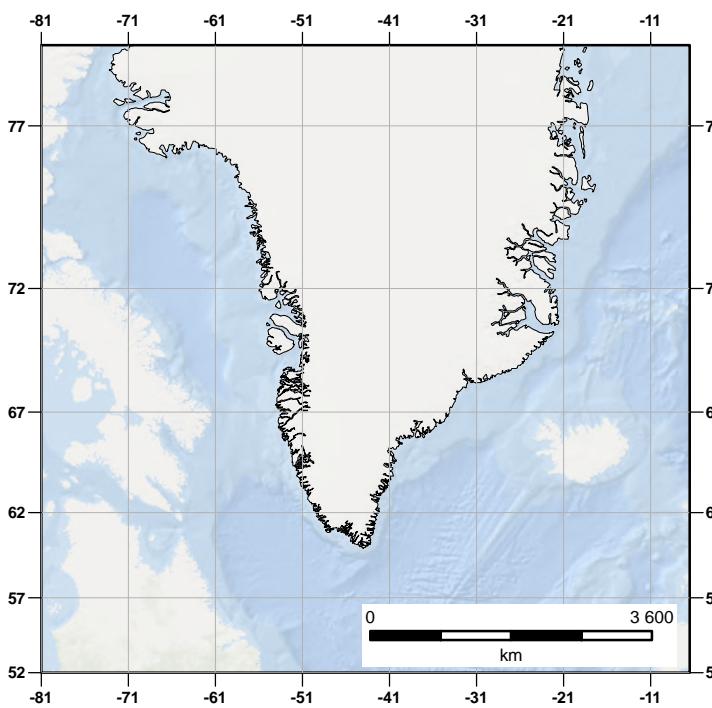


# Commodities Maps

# ARSENIC DEPOSITS OF EUROPE

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



## Deposit Status

Deposit name  
 Active extraction

Deposit name  
 Active project

Past extraction

Unexploited

Not specified

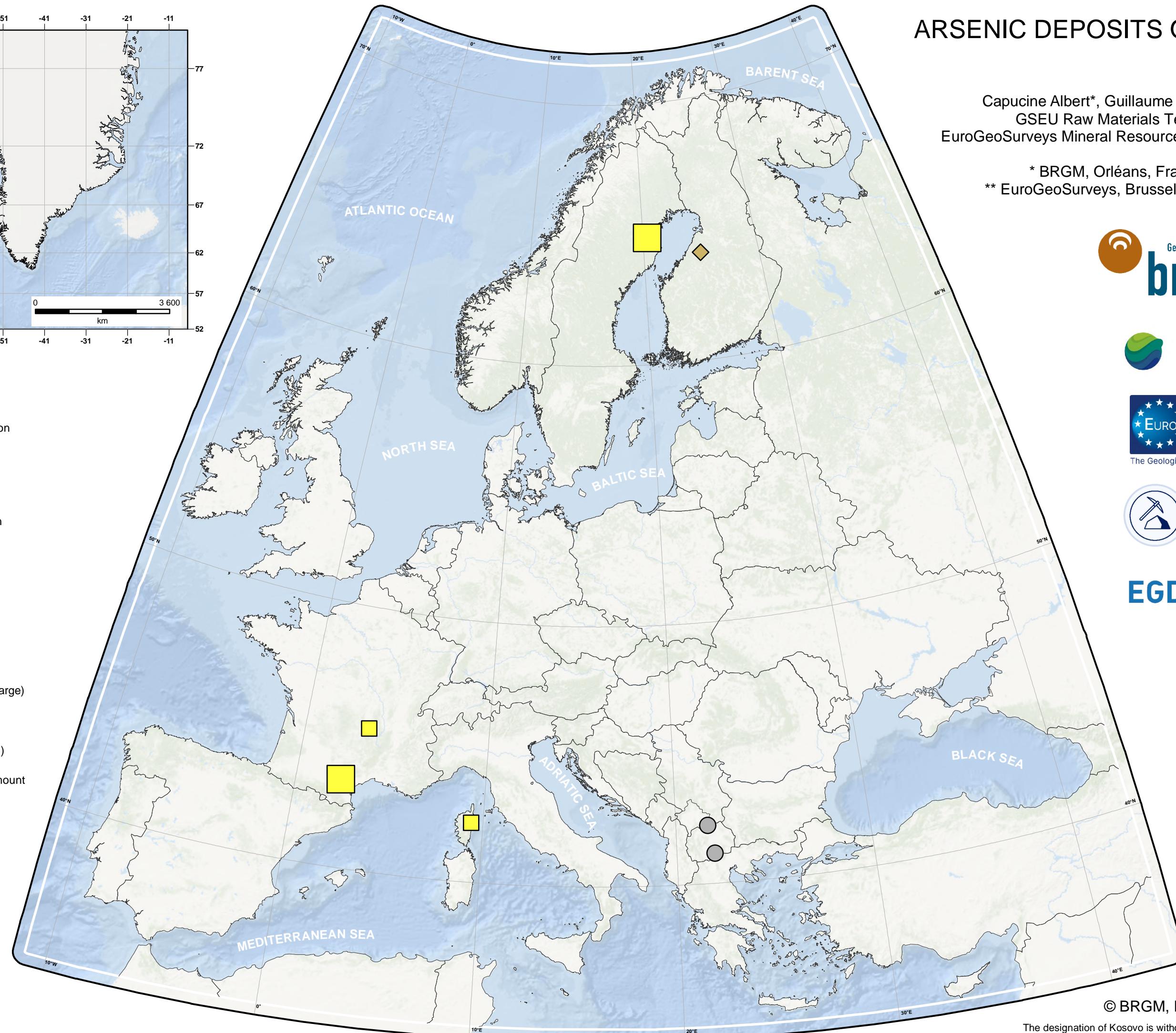
## Deposit Size \*

Class A (Super Large)

Class B (Large)

Class C (Medium)

\* Remaining + extracted amount  
of the commodity



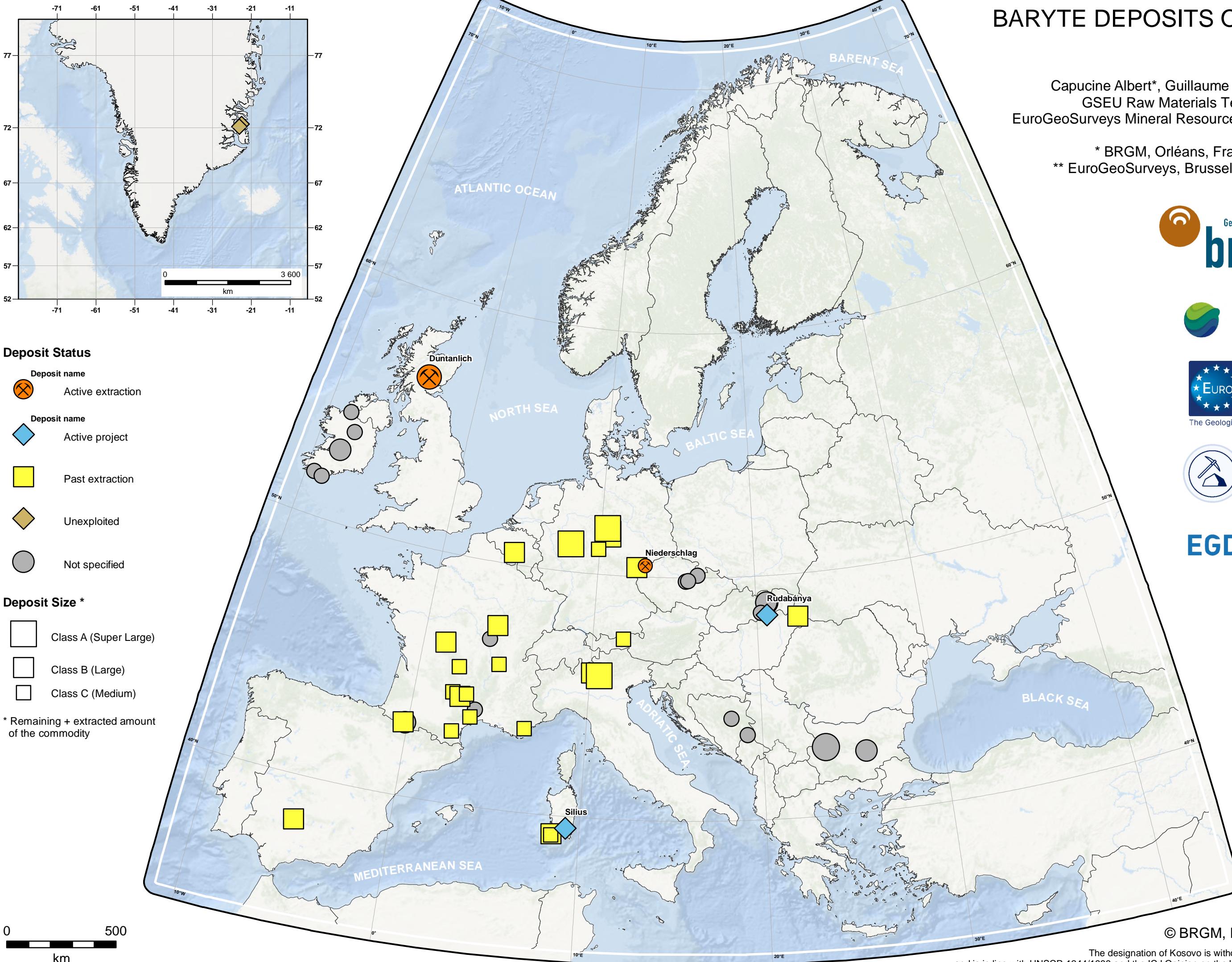
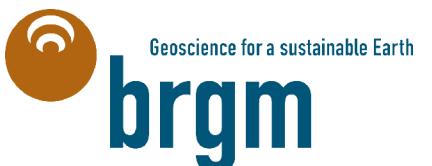
© BRGM, EuroGeoSurveys, 2024

The designation of Kosovo is without prejudice to positions on status,  
and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

# BARYTE DEPOSITS OF EUROPE

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



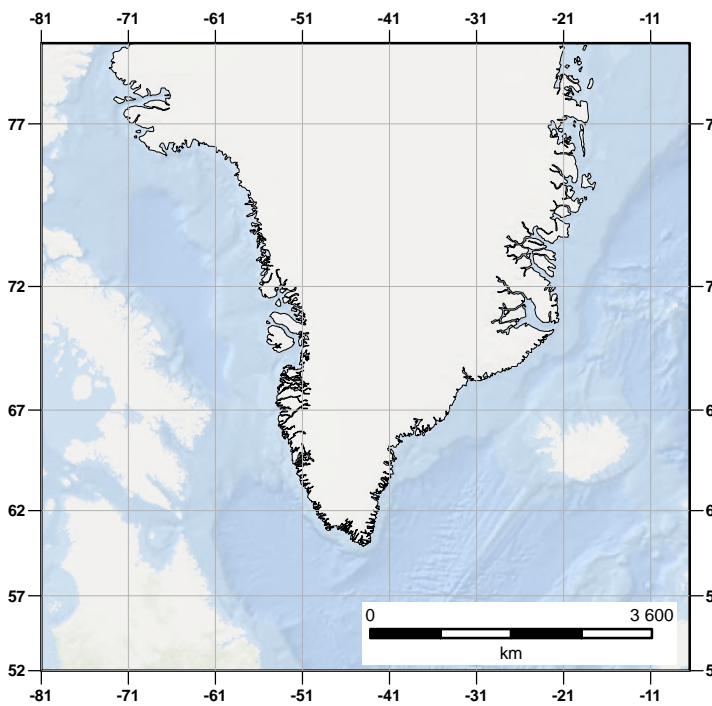
© BRGM, EuroGeoSurveys, 2024

The designation of Kosovo is without prejudice to positions on status,  
and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

# BERYLLIUM DEPOSITS OF EUROPE

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



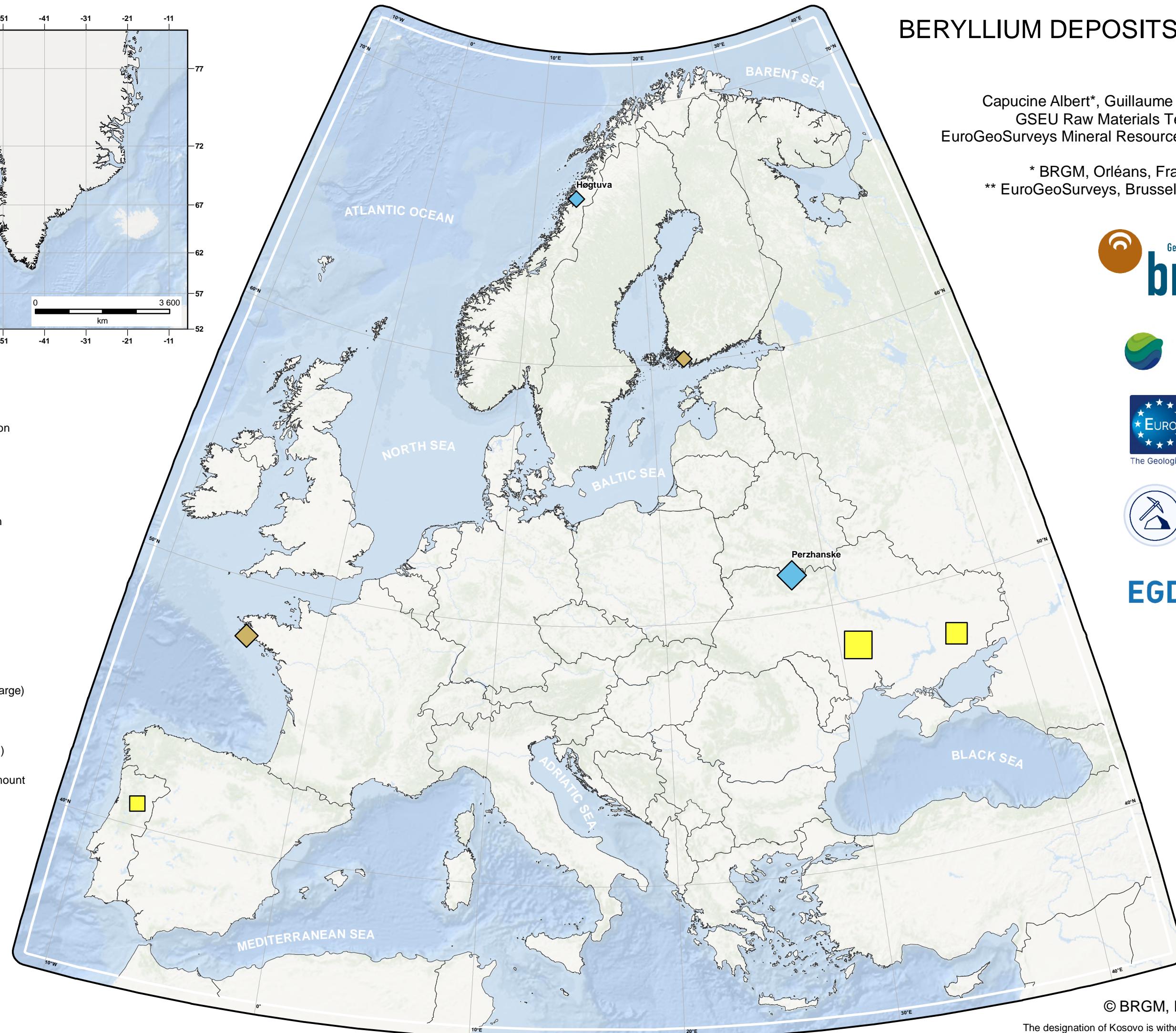
## Deposit Status

- Deposit name  
 Active extraction
- Deposit name  
 Active project
- Past extraction
- Unexploited
- Not specified

## Deposit Size \*

- Class A (Super Large)
- Class B (Large)
- Class C (Medium)

\* Remaining + extracted amount  
of the commodity



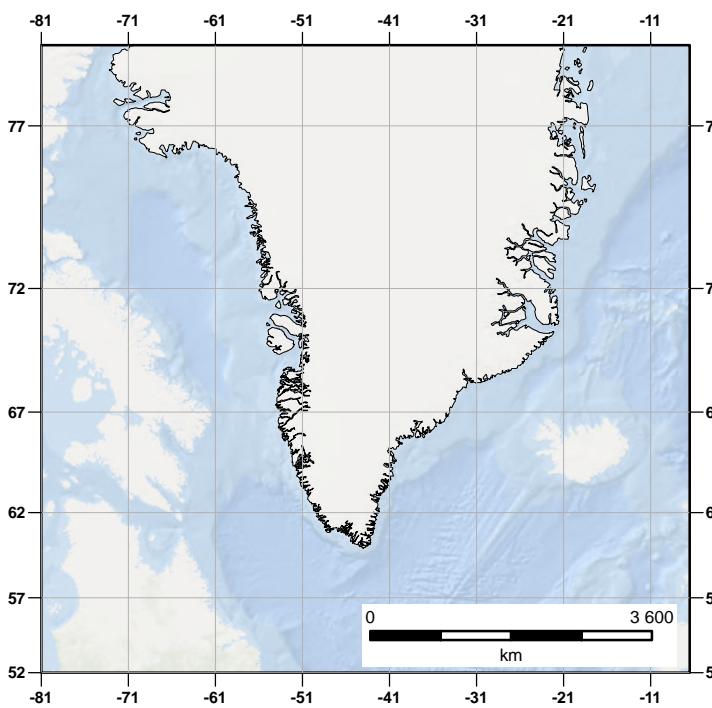
© BRGM, EuroGeoSurveys, 2024

The designation of Kosovo is without prejudice to positions on status,  
and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

# BISMUTH DEPOSITS OF EUROPE

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



## Deposit Status

Deposit name  
 Active extraction

Deposit name  
 Active project

Past extraction

Unexploited

Not specified

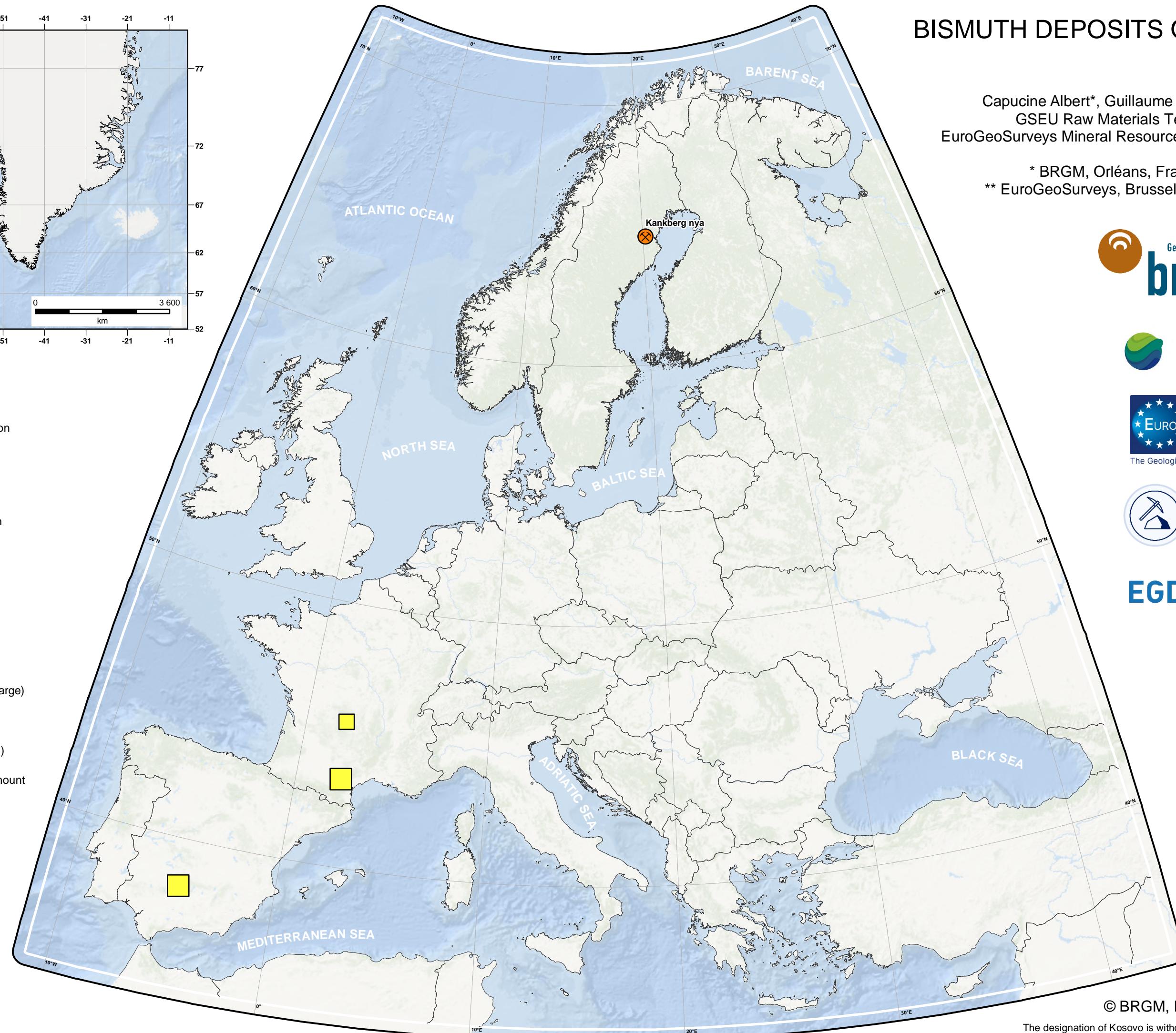
## Deposit Size \*

Class A (Super Large)

Class B (Large)

Class C (Medium)

\* Remaining + extracted amount  
of the commodity



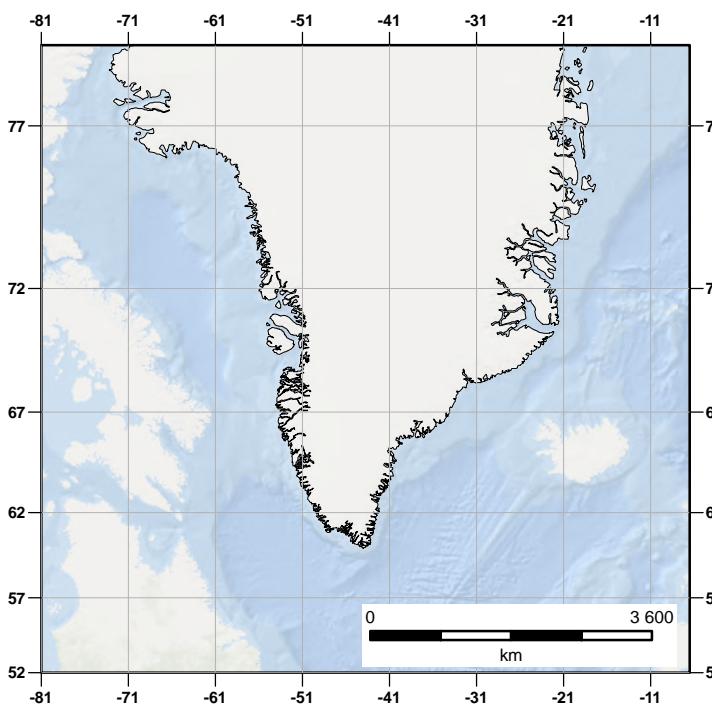
© BRGM, EuroGeoSurveys, 2024

The designation of Kosovo is without prejudice to positions on status,  
and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

# BORON/BORATE DEPOSITS OF EUROPE

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



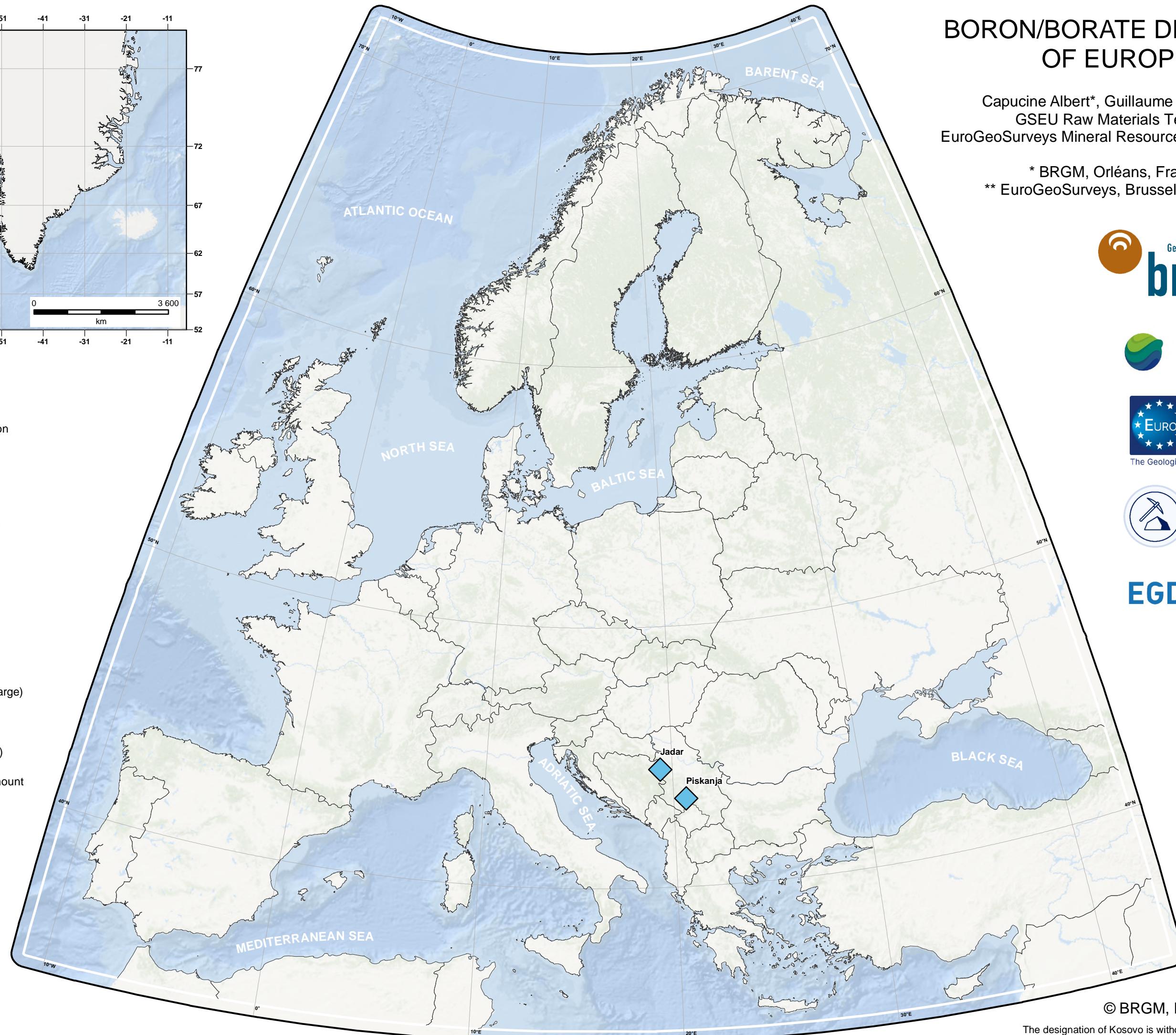
## Deposit Status

- Deposit name  
 Active extraction
- Deposit name  
 Active project
- Past extraction
- Unexploited
- Not specified

## Deposit Size \*

- Class A (Super Large)
- Class B (Large)
- Class C (Medium)

\* Remaining + extracted amount  
of the commodity



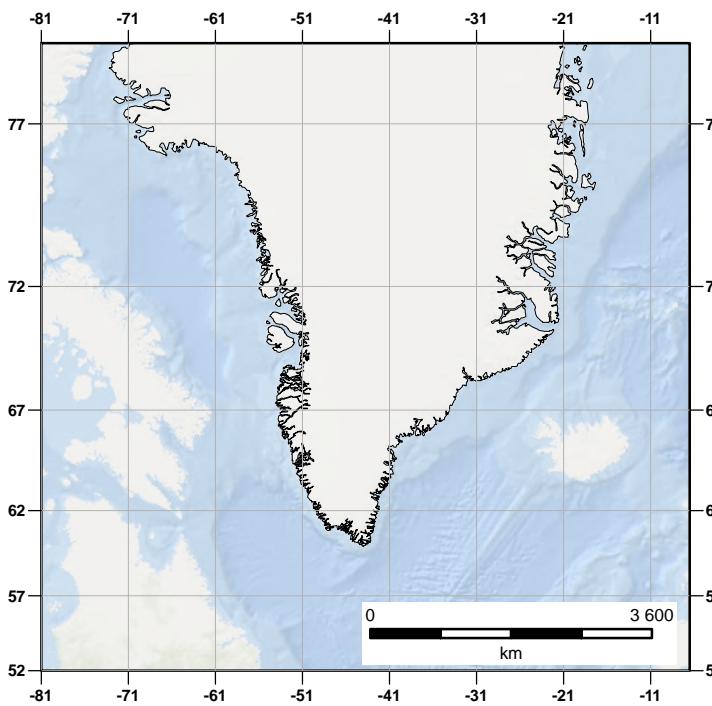
© BRGM, EuroGeoSurveys, 2024

The designation of Kosovo is without prejudice to positions on status,  
and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

# COBALT DEPOSITS OF EUROPE

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



## Deposit Status

Deposit name



Active extraction

Deposit name



Active project

Past extraction



Past extraction

Unexploited



Unexploited

Not specified

Deposit Size \*

Class A (Super Large)



Class A (Super Large)

Class B (Large)



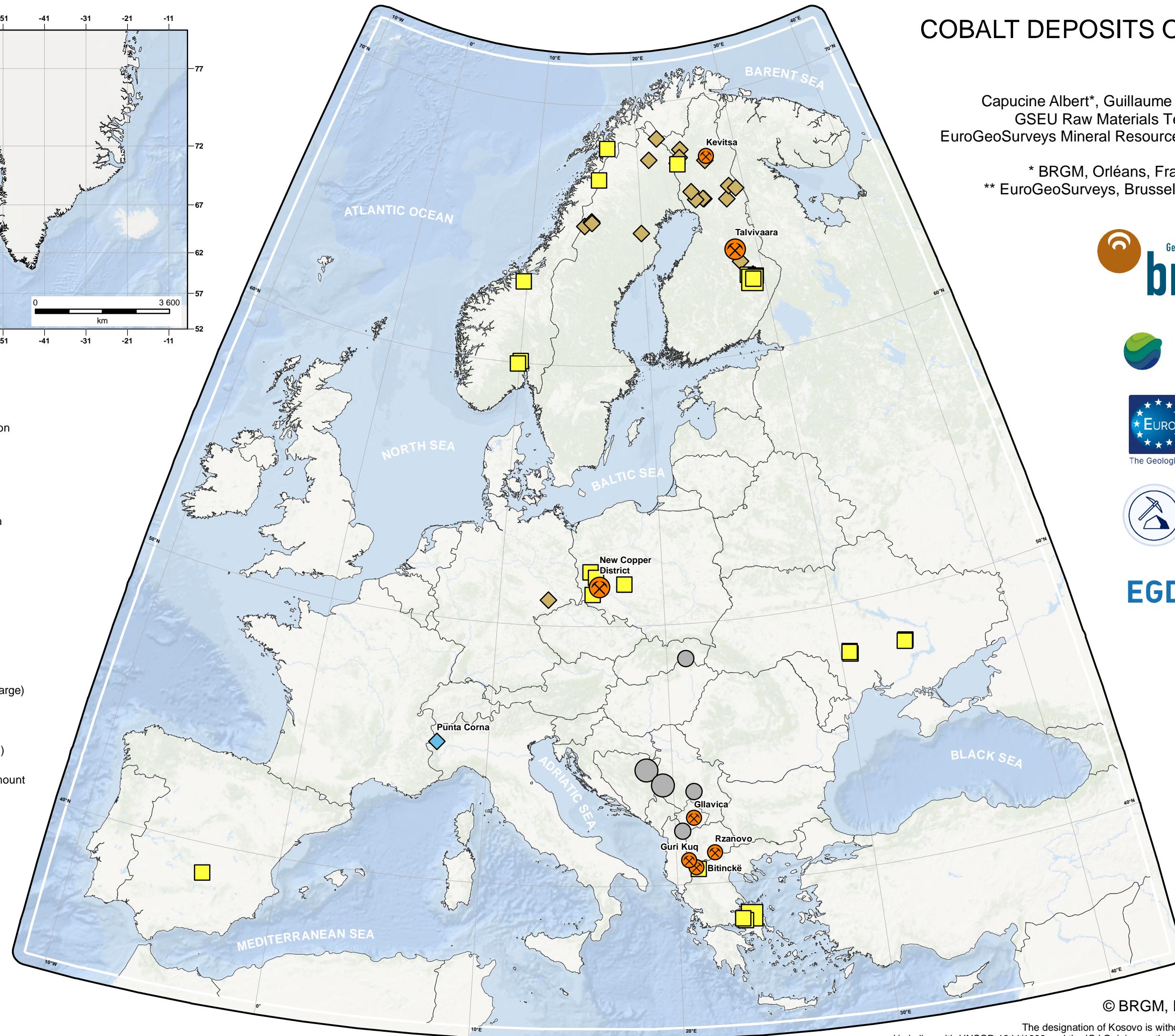
Class B (Large)

Class C (Medium)



Class C (Medium)

\* Remaining + extracted amount of the commodity



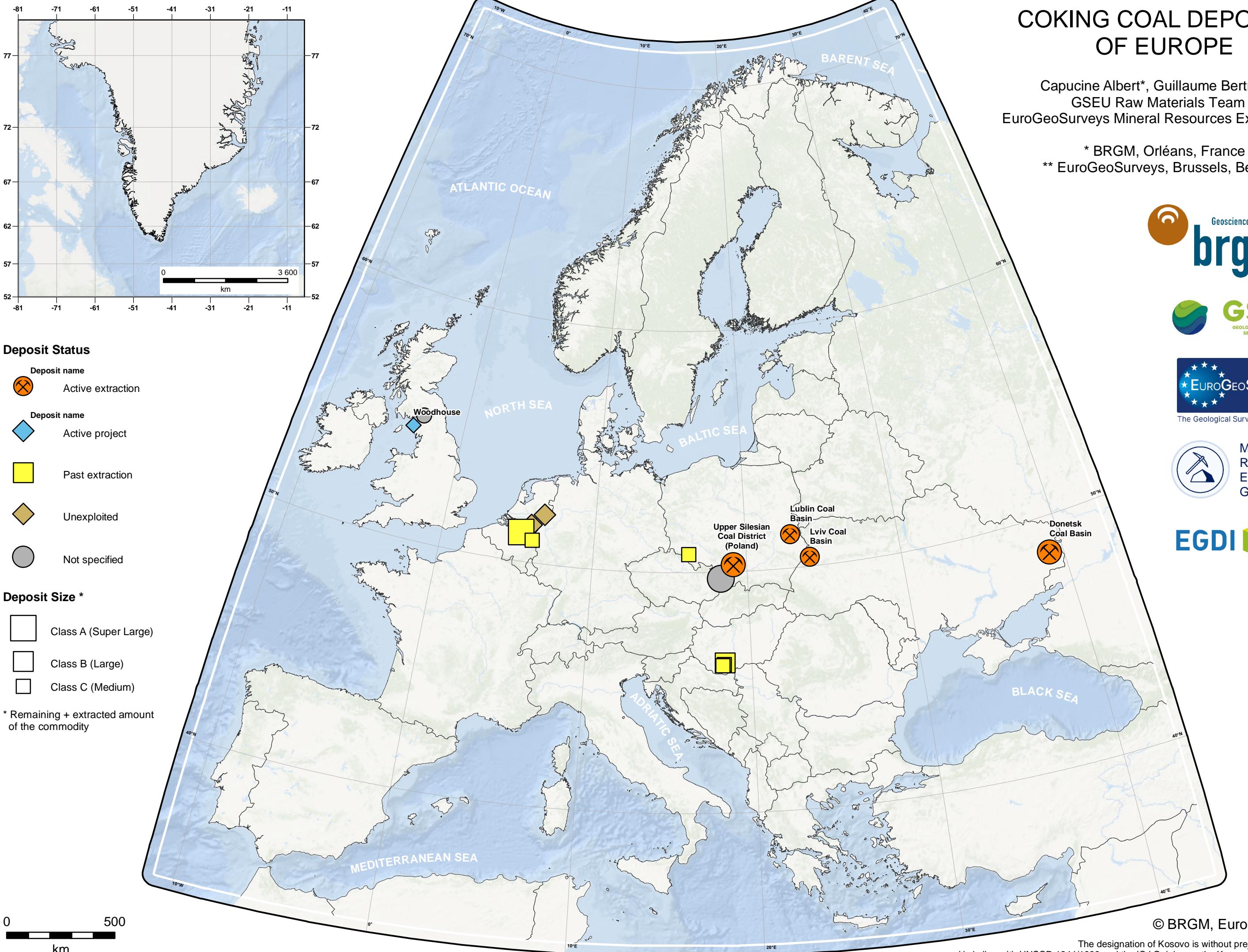
© BRGM, EuroGeoSurveys, 2024

The designation of Kosovo is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

# COKING COAL DEPOSITS OF EUROPE

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



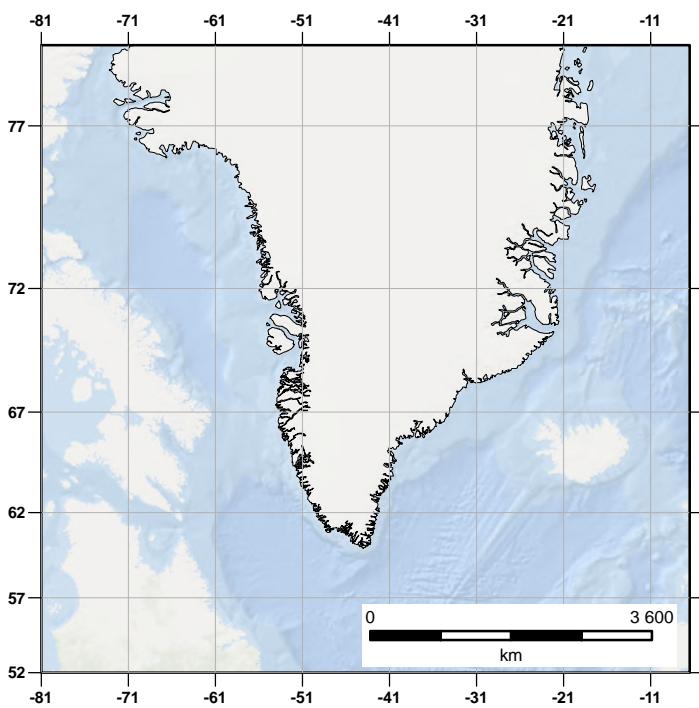
© BRGM, EuroGeoSurveys, 2024

The designation of Kosovo is without prejudice to positions on status,  
and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

# COPPER DEPOSITS OF EUROPE

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



## Deposit Status

Deposit name  
(X) Active extraction

Deposit name  
(diamond) Active project

Past extraction  
(square)

Unexploited  
(diamond)

Not specified  
(circle)

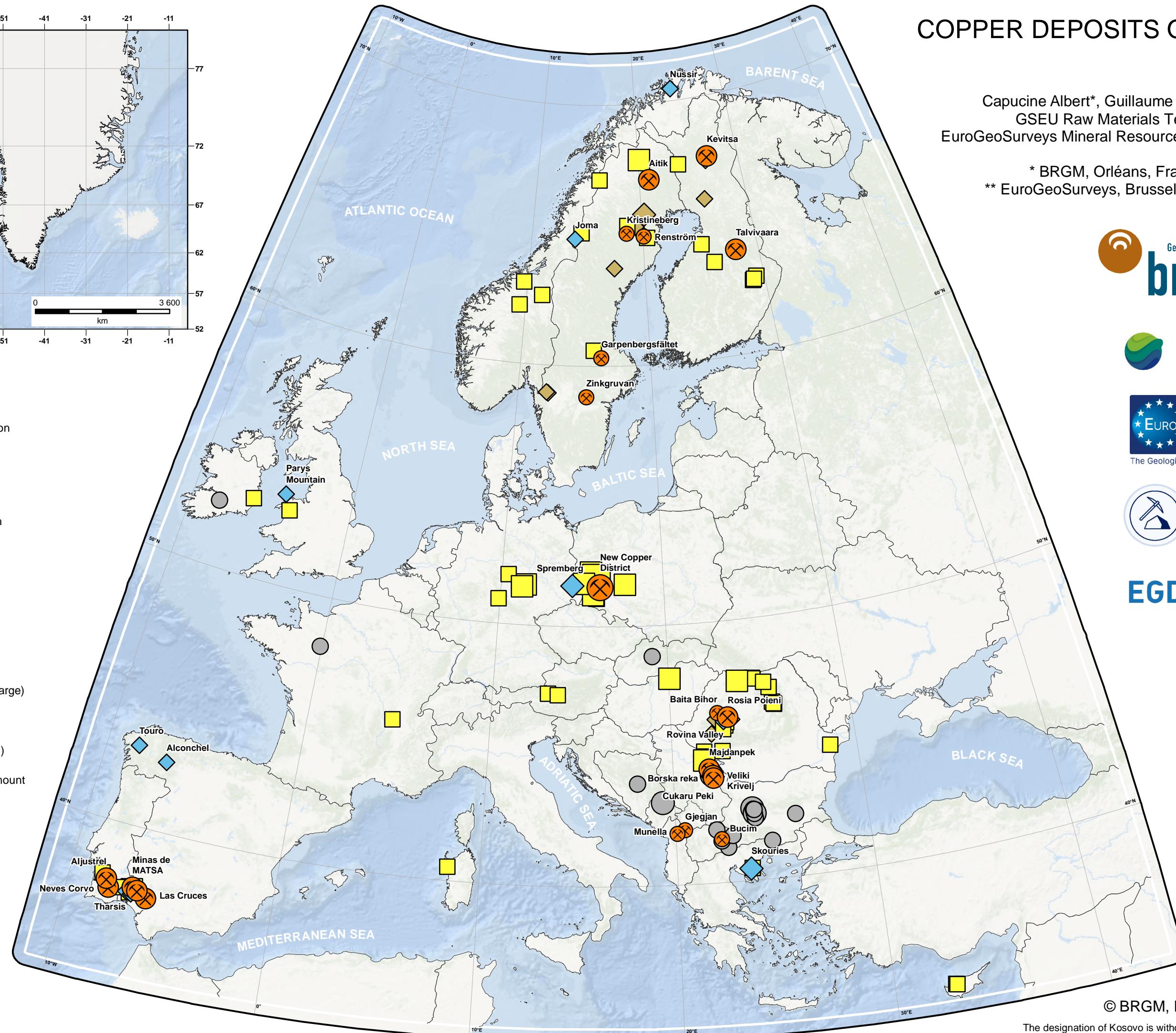
## Deposit Size \*

Class A (Super Large)

Class B (Large)

Class C (Medium)

\* Remaining + extracted amount  
of the commodity



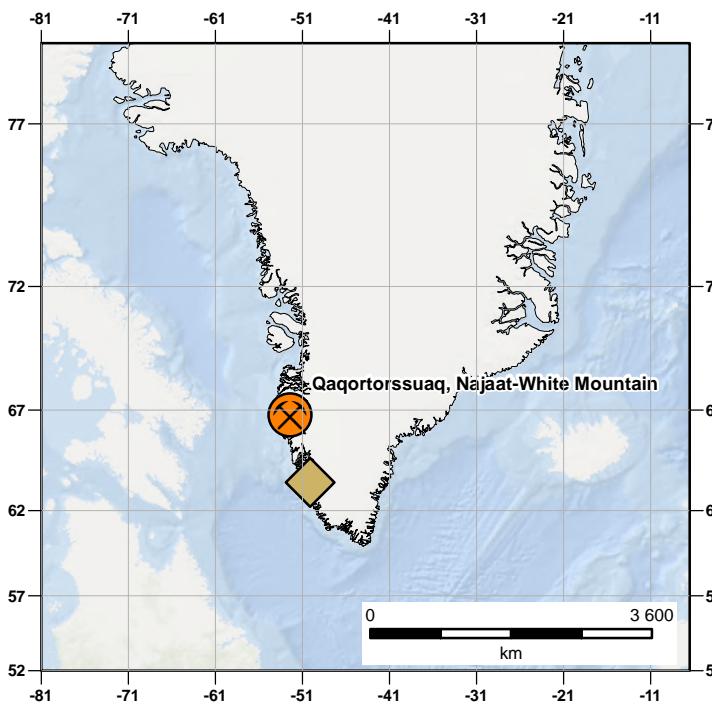
© BRGM, EuroGeoSurveys, 2024

The designation of Kosovo is without prejudice to positions on status,  
and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

# FELDSPAR DEPOSITS OF EUROPE

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



## Deposit Status

Deposit name  
(X) Active extraction

Deposit name  
(diamond) Active project

Past extraction  
(square)

Unexploited  
(diamond)

Not specified  
(circle)

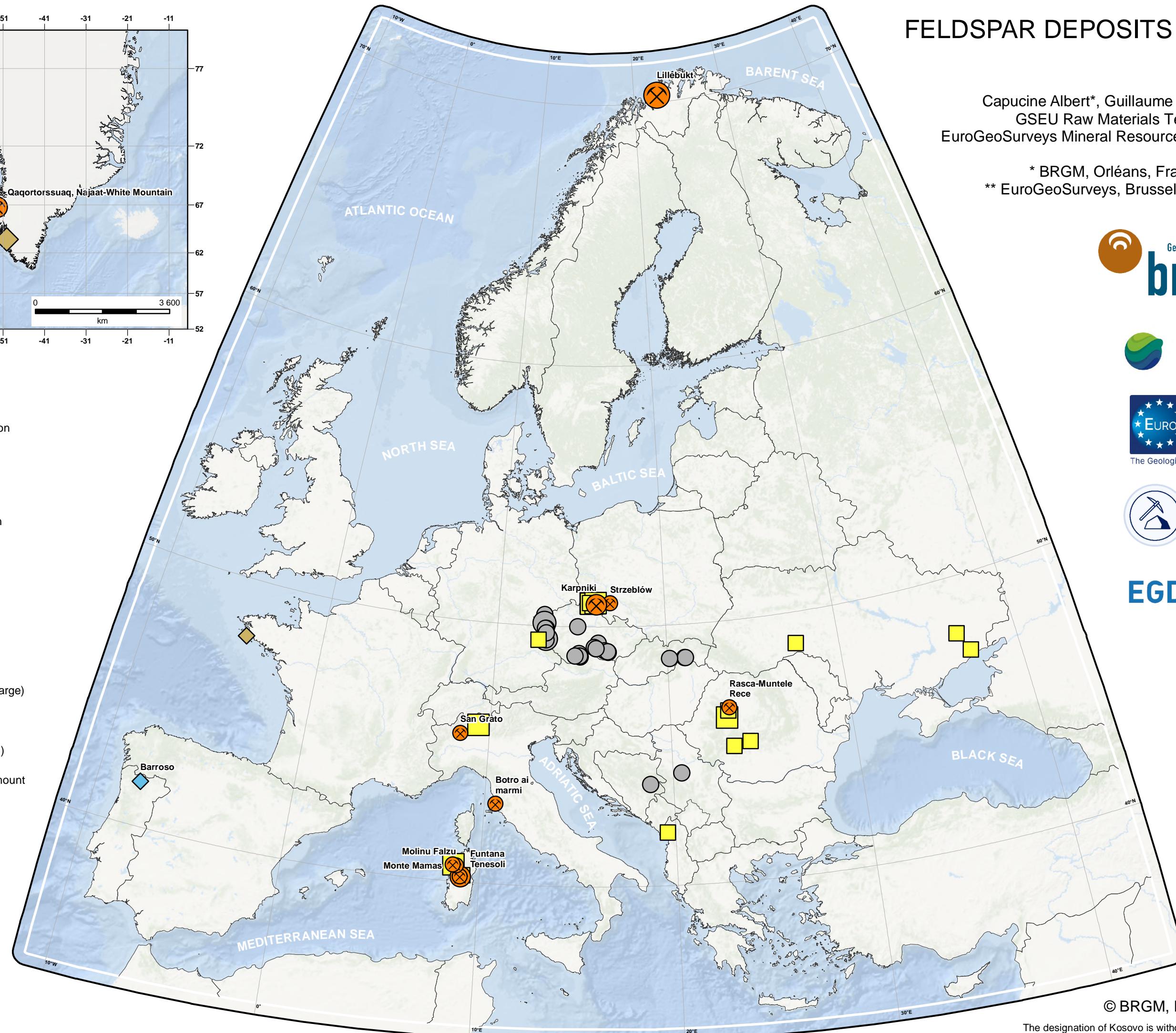
## Deposit Size \*

Class A (Super Large)

Class B (Large)

Class C (Medium)

\* Remaining + extracted amount  
of the commodity



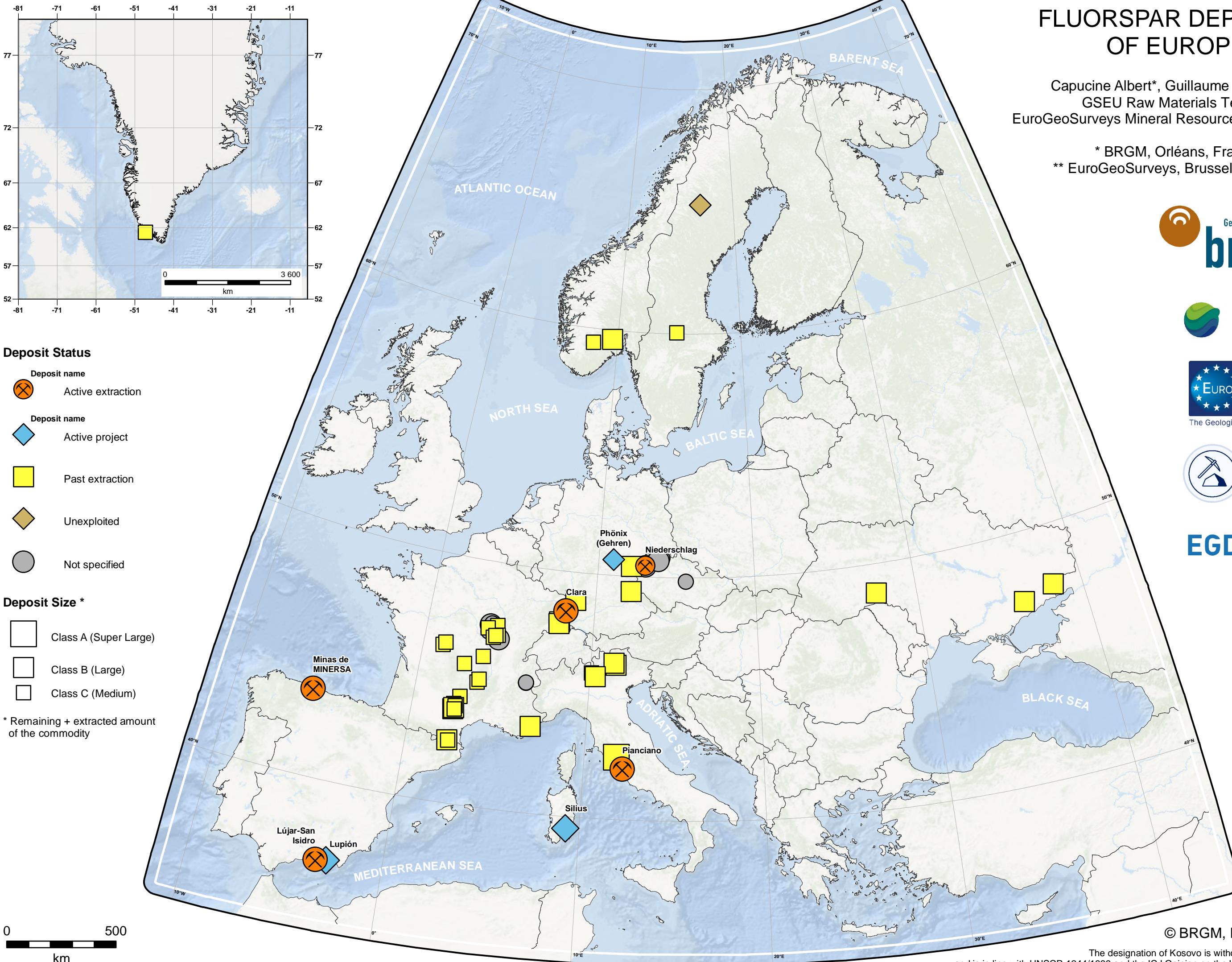
© BRGM, EuroGeoSurveys, 2024

The designation of Kosovo is without prejudice to positions on status,  
and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

# FLUORSPAR DEPOSITS OF EUROPE

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



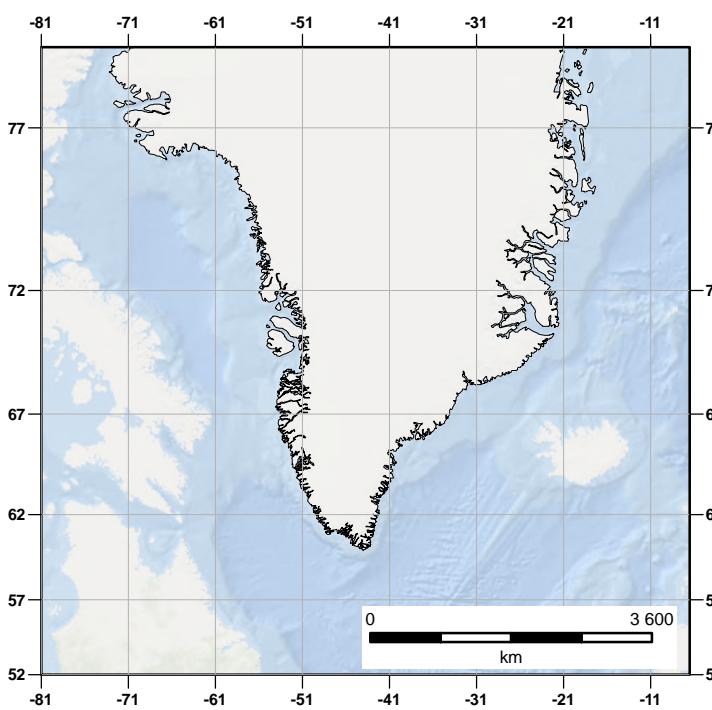
© BRGM, EuroGeoSurveys, 2024

The designation of Kosovo is without prejudice to positions on status,  
and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

# GALLIUM DEPOSITS OF EUROPE

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



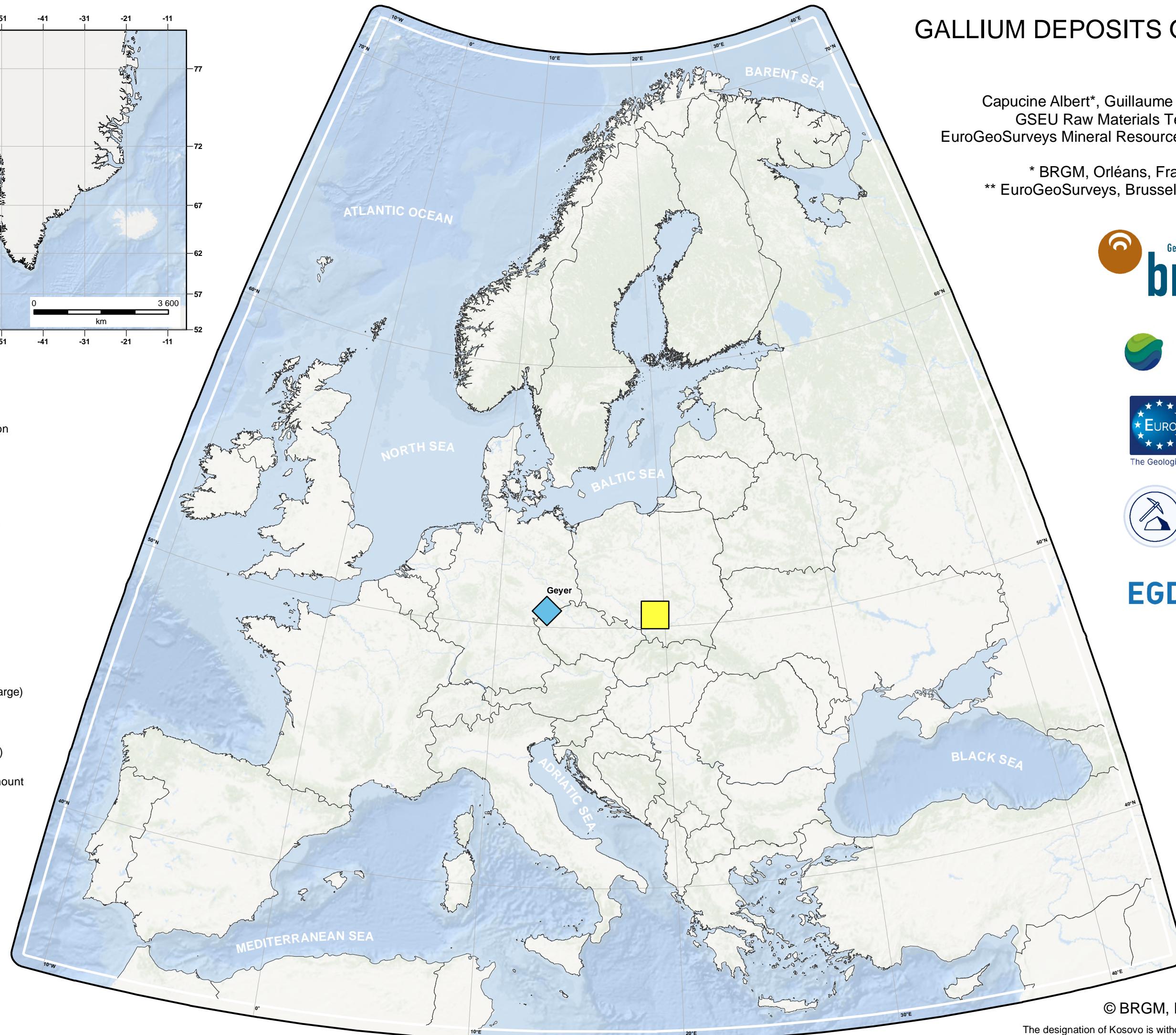
## Deposit Status

- Deposit name  
 Active extraction
- Deposit name  
 Active project
- Past extraction
- Unexploited
- Not specified

## Deposit Size \*

- Class A (Super Large)
- Class B (Large)
- Class C (Medium)

\* Remaining + extracted amount  
of the commodity



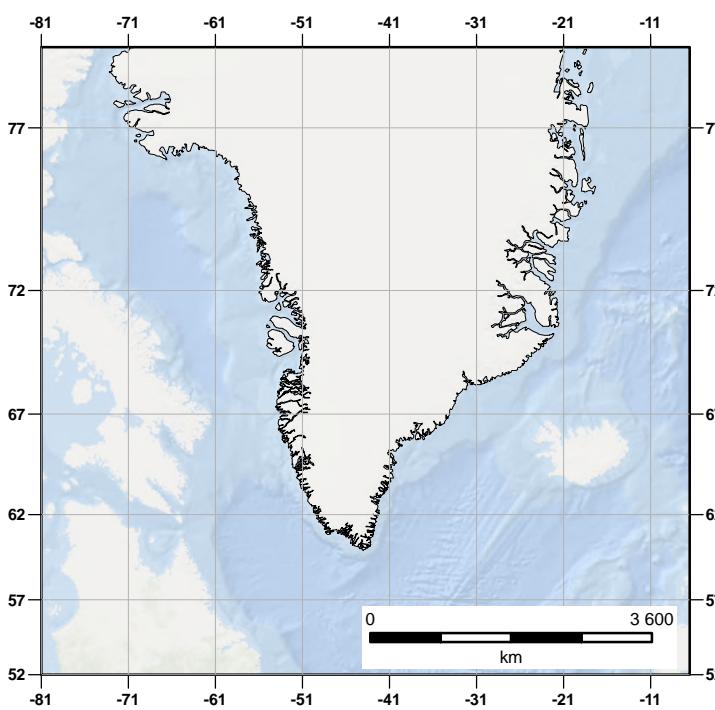
© BRGM, EuroGeoSurveys, 2024

The designation of Kosovo is without prejudice to positions on status,  
and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

# GERMANIUM DEPOSITS OF EUROPE

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



## Deposit Status

Deposit name  
 Active extraction

Deposit name  
 Active project

Past extraction

Unexploited

Not specified

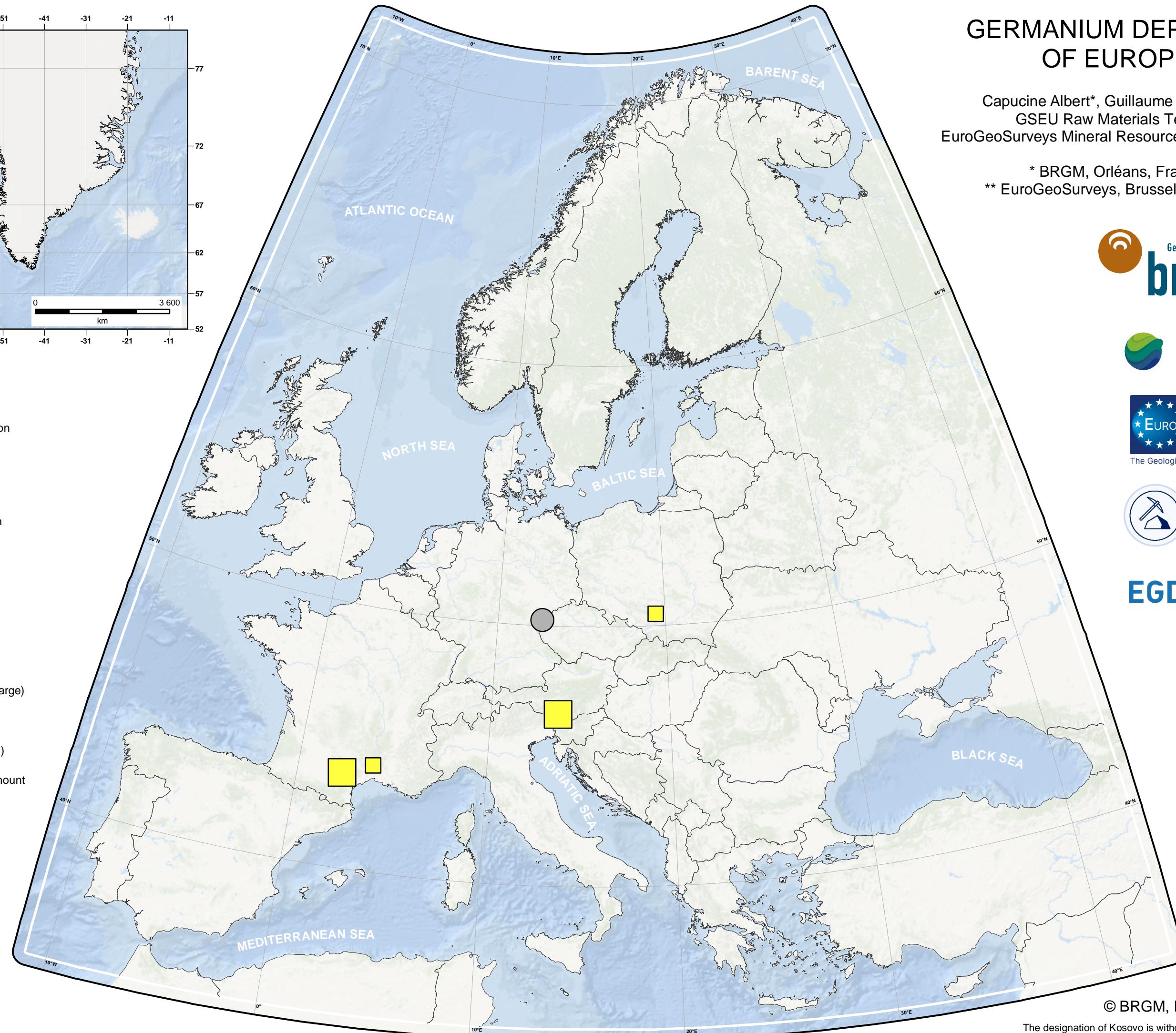
## Deposit Size \*

Class A (Super Large)

Class B (Large)

Class C (Medium)

\* Remaining + extracted amount  
of the commodity



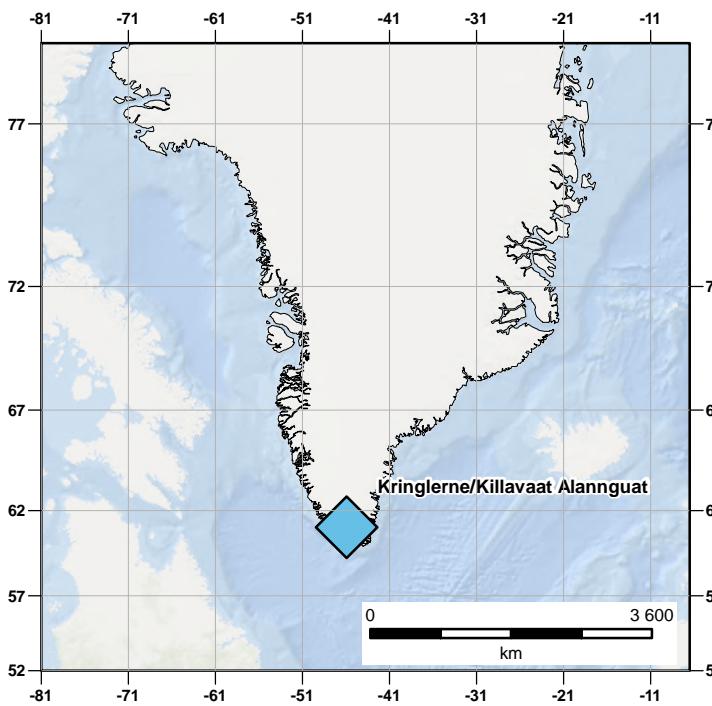
© BRGM, EuroGeoSurveys, 2024

The designation of Kosovo is without prejudice to positions on status,  
and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

# HAFNIUM DEPOSITS OF EUROPE

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



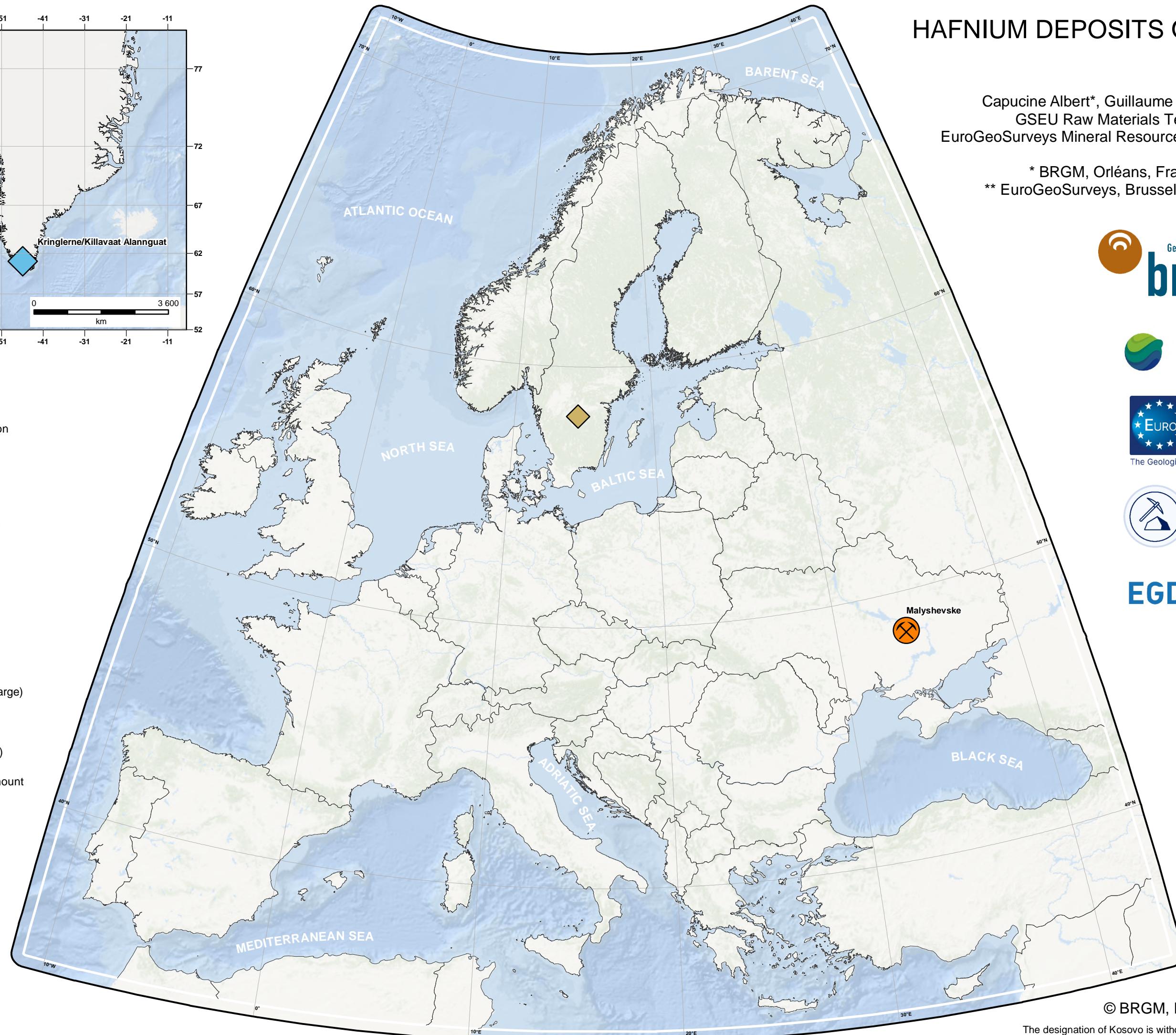
## Deposit Status

- Deposit name  
Active extraction (orange circle with a cross)
- Deposit name  
Active project (blue diamond)
- Past extraction (yellow square)
- Unexploited (brown diamond)
- Not specified (grey circle)

## Deposit Size \*

- Class A (Super Large) (white square)
- Class B (Large) (light blue square)
- Class C (Medium) (medium blue square)

\* Remaining + extracted amount  
of the commodity



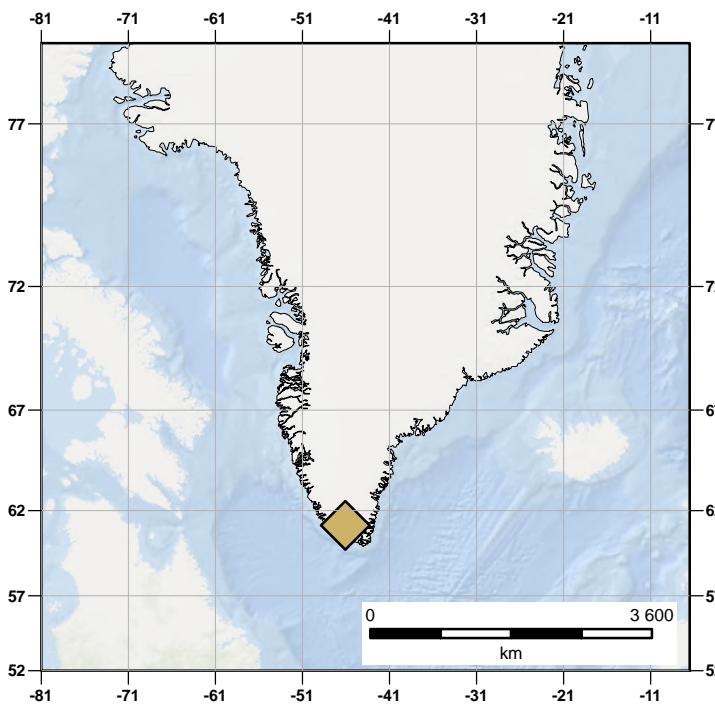
© BRGM, EuroGeoSurveys, 2024

The designation of Kosovo is without prejudice to positions on status,  
and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

# LITHIUM HARD ROCK DEPOSITS OF EUROPE

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



## Deposit Status

Deposit name  
 Active extraction

Deposit name  
 Active project

Past extraction

Unexploited

Not specified

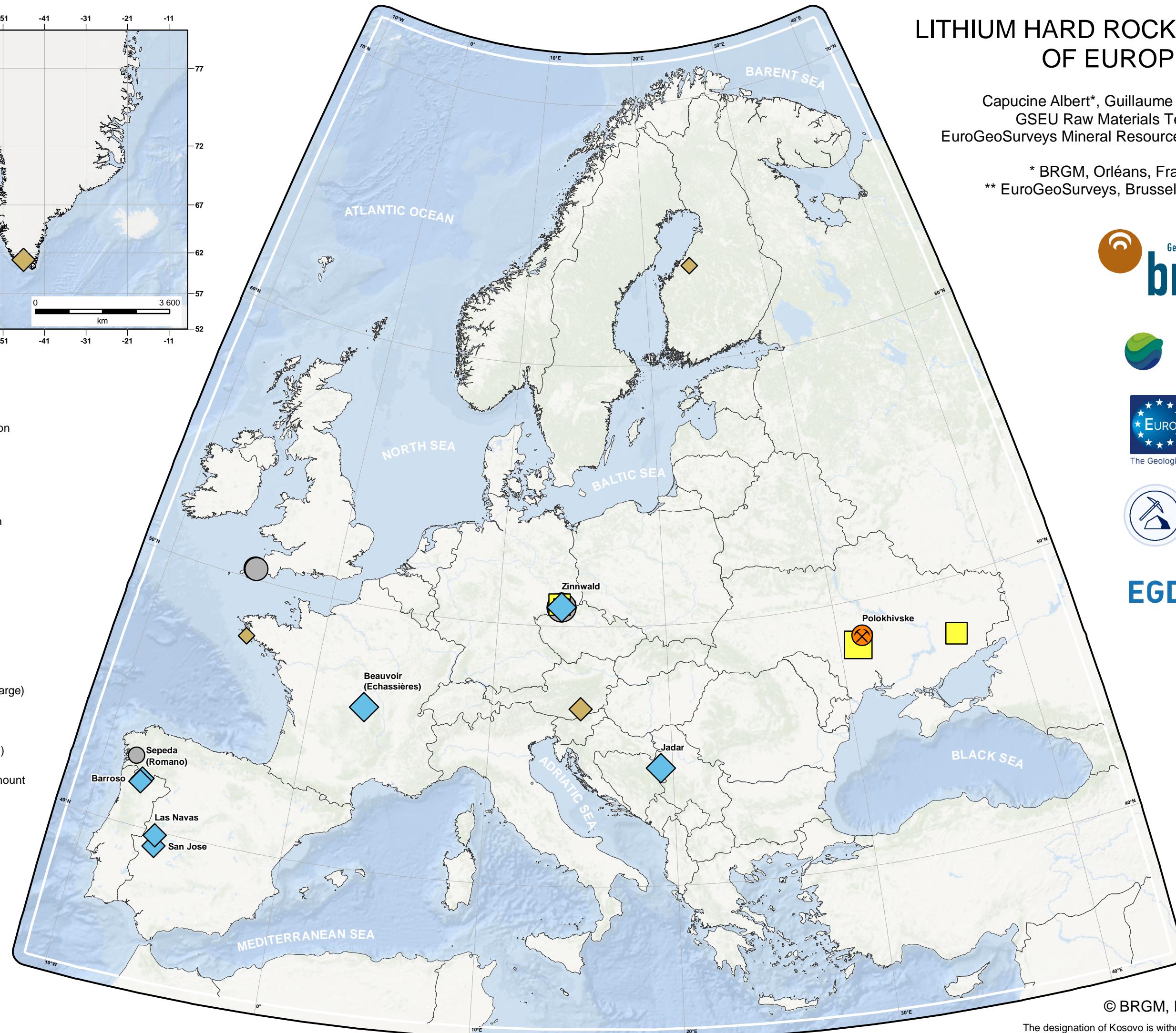
## Deposit Size \*

Class A (Super Large)

Class B (Large)

Class C (Medium)

\* Remaining + extracted amount  
of the commodity



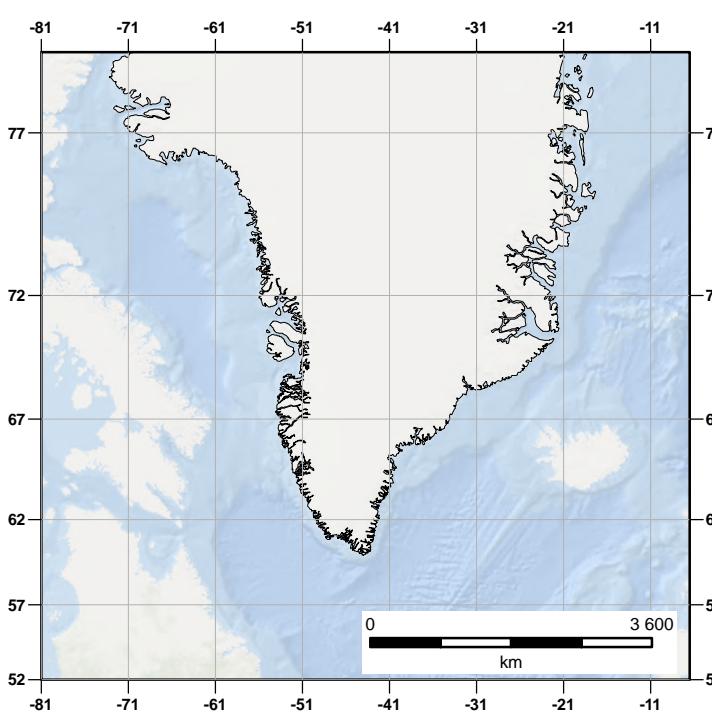
© BRGM, EuroGeoSurveys, 2024

The designation of Kosovo is without prejudice to positions on status,  
and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

# MAGNESIUM DEPOSITS OF EUROPE

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



## Deposit Status

Deposit name  
 Active extraction

Deposit name  
 Active project

Past extraction

Unexploited

Not specified

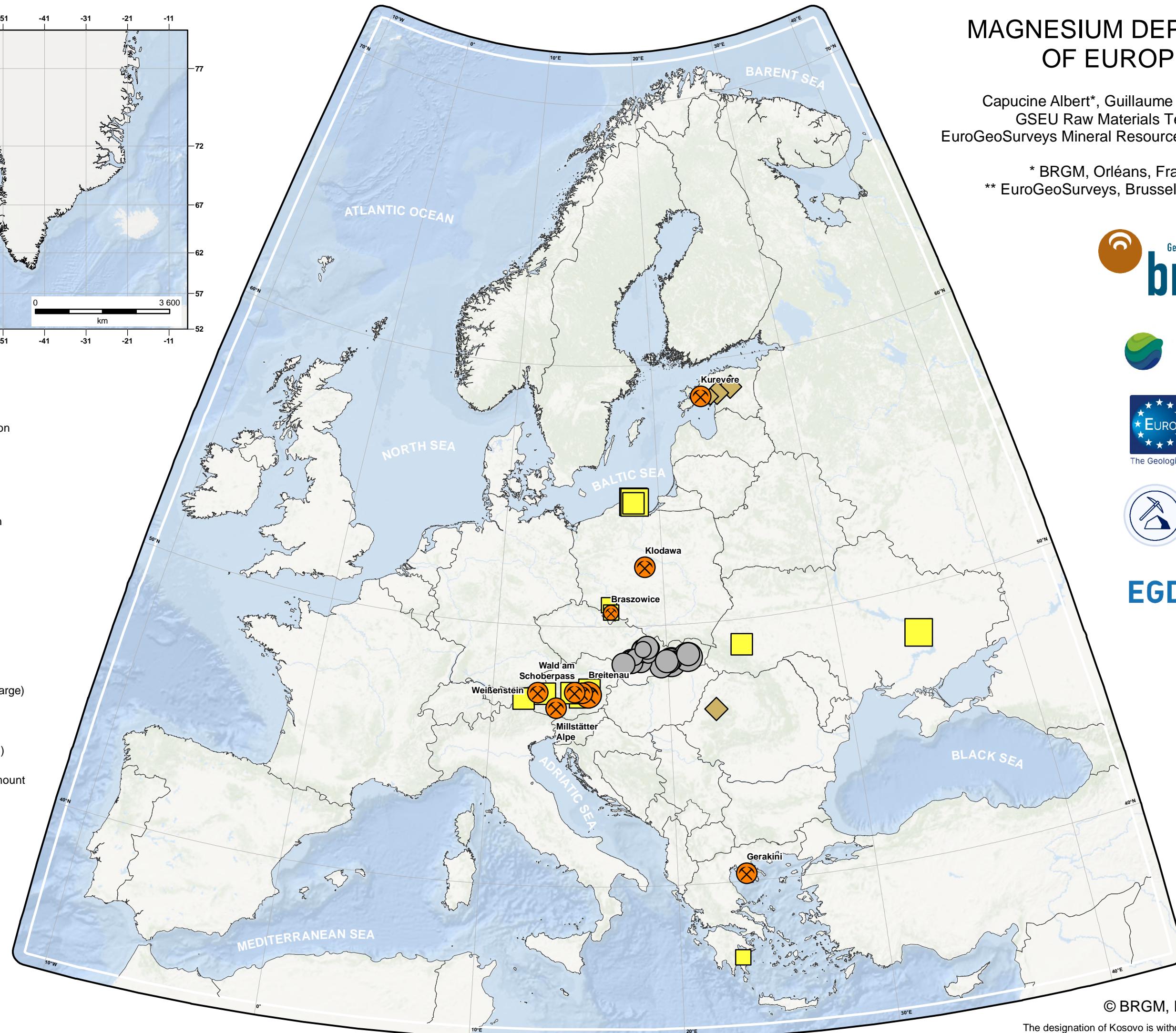
## Deposit Size \*

Class A (Super Large)

Class B (Large)

Class C (Medium)

\* Remaining + extracted amount  
of the commodity



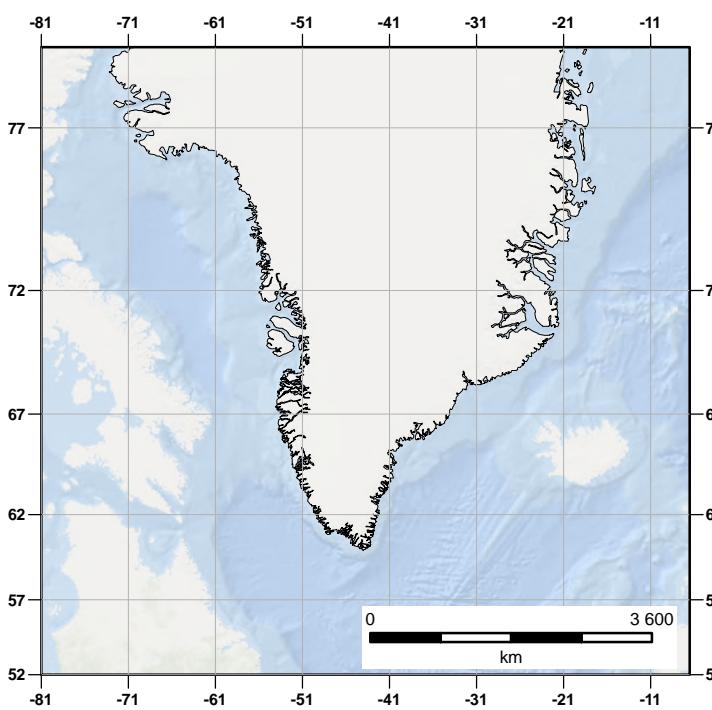
© BRGM, EuroGeoSurveys, 2024

The designation of Kosovo is without prejudice to positions on status,  
and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

# MANGANESE DEPOSITS OF EUROPE

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



## Deposit Status

Deposit name  
 Active extraction

Deposit name  
 Active project

Past extraction

Unexploited

Not specified

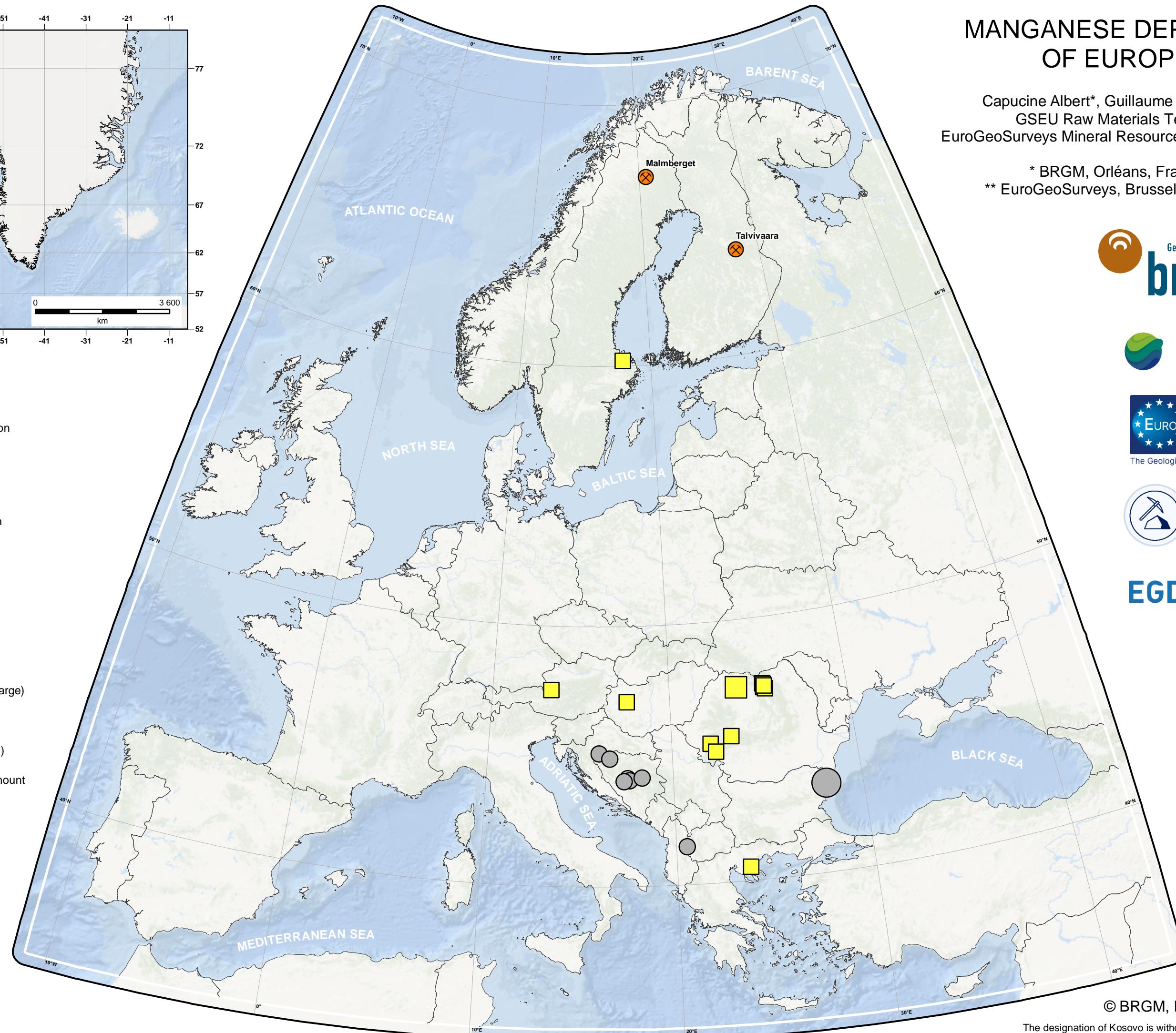
## Deposit Size \*

Class A (Super Large)

Class B (Large)

Class C (Medium)

\* Remaining + extracted amount  
of the commodity



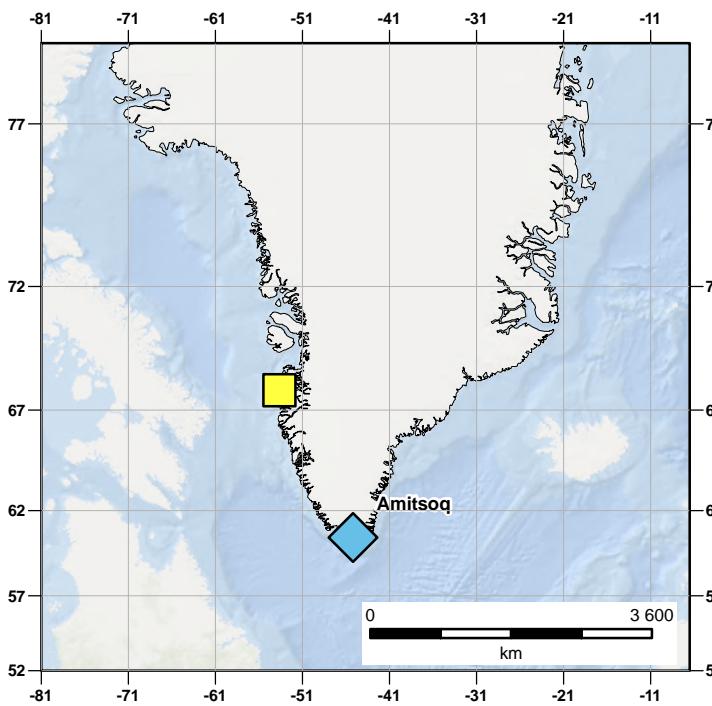
© BRGM, EuroGeoSurveys, 2024

The designation of Kosovo is without prejudice to positions on status,  
and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

# NATURAL GRAPHITE DEPOSITS OF EUROPE

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



## Deposit Status

Deposit name

Active extraction

Deposit name

Active project

Past extraction

Unexploited

Not specified

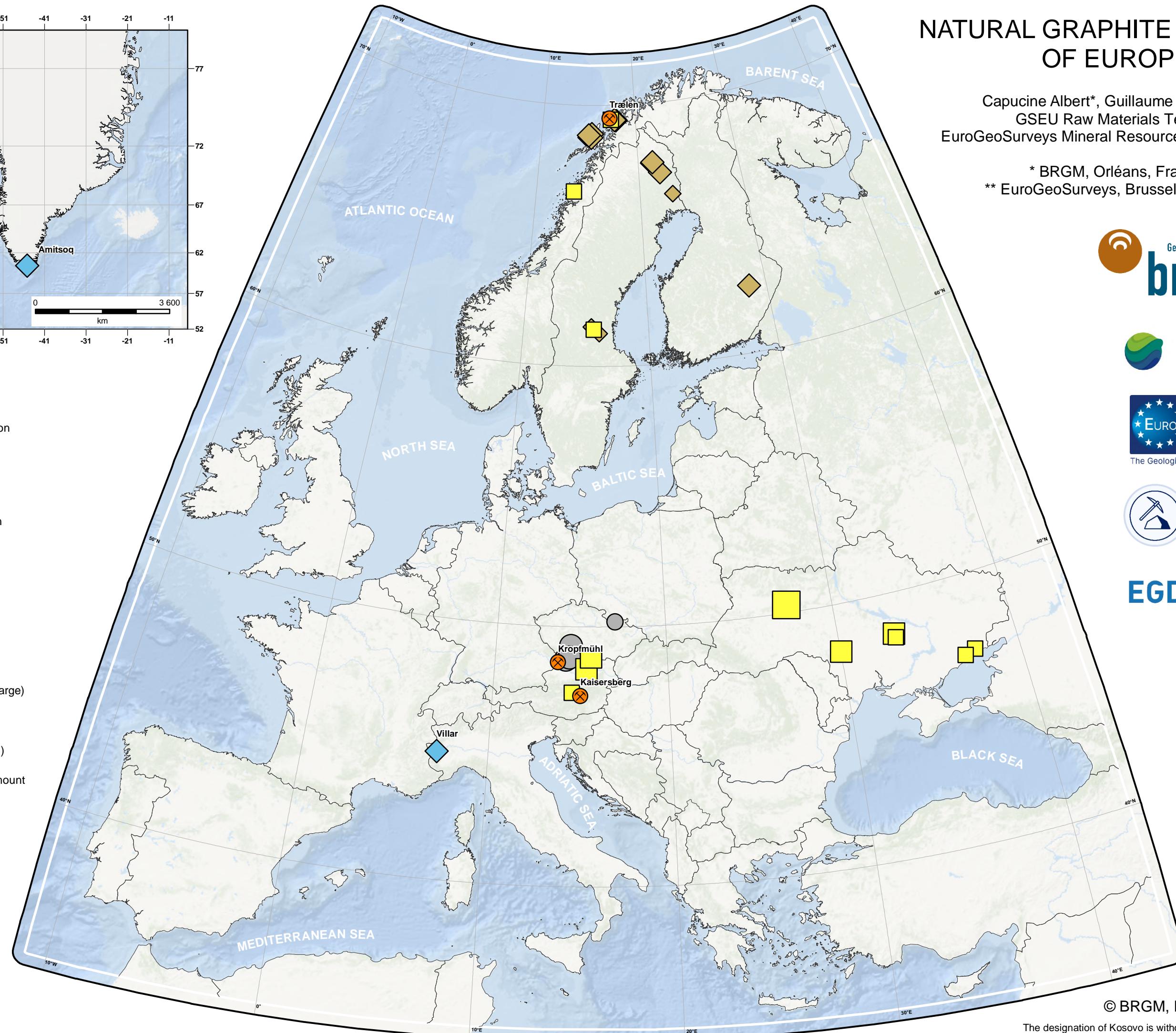
## Deposit Size \*

Class A (Super Large)

Class B (Large)

Class C (Medium)

\* Remaining + extracted amount  
of the commodity



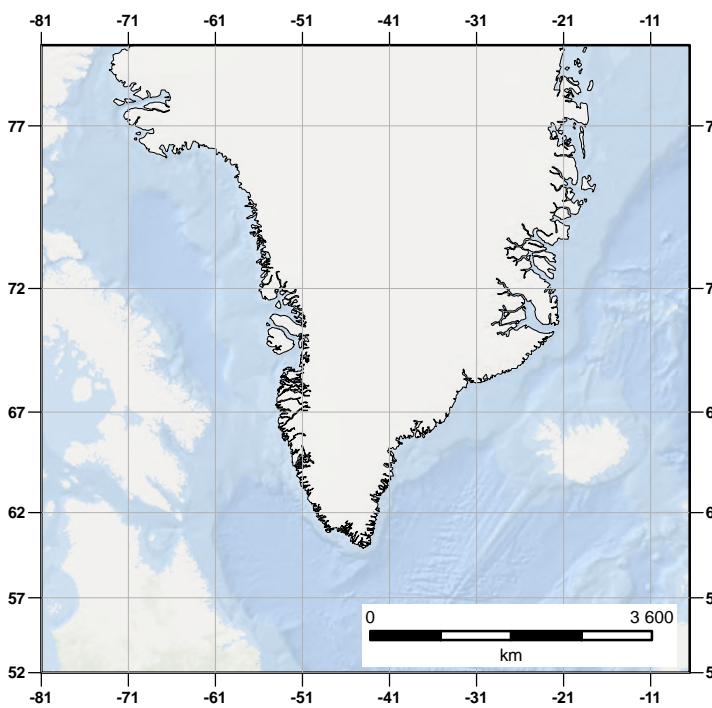
© BRGM, EuroGeoSurveys, 2024

The designation of Kosovo is without prejudice to positions on status,  
and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

# NICKEL DEPOSITS OF EUROPE

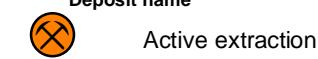
Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



## Deposit Status

Deposit name



Active extraction

Deposit name



Active project

Past extraction



Past extraction

Unexploited

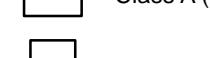


Unexploited

Not specified

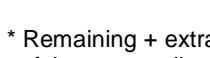
Deposit Size \*

Class A (Super Large)



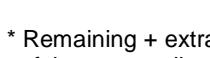
Class A (Super Large)

Class B (Large)



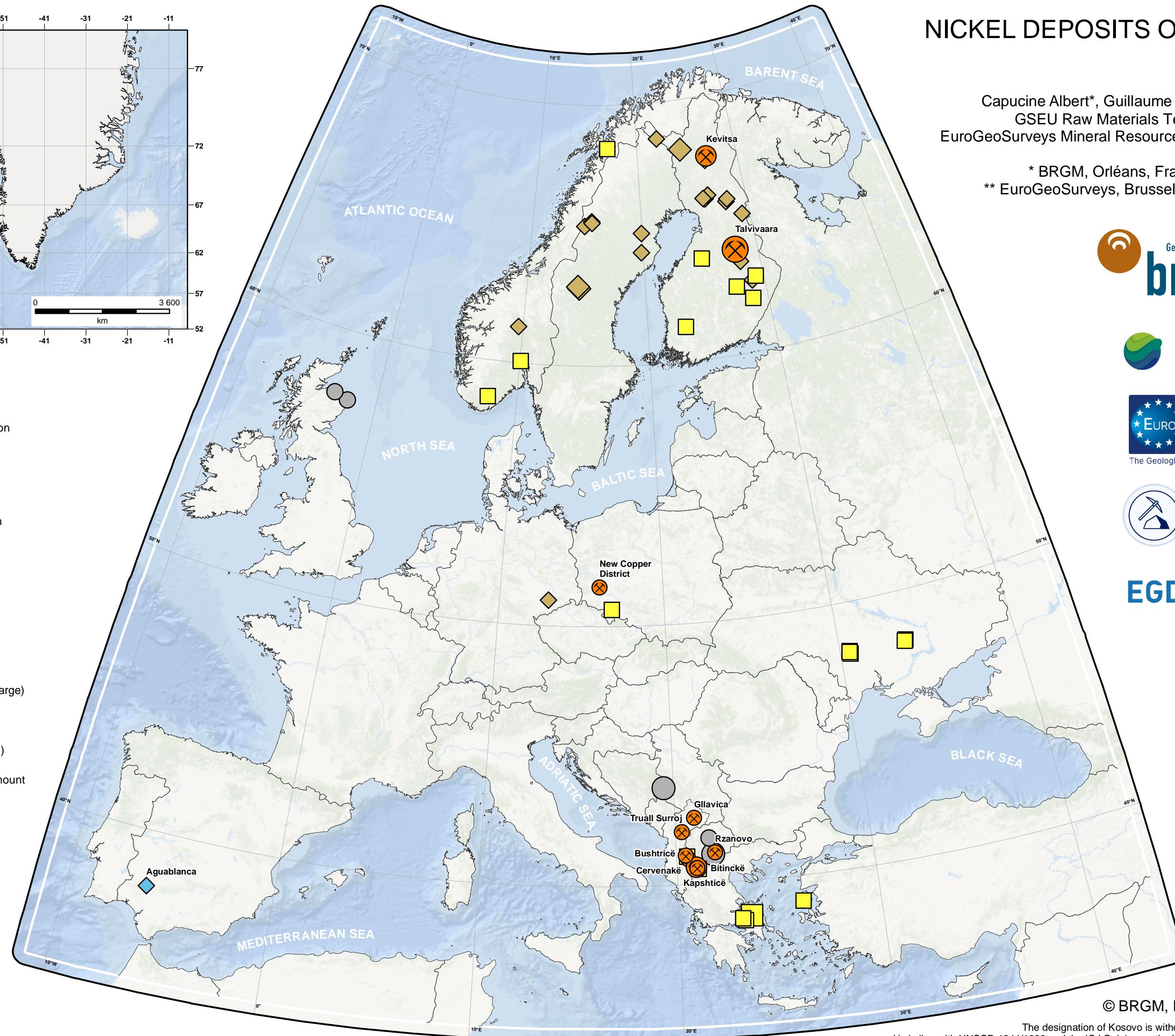
Class B (Large)

Class C (Medium)



Class C (Medium)

\* Remaining + extracted amount of the commodity



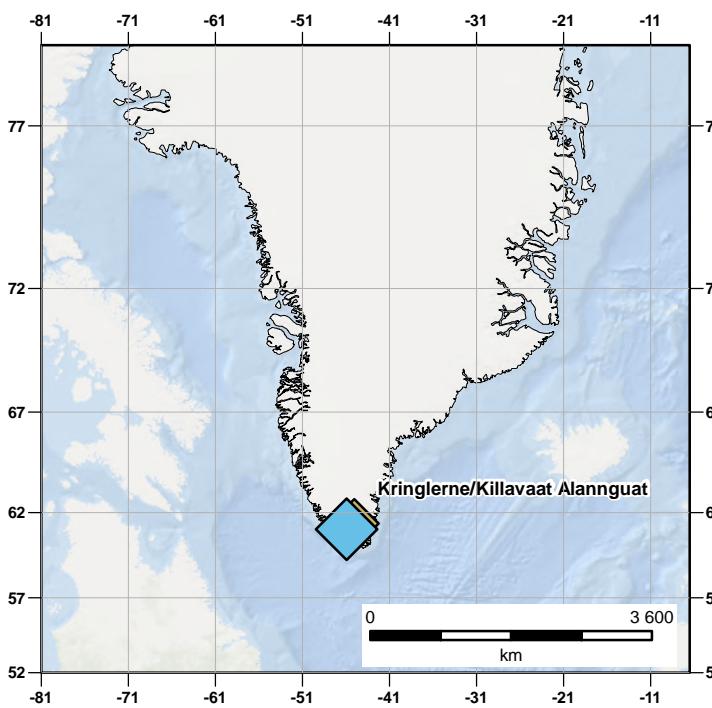
© BRGM, EuroGeoSurveys, 2024

The designation of Kosovo is without prejudice to positions on status,  
and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

# NIOBIUM DEPOSITS OF EUROPE

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



## Deposit Status

Deposit name  
✖ Active extraction

Deposit name  
diamond Active project

Past extraction  
square

Unexploited  
diamond

Not specified  
circle

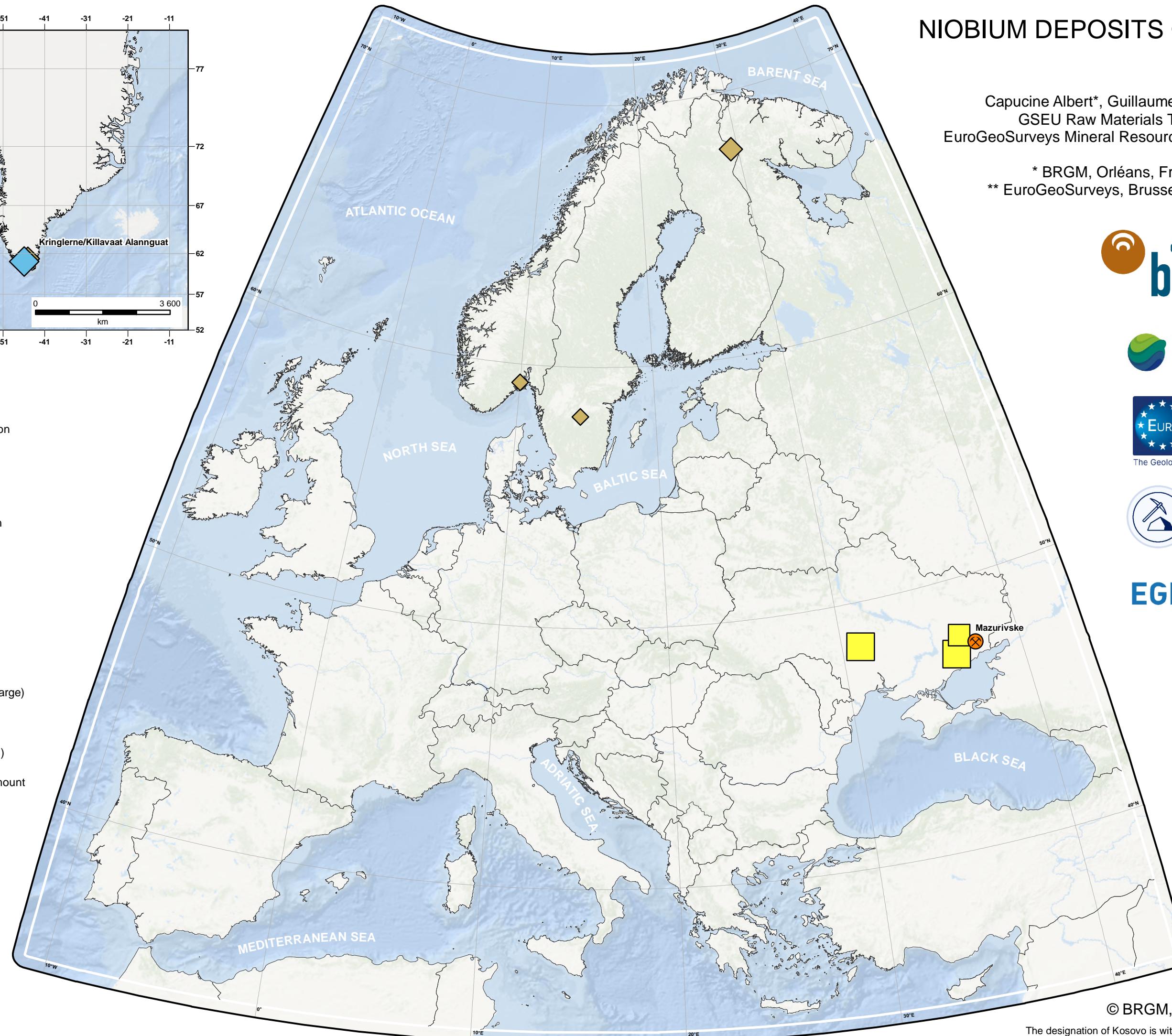
## Deposit Size \*

Class A (Super Large)

Class B (Large)

Class C (Medium)

\* Remaining + extracted amount  
of the commodity



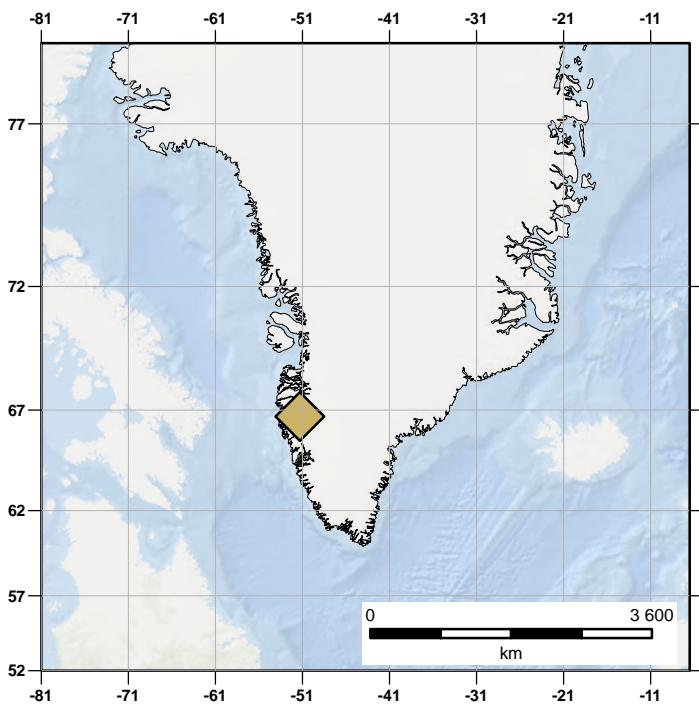
© BRGM, EuroGeoSurveys, 2024

The designation of Kosovo is without prejudice to positions on status,  
and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

# PHOSPHATE ROCK/PHOSPHOROUS DEPOSITS OF EUROPE

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



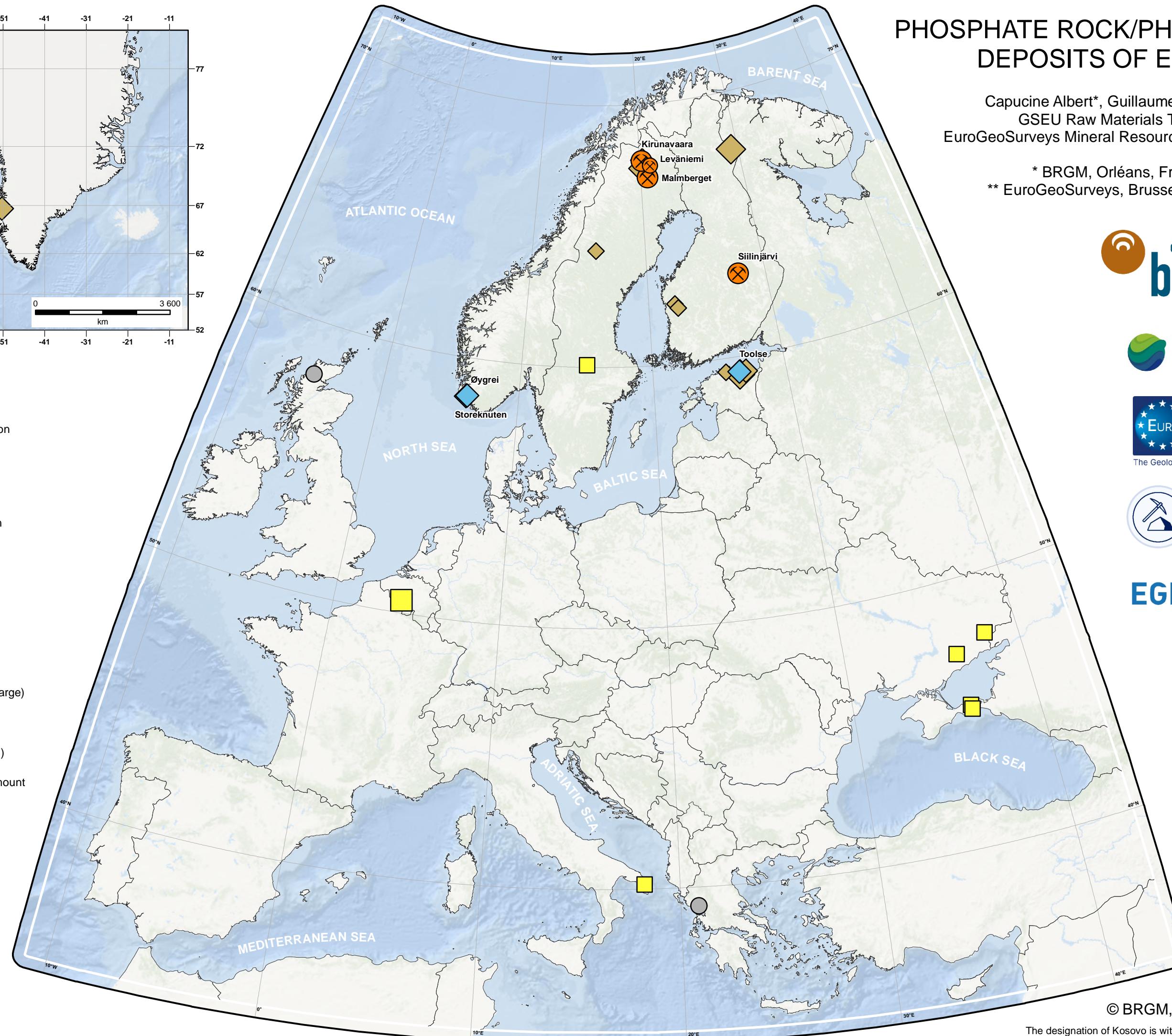
## Deposit Status

- Deposit name  
 Active extraction
- Deposit name  
 Active project
- Past extraction
- Unexploited
- Not specified

## Deposit Size \*

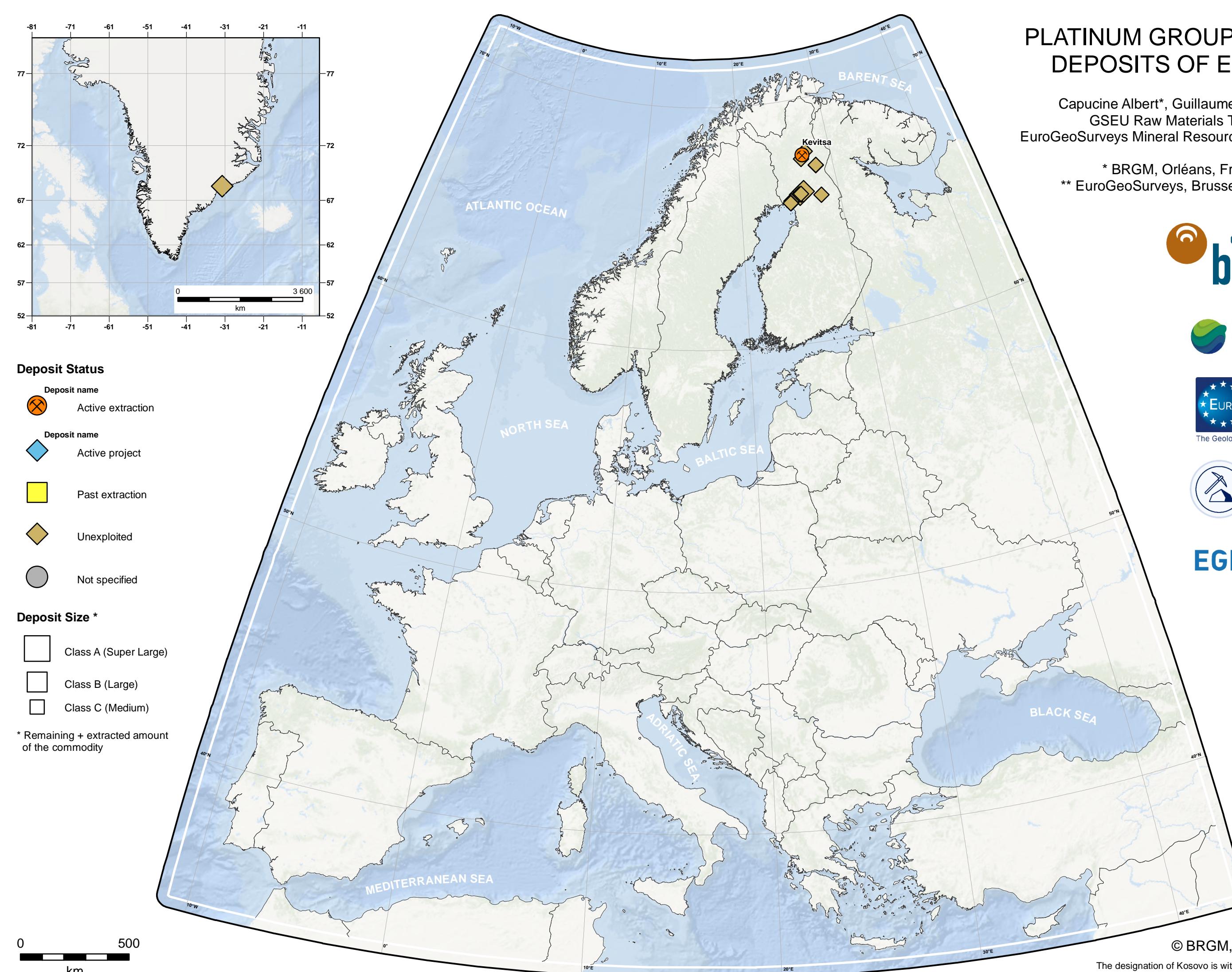
- Class A (Super Large)
- Class B (Large)
- Class C (Medium)

\* Remaining + extracted amount  
of the commodity



© BRGM, EuroGeoSurveys, 2024

The designation of Kosovo is without prejudice to positions on status,  
and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.



## PLATINUM GROUP METALS DEPOSITS OF EUROPE

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France

\*\* EuroGeoSurveys, Brussels, Belgium



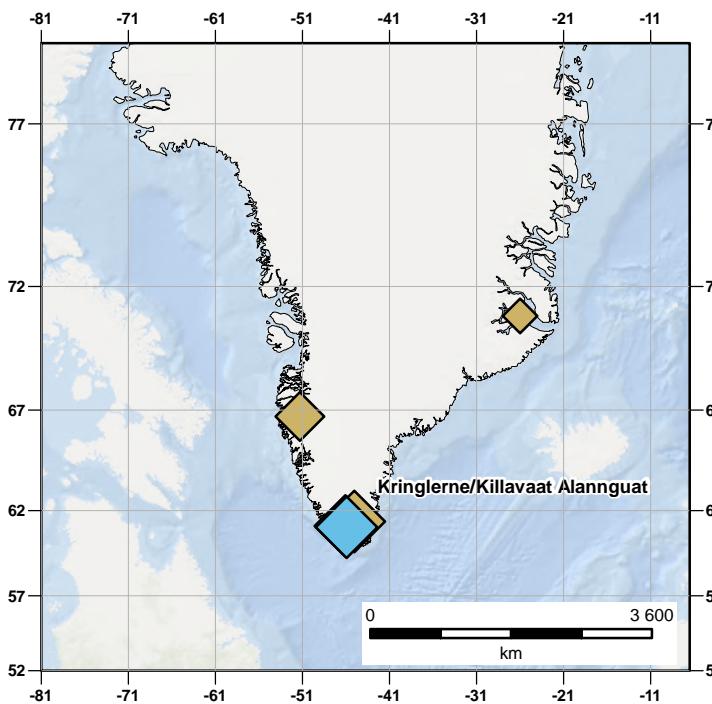
© BRGM, EuroGeoSurveys, 2024

The designation of Kosovo is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

# RARE EARTH ELEMENTS DEPOSITS OF EUROPE

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



## Deposit Status

Deposit name  
Active extraction (orange circle with X)

Deposit name  
Active project (blue diamond)

Past extraction (yellow square)

Unexploited (brown diamond)

Not specified (grey circle)

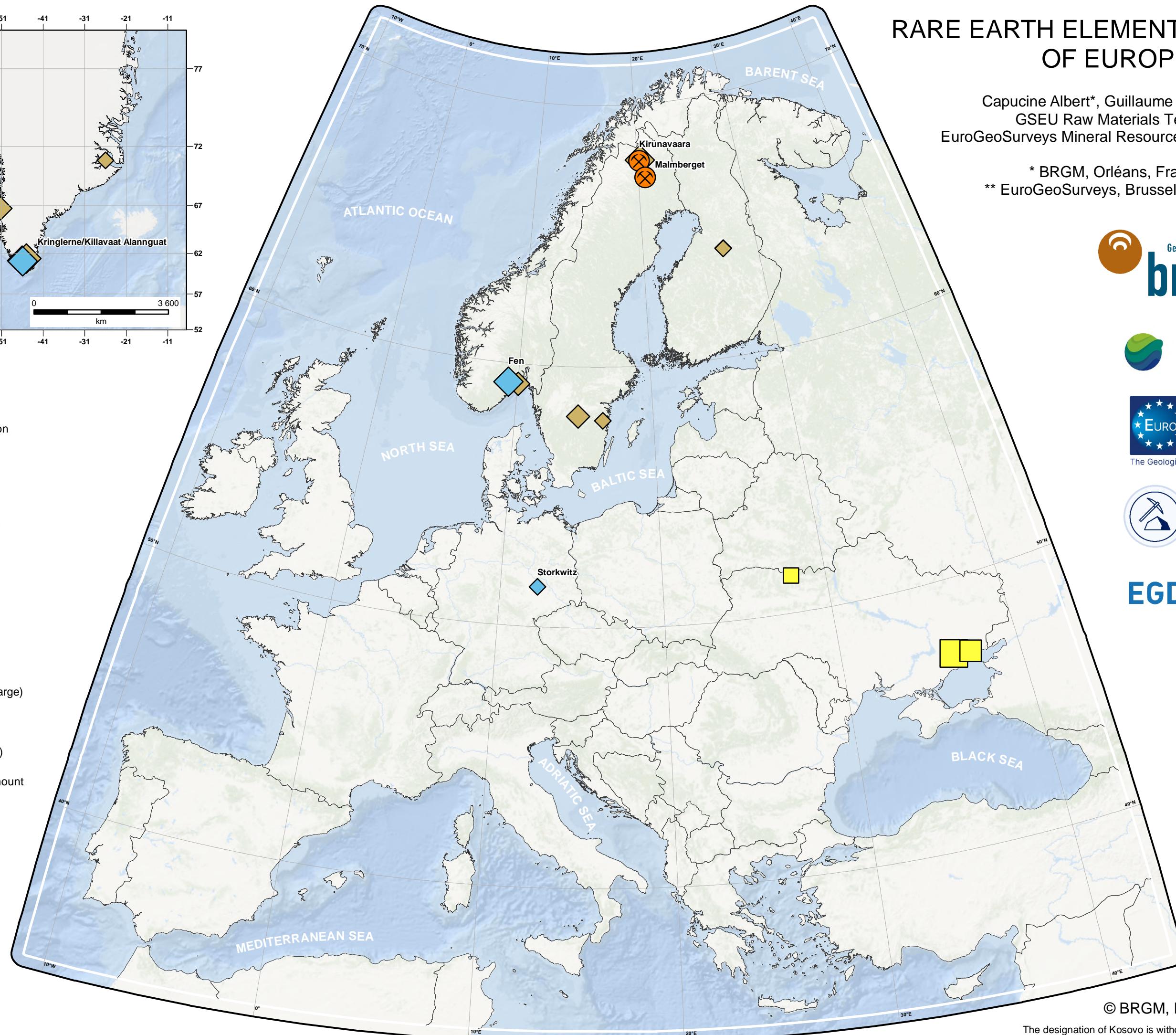
## Deposit Size \*

Class A (Super Large) (white square)

Class B (Large) (light grey square)

Class C (Medium) (medium grey square)

\* Remaining + extracted amount of the commodity



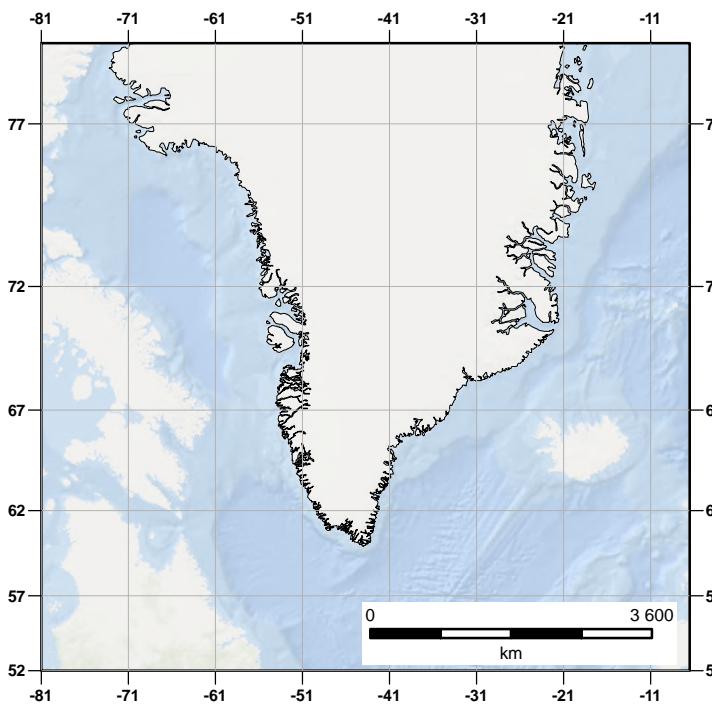
© BRGM, EuroGeoSurveys, 2024

The designation of Kosovo is without prejudice to positions on status,  
and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

# SCANDIUM DEPOSITS OF EUROPE

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



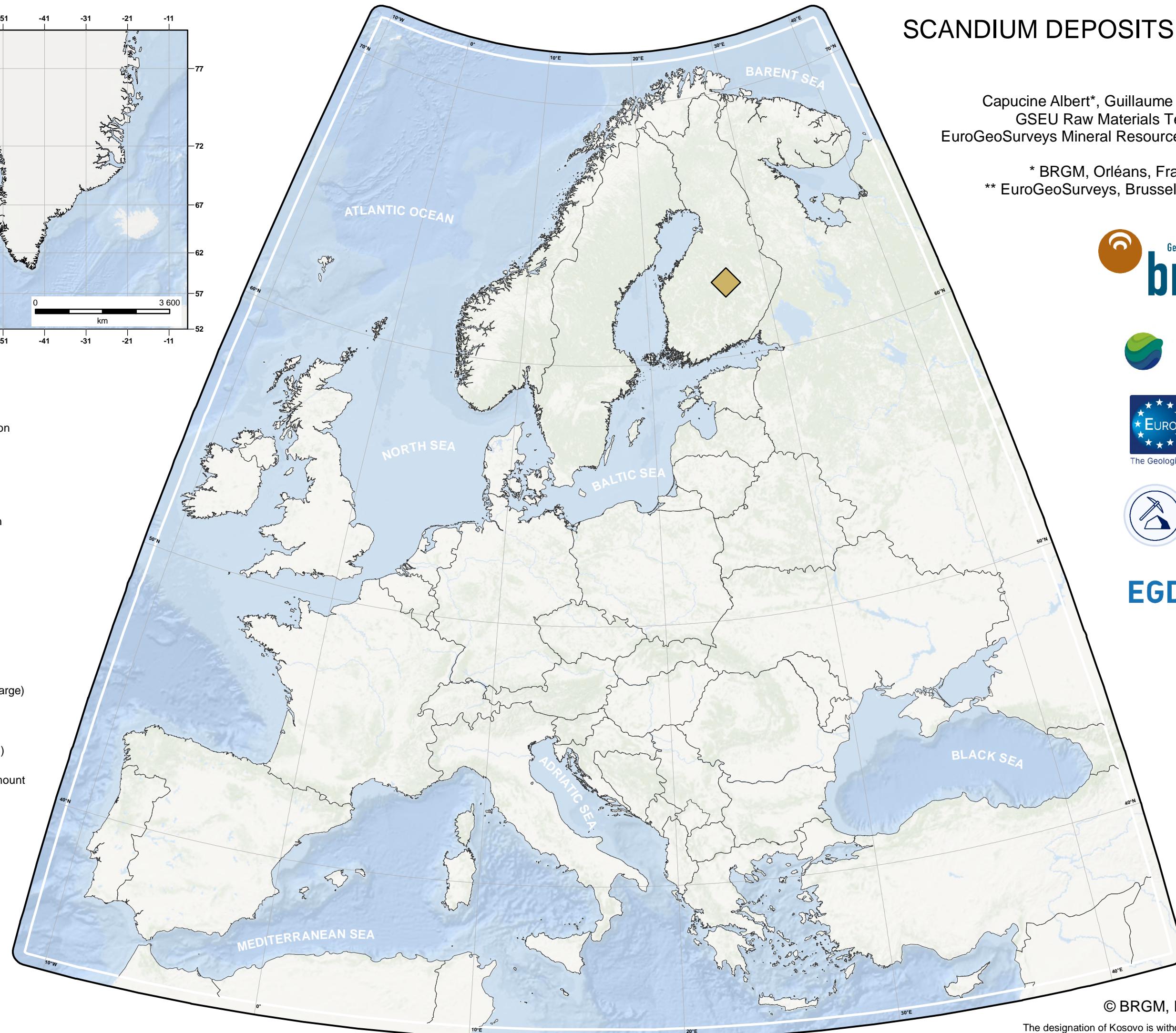
## Deposit Status

- Deposit name  
 Active extraction
- Deposit name  
 Active project
- Past extraction
- Unexploited
- Not specified

## Deposit Size \*

- Class A (Super Large)
- Class B (Large)
- Class C (Medium)

\* Remaining + extracted amount  
of the commodity



© BRGM, EuroGeoSurveys, 2024

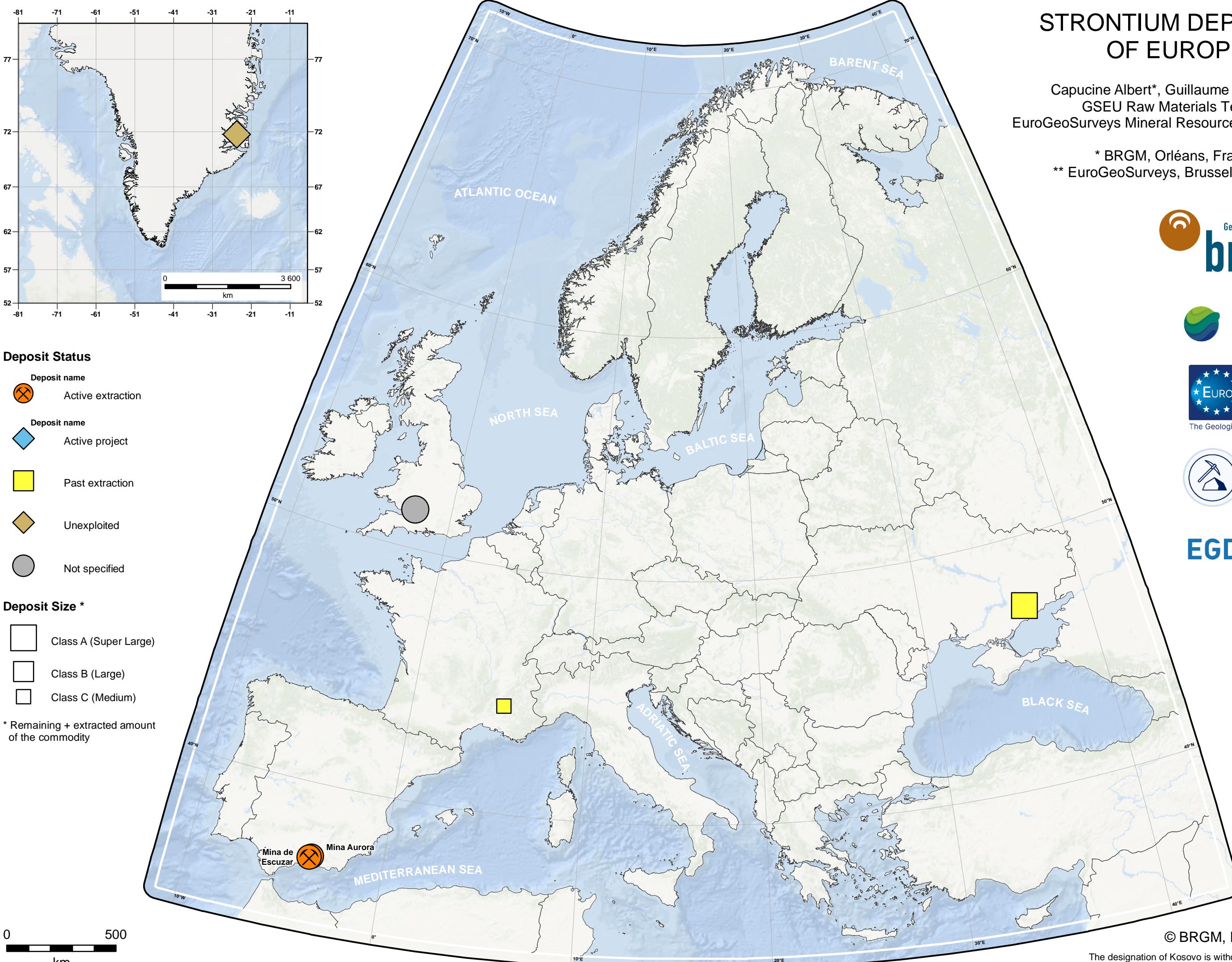
The designation of Kosovo is without prejudice to positions on status,  
and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

# STRONTIUM DEPOSITS OF EUROPE

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France

\*\* EuroGeoSurveys, Brussels, Belgium



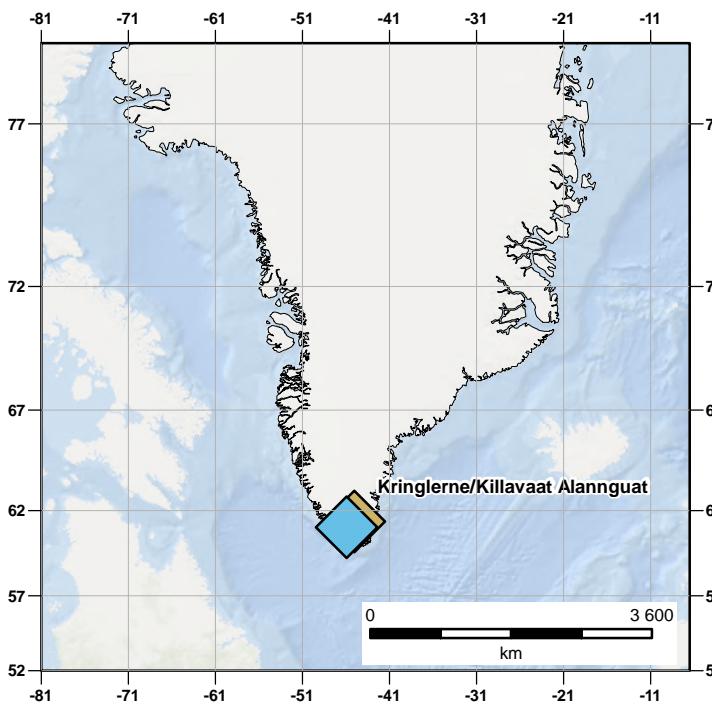
© BRGM, EuroGeoSurveys, 2024

The designation of Kosovo is without prejudice to positions on status,  
and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

# TANTALUM DEPOSITS OF EUROPE

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



## Deposit Status

Deposit name  
Active extraction

Deposit name  
Active project

Past extraction

Unexploited

Not specified

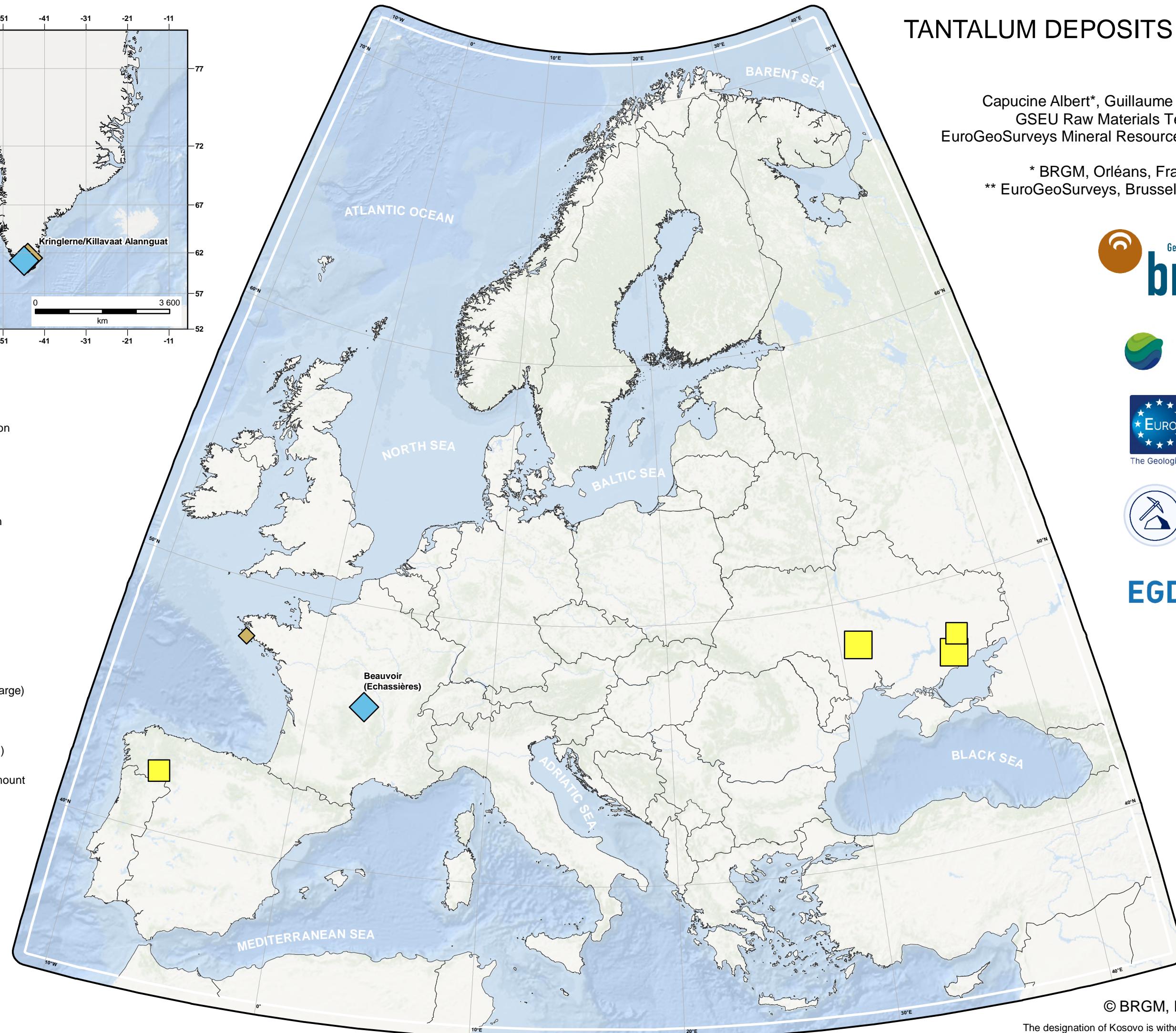
## Deposit Size \*

Class A (Super Large)

Class B (Large)

Class C (Medium)

\* Remaining + extracted amount  
of the commodity



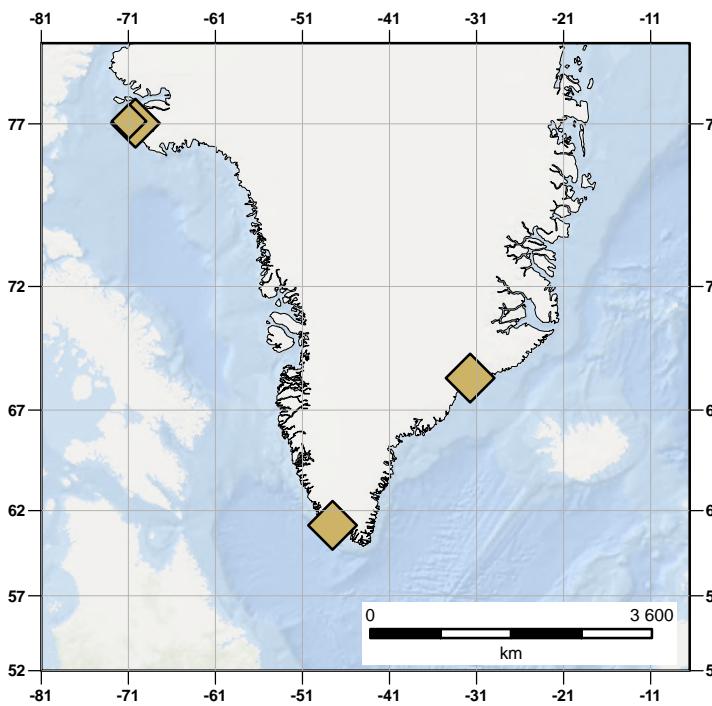
© BRGM, EuroGeoSurveys, 2024

The designation of Kosovo is without prejudice to positions on status,  
and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

# TITANIUM DEPOSITS OF EUROPE

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



## Deposit Status

Deposit name  
✖ Active extraction

Deposit name  
diamond Active project

Past extraction  
square

Unexploited  
diamond

Not specified  
circle

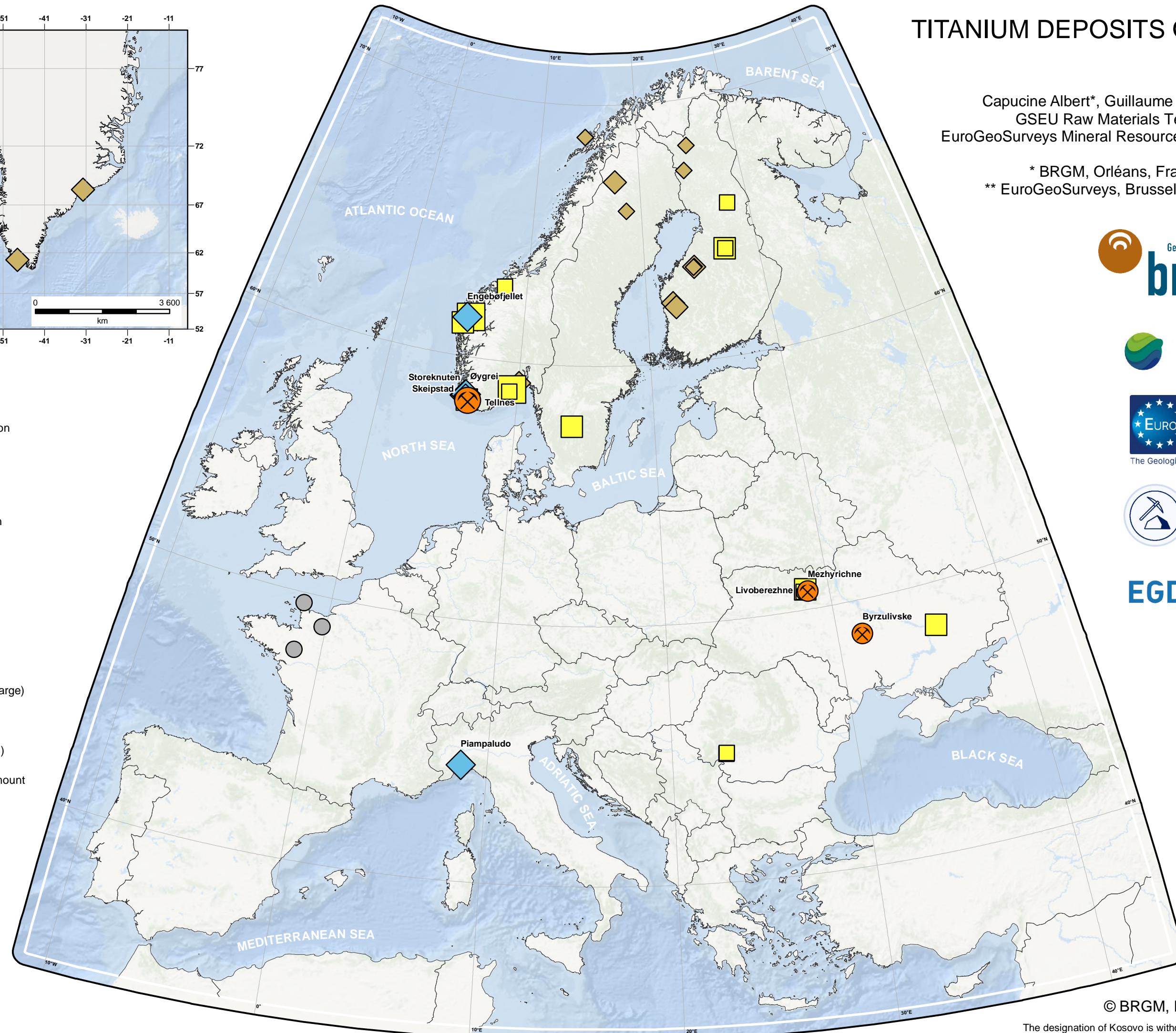
## Deposit Size \*

Class A (Super Large)  
square

Class B (Large)  
square

Class C (Medium)  
square

\* Remaining + extracted amount  
of the commodity



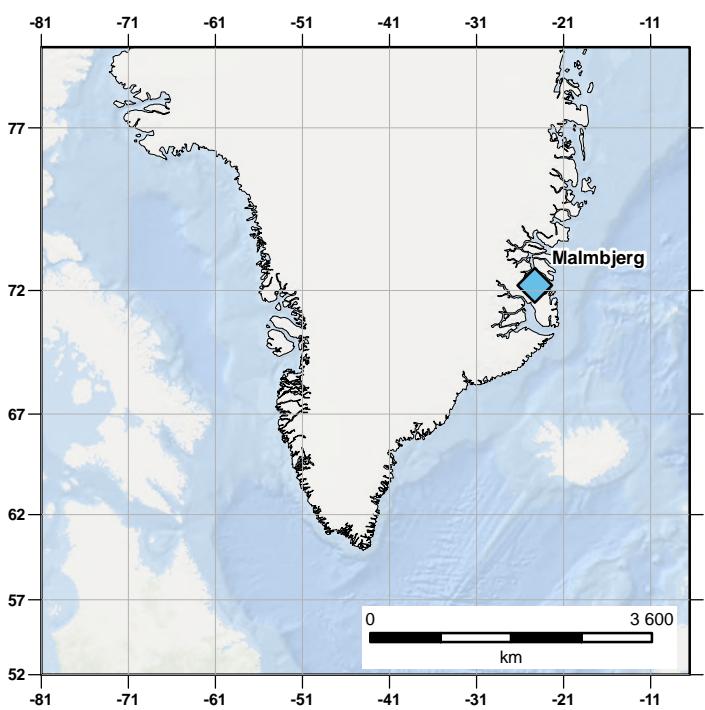
© BRGM, EuroGeoSurveys, 2024

The designation of Kosovo is without prejudice to positions on status,  
and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

# TUNGSTEN DEPOSITS OF EUROPE

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



## Deposit Status

Deposit name  
 Active extraction

Deposit name  
 Active project

Past extraction

Unexploited

Not specified

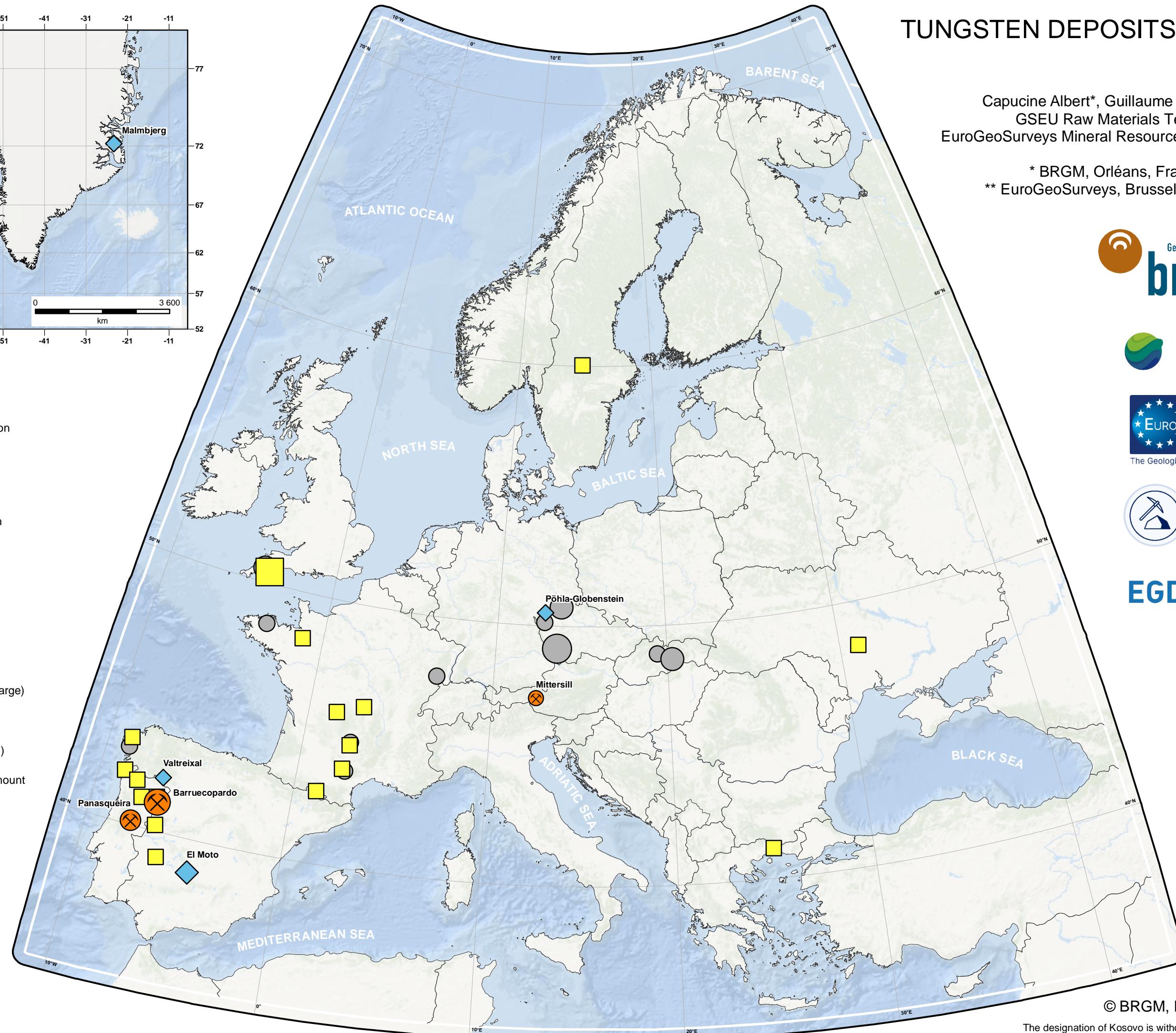
## Deposit Size \*

Class A (Super Large)

Class B (Large)

Class C (Medium)

\* Remaining + extracted amount  
of the commodity



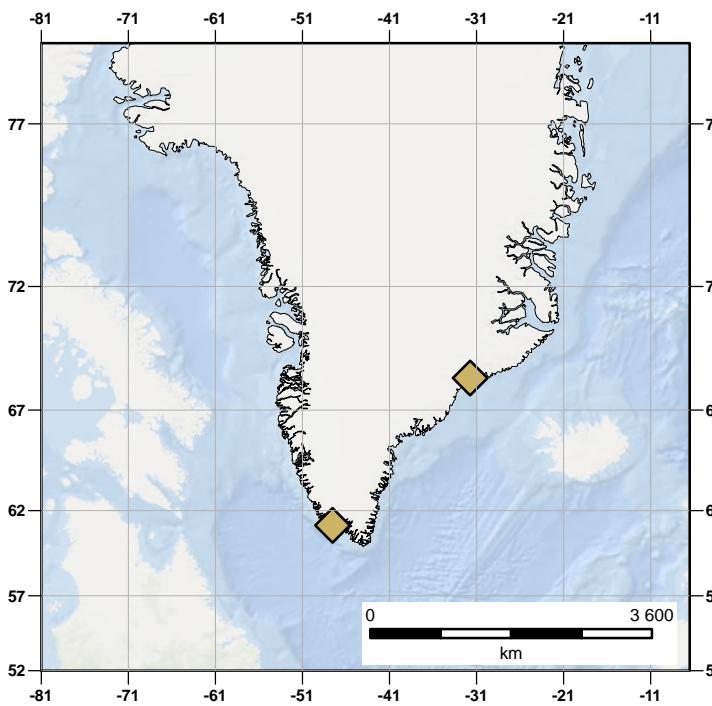
© BRGM, EuroGeoSurveys, 2024

The designation of Kosovo is without prejudice to positions on status,  
and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

# VANADIUM DEPOSITS OF EUROPE

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



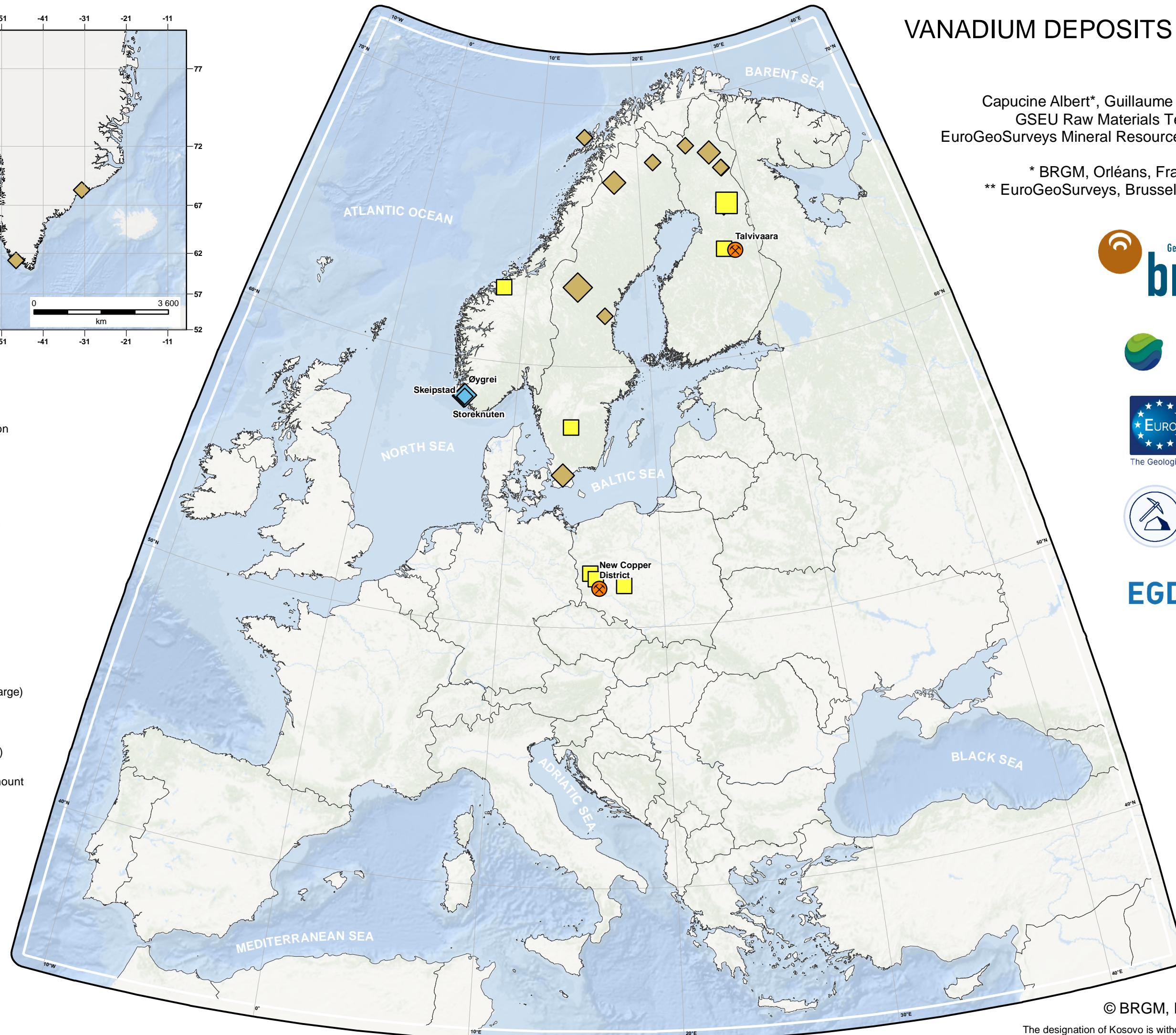
## Deposit Status

- Deposit name
  - Active extraction (Orange circle with X)
  - Active project (Blue diamond)
  - Past extraction (Yellow square)
  - Unexploited (Gold diamond)
  - Not specified (Grey circle)

## Deposit Size \*

- Class A (Super Large) (White square)
- Class B (Large) (Light blue square)
- Class C (Medium) (Dark blue square)

\* Remaining + extracted amount of the commodity



© BRGM, EuroGeoSurveys, 2024

The designation of Kosovo is without prejudice to positions on status,  
and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.



# Countries Maps

# CRITICAL RAW MATERIALS HARD ROCK DEPOSITS OF ALBANIA

Based on the 2023 CRM list  
of the European Commission

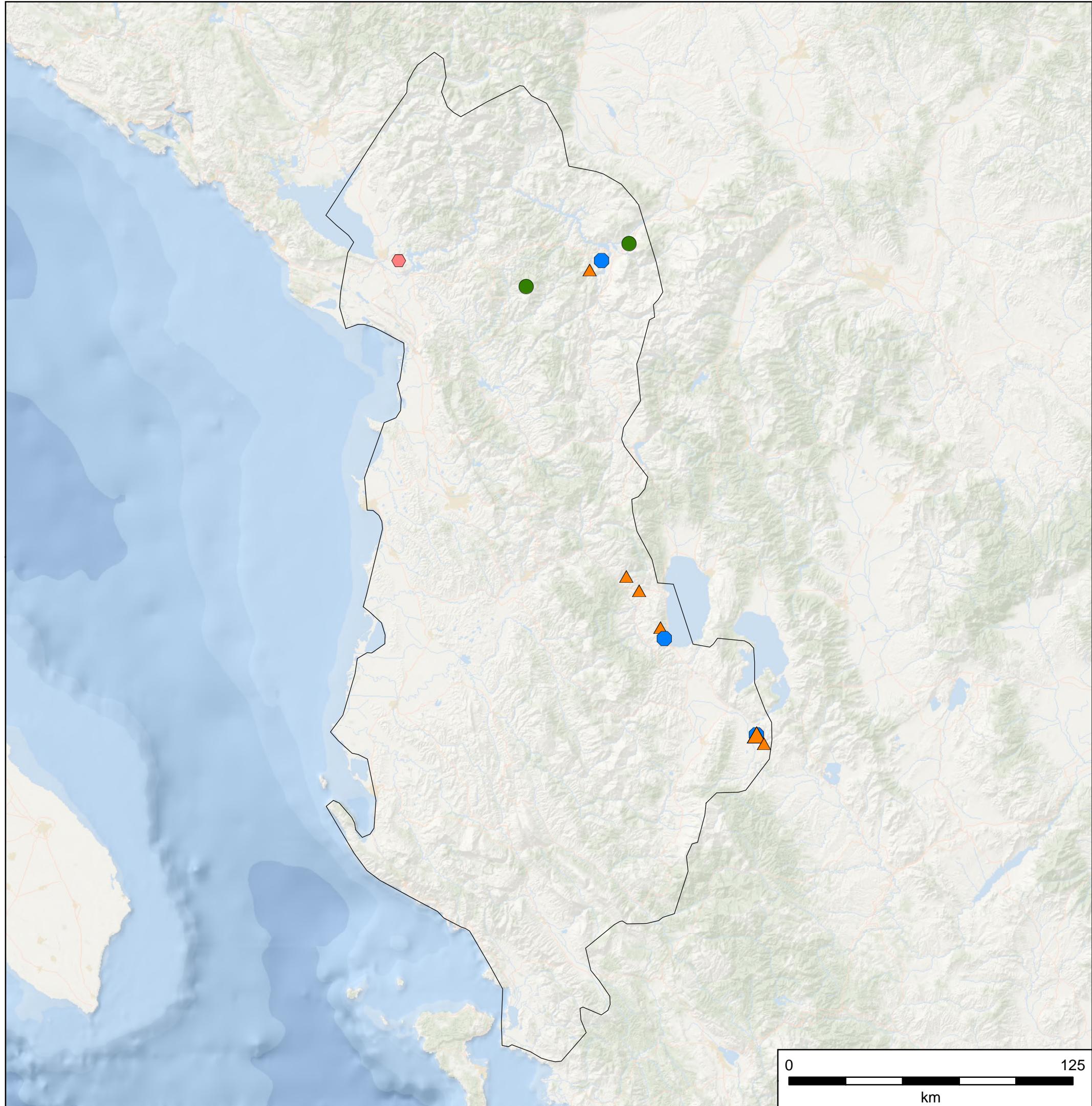
Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



**Commodity**  
● Cobalt  
● Copper  
◆ Feldspar  
▲ Nickel

**Deposit Size \***  
□ Class A (Super Large)  
□ Class B (Large)  
□ Class C (Medium)



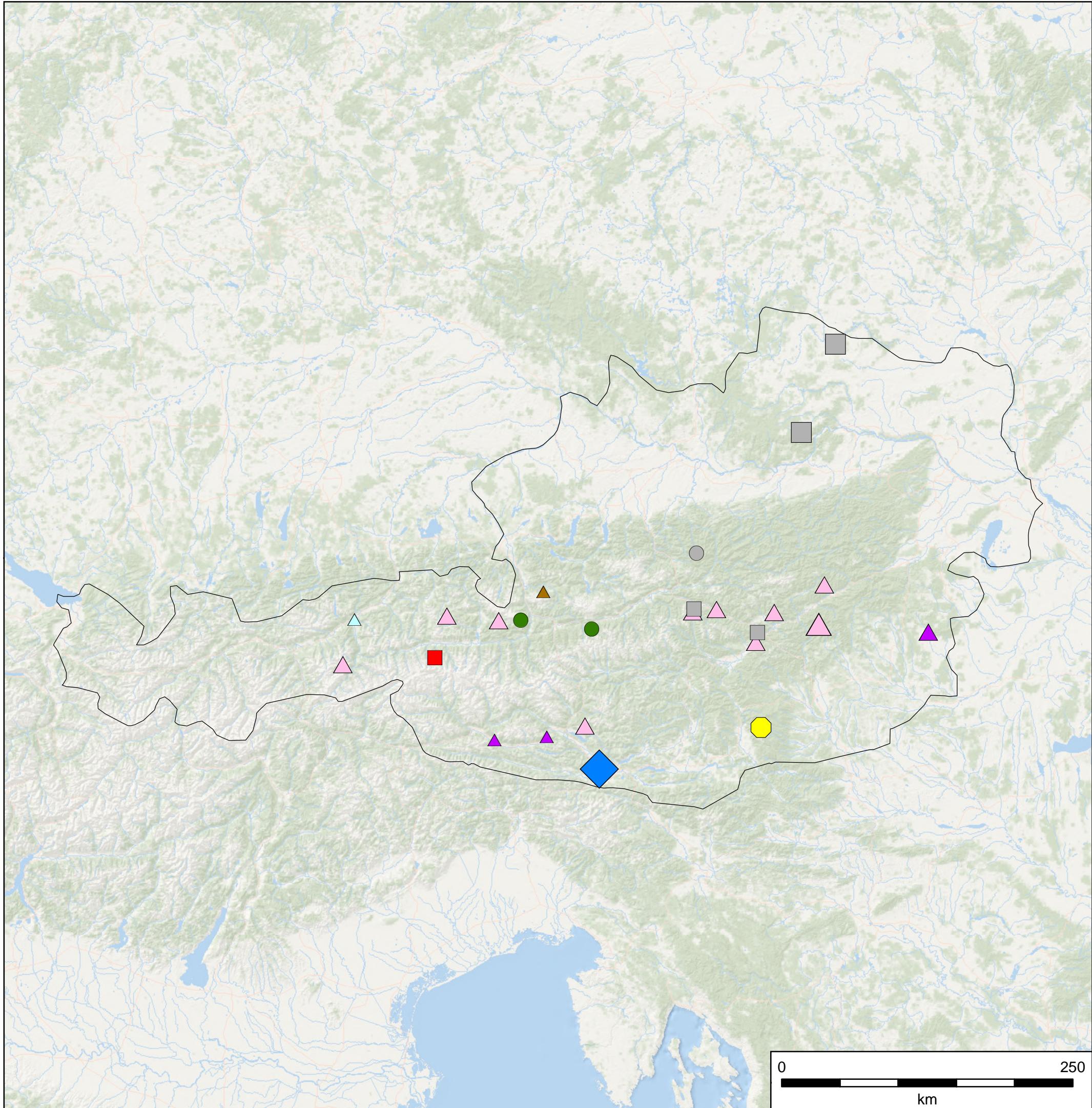
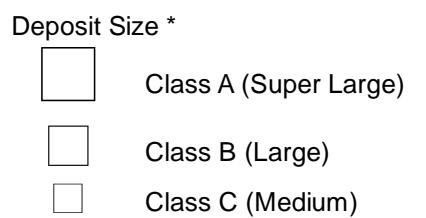
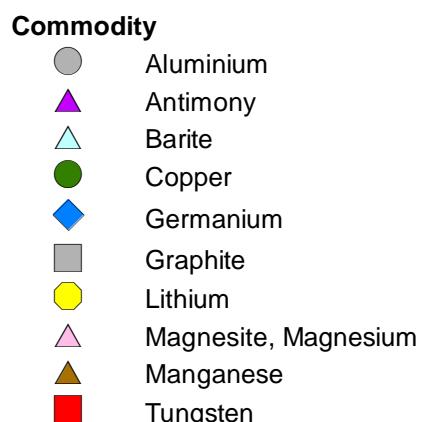
\* Remaining + extracted amount of the commodity

# CRITICAL RAW MATERIALS HARD ROCK DEPOSITS OF AUSTRIA

Based on the 2023 CRM list  
of the European Commission

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



\* Remaining + extracted amount of the commodity

# CRITICAL RAW MATERIALS HARD ROCK DEPOSITS OF BELGIUM

Based on the 2023 CRM list  
of the European Commission

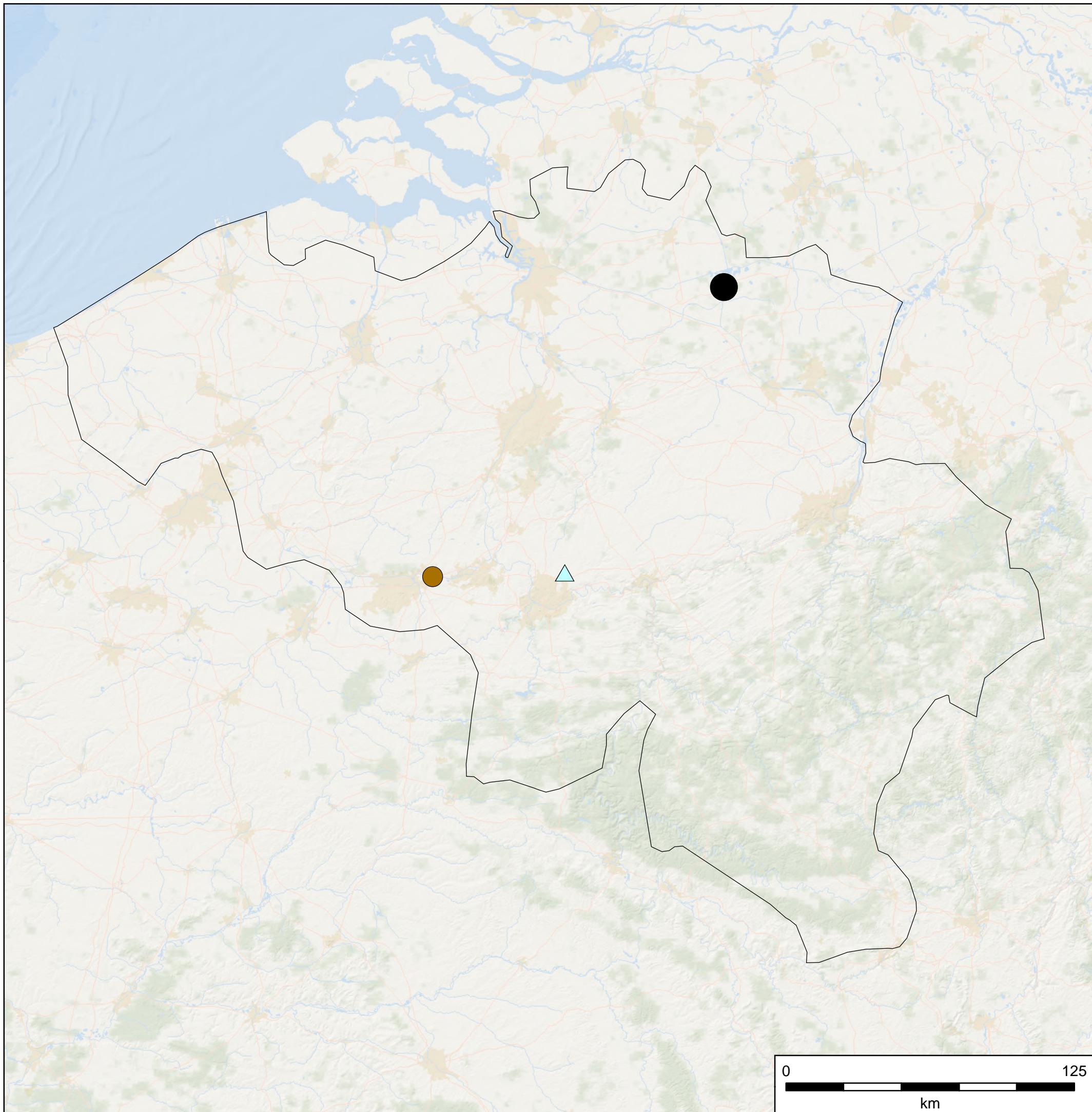
Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



**Commodity**  
△ Barite  
● Coking Coal  
● Phosphorous, Phosphate Rock

**Deposit Size \***  
□ Class A (Super Large)  
□ Class B (Large)  
□ Class C (Medium)



\* Remaining + extracted amount of the commodity

# CRITICAL RAW MATERIALS HARD ROCK DEPOSITS OF BOSNIA & HERZEGOVINA

Based on the 2023 CRM list  
of the European Commission

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

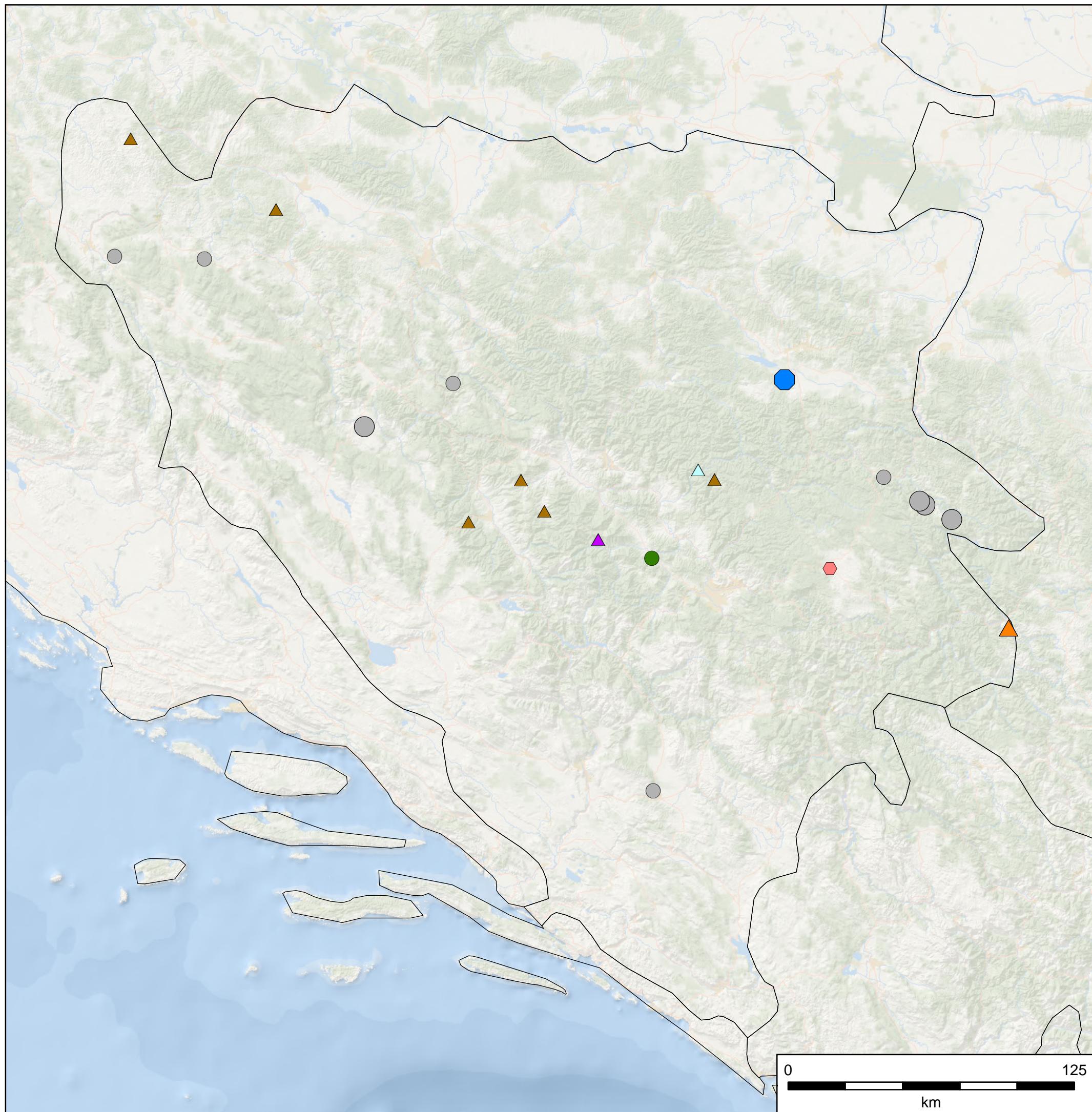
\* BRGM, Orléans, France

\*\* EuroGeoSurveys, Brussels, Belgium



- Commodity**
- Aluminium
  - ▲ Antimony
  - △ Barite
  - Cobalt
  - Copper
  - Feldspar
  - ▲ Manganese
  - ▲ Nickel

- Deposit Size \***
- Class A (Super Large)
  - Class B (Large)
  - Class C (Medium)



\* Remaining + extracted amount of the commodity

# CRITICAL RAW MATERIALS HARD ROCK DEPOSITS OF BULGARIA

Based on the 2023 CRM list  
of the European Commission

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



**Commodity**

- Aluminum
- △ Barite
- Copper
- ▲ Manganese

**Deposit Size \***

- Class A (Super Large)
- Class B (Large)
- Class C (Medium)



\* Remaining + extracted amount of the commodity

# CRITICAL RAW MATERIALS HARD ROCK DEPOSITS OF CYPRUS

Based on the 2023 CRM list  
of the European Commission

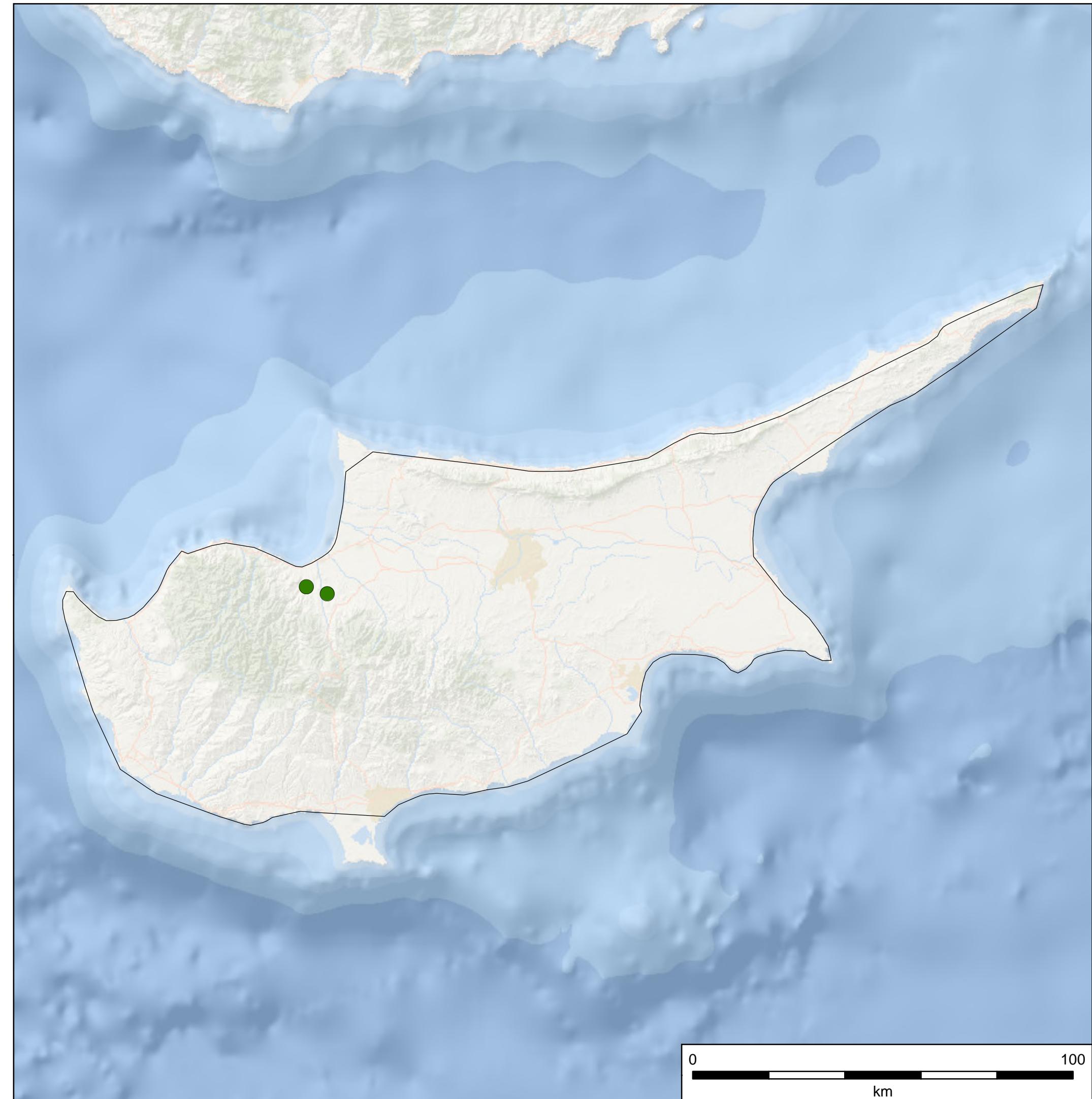
Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



Commodity  
● Copper

Deposit Size \*  
 Class A (Super Large)  
 Class B (Large)  
 Class C (Medium)



\* Remaining + extracted amount of the commodity

# CRITICAL RAW MATERIALS HARD ROCK DEPOSITS OF CZECH REPUBLIC

Based on the 2023 CRM list  
of the European Commission

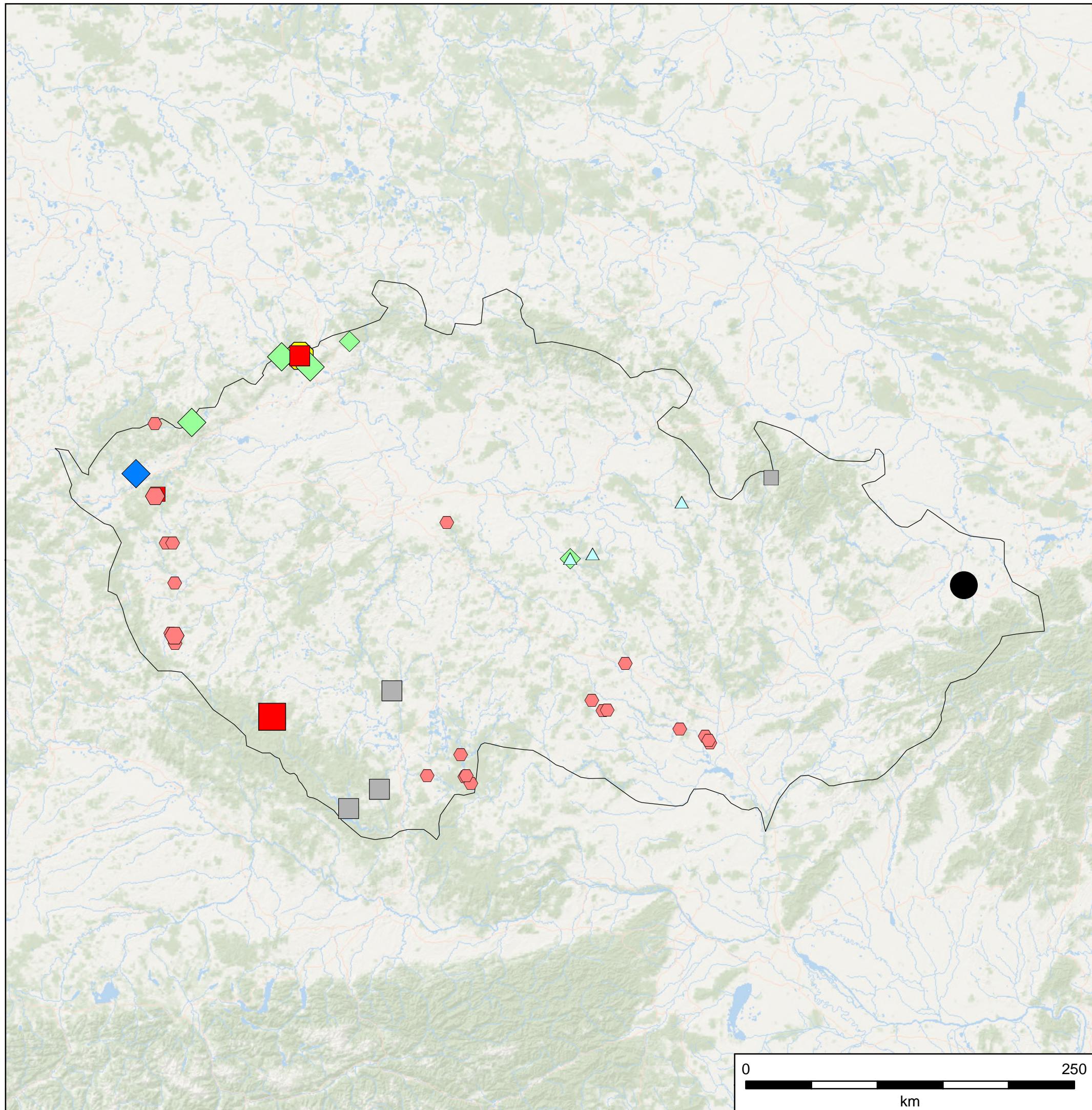
Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



- Commodity**
- △ Barite
  - Coking Coal
  - ◆ Feldspar
  - ◆ Fluorite
  - ◆ Germanium
  - Graphite
  - Lithium
  - Tungsten

- Deposit Size \***
- Class A (Super Large)
  - Class B (Large)
  - Class C (Medium)



\* Remaining + extracted amount of the commodity

# CRITICAL RAW MATERIALS HARD ROCK DEPOSITS OF ESTONIA

Based on the 2023 CRM list  
of the European Commission

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France

\*\* EuroGeoSurveys, Brussels, Belgium



**Commodity**  
▲ Magnesite, Magnesium  
● Phosphorous, Phosphate Rock

**Deposit Size \***  
□ Class A (Super Large)  
□ Class B (Large)  
□ Class C (Medium)



\* Remaining + extracted amount of the commodity

# CRITICAL RAW MATERIALS HARD ROCK DEPOSITS OF FINLAND

Based on the 2023 CRM list  
of the European Commission

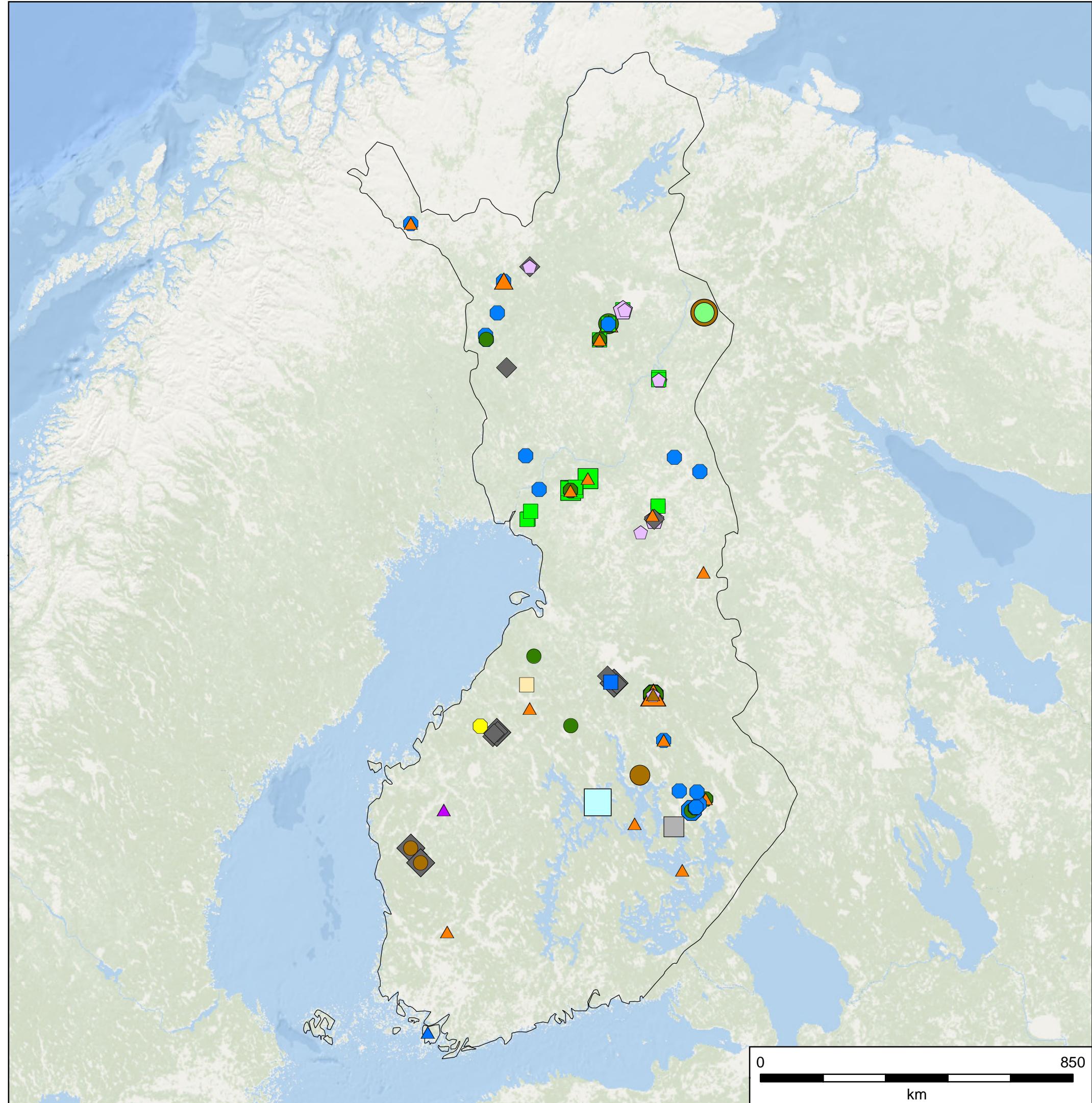
Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



Commodity
▲ Antimony
■ Arsenic
△ Beryllium
○ Cobalt
● Copper
■ Graphite
◆ Lithium
▲ Manganese
▲ Nickel
● Niobium
● Phosphorous, Phosphate Rock
■ Platinum, Platinoids Group Metals
■ Rare Earth Elements
■ Scandium
◆ Titanium
◇ Vanadium

Deposit Size *
□ Class A (Super Large)
□ Class B (Large)
□ Class C (Medium)



\* Remaining + extracted amount of the commodity

# CRITICAL RAW MATERIALS HARD ROCK DEPOSITS OF FRANCE

Based on the 2023 CRM list  
of the European Commission

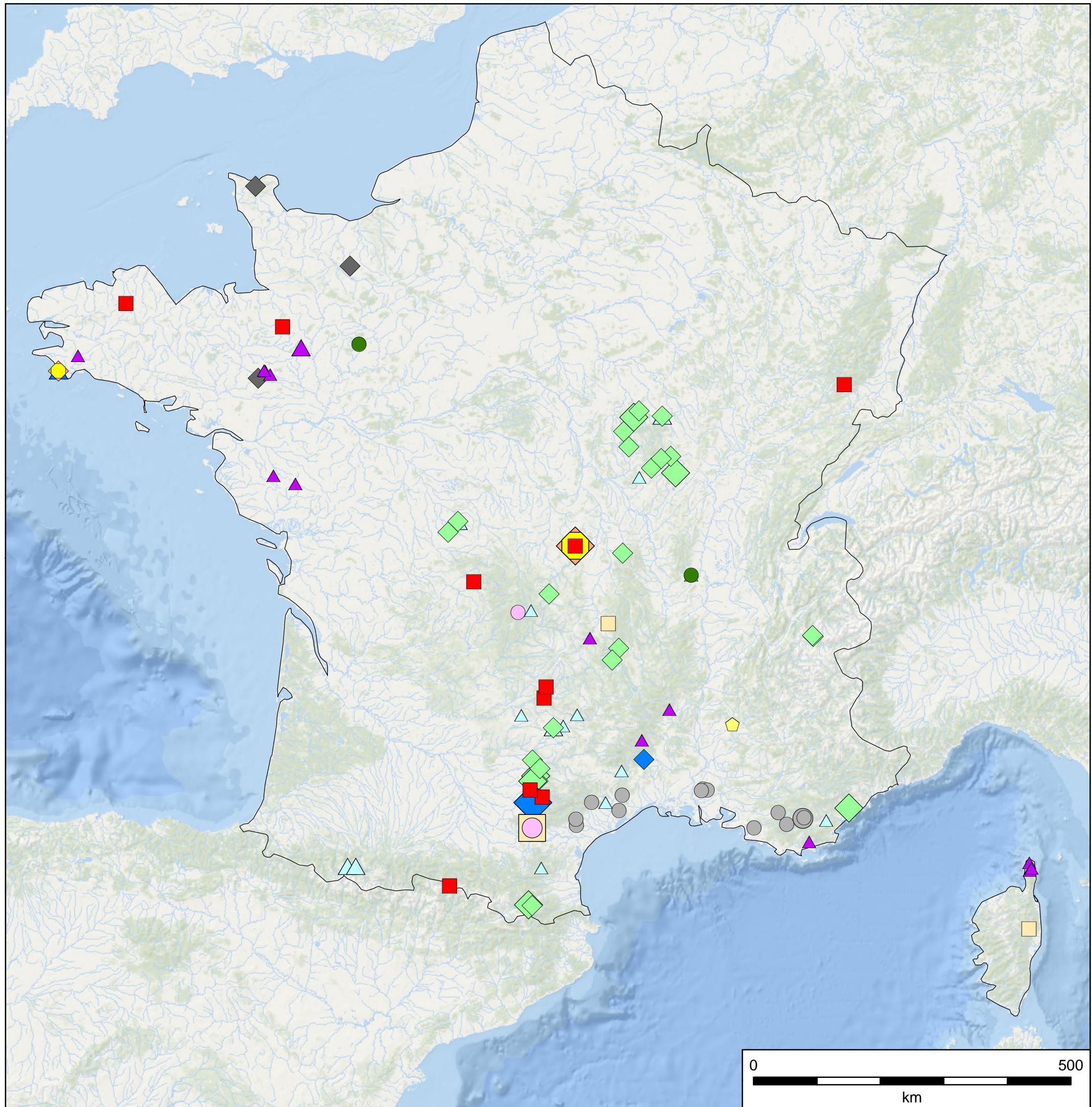
Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



Commodity
Aluminium
Antimony
Arsenic
Barite
Beryllium
Bismuth
Copper
Feldspar
Fluorite
Germanium
Lithium
Strontium
Tantalum
Titanium
Tungsten

Deposit Size *
Class A (Super Large)
Class B (Large)
Class C (Medium)



\* Remaining + extracted amount of the commodity

# CRITICAL RAW MATERIALS HARD ROCK DEPOSITS OF GERMANY

Based on the 2023 CRM list  
of the European Commission

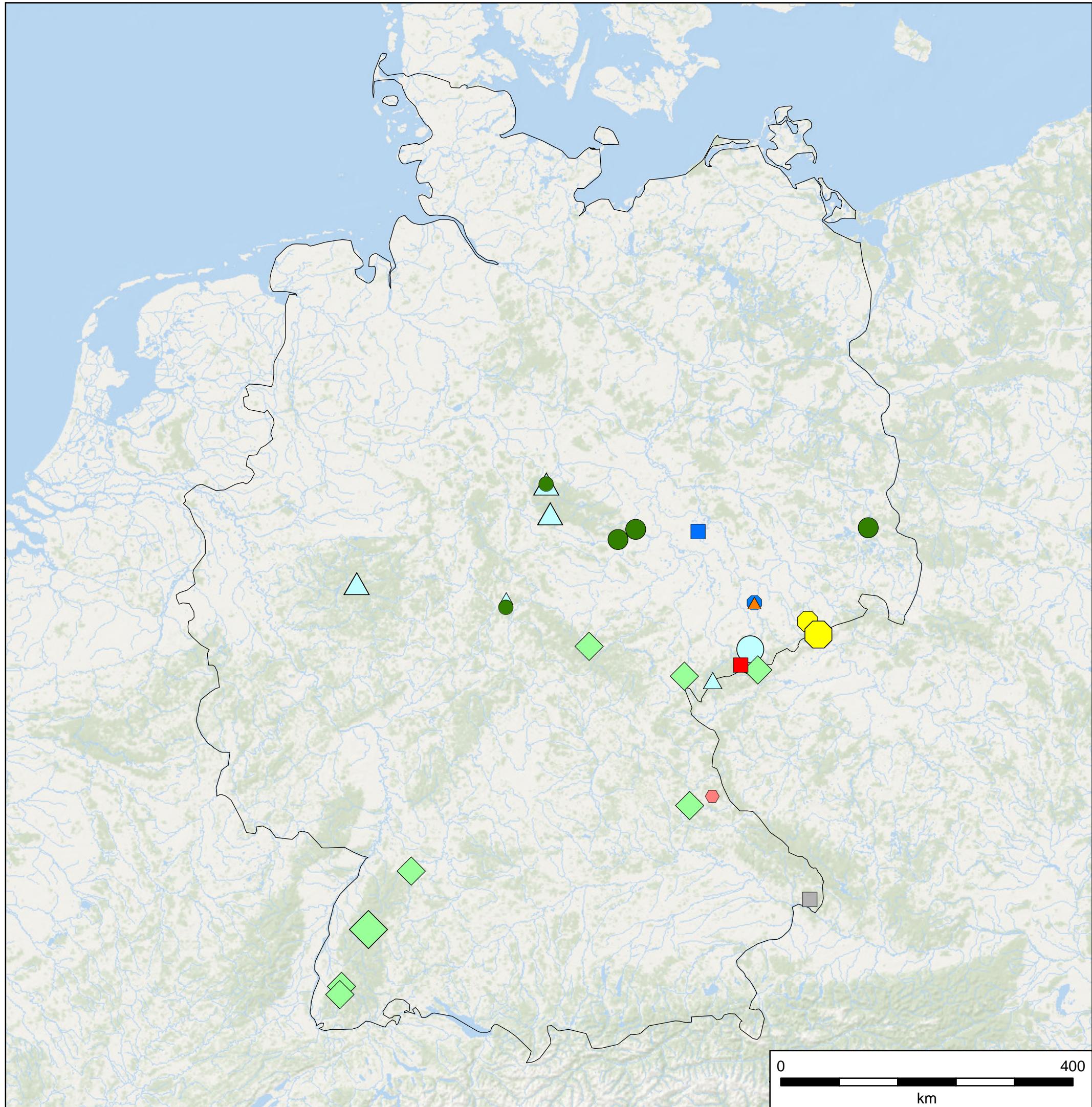
Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



Commodity	
△	Barite
●	Cobalt
●	Copper
◆	Feldspar
◇	Fluorite
○	Gallium
■	Graphite
○	Lithium
▲	Nickel
■	Rare Earth Elements
■	Tungsten

Deposit Size *	
□	Class A (Super Large)
□	Class B (Large)
□	Class C (Medium)



\* Remaining + extracted amount of the commodity

# CRITICAL RAW MATERIALS HARD ROCK DEPOSITS OF GREECE

Based on the 2023 CRM list  
of the European Commission

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France

\*\* EuroGeoSurveys, Brussels, Belgium



Commodity	
●	Aluminium
●	Cobalt
●	Copper
▲	Magnesite, Magnesium
▲	Manganese
▲	Nickel
●	Phosphorous, Phosphate Rock
■	Tungsten

Deposit Size *	
□	Class A (Super Large)
□	Class B (Large)
□	Class C (Medium)



\* Remaining + extracted amount of the commodity

# CRITICAL RAW MATERIALS HARD ROCK DEPOSITS OF GREENLAND

Based on the 2023 CRM list  
of the European Commission

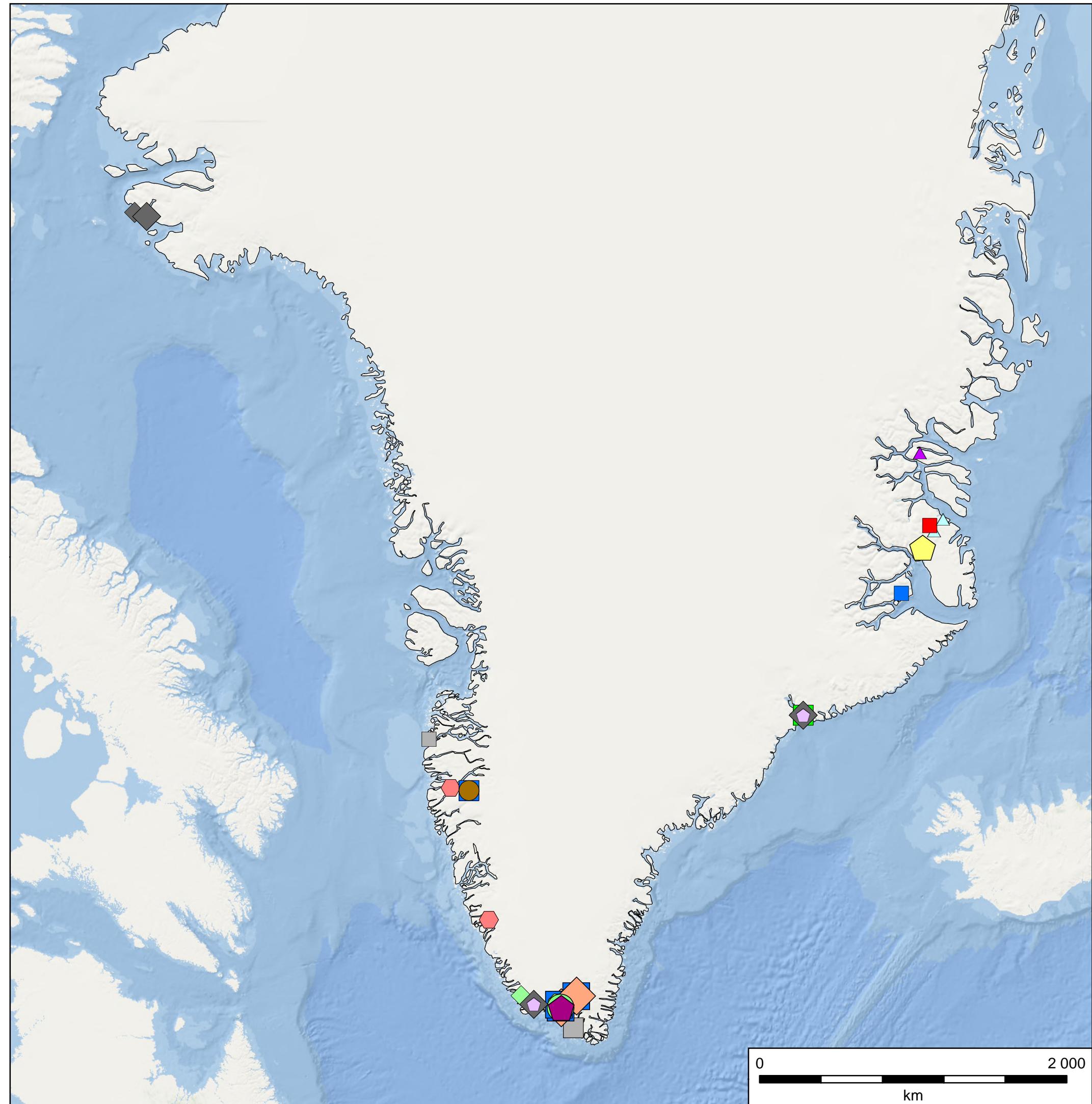
Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



Commodity
▲ Antimony
△ Barite
◆ Feldspar
◆ Fluorite
■ Graphite
◆ Hafnium
◆ Lithium
◆ Niobium
◆ Phosphorous, Phosphate Rock
◆ Platinum, Platinoids Group Metals
■ Rare Earth Elements
◆ Strontium
◆ Tantalum
◆ Titanium
◆ Vanadium
■ Tungsten

Deposit Size *
Class A (Super Large)
Class B (Large)
Class C (Medium)



\* Remaining + extracted amount of the commodity

# CRITICAL RAW MATERIALS HARD ROCK DEPOSITS OF HUNGARY

Based on the 2023 CRM list  
of the European Commission

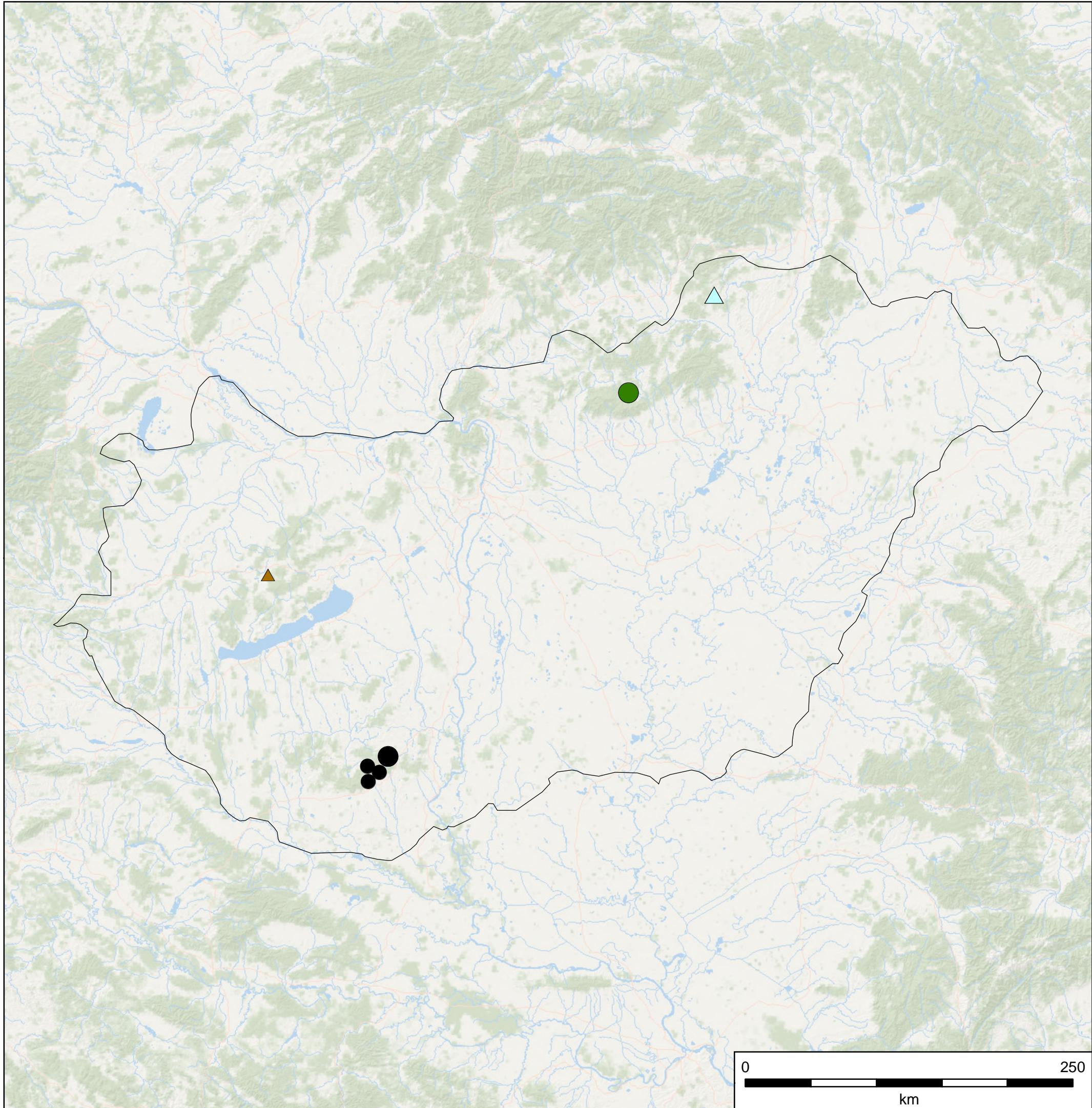
Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



- Commodity**
- ▲ Barite
  - Coking Coal
  - Copper
  - ▲ Manganese

- Deposit Size \***
- Class A (Super Large)
  - Class B (Large)
  - Class C (Medium)



\* Remaining + extracted amount of the commodity

# CRITICAL RAW MATERIALS HARD ROCK DEPOSITS OF IRELAND

Based on the 2023 CRM list  
of the European Commission

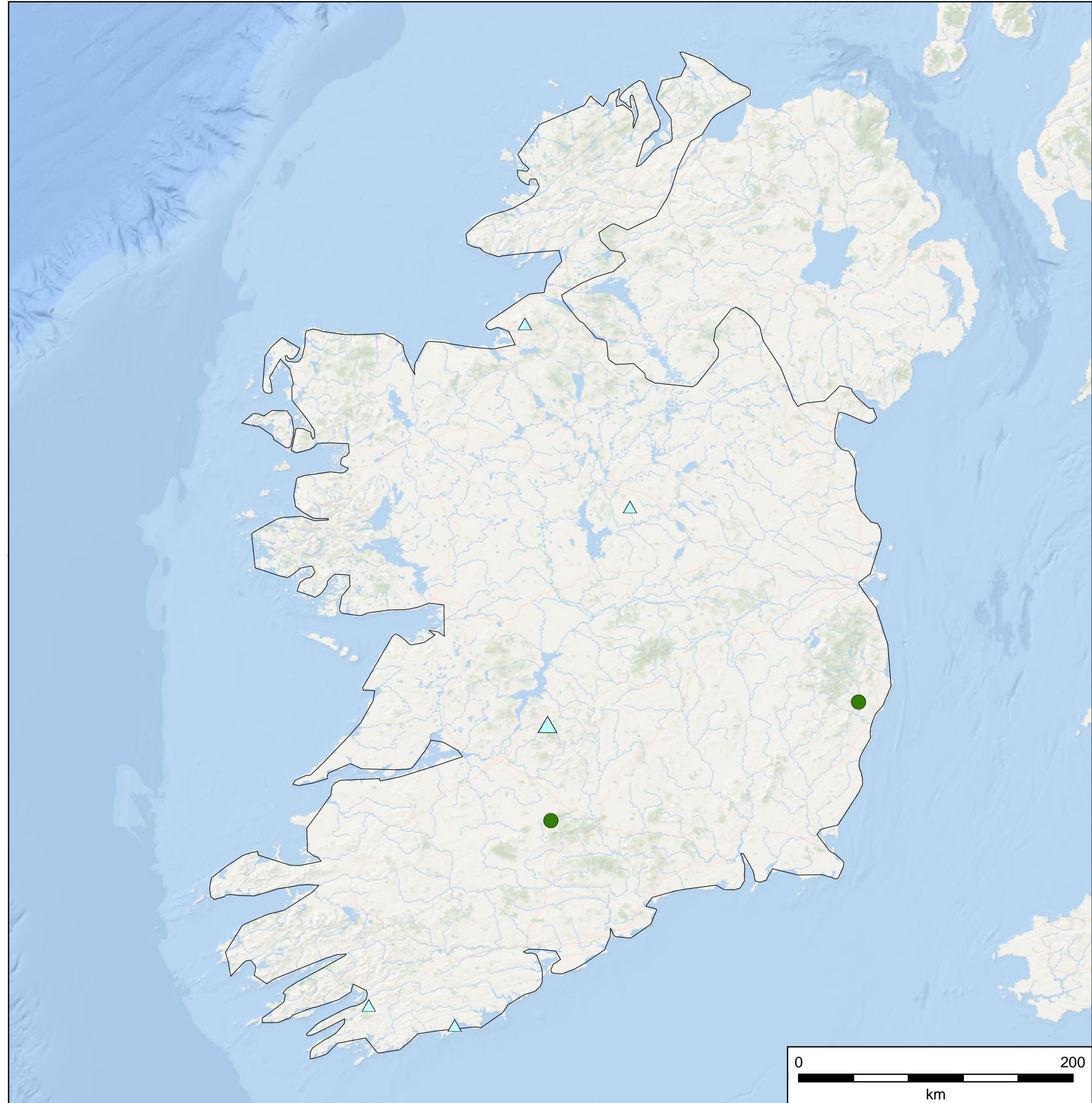
Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



**Commodity**  
△ Barite  
● Copper

**Deposit Size \***  
□ Class A (Super Large)  
□ Class B (Large)  
□ Class C (Medium)



\* Remaining + extracted amount of the commodity

# CRITICAL RAW MATERIALS HARD ROCK DEPOSITS OF ITALY

Based on the 2023 CRM list  
of the European Commission

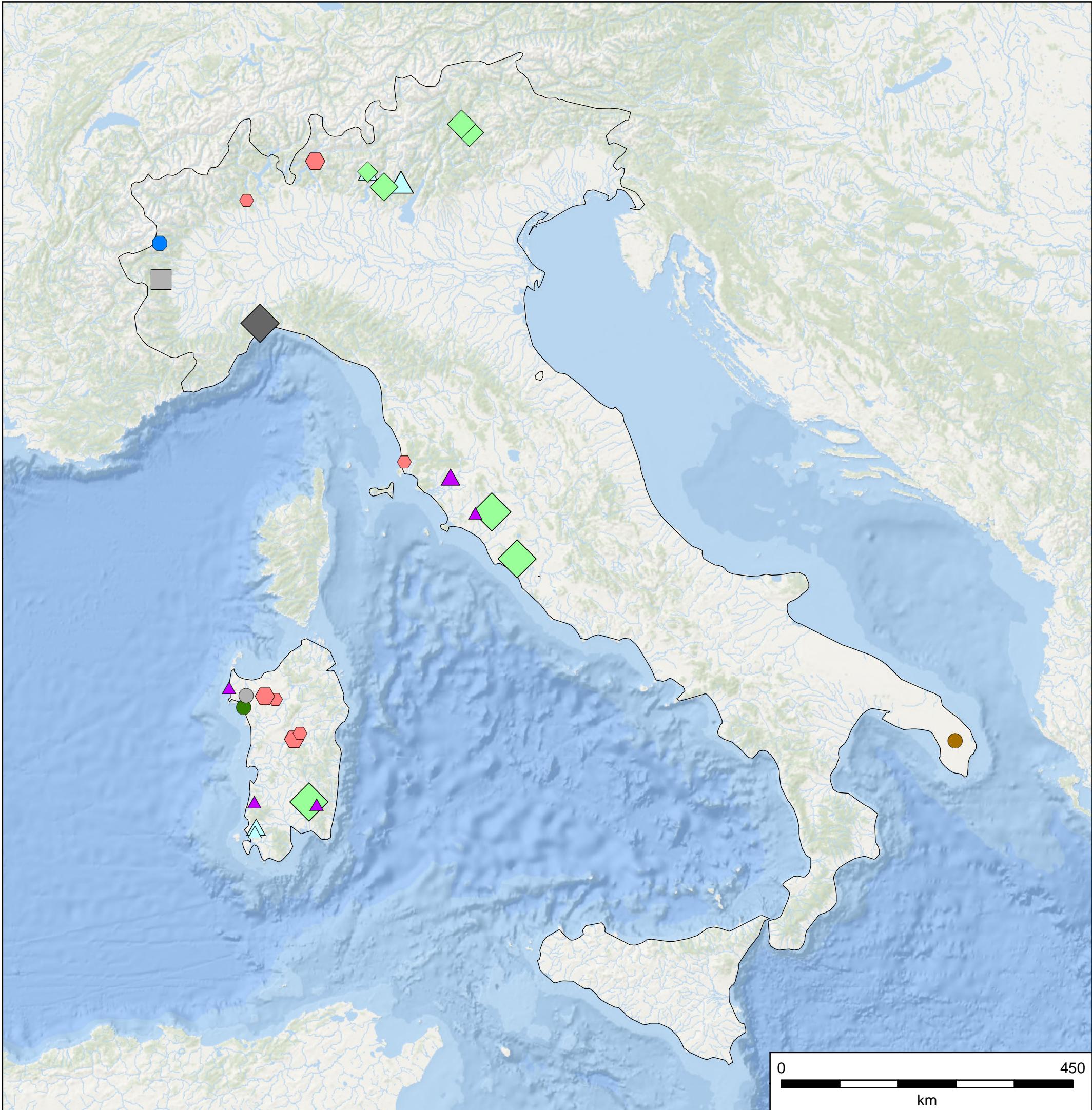
Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



Commodity	
●	Aluminium
▲	Antimony
△	Barite
●	Cobalt
●	Copper
●	Feldspar
●	Fluorite
■	Graphite
●	Phosphorous, Phosphate Rock
◆	Titanium

Deposit Size *
□ Class A (Super Large)
□ Class B (Large)
□ Class C (Medium)



\* Remaining + extracted amount of the commodity

# CRITICAL RAW MATERIALS HARD ROCK DEPOSITS OF KOSOVO \*\*\*

Based on the 2023 CRM list  
of the European Commission

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



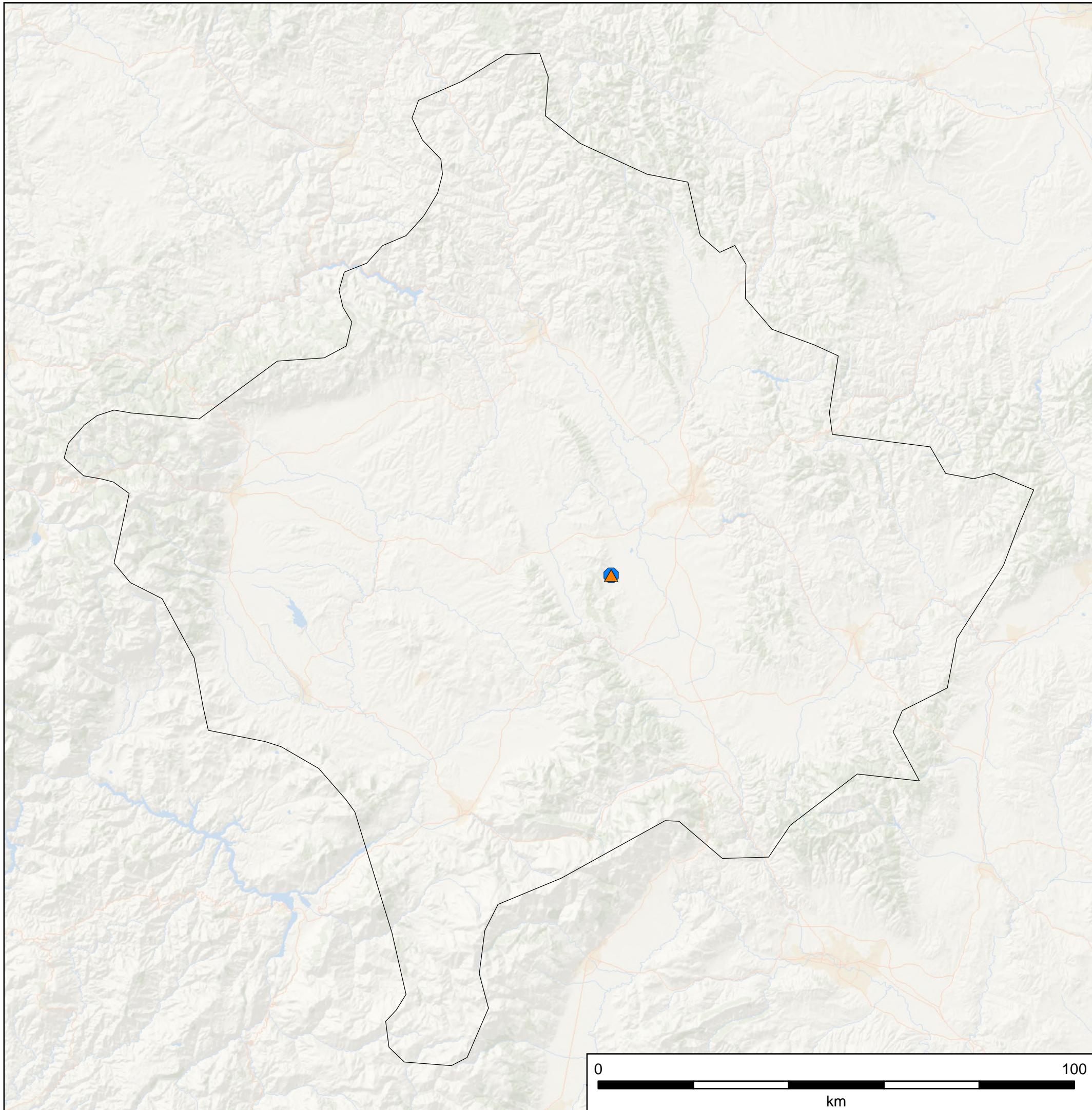
● Cobalt  
▲ Nickel

Deposit Size \*  
 Class A (Super Large)  
 Class B (Large)  
 Class C (Medium)

\*\*\* The designation of Kosovo is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence

\* Remaining + extracted amount of the commodity

© BRGM, EuroGeoSurveys, 2024



# CRITICAL RAW MATERIALS HARD ROCK DEPOSITS OF MONTENEGRO

Based on the 2023 CRM list  
of the European Commission

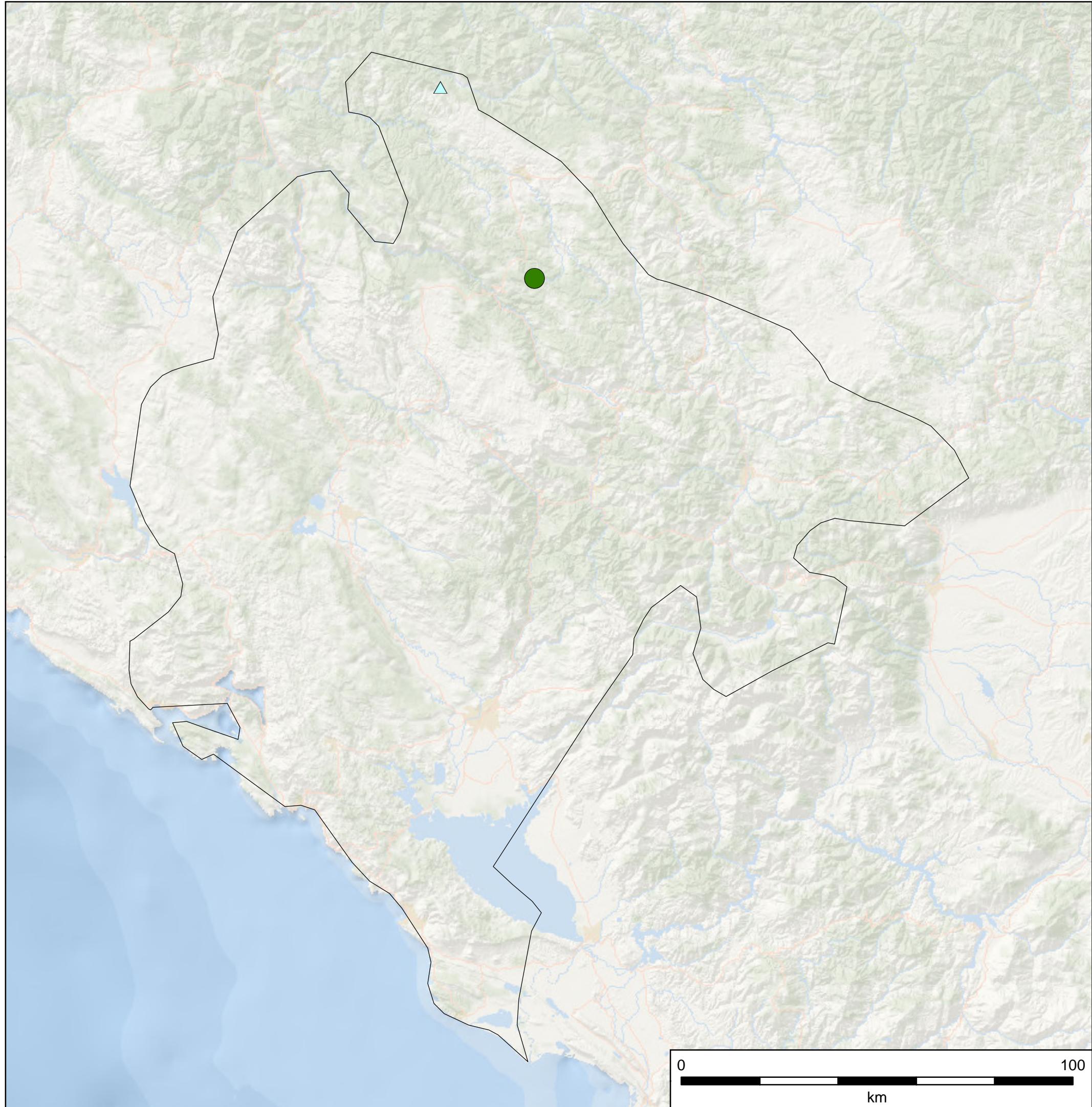
Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



**Commodity**  
△ Barite  
● Copper

**Deposit Size \***  
□ Class A (Super Large)  
□ Class B (Large)  
□ Class C (Medium)



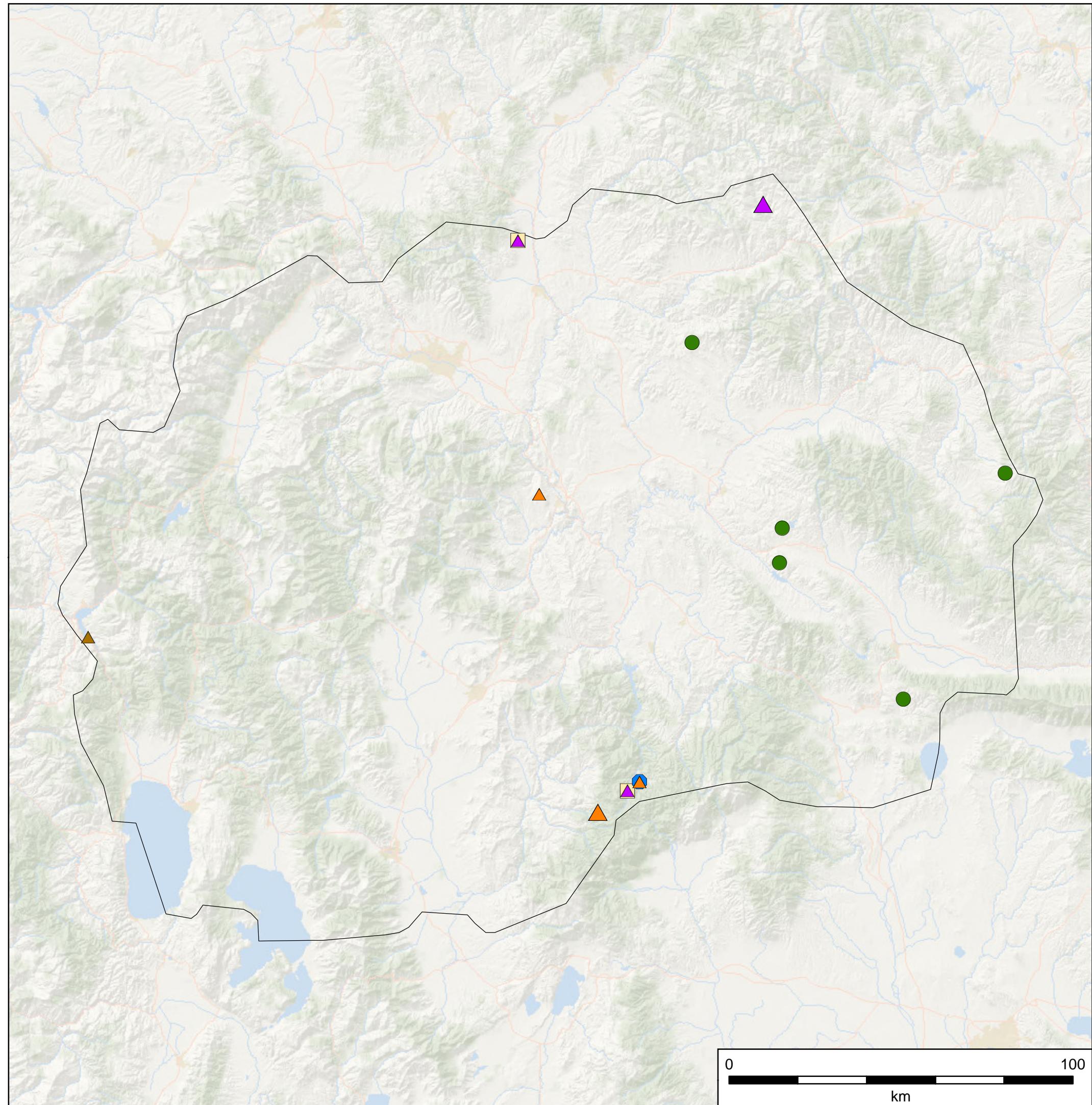
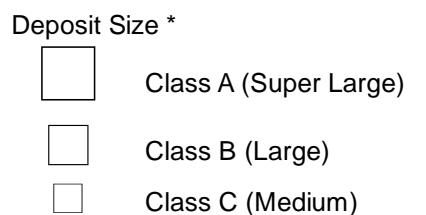
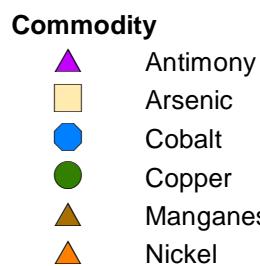
\* Remaining + extracted amount of the commodity

# CRITICAL RAW MATERIALS HARD ROCK DEPOSITS OF NORTH MACEDONIA

Based on the 2023 CRM list  
of the European Commission

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



\* Remaining + extracted amount of the commodity

# CRITICAL RAW MATERIALS HARD ROCK DEPOSITS OF NORWAY

Based on the 2023 CRM list  
of the European Commission

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

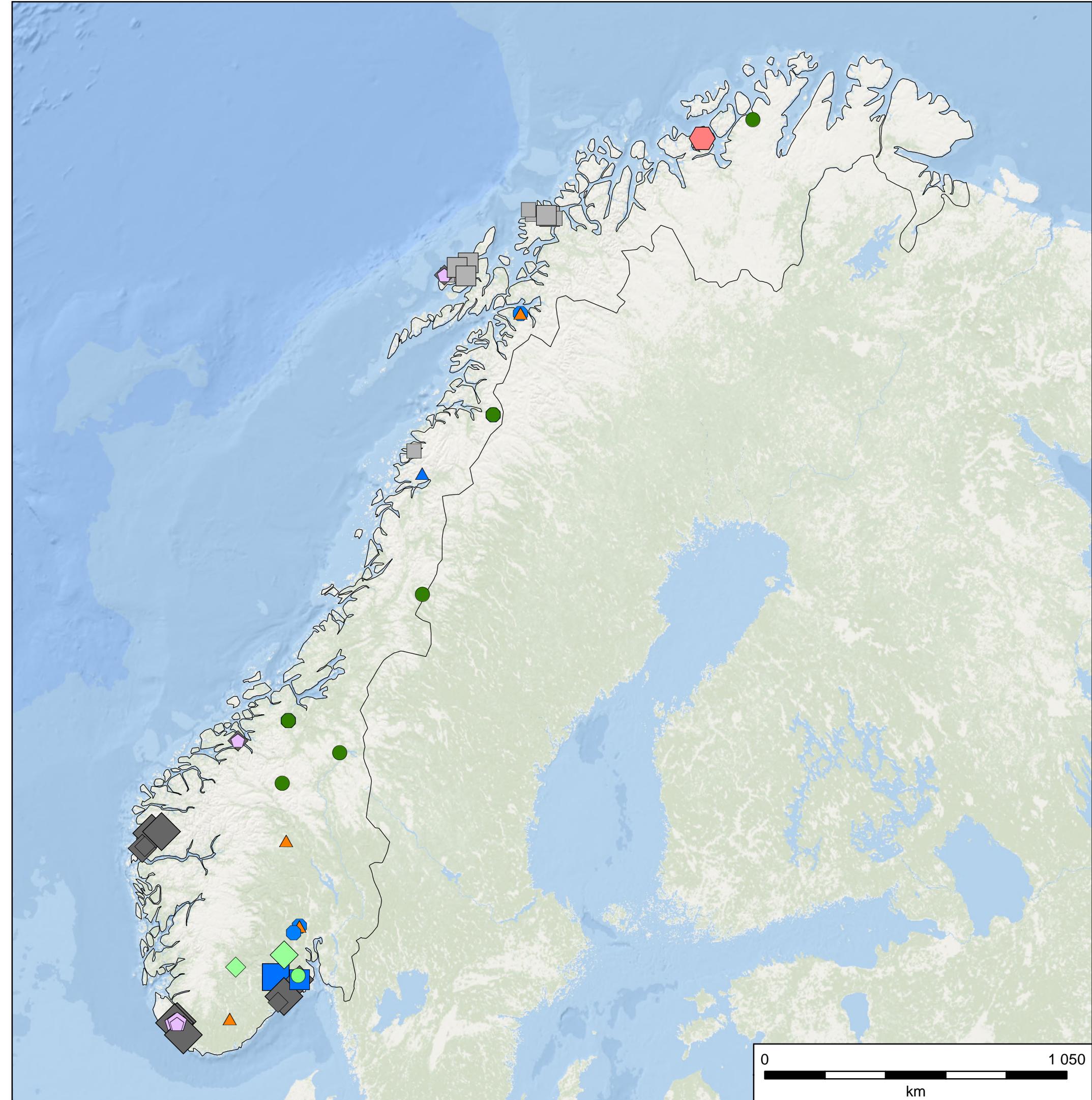
\* BRGM, Orléans, France

\*\* EuroGeoSurveys, Brussels, Belgium



Commodity	
▲	Beryllium
●	Cobalt
●	Copper
■	Feldspar
◆	Fluorite
■	Graphite
▲	Nickel
●	Niobium
●	Phosphorous, Phosphate Rock
■	Rare Earth Elements
◆	Titanium
◆	Vanadium

Deposit Size *	
■	Class A (Super Large)
□	Class B (Large)
□	Class C (Medium)

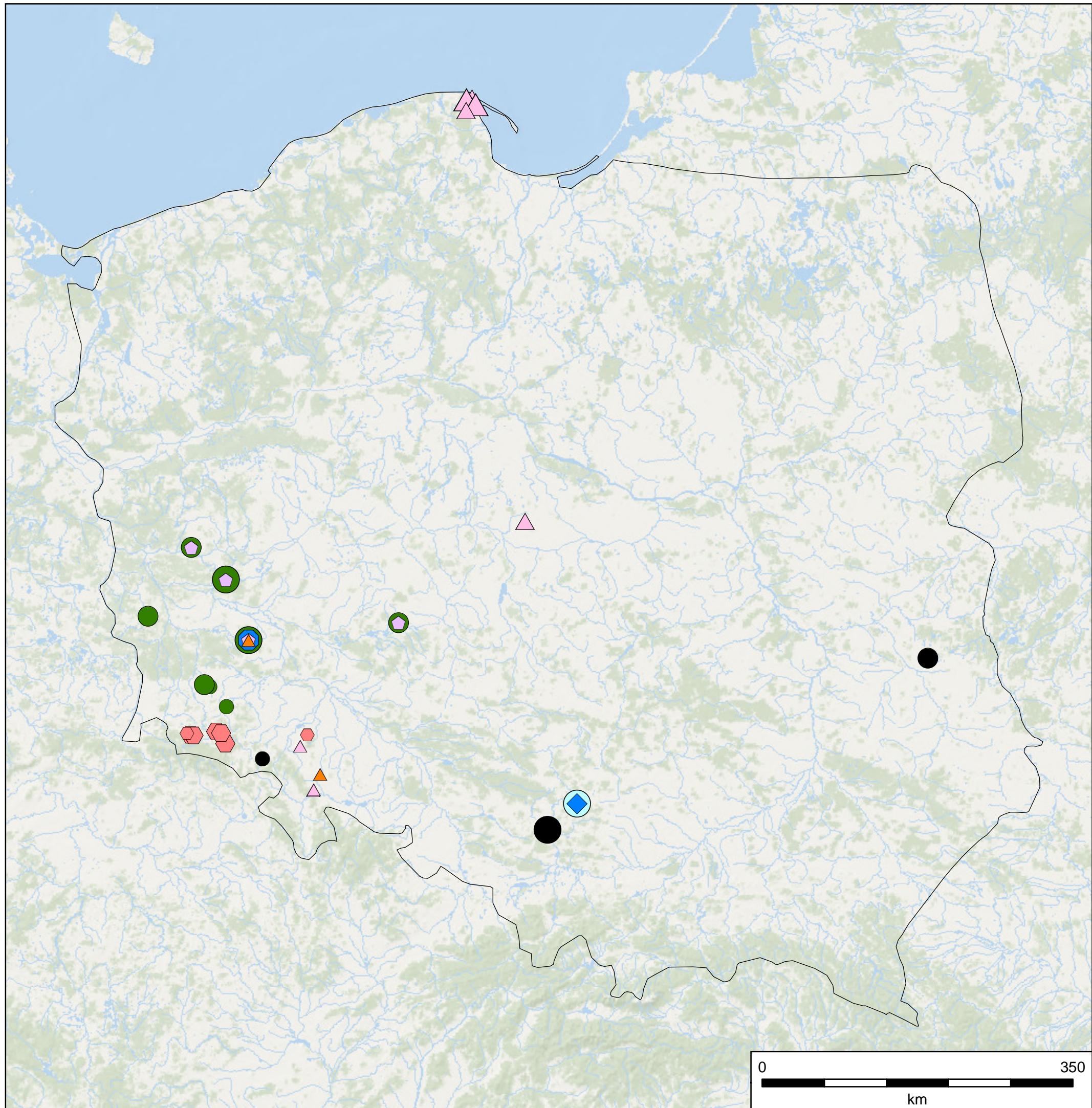
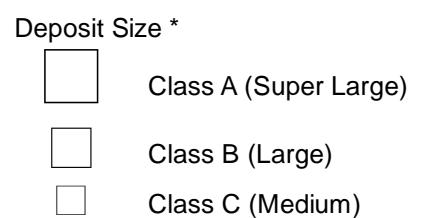
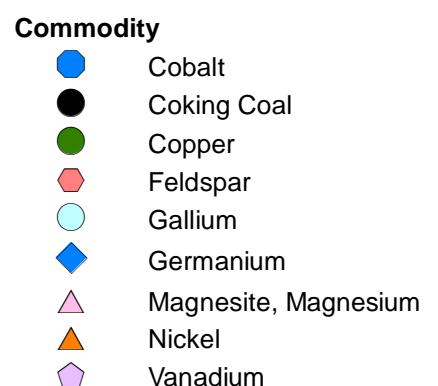


# CRITICAL RAW MATERIALS HARD ROCK DEPOSITS OF POLAND

Based on the 2023 CRM list  
of the European Commission

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



\* Remaining + extracted amount of the commodity

# CRITICAL RAW MATERIALS HARD ROCK DEPOSITS OF PORTUGAL

Based on the 2023 CRM list  
of the European Commission

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France

\*\* EuroGeoSurveys, Brussels, Belgium

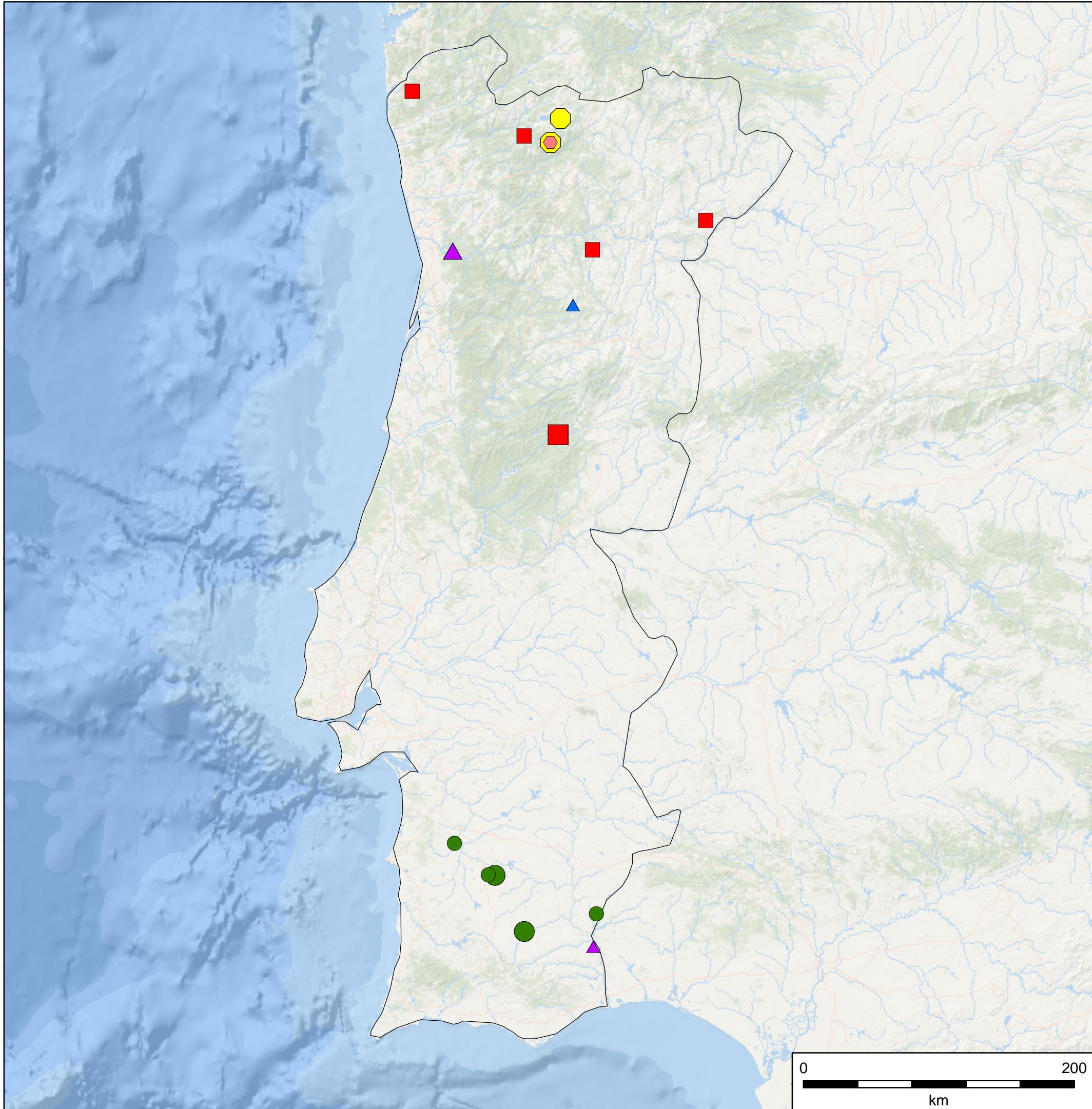


## Commodity

- ▲ Antimony
- △ Beryllium
- Copper
- ◆ Feldspar
- Lithium
- Tungsten

## Deposit Size \*

- Class A (Super Large)
- Class B (Large)
- Class C (Medium)



\* Remaining + extracted amount of the commodity

# CRITICAL RAW MATERIALS HARD ROCK DEPOSITS OF ROMANIA

Based on the 2023 CRM list  
of the European Commission

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

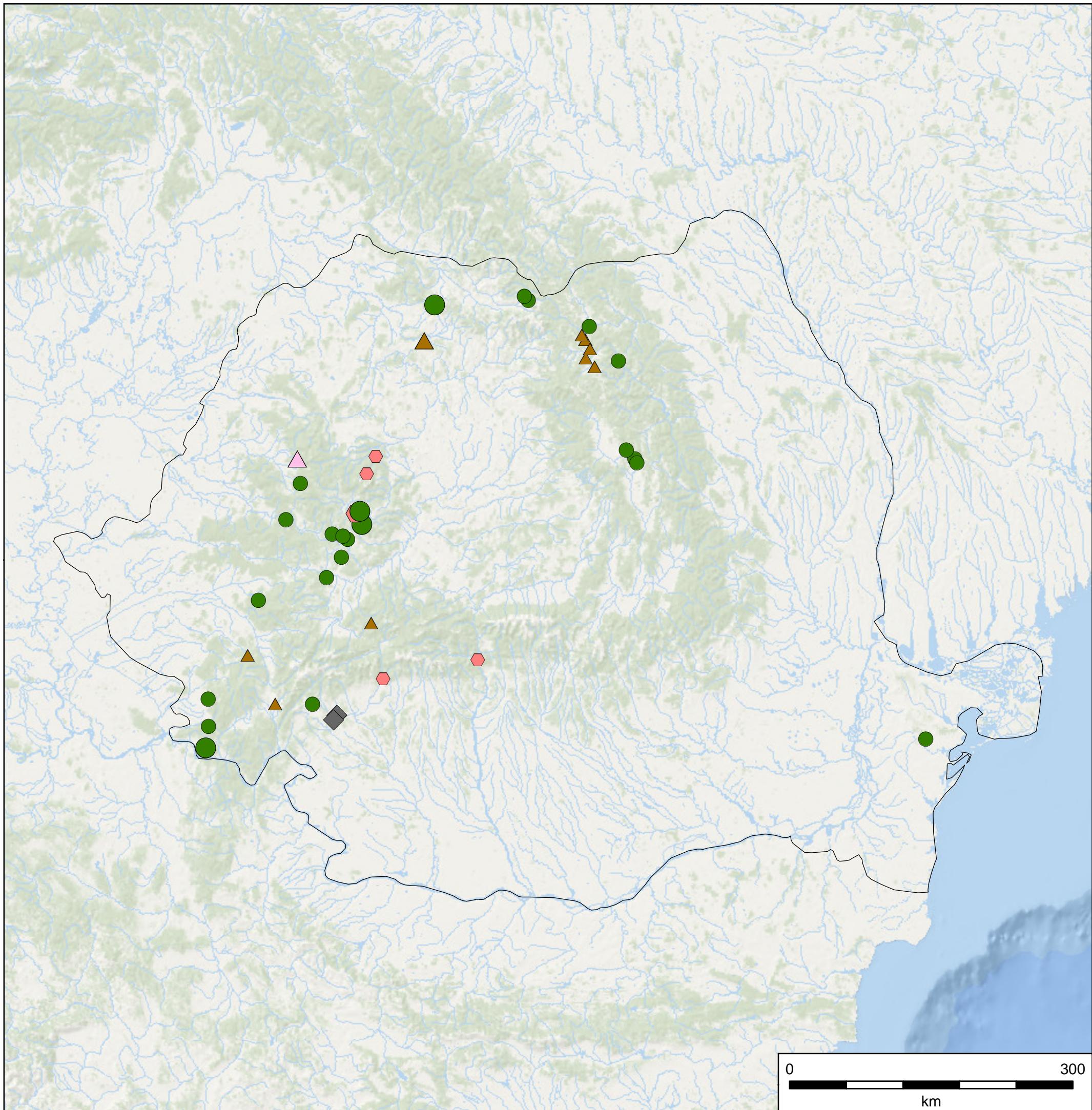
\* BRGM, Orléans, France

\*\* EuroGeoSurveys, Brussels, Belgium



- Commodity**
- Copper
  - Feldspar
  - △ Magnesite, Magnesium
  - ▲ Manganese
  - ◆ Titanium

- Deposit Size \***
- Class A (Super Large)
  - Class B (Large)
  - Class C (Medium)



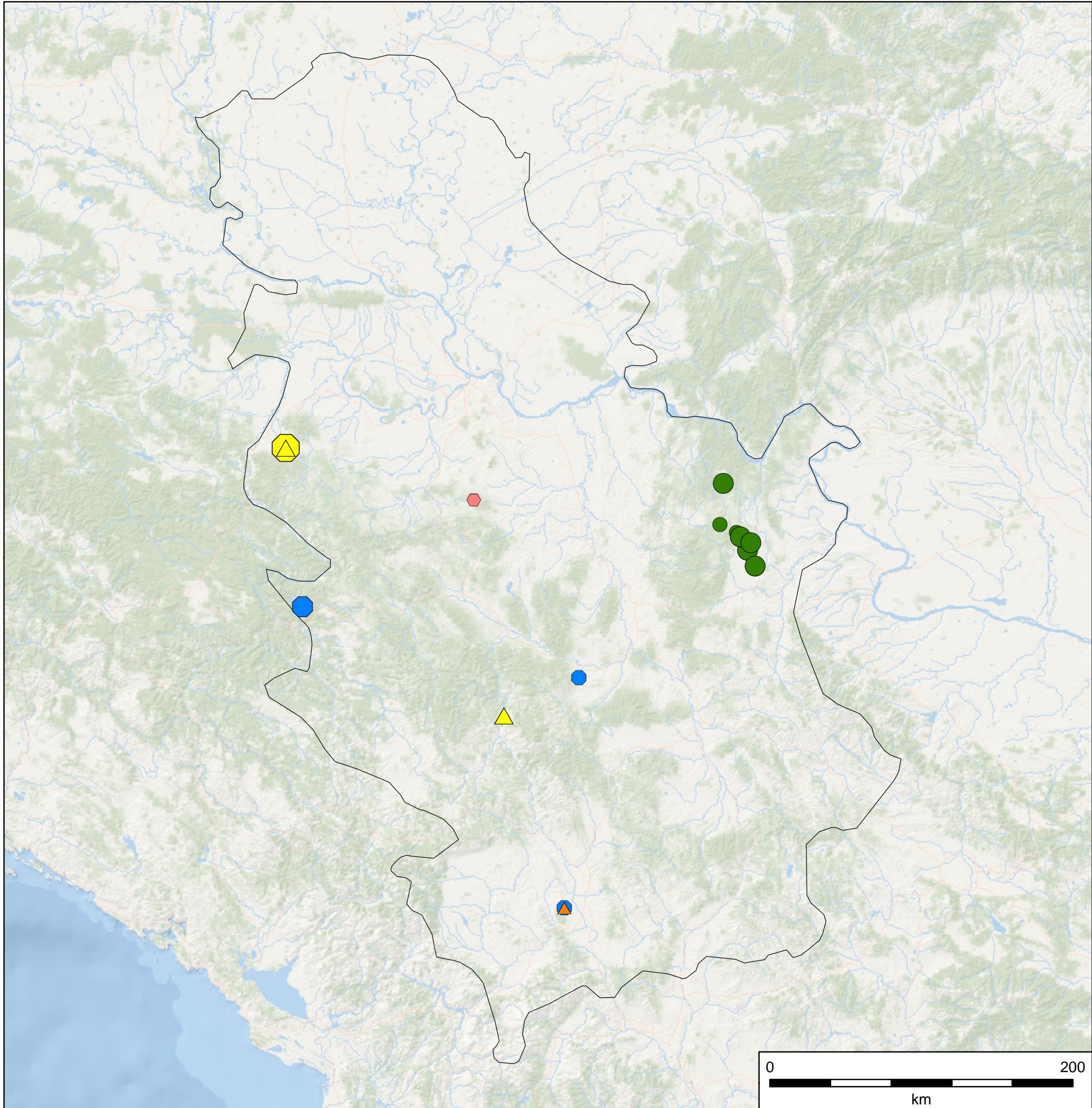
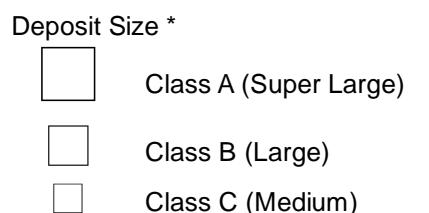
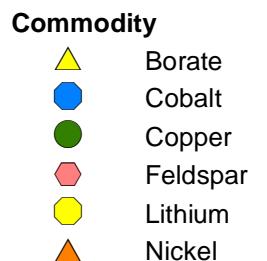
\* Remaining + extracted amount of the commodity

# CRITICAL RAW MATERIALS HARD ROCK DEPOSITS OF SERBIA

Based on the 2023 CRM list  
of the European Commission

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



\* Remaining + extracted amount of the commodity

# CRITICAL RAW MATERIALS HARD ROCK DEPOSITS OF SLOVAKIA

Based on the 2023 CRM list  
of the European Commission

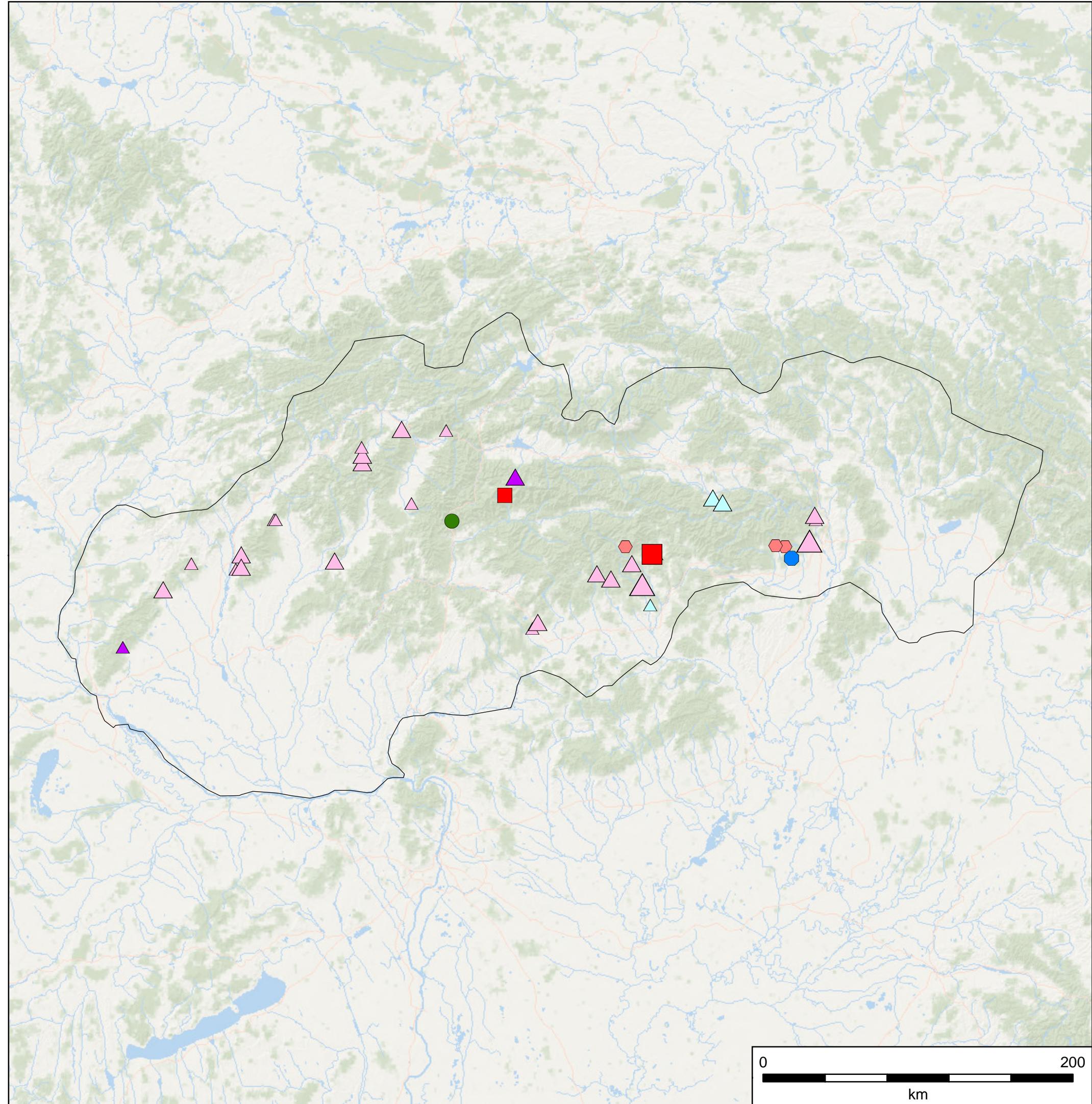
Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



Commodity	
▲	Antimony
△	Barite
●	Cobalt
●	Copper
◆	Feldspar
△	Magnesite, Magnesium
■	Tungsten

Deposit Size *	
□	Class A (Super Large)
□	Class B (Large)
□	Class C (Medium)



\* Remaining + extracted amount of the commodity

# CRITICAL RAW MATERIALS HARD ROCK DEPOSITS OF SPAIN

Based on the 2023 CRM list  
of the European Commission

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

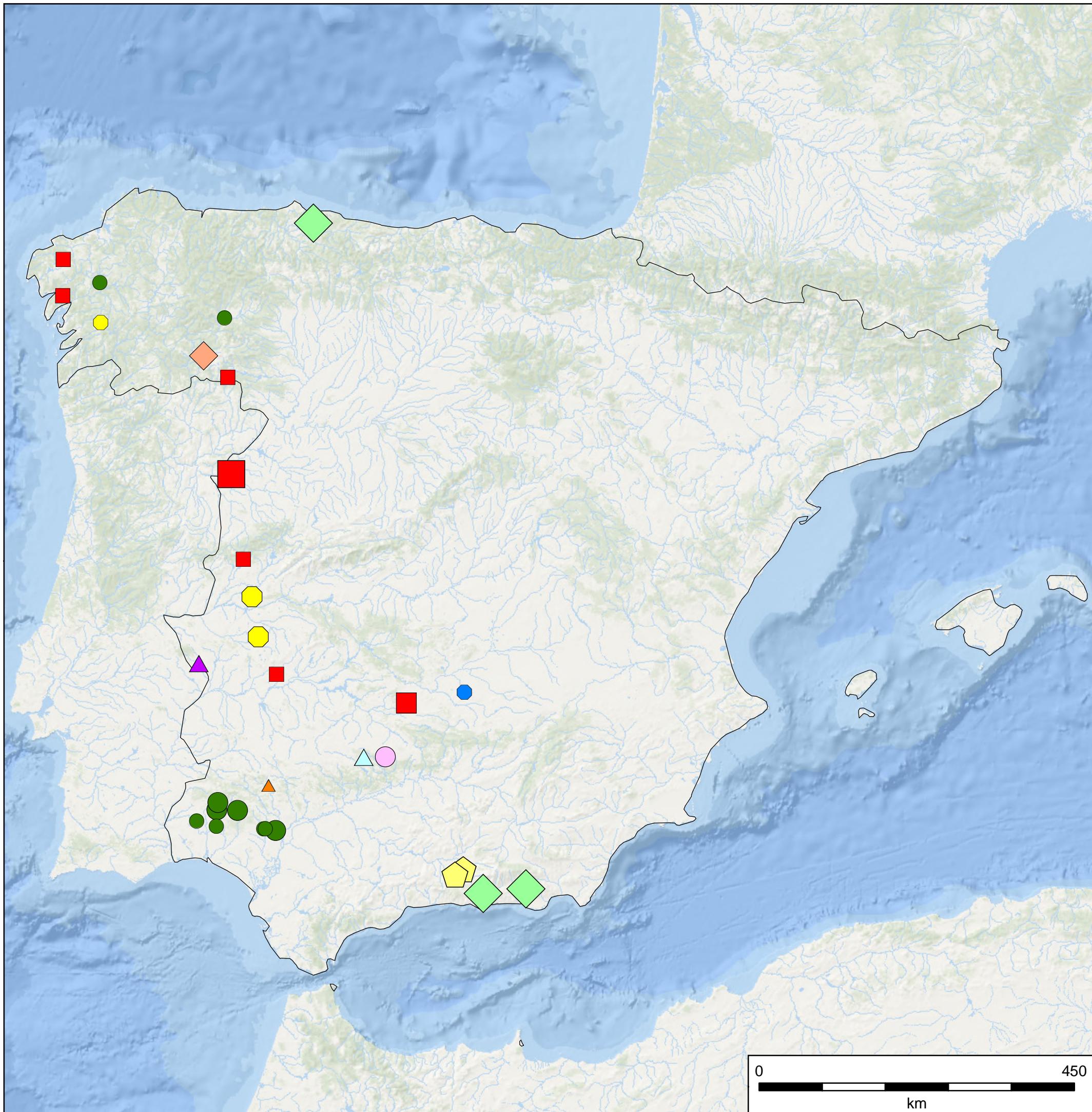
\* BRGM, Orléans, France

\*\* EuroGeoSurveys, Brussels, Belgium



Commodity
▲ Antimony
△ Barite
● Bismuth
● Cobalt
● Copper
◆ Fluorite
● Lithium
▲ Nickel
● Strontium
● Tantalum
■ Tungsten

Deposit Size *
Class A (Super Large)
Class B (Large)
Class C (Medium)



\* Remaining + extracted amount of the commodity

# CRITICAL RAW MATERIALS HARD ROCK DEPOSITS OF SWEDEN

Based on the 2023 CRM list  
of the European Commission

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

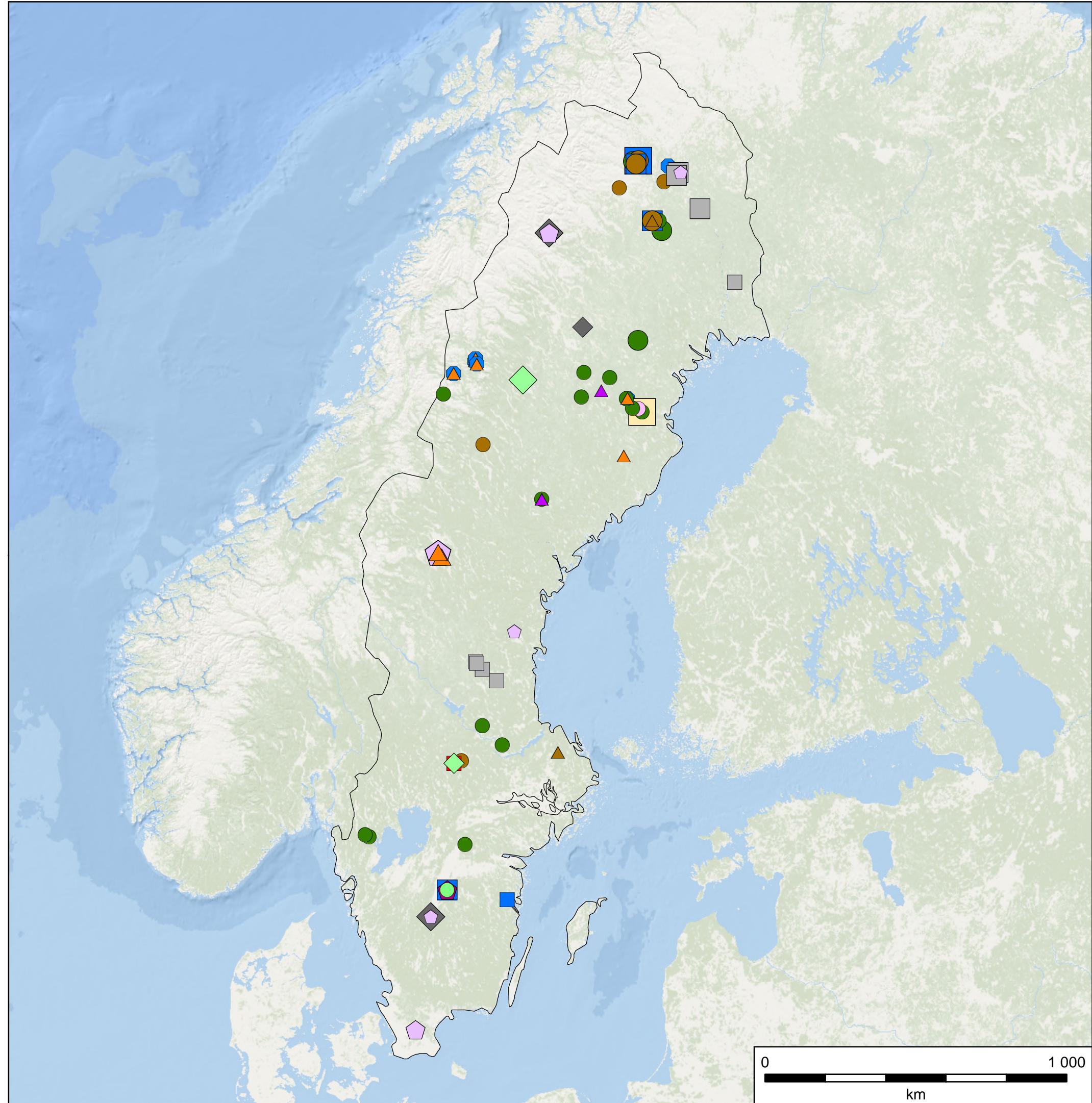
\* BRGM, Orléans, France

\*\* EuroGeoSurveys, Brussels, Belgium



Commodity	
▲	Antimony
■	Arsenic
●	Bismuth
◆	Cobalt
●	Copper
◆	Fluorite
■	Graphite
◆	Hafnium
▲	Manganese
▲	Nickel
●	Niobium
●	Phosphorous, Phosphate Rock
■	Rare Earth Elements
◆	Titanium
◆	Vanadium
■	Tungsten

Deposit Size *	
□	Class A (Super Large)
□	Class B (Large)
□	Class C (Medium)



\* Remaining + extracted amount of the commodity

# CRITICAL RAW MATERIALS HARD ROCK DEPOSITS OF THE NETHERLANDS

Based on the 2023 CRM list  
of the European Commission

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



EUROGEO SURVEYS  
The Geological Surveys of Europe



Commodity  
● Coking Coal

Deposit Size \*  
 Class A (Super Large)  
 Class B (Large)  
 Class C (Medium)



\* Remaining + extracted amount of the commodity

# CRITICAL RAW MATERIALS HARD ROCK DEPOSITS OF UKRAINE

Based on the 2023 CRM list  
of the European Commission

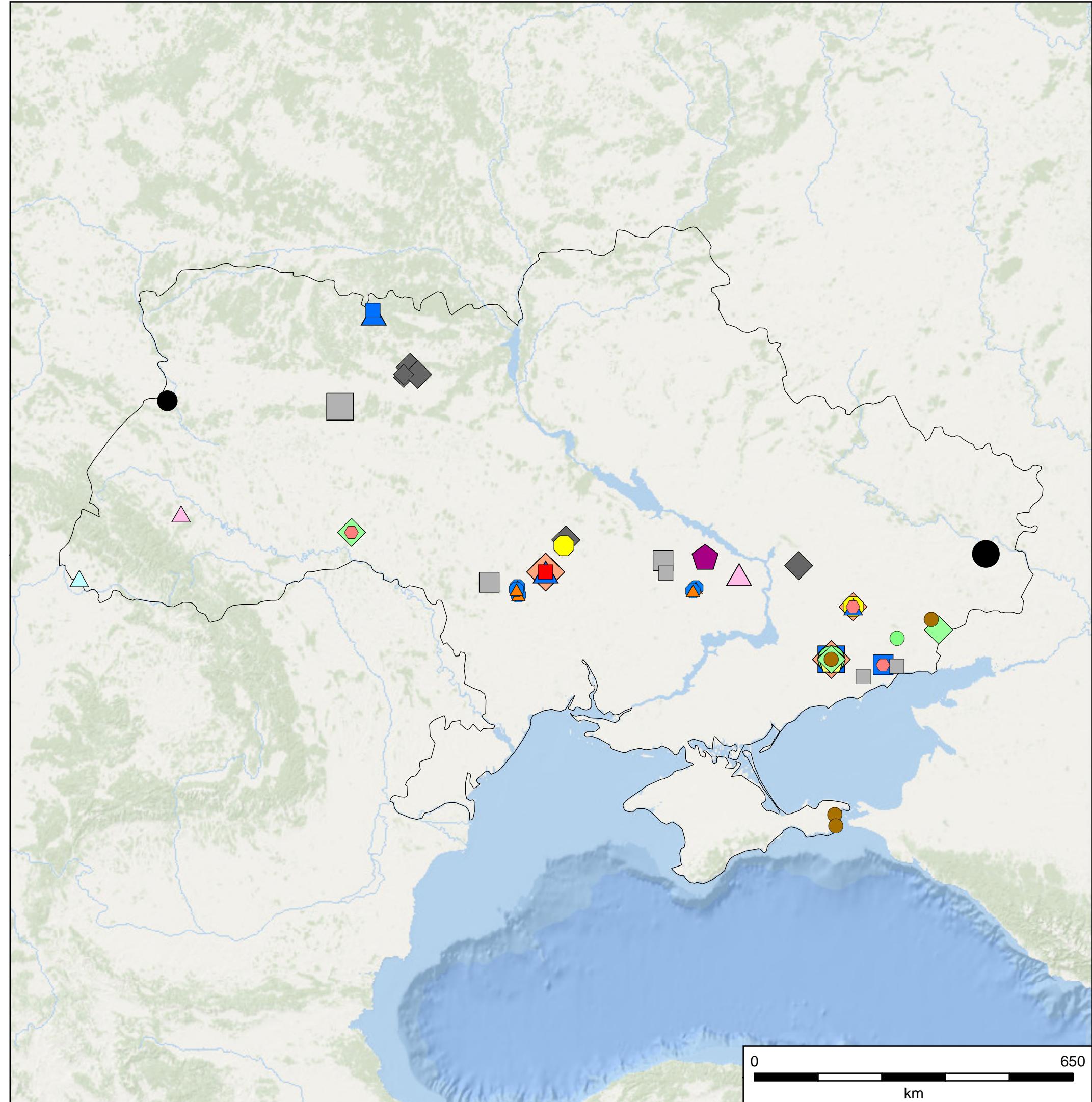
Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



Commodity
Barite
Beryllium
Cobalt
Coking Coal
Feldspar
Fluorite
Graphite
Hafnium
Lithium
Magnesite, Magnesium
Nickel
Niobium
Phosphorous, Phosphate Rock
Rare Earth Elements
Strontium
Tantalum
Titanium
Tungsten

Deposit Size *
Class A (Super Large)
Class B (Large)
Class C (Medium)

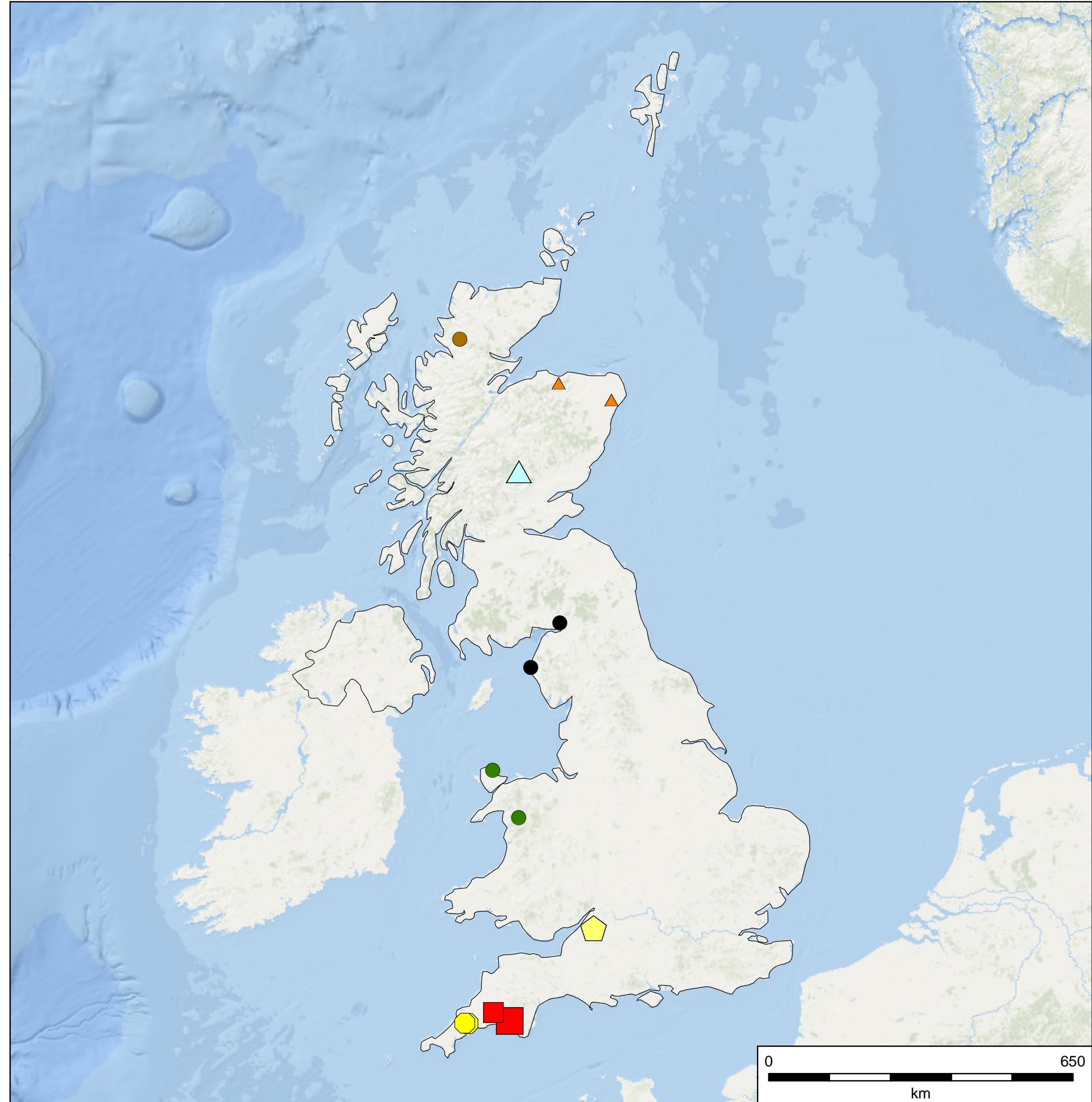
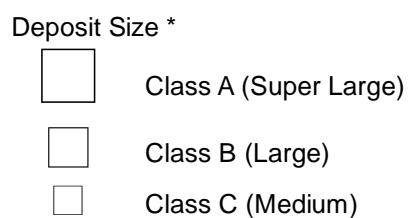


# CRITICAL RAW MATERIALS HARD ROCK DEPOSITS OF UNITED KINGDOM

Based on the 2023 CRM list  
of the European Commission

Capucine Albert\*, Guillaume Bertrand\*,  
GSEU Raw Materials Team &  
EuroGeoSurveys Mineral Resources Expert Group\*\*

\* BRGM, Orléans, France  
\*\* EuroGeoSurveys, Brussels, Belgium



\* Remaining + extracted amount of the commodity



# Favourability Maps

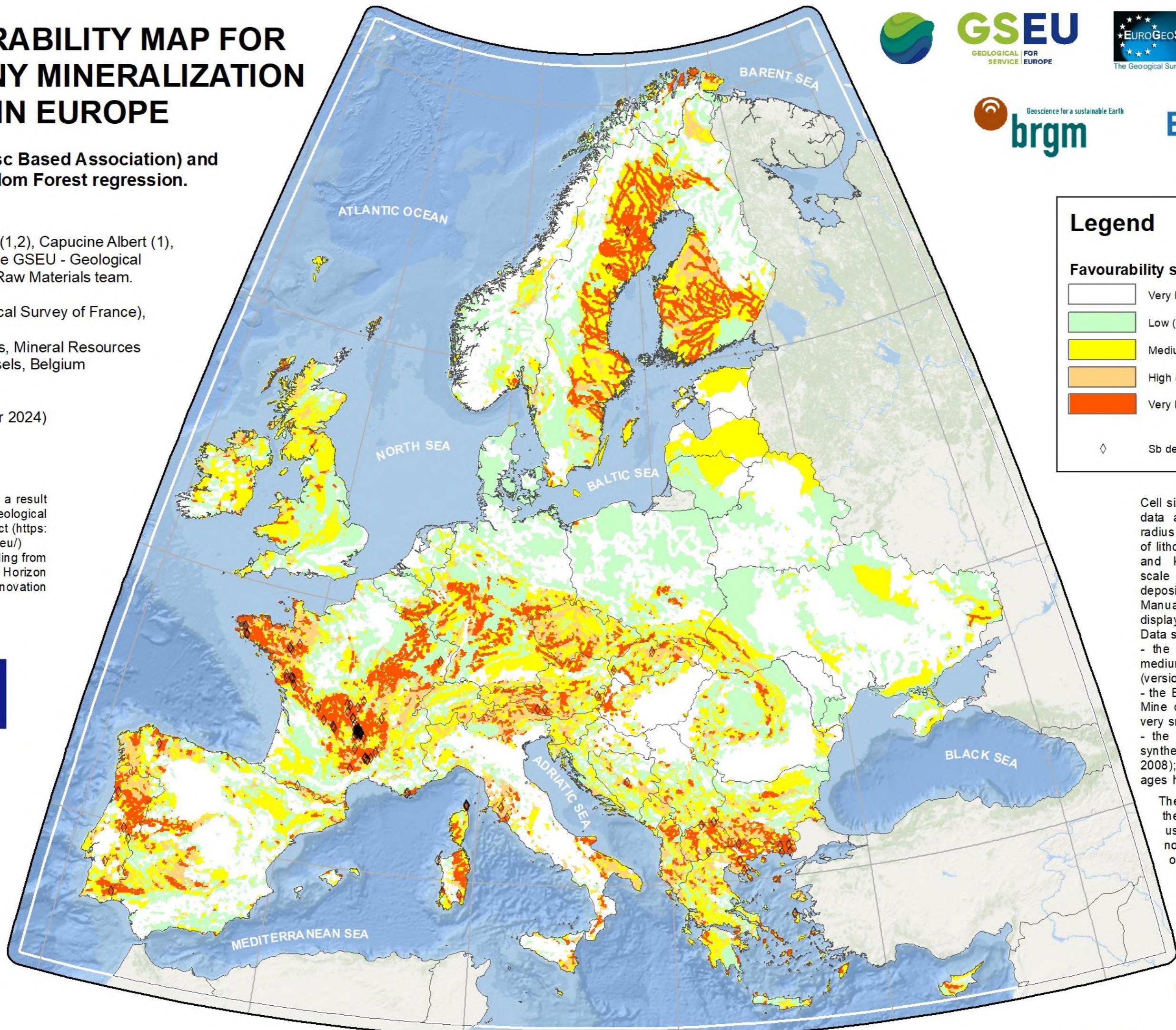
# FAVOURABILITY MAP FOR ANTIMONY MINERALIZATION IN EUROPE

DBA (Disc Based Association) and Random Forest regression.

Guillaume Bertrand (1,2), Capucine Albert (1), Alex Vella (1) and the GSEU - Geological Service for Europe Raw Materials team.

1 – BRGM (Geological Survey of France), Orléans, France  
2 – EuroGeoSurveys, Mineral Resources Expert Group, Brussels, Belgium

Version 1.0 (October 2024)



## Legend

### Favourability scores for antimony

Very low (0 to 0.4)
Low (>0.4 to 0.6)
Medium (>0.6 to 0.75)
High (>0.75 to 0.85)
Very high (over 0.85)

◊ Sb deposits (107 deposits)

This favourability map is a result from the GSEU - Geological Service for Europe project (<https://www.geologicalservice.eu/>)  
GSEU has received funding from the European Union's Horizon Europe research and innovation programme.

Cell size of 5 km x 5 km. DBA data aggregation with search radius of 7.5 km (associations of lithologies) and 5 km (faults and known deposits). Log4 scale weighting based on deposit class.

Manual classification for the display of favourability scores.  
Data sources are:

- the GSEU WP2 dataset of medium to super large deposits (version August 2024);
- the EGDI (MIN4EU) and Pro-Mine databases for small and very small deposits;
- the 1/1 500 000 geological synthesis of Europe (Billa et al., 2008); lithologies of Quaternary ages have been excluded.

The use of this map remains the sole responsibility of the users. The authors assume no responsibility for the use of this map and the consequences that may result.

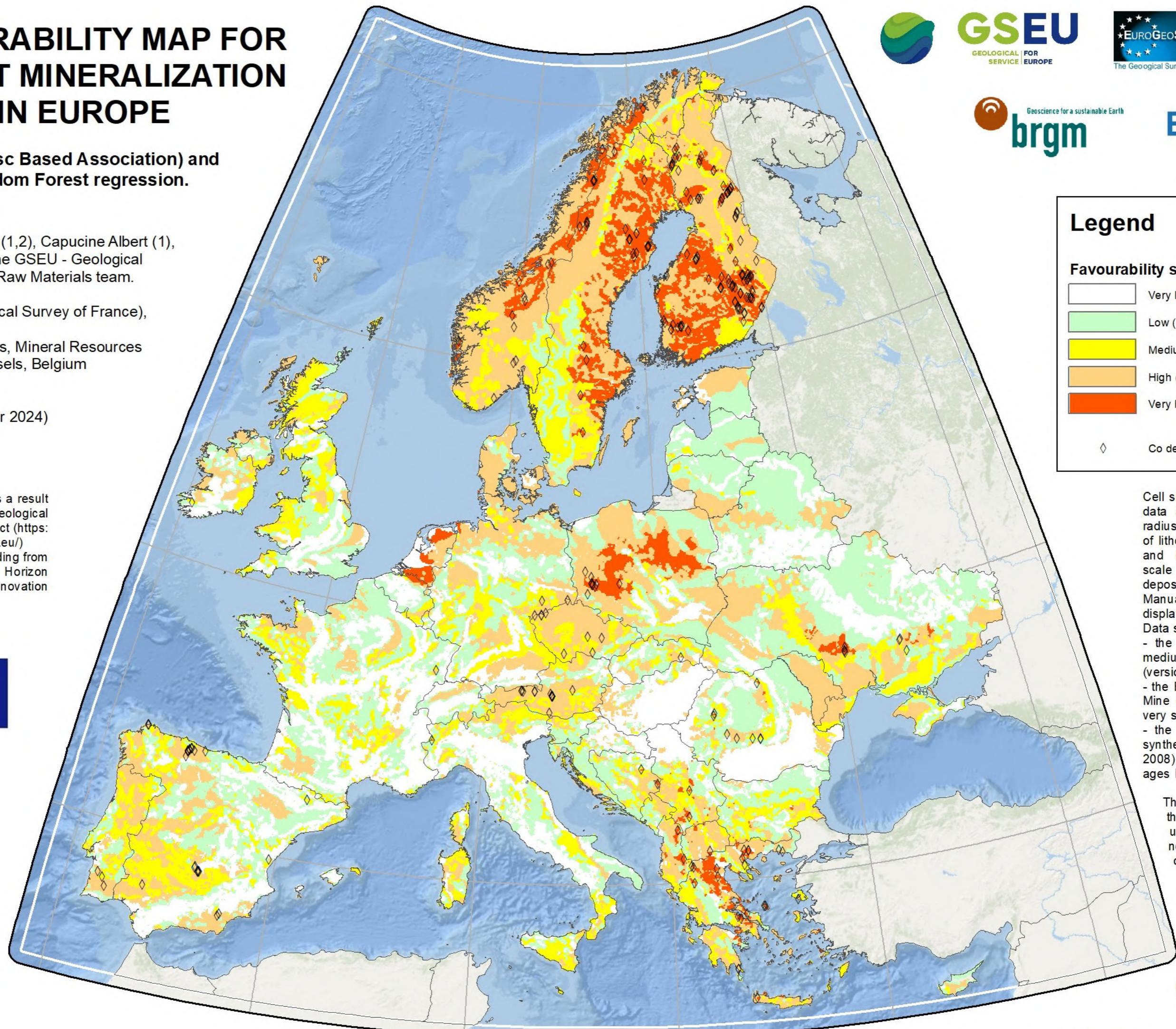
# FAVOURABILITY MAP FOR COBALT MINERALIZATION IN EUROPE

DBA (Disc Based Association) and Random Forest regression.

Guillaume Bertrand (1,2), Capucine Albert (1), Alex Vella (1) and the GSEU - Geological Service for Europe Raw Materials team.

1 – BRGM (Geological Survey of France), Orléans, France  
2 – EuroGeoSurveys, Mineral Resources Expert Group, Brussels, Belgium

Version 1.0 (October 2024)



## Legend

### Favourability scores for cobalt

Very low (0 to 0.4)
Low (>0.4 to 0.65)
Medium (>0.65 to 0.8)
High (>0.8 to 0.88)
Very high (over 0.88)

◊ Co deposits (261 deposits)

This favourability map is a result from the GSEU - Geological Service for Europe project (<https://www.geologicalservice.eu/>). GSEU has received funding from the European Union's Horizon Europe research and innovation programme.

Cell size of 5 km x 5 km. DBA data aggregation with search radius of 7.5 km (associations of lithologies) and 5 km (faults and known deposits). Log4 scale weighting based on deposit class. Manual classification for the display of favourability scores. Data sources are:

- the GSEU WP2 dataset of medium to super large deposits (version August 2024);
- the EGDI (MIN4EU) and Pro-Mine databases for small and very small deposits;
- the 1/1 500 000 geological synthesis of Europe (Billa et al., 2008); lithologies of Quaternary ages have been excluded.

The use of this map remains the sole responsibility of the users. The authors assume no responsibility for the use of this map and the consequences that may result.

0 500 km

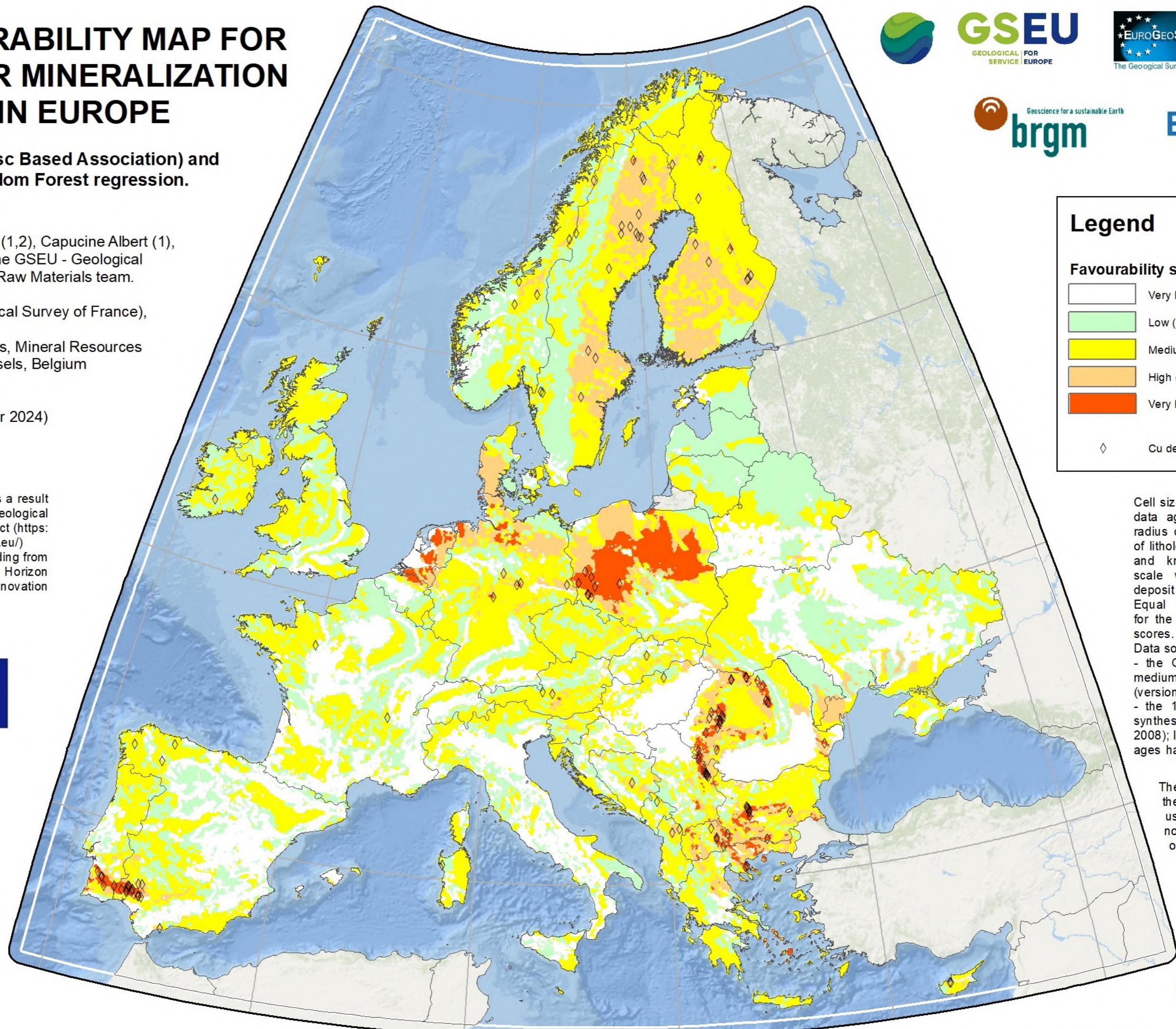
# FAVOURABILITY MAP FOR COPPER MINERALIZATION IN EUROPE

DBA (Disc Based Association) and Random Forest regression.

Guillaume Bertrand (1,2), Capucine Albert (1), Alex Vella (1) and the GSEU - Geological Service for Europe Raw Materials team.

1 – BRGM (Geological Survey of France), Orléans, France  
2 – EuroGeoSurveys, Mineral Resources Expert Group, Brussels, Belgium

Version 1.1 (October 2024)



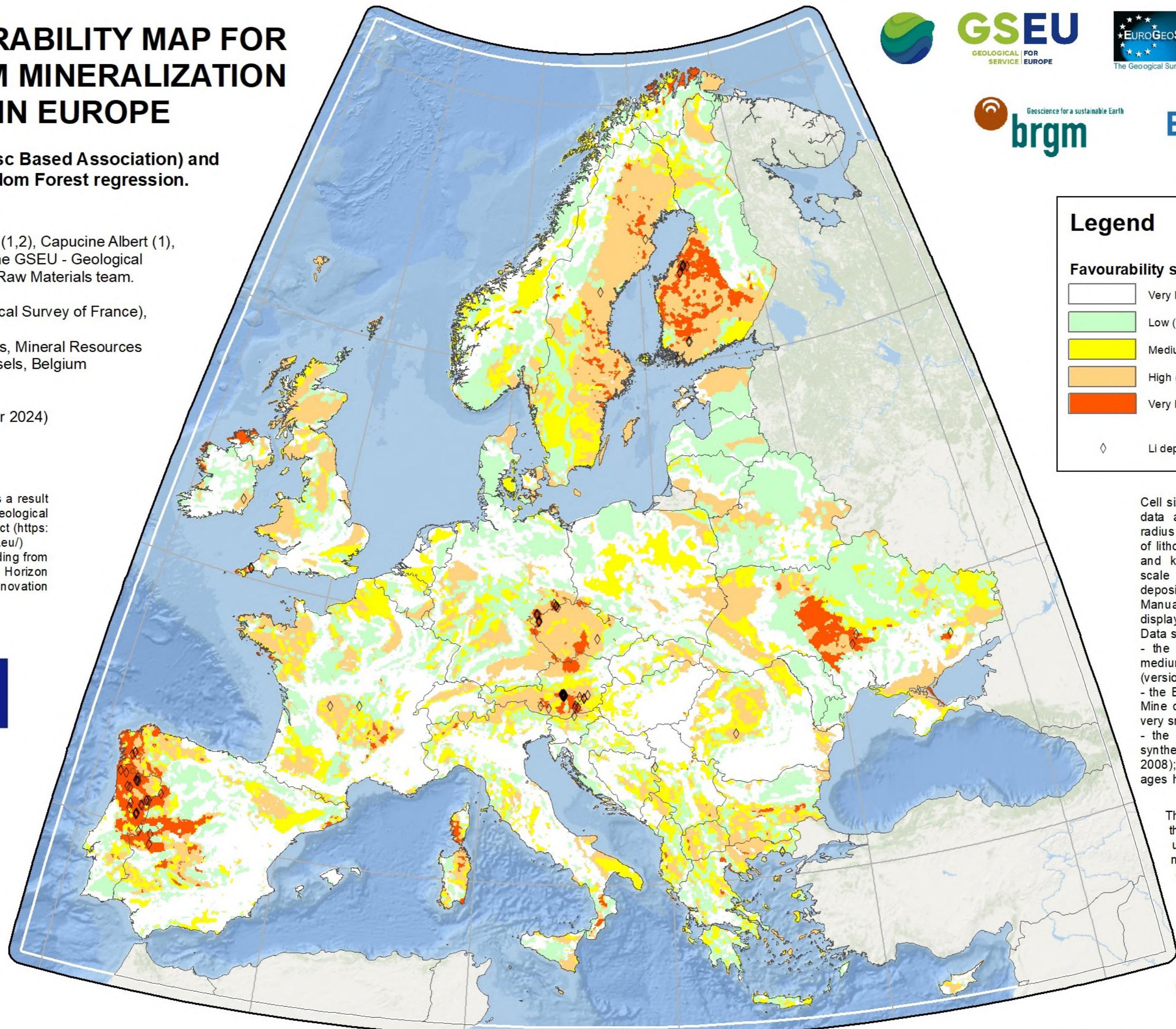
# FAVOURABILITY MAP FOR LITHIUM MINERALIZATION IN EUROPE

DBA (Disc Based Association) and Random Forest regression.

Guillaume Bertrand (1,2), Capucine Albert (1), Alex Vella (1) and the GSEU - Geological Service for Europe Raw Materials team.

1 – BRGM (Geological Survey of France), Orléans, France  
2 – EuroGeoSurveys, Mineral Resources Expert Group, Brussels, Belgium

Version 1.1 (October 2024)



## Legend

### Favourability scores for lithium

Very low (0 to 0.4)
Low (>0.4 to 0.6)
Medium (>0.6 to 0.75)
High (>0.75 to 0.88)
Very high (over 0.88)

◊ Li deposits (105 deposits)

Cell size of 5 km x 5 km. DBA data aggregation with search radius of 7.5 km (associations of lithologies) and 5 km (faults and known deposits). Log3 scale weighting based on deposit class.

Manual classification for the display of favourability scores.  
Data sources are:

- the GSEU WP2 dataset of medium to super large deposits (version August 2024);
- the EGDI (MIN4EU) and Pro-Mine databases for small and very small deposits;
- the 1/1 500 000 geological synthesis of Europe (Billa et al., 2008); lithologies of Quaternary ages have been excluded.

The use of this map remains the sole responsibility of the users. The authors assume no responsibility for the use of this map and the consequences that may result.

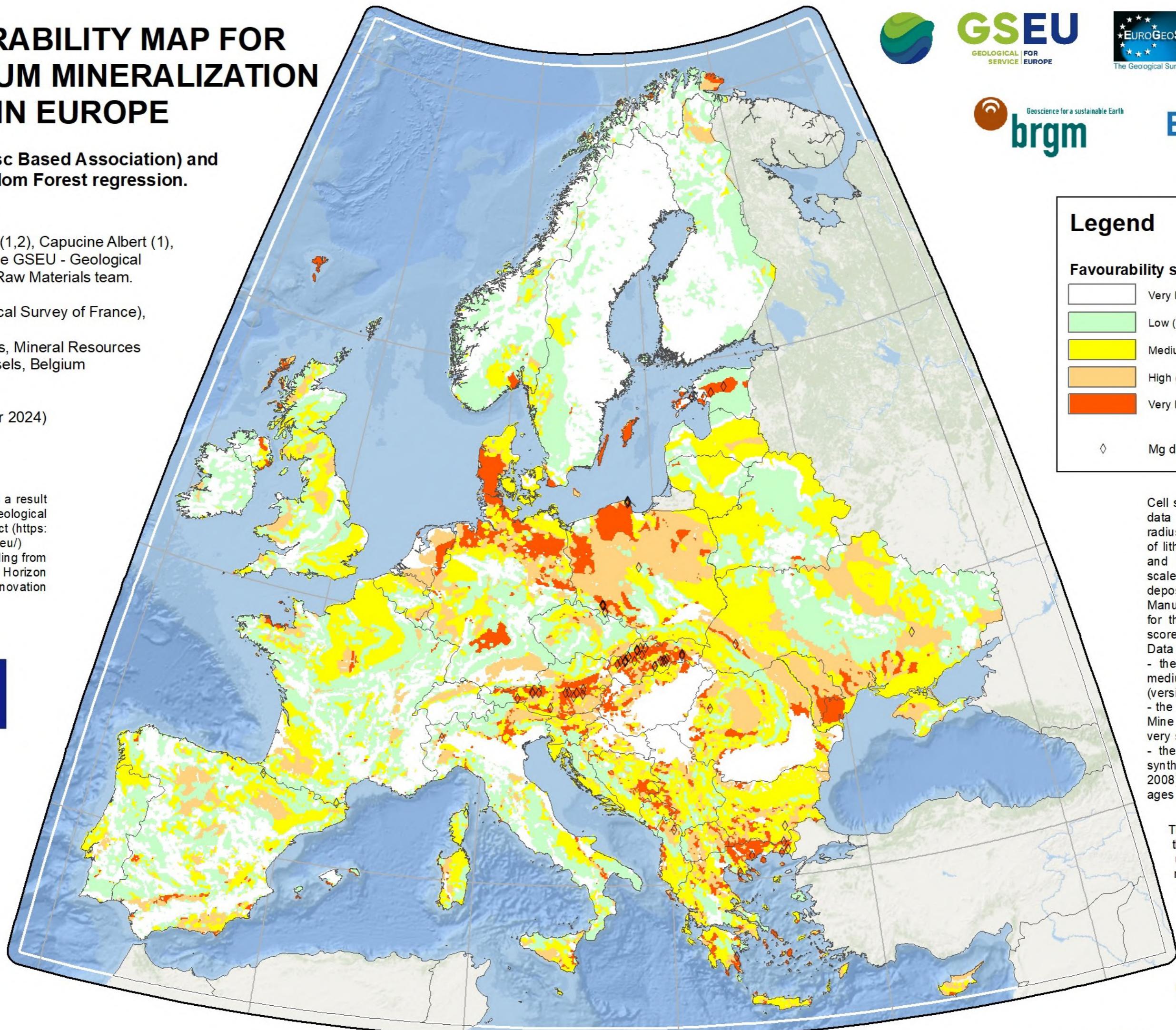
# FAVOURABILITY MAP FOR MAGNESIUM MINERALIZATION IN EUROPE

DBA (Disc Based Association) and Random Forest regression.

Guillaume Bertrand (1,2), Capucine Albert (1), Alex Vella (1) and the GSEU - Geological Service for Europe Raw Materials team.

1 – BRGM (Geological Survey of France), Orléans, France  
2 – EuroGeoSurveys, Mineral Resources Expert Group, Brussels, Belgium

Version 1.1 (October 2024)



0 500 km

Esri, Garmin, GEBCO, NOAA NGDC, and other contributors

CC BY 4.0

Geoscience for a sustainable Earth



## Legend

### Favourability scores for magnesium

- Very low (0 to 0.45)
- Low (>0.45 to 0.75)
- Medium (>0.75 to 0.9)
- High (>0.9 to 0.95)
- Very high (over 0.95)

◊ Mg deposits (65 deposits)

Cell size of 5 km x 5 km. DBA data aggregation with search radius of 7.5 km (associations of lithologies) and 5 km (faults and known deposits). Log3 scale weighting based on deposit class.

Manual intervals classification for the display of favourability scores.

Data sources are:

- the GSEU WP2 dataset of medium to super large deposits (version August 2024);
- the EGDI (MIN4EU) and Pro-Mine databases for small and very small deposits;
- the 1:1 500 000 geological synthesis of Europe (Billa et al., 2008); lithologies of Quaternary ages have been excluded.

The use of this map remains the sole responsibility of the users. The authors assume no responsibility for the use of this map and the consequences that may result.

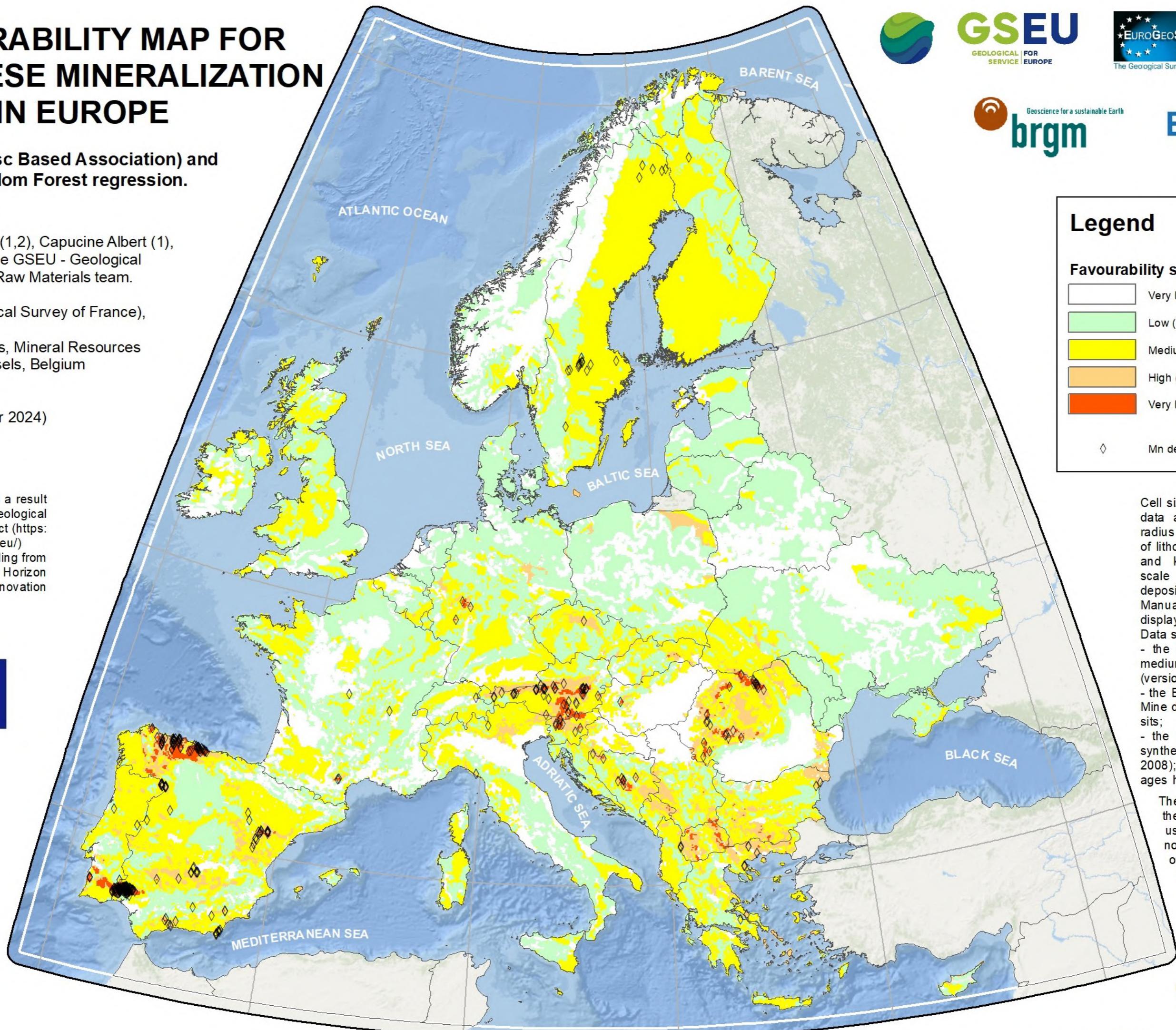
# FAVOURABILITY MAP FOR MANGANESE MINERALIZATION IN EUROPE

DBA (Disc Based Association) and Random Forest regression.

Guillaume Bertrand (1,2), Capucine Albert (1), Alex Vella (1) and the GSEU - Geological Service for Europe Raw Materials team.

1 – BRGM (Geological Survey of France), Orléans, France  
2 – EuroGeoSurveys, Mineral Resources Expert Group, Brussels, Belgium

Version 1.0 (October 2024)



**GSEU**  
GEOLOGICAL SERVICE FOR EUROPE

**EuroGeoSurveys**  
European Geoscience for Society  
The Geological Surveys of Europe



**brgm**  
Geoscience for a sustainable Earth

**EGDI**

## Legend

### Favourability scores for manganese

Very low (0 to 0.3)
Low (>0.3 to 0.45)
Medium (>0.45 to 0.6)
High (>0.6 to 0.75)
Very high (over 0.75)

◊ Mn deposits (340 deposits)

This favourability map is a result from the GSEU - Geological Service for Europe project (<https://www.geologicalservice.eu/>)  
GSEU has received funding from the European Union's Horizon Europe research and innovation programme.

Cell size of 5 km x 5 km. DBA data aggregation with search radius of 7.5 km (associations of lithologies) and 5 km (faults and known deposits). Log4 scale weighting based on deposit class.

Manual classification for the display of favourability scores.  
Data sources are:

- the GSEU WP2 dataset of medium to super large deposits (version August 2024);
- the EGDI (MIN4EU) and Pro-Mine databases for small deposits;
- the 1/1 500 000 geological synthesis of Europe (Billa et al., 2008); lithologies of Quaternary ages have been excluded.

The use of this map remains the sole responsibility of the users. The authors assume no responsibility for the use of this map and the consequences that may result.

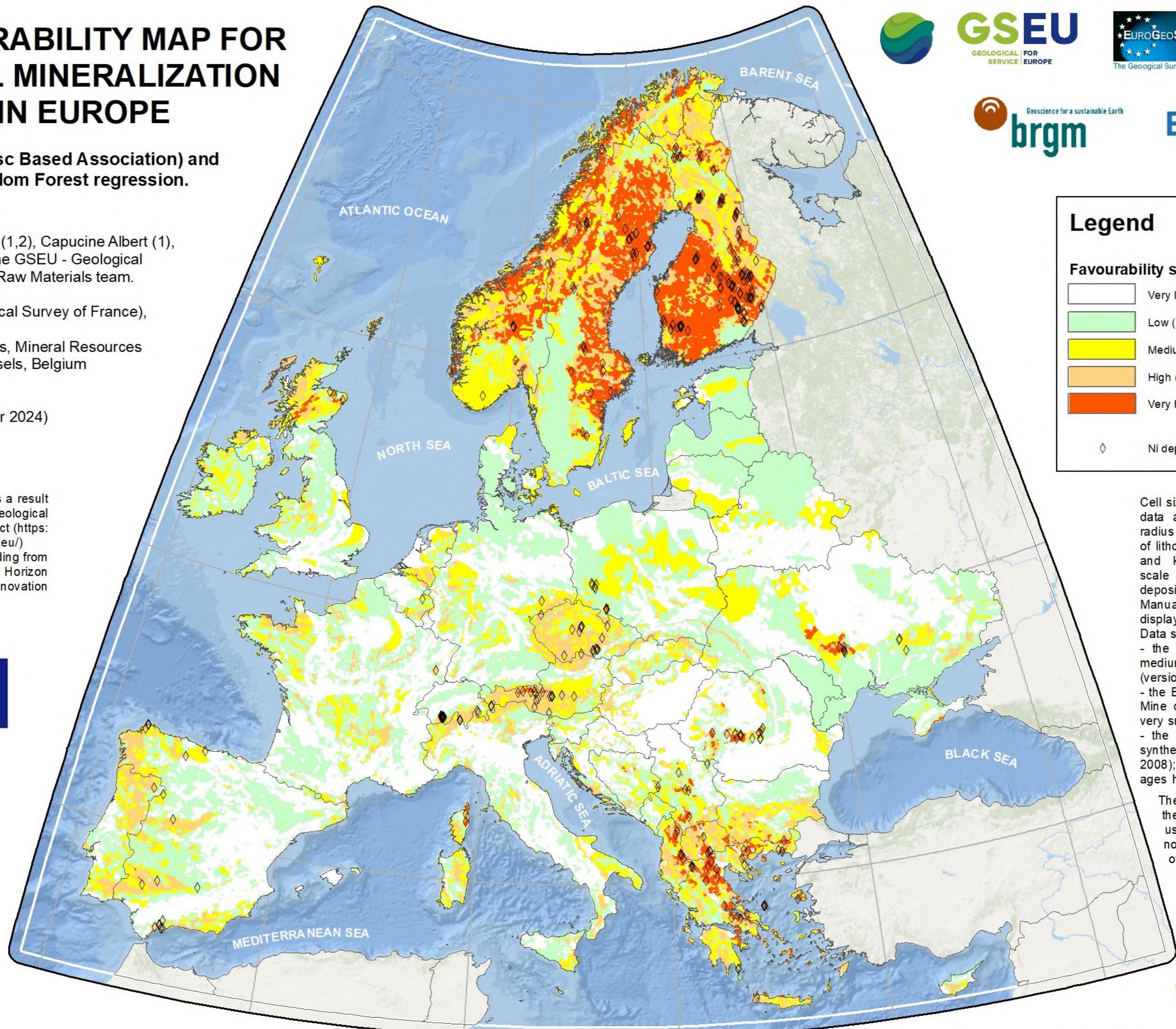
# FAVOURABILITY MAP FOR NICKEL MINERALIZATION IN EUROPE

DBA (Disc Based Association) and Random Forest regression.

Guillaume Bertrand (1,2), Capucine Albert (1), Alex Vella (1) and the GSEU - Geological Service for Europe Raw Materials team.

1 – BRGM (Geological Survey of France), Orléans, France  
2 – EuroGeoSurveys, Mineral Resources Expert Group, Brussels, Belgium

Version 1.0 (October 2024)



**GSEU**  
GEOLOGICAL SERVICE FOR EUROPE

**EuroGeoSurveys**  
European Geoscience for Society  
The Geological Surveys of Europe



**brgm**  
Geoscience for a sustainable Earth

**EGDI**

## Legend

### Favourability scores for nickel

Very low (0 to 0.4)
Low (>0.4 to 0.6)
Medium (>0.6 to 0.7)
High (>0.7 to 0.8)
Very high (over 0.8)

◊ Ni deposits (319 deposits)

This favourability map is a result from the GSEU - Geological Service for Europe project (<https://www.geologicalservice.eu/>). GSEU has received funding from the European Union's Horizon Europe research and innovation programme.

Cell size of 5 km x 5 km. DBA data aggregation with search radius of 7.5 km (associations of lithologies) and 5 km (faults and known deposits). Log3 scale weighting based on deposit class.

Manual classification for the display of favourability scores. Data sources are:

- the GSEU WP2 dataset of medium to super large deposits (version August 2024);
- the EGDI (MIN4EU) and Pro-Mine databases for small and very small deposits;
- the 1/1 500 000 geological synthesis of Europe (Billa et al., 2008); lithologies of Quaternary ages have been excluded.

The use of this map remains the sole responsibility of the users. The authors assume no responsibility for the use of this map and the consequences that may result.

0 500 km

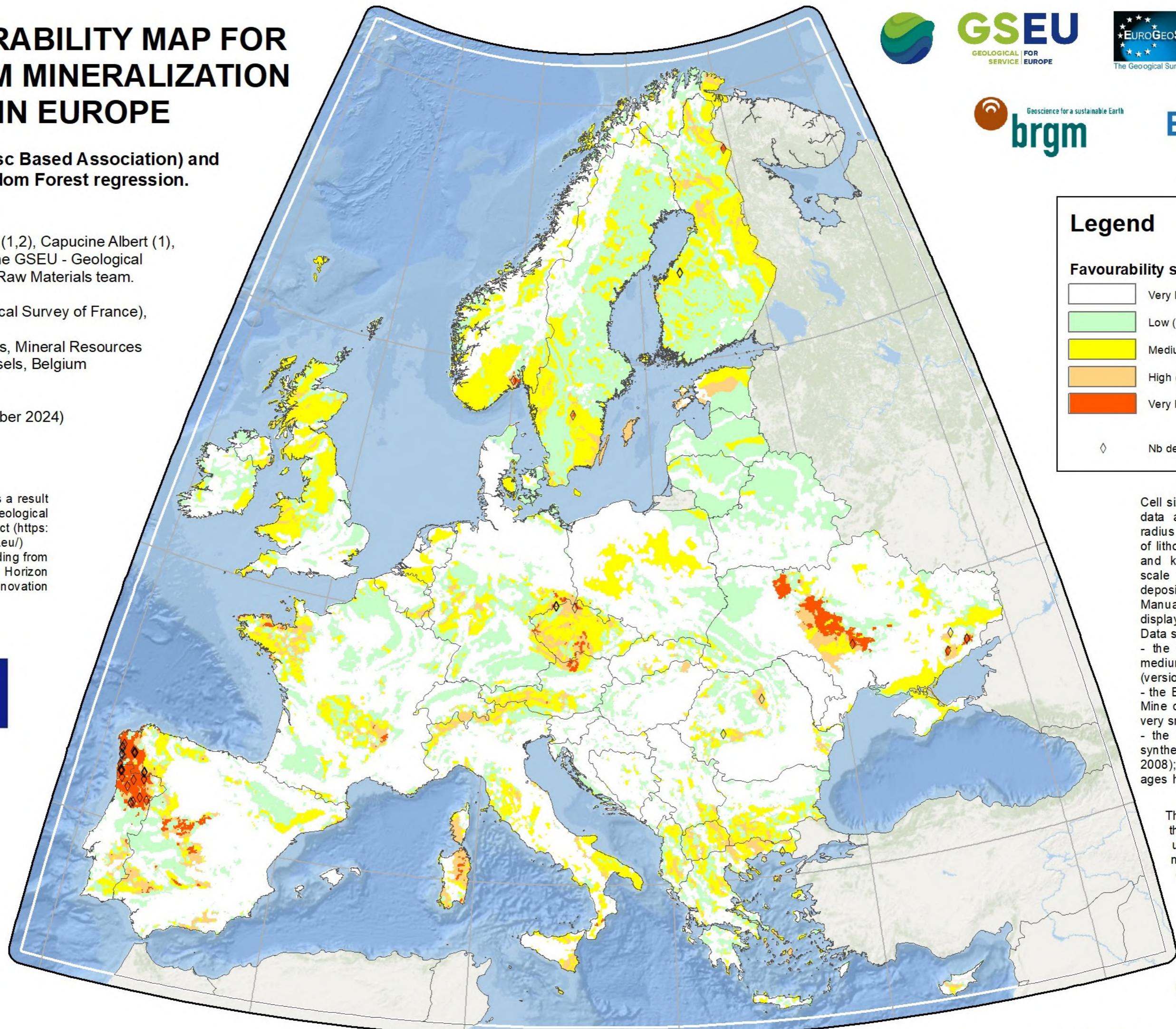
# FAVOURABILITY MAP FOR NIOBIUM MINERALIZATION IN EUROPE

DBA (Disc Based Association) and Random Forest regression.

Guillaume Bertrand (1,2), Capucine Albert (1), Alex Vella (1) and the GSEU - Geological Service for Europe Raw Materials team.

1 – BRGM (Geological Survey of France), Orléans, France  
2 – EuroGeoSurveys, Mineral Resources Expert Group, Brussels, Belgium

Version 1.0 (November 2024)



**GSEU**  
GEOLOGICAL SERVICE FOR EUROPE

**EuroGeoSurveys**  
European Geoscience for Society  
The Geological Surveys of Europe



**brgm**  
Geoscience for a sustainable Earth

**EGDI**

## Legend

### Favourability scores for niobium

Very low (0 to 0.4)
Low (>0.4 to 0.55)
Medium (>0.55 to 0.7)
High (>0.7 to 0.8)
Very high (over 0.8)

◊ Nb deposits (50 deposits)

Cell size of 5 km x 5 km. DBA data aggregation with search radius of 7.5 km (associations of lithologies) and 5 km (faults and known deposits). Log3 scale weighting based on deposit class.

Manual classification for the display of favourability scores.  
Data sources are:

- the GSEU WP2 dataset of medium to super large deposits (version August 2024);
- the EGDI (MIN4EU) and Pro-Mine databases for small and very small deposits;
- the 1/1 500 000 geological synthesis of Europe (Billa et al., 2008); lithologies of Quaternary ages have been excluded.

The use of this map remains the sole responsibility of the users. The authors assume no responsibility for the use of this map and the consequences that may result.

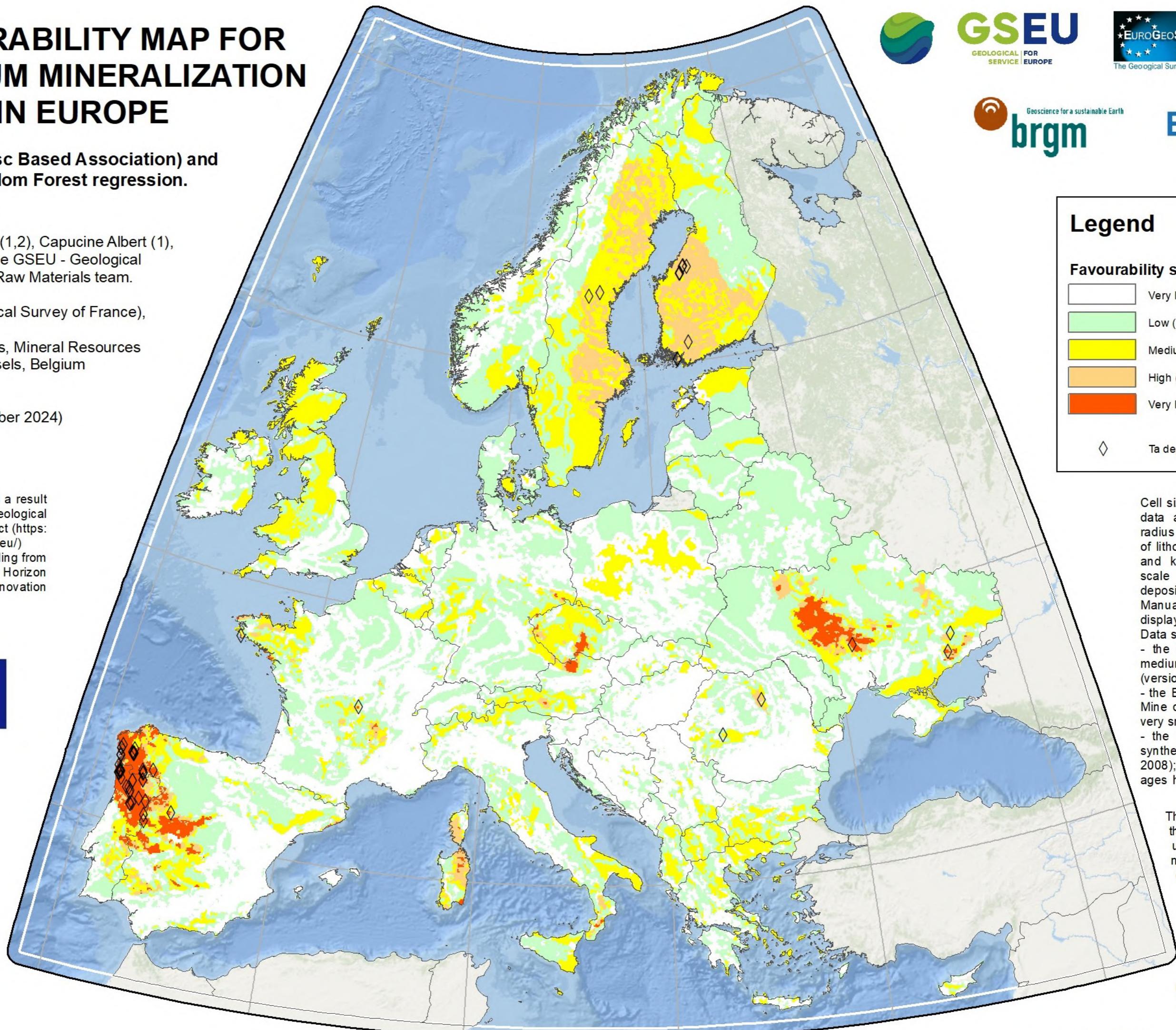
# FAVOURABILITY MAP FOR TANTALUM MINERALIZATION IN EUROPE

DBA (Disc Based Association) and Random Forest regression.

Guillaume Bertrand (1,2), Capucine Albert (1), Alex Vella (1) and the GSEU - Geological Service for Europe Raw Materials team.

1 – BRGM (Geological Survey of France), Orléans, France  
2 – EuroGeoSurveys, Mineral Resources Expert Group, Brussels, Belgium

Version 1.0 (November 2024)



The use of this map remains the sole responsibility of the users. The authors assume no responsibility for the use of this map and the consequences that may result.

Cell size of 5 km x 5 km. DBA data aggregation with search radius of 7.5 km (associations of lithologies) and 5 km (faults and known deposits). Log3 scale weighting based on deposit class.

Manual classification for the display of favourability scores. Data sources are:

- the GSEU WP2 dataset of medium to super large deposits (version August 2024);
- the EGDI (MIN4EU) and Pro-Mine databases for small and very small deposits;
- the 1/1 500 000 geological synthesis of Europe (Billa et al., 2008); lithologies of Quaternary ages have been excluded.

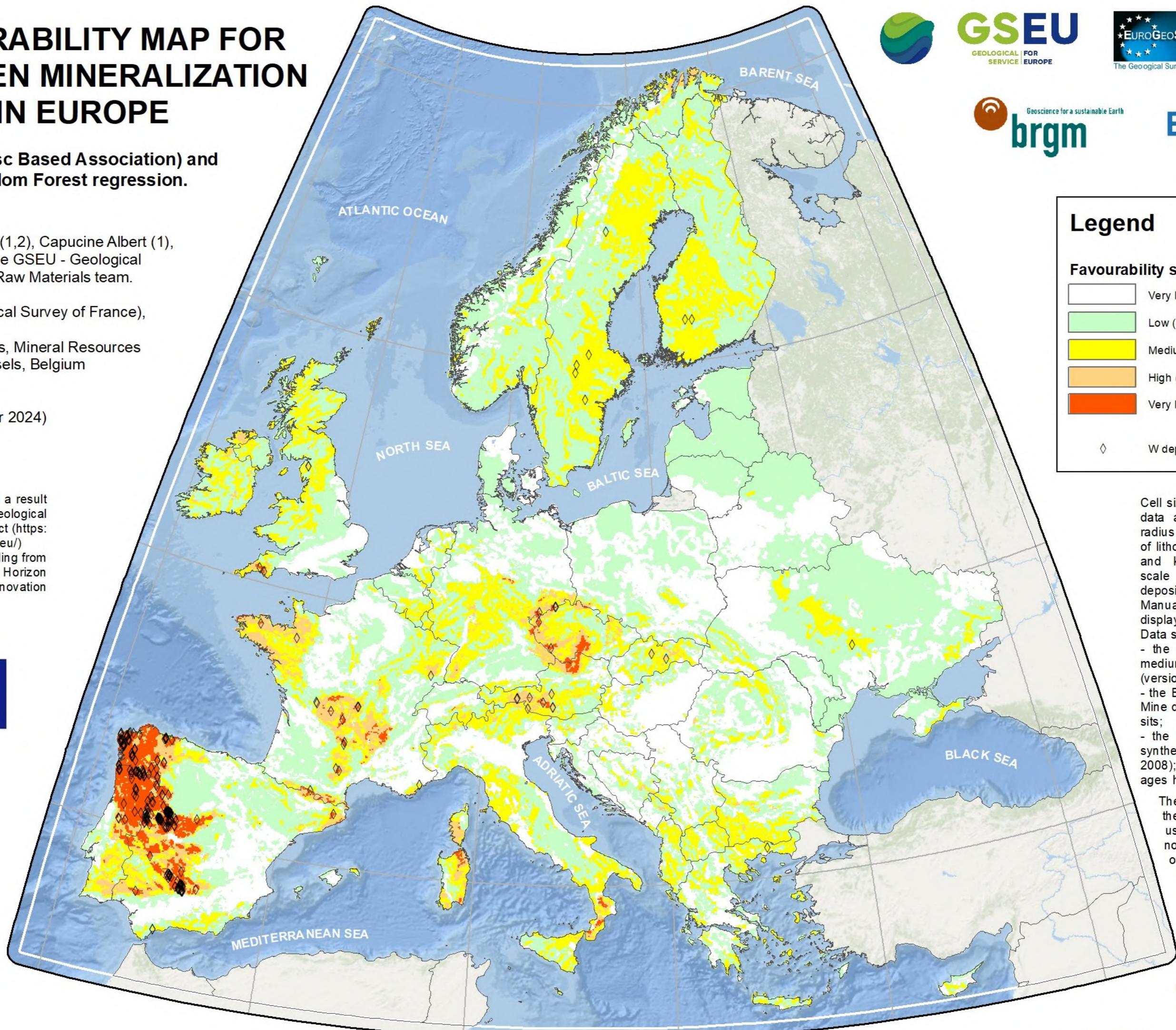
# FAVOURABILITY MAP FOR TUNGSTEN MINERALIZATION IN EUROPE

DBA (Disc Based Association) and Random Forest regression.

Guillaume Bertrand (1,2), Capucine Albert (1), Alex Vella (1) and the GSEU - Geological Service for Europe Raw Materials team.

1 – BRGM (Geological Survey of France), Orléans, France  
2 – EuroGeoSurveys, Mineral Resources Expert Group, Brussels, Belgium

Version 1.0 (October 2024)



## Legend

### Favourability scores for tungsten

Very low (0 to 0.2)
Low (>0.2 to 0.4)
Medium (>0.4 to 0.6)
High (>0.6 to 0.8)
Very high (over 0.8)

◊ W deposits (317 deposits)

This favourability map is a result from the GSEU - Geological Service for Europe project (<https://www.geologicalservice.eu/>)  
GSEU has received funding from the European Union's Horizon Europe research and innovation programme.

Cell size of 5 km x 5 km. DBA data aggregation with search radius of 7.5 km (associations of lithologies) and 5 km (faults and known deposits). Log4 scale weighting based on deposit class.

Manual classification for the display of favourability scores.

Data sources are:

- the GSEU WP2 dataset of medium to super large deposits (version August 2024);
- the EGDI (MIN4EU) and Pro-Mine databases for small deposits;
- the 1/1 500 000 geological synthesis of Europe (Billa et al., 2008); lithologies of Quaternary have been excluded.

The use of this map remains the sole responsibility of the users. The authors assume no responsibility for the use of this map and the consequences that may result.

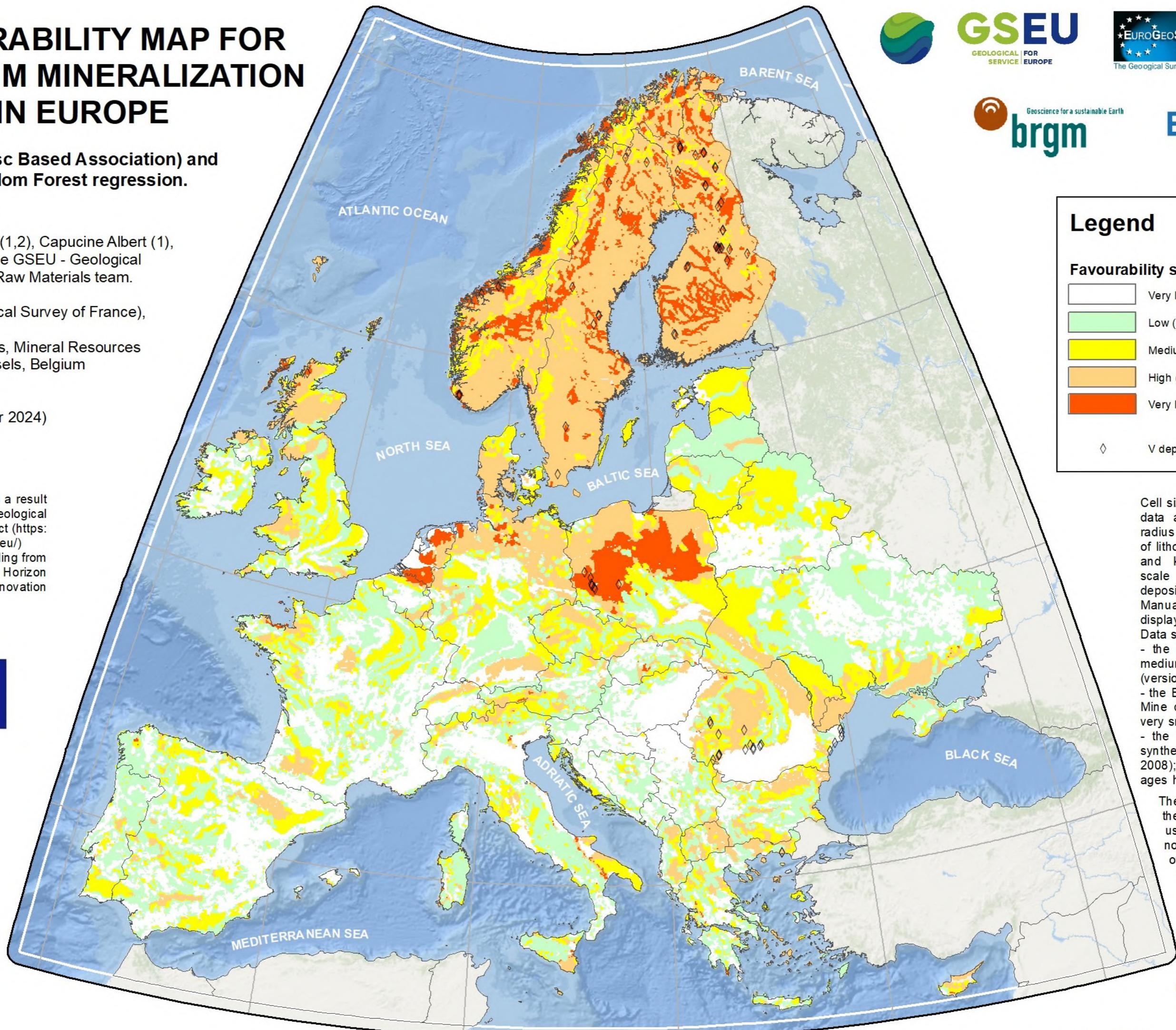
# FAVOURABILITY MAP FOR VANADIUM MINERALIZATION IN EUROPE

DBA (Disc Based Association) and Random Forest regression.

Guillaume Bertrand (1,2), Capucine Albert (1), Alex Vella (1) and the GSEU - Geological Service for Europe Raw Materials team.

1 – BRGM (Geological Survey of France), Orléans, France  
2 – EuroGeoSurveys, Mineral Resources Expert Group, Brussels, Belgium

Version 1.0 (October 2024)



## Legend

### Favourability scores for vanadium

Very low (0 to 0.25)
Low (>0.25 to 0.5)
Medium (>0.5 to 0.75)
High (>0.75 to 0.88)
Very high (over 0.88)

◊ V deposits (80 deposits)

Cell size of 5 km x 5 km. DBA data aggregation with search radius of 7.5 km (associations of lithologies) and 5 km (faults and known deposits). Log3 scale weighting based on deposit class.

Manual classification for the display of favourability scores. Data sources are:

- the GSEU WP2 dataset of medium to super large deposits (version August 2024);
- the EGDI (MIN4EU) and Pro-Mine databases for small and very small deposits;
- the 1/1 500 000 geological synthesis of Europe (Billa et al., 2008); lithologies of Quaternary ages have been excluded.

The use of this map remains the sole responsibility of the users. The authors assume no responsibility for the use of this map and the consequences that may result.

0 500 km



December 2024



**GSEU**  
GEOLOGICAL SERVICE FOR EUROPE

## ACKNOWLEDGMENTS

These maps are the result of the outstanding efforts of the Critical Raw Materials Group within the Geological Service for Europe (GSEU) project.

With special thanks to Capucine Albert and Guillaume Bertrand.



Funded by  
the European Union

**EUROGEO SURVEYS**  
European Geoscience for Society  
The Geological Surveys of Europe