



HAL
open science

Comparison of classic trace element geochemistry, soil partial leaches, on soils and biogeochemistry in the Western Europe Environment. An example from Sb deposits

Jérémie Melleton, Hélène Marasa, Virginie Derycke, Eric Fournier, Eric Gloaguen, Loic Bouat

► To cite this version:

Jérémie Melleton, Hélène Marasa, Virginie Derycke, Eric Fournier, Eric Gloaguen, et al.. Comparison of classic trace element geochemistry, soil partial leaches, on soils and biogeochemistry in the Western Europe Environment. An example from Sb deposits. 2019. hal-02345127

HAL Id: hal-02345127

<https://brgm.hal.science/hal-02345127v1>

Preprint submitted on 4 Nov 2019

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Comparison of classic trace element geochemistry, soil partial leaches, on soils and biogeochemistry in the Western Europe Environment. An example from Sb deposits.

Melleton J.¹, Marasa H.¹, Derycke V.¹, Fournier E.¹, Gloaguen E.¹, Bouat L.²

¹ BRGM

² Le Mans University

In Europe, exploration geochemistry is mainly restricted to classical soils geochemical analyses based on total digestion of samples, despite the good results obtained in other areas with approaches related to selective and partial leaches, in particular to reveal anomalies linked to deeply buried deposits. Similarly, examples of biogeochemistry usages in Europe remain anecdotic, but it is now very efficient to help in focusing exploration efforts with the actual level of element detection reached in a large spectrum of plants.

Within the framework of the UpDeep project (EIT Raw Materials), which aims at developing the geochemical expertise on deep buried exploration into Europe, we performed a comparison of some of these new geochemical methods on the Vendée antimony district (France).

One of the challenging questions of exploration geochemistry in Western Europe is the long-term anthropogenic contamination related to past mining activities but also agriculture and forestry, which can strongly affect primary geochemical anomalies.

Within the scope of testing different well-documented approaches, we collected around 160 samples of soils on which we performed separately the following treatment: deionized water leach, sodium pyrophosphate leach, and Aqua Regia digestion on Ah horizon; and hot hydroxylamine leach, Ionic LeachTM (ALS) and Aqua Regia digestion on B horizon. Each soil samples have been analyzed by pXRF.

We also collected 184 samples of oak and 94 samples of bramble twigs in order to compare their geochemical signal. In this Western European context, identification of a homogeneously distributed vegetation media represents a complex issue.