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Exploration biogeochemistry in the Western Europe environment, an example from Sb deposits.

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In Europe, exploration geochemistry is mainly restricted to classical soils geochemical analyses based on total or near total digestion of samples. Examples of biogeochemistry usage in continental Europe remain anecdotic. However, with the actual detection levels in analytical methods and the knowledge about metals accumulation reached in a large spectrum of plants, biogeochemistry has already been successfully tested in various environments and over distinct deposit types.

Within the UpDeep project (European Institute of Innovation and Technology - Raw Materials) framework that aims to develop the geochemical expertise on deep buried exploration in Europe, a biogeochemical survey has been done on several known Sb deposit of the Vendée 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 agricultural and forestry activities, which can strongly affect the primary geochemical anomalies especially in soil horizons and plants. In the studied area, intensive agriculture is widespread, and forestry has been conducted intensively. In such environment, hedges remain the only area where variety of plant species is important enough to chose a good media, in particular for trees.

Within the scope of testing different plant species, oak bark and bramble leaves were sampled at around 110 sites. After powdering, the samples experienced a HNO_3 digestion followed by ICM-MS analyses.

To identify the geochemical signatures related to Sb mineralizations, classical compositional data analyses have been carried out before response ratios and log ratios applications.