

ERA-MIN2 AUREOLE project : tArgeting eU cRitical mEtals (Sb, W) and predictibility of Sb-As-Hg envirOnmentaL issuEs

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ERA-MIN2 AUREOLE project : tArgeting eU cRitical mEtals (Sb, W) and predictibility of Sb-As-Hg envirOnmentaL issuEs

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Antimony (Sb) is a critical metal for Europe. Indeed, Sb is widely used in a variety of industrial operations, especially in the European aircraft industry, such as production of flame retardants, plastics, paint pigments, glassware and ceramics, alloys in ammunition and battery manufacturing plants.

Despite its strategic importance, the knowledge on Sb and its ore deposits remains poorly constrained. Moreover, Europe remains under the threat of an essentially Chinese supply despite a proven potential for European deposits that contain also strategic and precious co-products (W, Au). In parallel, Sb and associated metalloids (As, Hg, etc) are more and more recognised as a global threat for human health and it has been demonstrated that most of elevated concentrations of Sb on earth surface originate from natural, geogenic sources. Then, a first large-scale identification of these areas where primaries resources occur and metalloids can contaminate humans should be a priority.

To achieve its objectives, the overall approach of the ERA-MIN2 AUREOLE project (2019-2022 - https://aureole.brgm.fr) is based on disruptive concepts: i) development of a 3D large-scale metallogenic model integrating deep-seated processes to determine the spatial distribution of ore deposits; ii) the use of mineral prospectivity data weighted by surface data to determine the probability of environmental risk over large areas.

The work package (WP) 1 is dedicated to produce the new 3D deep-seated metallogenic model for antimony mineralisations and contribute to the global 3D understanding of the Sb mineralising processes. The WP2 is designed to the understanding of processes - such as geomorphology, weathering, climate - that control the mobilisation and transport of metalloids at the earth surface. The WP3 will use results from WPs 1 & 2 to produce large-scale mineral prospectivity and a large-scale environmental risk assessment by weighting mineral prospectivity with earth surface

properties, such as DTM, rainfall, weathering cartographic maps, etc.

The AUREOLE project will bring new scientific knowledge on Sb and Sb deposits, for a better mineral exploration targeting.

The expected outcomes will be several high-impact deliverables devoted to the targeting of new Sb deposits and a new large-scale environmental assessment maps for decision-making dealing with humans health. Long term expected impacts would be an increase of EU Sb resources and EU Sb sustainable supply. Because of its implications for European critical metals, the AUREOLE project will provide new findings and results to the SCRREEN project (Solutions for Critical Raw Materials – a European Expert Network) and to the IMP@CT project (Integrated Mobile Modularised Plant and Containerised Tools for sustainable, selective, low-impact mining of small, high-grade or complex deposits). It will also interact with the Geo-ERA FRAME project (Forecasting and assessing Europe's strategic raw materials needs).