

04.01 Prospection and extraction of critical and strategic raw materials in Europe

Acceptance of Plant-Based Geochemical Exploration and applicability: Lessons from SEMACRET

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This study presents findings concerning plant-based geochemical exploration from the SEMACRET project, which investigated identifying sources and deposits of orthomagmatic critical raw materials (CRMs), including Ti, V, Ni, Co, Cr, Cu, and PGM. Our research demonstrates that plant geochemistry effectively reflects underlying geology across diverse ecosystems, as well as exploration targets such as sub-outcropping ores and subtle lithological variations, including different types of mafic rocks.

Through community engagement, we found that local stakeholders generally accept plant-based geochemical exploration, perceiving it as a low-impact and environmentally benign activity. While concerns about potential mining activities may persist, this method was recognized as non-intrusive and potentially beneficial for addressing environmental research questions beyond exploration.

This contribution summarizes the key takeaways from community events and interactions regarding surficial geochemistry, and contextualizes the effectiveness of plant-based exploration for identifying sub-outcropping mineralizations in European ecosystems from a geologist's point of view. A crucial aspect of conducting surficial geochemistry was found to be the timely and transparent communication with local stakeholders about the sampling methods and objectives, which helped to establish trust and acceptance.

The lessons learned from SEMACRET, scientifically and during interaction with stakeholders, will inform the development of exploration strategies for the DeepBEAT project, which focuses on sustainable deep exploration in Europe.