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Strengthening Li-Bearing Pegmatite Exploration Through Applied Geophysics

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Lithium is considered a critical raw material by the European Commission. Its prospection will be vital in the coming years. Lithium can be found in minerals such as spodumene or petalite. These minerals appear in hard rocks like pegmatites. These rocks can be found in the Barroso-Alvão pegmatite field (Portugal), which is one of the test sites for the Horizon2020 GREENPEG EU project.

In the frame of GREENPEG, a high-resolution helicopter-borne magnetic and radiometric survey was perfomed from Alijó to Bragado. Radiometric data revealed that across the investigated area, the Th signal shows higher values in the west and lower contents in the east. This observation may correlate with different country rocks; areas of higher Th are represented by siliceous rocks (quartz-phyllites) whereas areas with lower Th are underlain by less siliceous schists. At a smaller scale, negative Th anomalies are superimposing the general Th trend. These correlate with clusters of outcropping pegmatites. In addition, high total radiometric signals (U+Th+K) are observed along the area's two main rivers (Beça and Tâmega).

The interpretation of the airborne geophysical data is still in progress. Future work will include a spatial statistical analysis of the pegmatites, tectonic structures, lithological boundaries, and geochemical mapping results to relate this information to the detected geophysical gradients and anomalies. The final aim is to establish the 3D geological model of the area, considering geological, geochemical, and geophysical data. This 3D model will allow vectoring to areas with highest potential for Li-mineralized pegmatites.

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