

Multielement levelling of data from Central Portugal exploration geochemistry

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Multielement stream sediment chemical analyses resulting from a large geochemical exploration programme in Central Portugal, were produced with different analytical methods and the same sampling protocols and sampling. Therefore, the objective of this study is to figure out the causes of artificial features in the maps and level these analytical results to make them comparable and thus take advantage of the potential of multielement geochemical information from contiguous areas. Batista et al. (2024) showed that La chemical element levelling was possible and successful in the 293 and 305 1:25 000 scale topographic sheets in Central Portugal using the reference data of the contiguous sheets, numbers 294 and 306, considered coherent with the geology. In this study the spatial distribution of elements analysed by INAA and by ICP-OES to detect which elements also present non-geological features, is observed. The laboratory used replicates and CRM with apparently no significant differences. Individual interpolation of elements shows that the ICP-OES analysed elements, except Mo, do not apparently show non-geological features in the boundaries of sheets; furthermore many elements analysed by INAA do not show these artificial boundaries either, requiring different explanations through statistical treatment of both analytical methods. Elements such as Ag, Mo, Ni, Sr and Zn were analysed by both methods, but the results used for mapping were the ICP-OES ones where lower detection limits and variability of data were observed compared to INAA. Nevertheless, Mo shows artificial features not similar to the others leading to the rejection of the element that clearly was not adequately analysed. Chromium, analysed by INAA shows a different situation of non-geological distribution in the map that also needs further investigation not object of the present study. Sulphur, Ag, Au, Be, Br were also excluded from this exercise because they are not the main exploration target, and the anomalous situations encountered are different. Considering the referred to exceptions levelling needs to be made in REE elements, U, Th, Ti, Hf, Ce.

Batista et al., 2024. Levelling geochemical datasets as a tool to overcome boundary features in data applied to mineral exploration. *Comunicações Geológicas*, 111, 1, 5-10. <http://hdl.handle.net/10400.9/4279>