

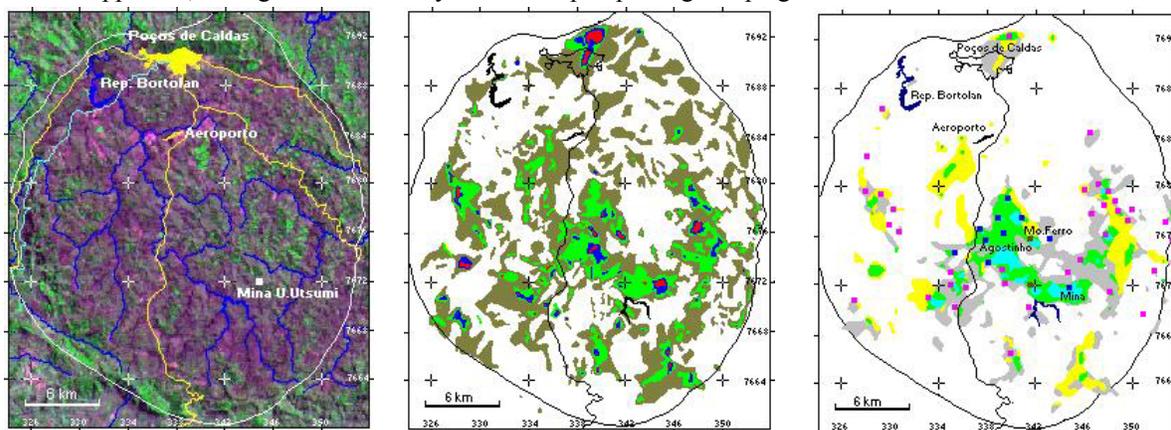
## INTEGRAÇÃO, MANIPULAÇÃO E ANÁLISE ESPACIAL DE DADOS NA PESQUISA MINERAL ATRAVÉS DE MODELOS EMPÍRICOS DE PROSPECÇÃO: UM EXEMPLO NO PLANALTO DE POÇOS DE CALDAS

### INTEGRATION, MANIPULATION AND SPATIAL ANALYSIS OF DATA IN MINERAL RESEARCH, THROUGH EMPIRIC PROSPECTING MODELSS: CASE-STUDY IN THE POÇOS DE CALDAS PLATEAU

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#### Abstract

Based on an empiric prospecting model, computer-aided integration, manipulation and spatial analysis techniques were used in the Poços de Caldas alkaline complex with the objective of mapping potential areas for radioactive mineral prospecting. To apply the prospecting model a geocoded digital dataset was created, which included: gamma-ray total count, lithologic and structural data, mineral occurrences, drainage network and digital terrain model. Boolean algebra and weighted means were the techniques used to manipulate the dataset, according to rules defined by the prospecting model. In the boolean algebra based model a site would be selected as potential if its gamma-ray counts were greater than 1.8 times the regional background and if it occurred in areas of favorable lithologies cut by faults and/or fractures. The target areas defined by this procedure correspond to approximately 12% of the entire area of the alkaline rocks, encompassing 77% of the previously known radioactive mineral occurrences. In spite of the relevant results, this method has a major weakness: it does not allow the definition of prospecting priorities among the delineated target areas. It was possible through the weighted means based model to define target areas as having low, mid, high and very high potential for radioactive mineral prospecting. The target areas of very high potential covered only 1.5% of the alkaline massif, encompassing all the major known mineral deposits, a result that provides credit for the adopted prospecting model. These results show that semi-quantitative mineral prospecting models can be a valuable approach, saving time and money in mineral prospecting campaigns.



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