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Application of radial basis function in the analysis of irregular geochemical patterns through Spectrum-Area method

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Abstract

Mineralization-related nonlinear geological processes result in the deposition of ore bodies. Consequently, the ensuing geochemical anomalies could be detected through techniques taking into account this complex processes. Power spectrum-area (S-A) method is an approach that can provide significant information for identifying geochemical anomalies associated with mineralization. In the present study, S-A was applied on soil geochemical analysis to generate favorable areas to Pb-Zn mineralization. To consider surface geochemical properties of Irankuh district, a total of 804 soil samples were collected in Gushfil-Tappeh Sorkh areas having few known deposits and the aim was to locate promising zones for further exploration activities. Samples were collected over an almost regular grid; however, there are irregularities and unsampled areas leaving holes in the sampling region. This method becomes a bit complicated and is influenced by edge effects in areas with irregular geometric shape. In order to reduce this phenomenon, radial basis function was used that has resulted in considerable improvement in final produced maps compared to other methods.

Key word: Radial Basis Function; Power spectrum-area; Gushfil-Tappeh Sorkh; irregular geometric.

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