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Application of fractal modelling for integration of data layers in GIS, Case study: Sharafabad-Hizehjan area (NW Iran)

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The aim of this study is to indicate an Au prospect utilizing fractal modelling in the Hizehjan-SharafAbad area, NW Iran, which is located in the Alborz-Azerbayjan structural zone and the Arasbaran metallogenic belt. In this study, Au geochemical anomalies, lithological layers, alteration zones, faults, vein densities and geophysical data were generated and integrated into a GIS package. Different populations of the geochemical anomalies, faults and vein densities were determined based on Concentration-Number (C-N) and Concentration-Area (C-A) fractal models [1, 2]. In addition, these layers were converted to a raster format and subsequently weighted using an Index Overlay method and fractal modelling for the subsequent identification of Au prospects. Finally, results obtained by the Index Overlay method were classified by the C-A fractal modelling. The results revealed that significant Au prospects were situated in the NW and central parts of the study area.
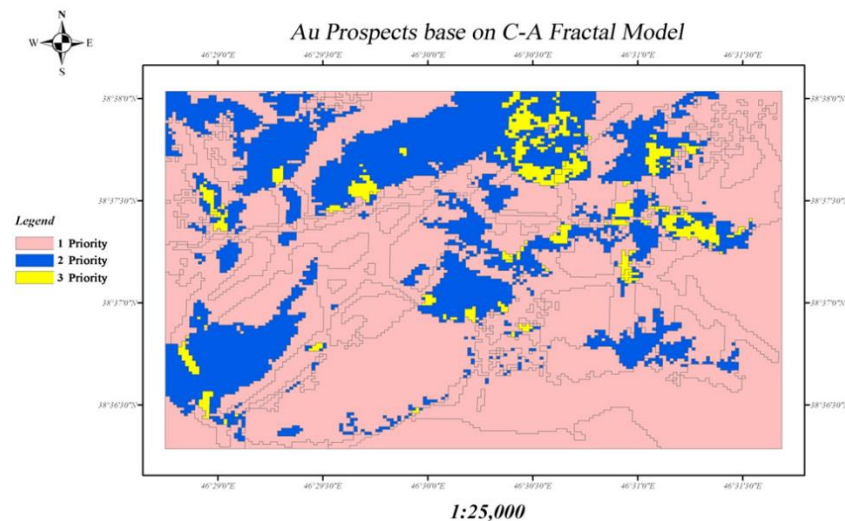
Figure 1: Au prospects base on C-A fractal model

References:

[1] Hassanpour Sh and Afzal, P (2013) Arab J Geosci 6: 957-970

[2] Cheng Q et al. (1994) J Geochem Explor 51:109–130