

Using Statistical Method and Geochemical Mapping Techniques in Exploration of Gold and Base Metals in Khuni Area, Anarak, Iran

MOHAMMAD HADI NEZAMPOUR¹ AND HAMID

MOSAZADEH²

¹Department of Geology, Faculty of Earth Sciences, Shahid Beheshti University, Tehran, Iran
(hadi.nezampour@gmail.com)

²Department of Exploration, Kan Azin Consuming and Research Company, Tehran, Iran
(hamid_mosazadeh@yahoo.co.uk)

This paper concern the application of statistical and geochemical distribution and anomaly mapping based on the results of stream sedimentary exploration data in Khuni area, central of Iran. Samples were collected from 262 stream drainage site during the Khuni stream sediment sampling program. All samples were analyzed for 22 trace elements; results for 11 of these are used in this paper. Then; the different statistical techniques were used and compared for determination of statistical central parameter on the primary or normal data, and we propose a new method based on Lepletie-Winsorian method, for determination of average data without deleting outlier and normalization data. Replacement of censored data, determination of analysis precision, coefficient variable and cluster analysis are another sections of application statistical techniques in the Khuni area.

Monoelement maps provided for visualization of general distribution of element values, without normalization data. Several geochemical mapping technique on the base of their effectiveness in detecting of gold and base metals geochemical anomalous were used. These methods are applied to determine anomalous area, by: 1) calculation of threshold values, using mean and standard division of normal data, 2) factor anomaly maps, based on factor analysis for assemblage of elements, 3) gap statistical method to avoid personal error, and 4) P×N method that classified anomalous area.

Analyzing and processing of data in the stream sedimentary samples indicate to presence of three new mineralization anomalies; located in the south-east, north-east and in the south-west of the area. The south-east and north-east anomalies contain high grade of gold (up to 5000 ppb) and south-west anomaly is enriched in base metals (up to 2 wt %).

References

Zhang, C., Selinus, O (1998). Statistics and GIS in environmental geochemistry -some problems and solutions. *Journal of Geochemical Exploration*, 64, 339–354.