Introduction Investigation of Geochemistary and Introduction Promissing Area in1/50000 Tajrish Sheet

Bidestani, Shabnam [a,*] , Dr.Rasa,Iraj [b], Dr.Hezareh,Mohamadreza [c]

[a]Islamic, Azad University, Mahalat,Bidestani_sh@yahoo.com

[b]Beheshti University ,Tehran

[c]Geological Survey of Iran

Absteract

Longitudes and 51 15' 00" to 51 30' 00" Studied area (1/50000 sheet of Tajrish)is between Latitudes 35 45' 00" to 36 00' 00" . To explorate the area geochemically,was used drainage sediments method and consequently accomplished drainage sampling. 44 element analysis for all samples was accomplished by AMDEL laboratory in Australia.

Key word :*Tjrish-Geochemistry- heavy minerals -Factor Analysis- cluster an alysis- Paragenesis - Anomalus*

Introduction

The area is located between 51:15:00 to 51:30:00 longitudes and between 35:45:00 to 36:00:00 latitudes. The oldest rocks of this region belong to lower Cambrian and these rocks consist of alternation of red-green Mica shale, dolomite along with andesitic- basaltic lava, shale, red and green mica sandstone, and red arkosic sandstone.

This plate is bounded with following plates: from north to 1:50000 Gajre, from south to1:50000 Tehran, from east to 1:50000 Lashkarak and from west to 1:50000 Karaj.

Geology of the region

During geological area, Paleozoic, Mesozoic, Cenozoic, following formations was made:

Paleozoic: Baroot formation, Zaygon formation, Lalon formation, top quartzite, Mila formation, Jirood formation: D-C_g, Mobarak formation: C, Dorood formation: P_d, Nasan formation: P_n.

Mesozoic: lime part of Elica formation, dolomite part of Elica formation.

Cenozoic: Karaj formation.

Structural and tectonic conditions of the region

North side of the region is belong to part of Alborz territory, whereas, Alborz territory of the region is mountainous. Alborz territory is located in the border of central Iran orogenesis and is divided into several structural regions by some main faults that are parallel to direction of Alborz Mountains.

Alborz area has compact anticlines along with open synclines with SE-NW axial trend. This area can be called as Nappe layers. These layers moved because of orogenesis movement from north east to south west and totally get younger in this direction.

Large faults of this region are: Meygoun great fault, Ahar fault, Shirpela fault, Emamzade davoud fault, Niavaran fault, Davoudie fault and Tehran north fault.

Discussion

After designing the sampling net and taking those samples, they were tested chemically for these elements: La, Zn,Cr, Mn, Ba, Au, Na, S, Zr, Hg, Ag, B, As, Co, Cu Cd, Te, U, Mg, Be, K, V, P, Li, Ca, Sc, Al, Fe, Ti, Sr, Tl, Cs, Ce, Bi, Y, Th, Sn, Rb, Pb, Nb, Mo, Sb, W, Ni. Au was measured by Fire Assay method, while other elements were measured by ICP(MS,AES) method. after calculating the errors, accuracy of analysis was verified.

One of the main assumptions for correct analysis of variables in geochemical societies is their uniformity. Any deviation from this assumption could have more or less impact on the results of data analysis. Consequently it results in incorrect outcome. one of surface environmental variables that could cause non uniformity in geochemical media is type of base rock which has outcrop. While this base rock is the source of erosion sediments.

Since, each stream sediment is coming from its upper rocks. access to the uniformity standard through which we could determine the base, critical and anomaly values is impossible without normalizing the element amount according to upstream litho logy in the catchment .classifying these standards has been done according to type of outcrop base rock which is available in upstream of each samples.

Statistical evaluation

First step of geochemical data processing is evaluation the statistical parameters of each element to determine their distribution nature which can be achieved by calculating of statistical parameters like, average, standard deviation, deviation, elongation, variance .when we are evaluating raw data, some of them are located above or below of standard data and they are apart from standard ones. if we draw their boxplot, we see that these data obviously apart from others. Using some of statistical method depend on which distribution function of study variables be normal, whereas, distribution functions are of normal log type. Eventually, before using these methods, raw data must be normalized. To know whether there is a meaningful relation between changes in statistical variables, we calculate the correlation coefficient between them. This is done to find the correlation between variables and to estimate values of other variables.

With the scientific advances in exploration, especially geochemical exploration and discovery of hidden and unknown deposits the heavy mineral tracking method as one of the most efficient exploration methods is presented .We used raw data to calculate Spierman correlation coefficient. As it can be seen, some times, these coefficients have different behavior respect to Pierson coefficient.

This difference is severe when there are lots of data which are not in the main range. With precise comparison between them, it can be seen that the difference between these two correlation coefficients is not much. It shows that data which are not in the main range doesn't have great effect on others. For computation correlation distribution. coefficient Spierman used raw samples (data)that independent With integral

Another way to study the relation of elements' changes with each other is to plot rocky chart (ScreePlot) which special values according to the importance are ordered from the biggest to the smallest amount

Because each group of elements shows more or less the same sensitivity to the environmental conditions, knowing the genetic relation and interaction between different elements can be implemented to understand more accurately the changes in the geochemical environments.
Cluster analysis is a multi variable statistical method which categorizes the elements of similarity based on the similarity of change. For many reasons cluster analysis is valuable, including cluster analysis that can help to find all real groups and will also reduce data density.
According to calculated Dendogram four main groups can be isolated, indicating that the relationship between the variables is Paragenesis.
Consists of two main groups A, B that Group A consists of two sub-groups A1 and A2 and group B consists of two sub-groups B1 and B2
The first Group A1: consists of lead, zinc antimuan - Copper - Tin - Gold - Chromium - Nickel - Manganese Silver –
The second group A2: consist of lead, zinc antimuan - Copper - Tin - Gold - Chromium - Nickel - Manganese Silver
The third group A2: consist of phosphorus, iron titanium strontium
The fourth group of B1: consists of uranium - zirkonium - arsenic - Molybdenum
The fifth Group of B2: Barium - Tungsten
Also on the raw data and the rich index of other statistical parameters like factorial analysis, differentiation analysis, Pn and. . . Was performed, and finally was ready for estimating network

Network estimation of data

Network estimation is one of the methods that use the data of sampling points to estimates the results for the points in which sampling haven't been done. Since, regions under exploration via alluvial sediments are very wide and there isn't enough number of samples especially in Iran, network estimation method is more practical.

Control Phase of geochemical anomalies

With the scientific advances in exploration, especially geochemical exploration and discovery of hidden and unknown deposits the heavy mineral tracking method as one of the most efficient exploration methods is presented. The purpose of this analysis and evaluation is to determine the existing correlations between different samples in terms of change of variables like chemical composition of samples
The value of observing heavy minerals which are the secondary minerals of rock, and may be found in the regions with lack of mineralization are not as much as tracking elements, but it can be presenter of environment and mineralization bed. In general around 1:50000 Tajrish plate the exploration operations carried out and 61 samples of water canal bed are taken by heavy mineral method.
agent 1: iron - phosphorus - titanium - copper - strontium as positive (enriched) and antimuan - lead - arsenic - barium as negative (empty).
Agent 2: Lead - Copper - Gold - Zinc - Silver antimuan - positive tin - and negative zirkonium and iron
Agent 3: positive chromium and nickel negative zirconium, uranium, barium

Integrating data:

Heavy mineral tracking is presented as one of the most efficient exploration methods.

The value of observing heavy minerals which are the secondary minerals of rock, and may be found in the regions with lack of mineralization are not as much as tracking elements, but it can be presenter of environment and mineralization bed. In general around 1:50000 Tajrish plate the exploration operations carried out and 61 samples of water canal bed are taken by heavy mineral method.

In the 1/50000 Tajrish plate, gold, lead and zinc - Copper limunite elanite menitite magnetic minerals - non-magnetic

After preparing and composing the geological, and geochemistry data in GIS system, is distinguished.

Conclusion

This region's lithology is consist of following lithologies: Barot formation Eb(alternation of shale and red mica), Zaygon formation Ez(shale and mica sandstone), Lalon formation El(Arcozic sandstone), upper quartzite Elq(white arcozic sandstone) Jeyrood formation Cg-D, Mobarak formation C, Dorood formation Pn, Elica formation. Also there are some faults in this region :Meygon great fault, Ahar fault, Shirpela fault, Emamzade davood fault, Niavaran fault, Davoodie fault and Tehran north fault which are located in north part of the region. Therefore, it could be said that this area is a preferred place for geochemical exploratory researches silver has anomaly at: Hesarak catchment- meygoun-Jiroud - -Evin sub catcment - Darakeh. Arsenic: Jiroud - Lanyz Village catchment – Emamzadeh Davoud Basin. Gold: Darabad – Pas ghaleh - Manzariyeh - Emamzadeh Davoud - Evin - Darakeh. Barium: Meygoun catchment- Ahar - Lanyz - Shahrestanak. Copper: darabad catchment – Pas ghaleh Darband - Evin - Darakeh. Manganese: Darabad. Nickel: Darabad - Kolakchal - Golabdareh – Darband- Pas ghaleh –Jiroud Phosphate: Jiroud Lead: Jiroud Antmuan: Lanyz, Jiroud Meygoun,strontium: - Ahar - Shahrestanak Emamzadeh Davoud basin - Jiroud. Uranium: Ahar catchment - Lanyz Shahrestanak Meigoun - Jiroud Evin heights- Darakeh - Farahzad Tangestan: Emamzazh Davoud. Zinc: Jiroud

Spierman correlation coefficient table

Ti - Fe	Fe- P	Ti- P	Pb-Sb	As-Sb	As-Pb	AuPb	Cu - Fe
0.92	0.67	0.66	0.82	0.75	0.56	0.58	0.47

Ti- Cu	Cu-Zn	Au-Cu	Pb_ Zn
0.61	0.44	0.24	0.06

Reference

1-Borna,B,2002, Geochemical Exploration and heavy mineral of Tehran : Tehran, Geological Survey of Iran, scale 1:100,000.

2-Hasanipak,A.,2004,Expioration geochemistry,TehranUniversityPuplishing,v5, P29-56,182-195

3- Amini,B.,Emami,M.H.,1993,Geology Map of Tehran :Tehran Survey of Iran ,scale1:1,000,00

4-Map,1998 Topographic Map of Tajrish area: National Geographical Organization scale1: 50,000

5-Swan, A.R.H, SandilandsM.1995- Introduction to geological data analysis, Blackwell science, Cambridge, 446P.

6-Peters. W.C. 1987- Exploration n and Mining Geology. John Wiley& Sons L