Compositional multivarite analysis of stream sediment geochemical data to identify hydrothermal gold deposit, East of Iran

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Stream sediment geochemical study is one of the most convenient methods in identification of the primary halos related to probable mineralization in a large scale. These data due to their sampling space nature are representatives of the upstream formations. Therefore, by studying the catchment basins upstream the anomaly samples, the genesis of probable mineralization can be determined. In recent study, in order to detect the probable Gold mineralization in 1: 100,000 geological sheet of Dehsalm, East of Iran, the stream sediments geochemical data were analysed multivariately regarding the compositional nature of them. The results obtained by the robust principal components analysis (RPCA), indicates the association of As, Ag, Hg and Sb in the fourth component as the major pathfinders of hydrothermal gold mineralization. After plotting this component scores map and determining the upstream catchment basins for it, the important mineralized basins were identified. Complying the results with Au index in the study area, as the evidence layer, shows the relative success of applying this method. The output of such researches could be used in more precised planning for the detailed exploration stage.

Keywords: Stream sediment, RPCA compositional, gold mineralization.