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Combination of Separation Methods and Data Mining Techniques for Prediction of Anomalous Areas in Susanvar, Central Iran

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Abstract

Structural method U-statistics is an eminent technique for delineating geochemical patterns; on the other hand, it is worthwhile to introduce Mahalanobis distance approach decreasing the background effects and intensifying the correlation factor of points as a powerful non-structural method. Undoubtedly, predicting the anomalous values could play an important role in the inchoate stages of exploration. Therefore, it is essential to find the most accurate approach to separate anomalous values from background and afterward use the results to anticipate each arbitrary sample. In this study, results of the combination between U-statistics & Mahalanobis distance algorithms are used to distinguish anomalous values from background on an accurate point of view. Then, three data mining methods will be applied to produce practical equations and finally determine anomalous values. Separation of geochemical anomalies, based on the combination of the U-statistics and the Mahalanobis distance approaches, would be done; then, under the influence of their results and the other parameters – x and y coordinates and Au and As grades - three data mining methods, K nearest neighbor (K-NN), decision tree, and naïve Bayes classifier, have been applied. For this purpose after separation of anomalous values according to the number of 603 samples by applying above combination, the data mining methods would be utilized to anticipate

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