Alteration Anomaly Information Extraction from Remote Sensing and Mineral Potential Prediction in Inner Mongolia, China

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The Wen-Gen region, Inner Mongolia, is belonged to a part of the Lang Mountain metallogenic belt and located in the semi-arid mountainous area, which is an ideal exploration target area by Remote Sensing (RS) method. In this paper, Landsat-7 Enhanced Thematic Mapper Plus (ETM+) data as the data source was used to interpret the geological structure and extract the alteration information, with the aim for metallogenic potential prediction. Alteration information extraction was achieved by the methods of Principal Component Analysis (PCA) and ratio analysis, which are able to eliminate the interference factors in the remote sensing image and enhance the alteration information. We extracted alteration anomalies by the threshold method. In this paper, we also made a comprehensive analysis of the remote sensing alteration information, and merged this information with results of field geological investigations, geophysical and geochemical exploration of the study area. The results showed that the remote sensing alteration distribution is consistent with the distribution of the mineral spots found by the field work, geomagnetic anomalies, and geochemical composite anomalies. The comprehensive analysis can efficiently delimit targets for further exploration in this area.