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Mineral Prospectivity Mapping Method Integrating Multi-Sources Geology Spatial Data Sets and Case-Based Reasoning

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ABSTRACT

Extracting and synthesizing information from existing and massive amounts of geology spatial data sets is of great scientific significance and has considerable value in its applications. To make mineral exploration less expensive, more efficient, and more accurate, it is important to move beyond traditional concepts and establish a rapid, efficient, and intelligent method of predicting the existence and location of minerals. This paper describes a case-based reasoning (CBR) method for mineral prospectivity mapping that takes spatial features of geology data into account and offers an intelligent approach. This method include a metallogenic case representation that combines spatial and attribute features, metallogenic case-based storage organization, and a metallogenic case similarity retrieval model. The experiments were performed in the eastern Kunlun Mountains, China using CBR and weights-of-evidence (WOE), respectively. The results show that the prediction accuracy of the CBR is higher than that of the WOE.

KEYWORDS

Mineral Prospectivity Mapping; Case-Based Reasoning; Metallogenic Case Representation; Metallogenic Case Retrieval; Eastern Kunlun Mountains

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