

Study on geogas prospecting experiment in the semi-arid desert steppe

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The conventional geochemical exploration methods can not be applied to mineral exploration in semi-arid desert steppe which covered by aeolian sands. In this paper, the geogas prospecting was carried out at Weilasituo Zn-Cu polymetallic deposit in the semi-arid desert steppe in Inner Mongolia, China. The study area are widely distributed within the thickness of 0.1-95.9 meter quaternary alluvium and eolian sands.

The samples were collected with dynamic geogas sampling device. The sampling and analytical methods were described in detail in the reference^[1]. The results show that the anomalous

elements in the geogas are correspond to those ore-forming elements. The anomalies of Cu, Zn, Fe, As, Ag, Pb, Cd, Bi, Ni and Mn match well with the concealed ore body (see Figure 1). And the contents of Ag, Pb, Ni are more than 10 times its average content.

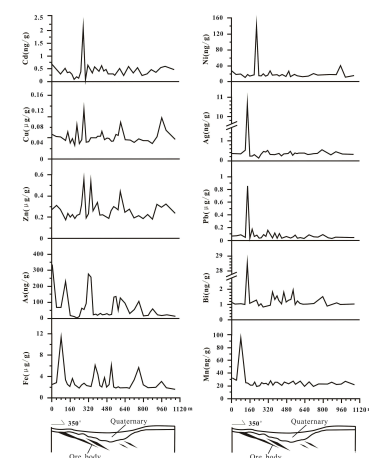


Figure 1: The results of geogas prospecting in the Weilasituo mining area.

Rare Earth Elements (REE) tracing technology was applied to study the source of ore-forming elements in geogas. It is characteristic with that

the chondrite-normalized REE pattern of geogas are close to ores. And there are certain differences between geogas and wall rocks. This indicated that the geochemical information of the concealed orebody can be preserved in the geogas. In other words, the enriched elements concentration in geogas are derived from the concealed ore body. So we can conclude that the geogas prospecting method could be used in the area of semi-arid desert steppe.

[1] Wang et al. (2016) *Geol Prospect. Rev.* **52**, 667-677.