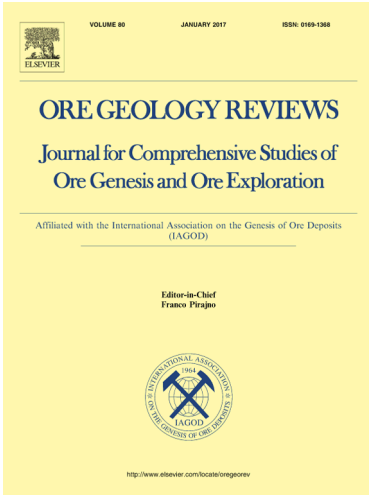

Part II: A demonstration of integrating multiple-scale 3D modelling into GIS-based prospectivity analysis: a case study of the Huayuan-Malichang district, China

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Part II: A demonstration of integrating multiple-scale 3D modelling into GIS-based prospectivity analysis: a case study of the Huayuan-Malichang district, China[1]

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Abstract

This paper constitutes the second part of a study called "Mineral system modelling prospectivity analysis for MVT Pb-Zn deposit in northwestern Hunan Province, China". The methodology is described in Part 1; Part 2 demonstrates the value of 3D modelling at the district and ore deposit scales. The process employed in this paper is as follows: (i) 3D models are constructed at multiple scales (i.e., at the district and ore deposit scales); (ii) an interpretation of the 3D models is presented based on a conceptual geological model; (iii) a map of the mineral potential at depth, relying on the conceptual geological model and 3D geometry data, is delineated and discussed; (iv) calculations of the volume and ore-bearing ratio are improved using 3D geometry; (v) the similarity coefficient used in Part 1 is replaced with the quantitative uncertainty of the 3D models; and (vi) the undiscovered mineral resources are estimated in the study area. To be consistent with Part 1, a case study of the Mississippi Valley-type (MVT) Pb-Zn mineralization in the Huayuan-Malichang district (36 × 24 km^2 in northwestern Hunan Province, China), is conducted.

Keywords: Multiple scale prospectivity analysis; 3D modelling; Resource estimation; Uncertainty.

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