

PEI Rongfu, MEI Yanxiong, QU Hongying and WANG Haolin, 2014. our Hierarchical Systematic Metallogeny for North Margin of North China Platform. *Acta Geologica Sinica* (English Edition), 88(supp. 2): 106-107.

our Hierarchical Systematic Metallogeny for North Margin of North China Platform

PEI Rongfu*, MEI Yanxiong, QU Hongying and WANG Haolin

Ministry of Land and Resources Key Laboratory of Metallogeny and Mineral Assessment, Institute of Mineral Resources, Chinese Academy of Geological Sciences, Beijing 100037, China

Based on the new mobility concept that metallogenic “time dimension” forms “space dimension”, that is metallogenic 3D to y (three dimension through geological time from old to young), the authors propose the concept of the hierarchical systematic metallogeny, i.e. the concept of ore-forming processes of four metallogenic grades—tectono “setting”, metallotect “convergence”, metallogenic fluid “phases” and ore unloading thermo “deposits”—in

one metallogenic province and coupling of metallogenic components of the four different grades according to a certain regularity initiated by a certain geological event in a certain geological period with geological evolution. Without coupling, no ore deposit will form; general coupling will only give rise to ore deposits of general size; and optimum coupling will lead to super-accumulation of metals and formation of superlarge ore deposits. Take for



Fig. 1 Metallogenic tectonic setting of the northern margin of North China Platform and its north side and its metallotect convergence
1-Archean craton basement- Paleoproterozoic mobile belt- Paleozoic mole track and mass; 2-Paleoproterozoic-Paleozoic aulacogen and depression mobile belt; 3-Mesoproterozoic aulacogen; 4-Neoproterozoic-Paleozoic depression; 5-Calidonian folded belt; 6-Early Variscan folded belt; 7-Late Variscan folded belt; 8-Median mass; 9-Mesozoic-Cenozoic rift basin; 10-Lithospheric fault; 11-Measured or inferred deep fault; 12-Measured or inferred fault (belt); 13-Boundary line of tectonic region(belt); 14-Contact metasomatic type; 15-Porphyry type; 16-Magmatic hydrothermal type; 17-Volcanic hydrothermal type; 18-Magmatic differentiation type; 19-Metamorphic + magmatic hydrothermal type; 20-Exhalative sedimentary type; 21-Volcanic sedimentary type; 22-Archean-Paleoproterozoic syn-shear metallotect convergence (site); 23-Proterozoic-Paleozoic syn-metallotect convergence (site); 24-Paleozoic-Mesozoic “L-R-C (Line-Rows-Cluster)” tectonomagmatic metallotect convergence (site)

* Corresponding author. E-mail: 745403991@qq.com

example the metallogenic province on the northern margin of the North China platform and its northern side, the paper deals with the ordered coupling, coupling degree and mechanism of super-accumulation of metals and it is found that super-accumulation of metals is the result of “initiation resonance” of conventional ore-forming processes stimulated by a certain geological event in a certain geological period.

We propose that the Archean oxyatmaversion (i.e. peroxidation event), Proterozoic-Paleozoic redoxyatmaversion (i.e. oxygen-deficient event) and Meso-Cenozoic tectonospheric thermal erosion are major events that initiated exceptional ore-forming processes

(Pei, 2001a, 2001b). The intensity and frequency of explosion of exceptional ore-forming processes caused by “initiation resonance” of geological events in a certain time range may be evaluated by using the correlation of the forming time interval (FTI) and the relative abundance of ore reserves (RAOR) of representative deposits in the hierarchical metallogenic system. For example, it is evident that BIF type deposits, which are the most important iron source in the world, resulted from superaccumulation of iron initiated by exceptional ore-forming processes stimulated by oxyatmaversion events (Pei et al., 2012).