Regional metallogeny of Mo-Cu porphyry deposits in Northeastern China, it's model and prospects

YONG LAI, [1] YITAO ZHOU, [1] QIHAI SHU, [1,2]

[1]Key Laboratory of Orogenic Belt and Crustal Evolution, School of Earth and Space Sciences, Peking University, Beijing 100871, China

[2]State Key Laboratory of Geological Processes and Mineral Resources, School of Earth Sciences and Resources, China University of Geosciences, Beijing 100083, China

In the past decade, with many new discoveries of giant Mo (Cu) deposits in Northeastern China, it has become the largest molybdenum mineralization region in China. Two of them, Dongbulage porphyry Mo-dominant deposit and Taibudai Cu-(Mo) deposit, are chosen for understanding the difference between two ore-bearing intrusions by means of major and trace elements geochemistry, zircon U-Pb dating. It provides insightful contrast of different origins and evolutions of magmas in two deposits. That shows that fractional crystallization and water content of the magma played an important role in Mo or Cu mineralization.

The compilation of existing data on Mo (Cu)-bearing deposits in Northeastern China, Jurassic Mo (Cu) mineralization (200–140 Ma) displays a clear younging trend from southeast to northwest, coincides with the regional magmatism trend. We propose a regional metallogenic model that is related to the northwestward flat-slab subduction of the Paleo-Pacific plate beneath the Eurasian continent that started in the Early Jurassic (ca. 200 Ma). This model explains the spatial-temporal distribution of Mesozoic Mo (Cu) deposits and igneous rocks in northeastern China, is important for regional metallogeny and exploration.