



Contrasting styles of mineralization in the Chinese Altai and East Junggar, NW China: implications for the accretionary history of the southern Altaids

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The Chinese Altai-East Junggar collage in the southern Altaids hosts three metallogenic belts, which are, from north to south: (1) a volcanogenic massive sulphide (VMS) Cu-Pb-Zn belt; (2) a belt of shear zone-related gold deposits; (3) a porphyry Cu-Au-Mo belt. The VMS deposits formed in two pulses (c. 405 Ma and c. 375 Ma) in the Chinese Altai arc. The porphyry deposits developed in three pulses in the East Junggar arc, the first two synchronous with the VMS mineralization, and the third at c. 330 Ma. The shear zone-related gold deposits developed in the late Carboniferous to Permian at the contact between the Chinese Altai and East Junggar arcs. Time-space distributions of diverse ore deposits across the Altai-East Junggar collage indicate that the collage developed from two independent arcs, the Chinese Altai and the East Junggar. The VMS and porphyry deposits developed in the Chinese Altai and East Junggar arcs, respectively. The Chinese Altai arc is interpreted to be a Japanese-type arc, and the East Junggar arc a Mariana-type arc. During the latest Palaeozoic, the two arcs were juxtaposed by the Erqis Fault, when many shear zone-related lode gold deposits were emplaced. These metallogenic distributions were a likely response to spatially localized mechanisms of crust growth and to the tectonic evolution of the Altai-East Junggar collage, and they are consistent with interpretation of the Altaids as a multiple subduction-accretion collage.