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Geological analysis of aeromagnetic and gravity data from Eastern Tianshan, China: implications for potential porphyry Cu-Mo polymetallic deposits exploration

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Aeromagnetic and bouguer gravity data has been used to better understand the geology and mineral resources near the Late Carboniferous-Early Permian porphyry Cu-Mo deposits in eastern Tianshan, China, where is covered by Gobi-desert. The reduced-to-pole (RTP) transformation of regional-scale aeromagnetic data shows that the porphyry Cu-Mo deposit is within a cluster of magnetic anomaly highs that trends northeast along the crustal-scale Kangguertag-Huangshan fault. The 10 km upward continuation transformation of regional scale of aeromagnetic and bouguer gravity data shows a linear northeast trend of magnetic and gravity anomaly highs. Those anomalies are spatially correlated with Late Carboniferous-Early Permian igneous rocks and in the Tuwu-Yandong mineralization district are centered over the granodiorite rocks genetically related to porphyry copper systems. These anomalies are interpreted to reflect a Late Carboniferous-Early Permian magmatic arc that is favourable for additional discoveries of Late Carboniferous-Early Permian porphyry copper systems in north region of Eastern Tianshan.

