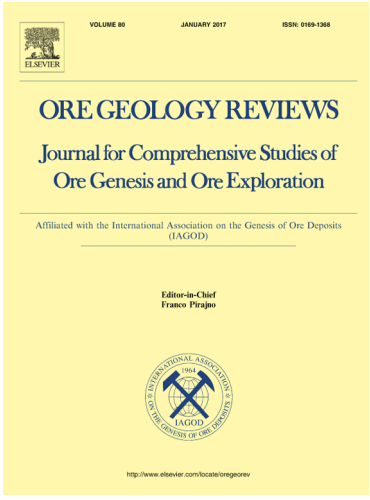

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Maximum entropy modeling for orogenic gold prospectivity mapping in the Tangbale-Hatu belt, western Junggar, China

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ABSTRACT:

The Tangbale-Hatu belt (western Junggar region), located in the Central Asian Orogenic Belt (CAOB), has undergone complicated accretion and collision processes during the evolution of the Paleo-Asian Ocean. The geological events contributed to orogenic gold mineral systems in the region. In the present study, mineral systems approach was employed to evaluate critical ore-forming processes such as fluid migration pathways, the formation of trap zones, and deposition of metals. By means of translating these critical processes into mappable ore-controlling variables, we attempt to establish a process-based quantitative evaluation model. A maximum entropy (MaxEnt) model was proposed to predict the potential distribution of orogenic gold deposits based on known gold deposits/occurrences, and ore-controlling variables. Nine ore-controlling variables including fault intersection density, fault linear