

## **Crustal Extension and Its Relationship to Porphyry Cu-Au and Epithermal Au Mineralization in the Biga Peninsula, NW Turkey**

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Epithermal gold and porphyry copper-gold mineralization of the Biga peninsula in northwestern Turkey sits within a system of NE- to ENE-trending metamorphic horst blocks separated by half-graben volcanosedimentary basins developed as a result of rollback of the northward subducting African slab during the Eocene, Oligocene, and Miocene. We propose that epithermal and porphyry mineralization occupy distinct favorable positions within the overall extensional architecture and fault/fracture array. High-sulfidation alteration systems and low-sulfidation quartz veins preferentially occupy half-graben basins and border faults. These are found in the hanging-wall basins above the core complex detachment fault system, as well as forming major strata-bound silicified zones fed by steeply dipping extensional faults and associated fractures above intrusions. At greater depths and higher pressure and temperature conditions, porphyry-style copper-gold stocks occur in close association to plutonic bodies that intrude the footwall of ductile to brittle extensional faults and link to metamorphic core complex exhumation. Postemplacement crustal extension resulted in “domino-style” block rotations and half-graben formation throughout the Miocene and Pliocene. Since the early Pliocene, the westward propagation of the North Anatolian fault offsets a series of these deposits as a result of increased dextral transtension.