

Epithermal Precious Metal Mineralization in a Strike-Slip Corridor: The San Dimas District, Durango, Mexico

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Abstract

The San Dimas district, Durango, Mexico, was investigated to define the structural control of epithermal Ag-Au mineralization and to unravel the tectonic history of the area. Three distinct deformational events have been identified. Deformational event D₁ is characterized by the formation of subvertical east-west- to east-northeast–west-southwest-trending tension gashes and hybrid extensional shear fractures that were caused by the ongoing but weakened compression due to subduction west of Mexico during the Early Oligocene. Changing stress conditions during deformational event D₂ developed north-south-trending right-lateral strike-slip faults with accompanying secondary structures, forming a complex pattern of a transtensional corridor. The structures of both D₁ and D₂ are hosted by the Lower Volcanic Group and the underlying Piaxtla intrusive rocks, and they carry low-sulfidation epithermal silver-gold mineralization. Subsequent extension on reactivated north-south-trending strike-slip faults and northwest-southeast-trending normal faults established Basin and Range-type tectonics through both the Oligocene and Miocene. The transition from compression to extension is documented by this strike-slip corridor which was established during the Late Oligocene.