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# [PS]Upper Triassic-Middle Jurassic Strata of Plomosas Uplift and Sierra Samalayuca, Chihuahua, Mexico: Onshore Record of Syn-rift Gulf of Mexico Fault History*

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## Abstract

Reconstructions of western Pangea routinely overlap continental crusts of Colombia and central Mexico as far north as the Tampico-Misantla or even Burgos basins, depending on assumptions regarding Atlantic restoration. All models predict that a trans-Mexico sinistral transform-fault system operated during Triassic-Callovian time, during the syn-rift phase of Gulf of Mexico (GoM) evolution, and permitted Mexico to acquire its current position relative to North America before GoM seafloor spreading began. The entry point of this transform into the GoM must have formed a left stepping marginal offset on the order of 500 km within the continental crust of eastern Mexico; however, definition of the position of this offset has long been hindered by thick sediment in and east of the Burgos Basin. New basement structure maps based on ION deep seismic data now permit definition of the position and trend of the offset, with implications for inland fault evolution. The marginal offset is a projection of La Babia fault zone on the south flank of the Burgos Basin, rather than previously proposed alternatives along the San Marcos fault or Mojave Sonora megashear trend. Newly recognized Upper Triassic-Middle Jurassic strata in northern Chihuahua, Mexico, provide data on timing and location of the fault system that accommodated separation of North and South America prior to opening of the GoM. These strata, formerly considered Lower Permian, occupy discrete structural culminations of the Plomosas uplift and Sierra de Samalayuca. The Plomosas Formation is as much as 2900 m thick and consists of alluvial-fan, fluvial, tidal, and possible loessite deposits with abrupt lateral facies changes consistent with accumulation in a rift of pull-apart basin. The Samalayuca Formation represents turbidites deposited just south of the US-Mexico border. Both successions contain detrital zircon populations indicating deposition post-227 Ma, or Late Triassic, and pre-157 Ma, the age of the overlying La Casita Formation, and both are truncated beneath a Late Jurassic unconformity, such that unit thicknesses are highly variable. We infer that these units were deposited in sedimentary basins associated with a NW-trending transform fault that passed through Chihuahua about 40 km SE of the Rio Grande and terminated in a system of normal faults that continue west through southern New Mexico. The fault system became active in Late Triassic time and persisted through the Late Jurassic.

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