

STRUCTURE OF MINA DEFLECTION IN MONO LAKE, CA: IMPLICATIONS FOR PALEOSEISMOLOGY

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Walker Lane, a zone of transcurrent faulting along the Sierran range front, is dominated by NNW trending normal faults (Ryall and Priestly, 1975). Within the Walker Lane, the Mina Deflection is a region of structural anomaly, where a significant component of regional displacement (Oldow et al., 2001) and seismicity (Ryall and Priestly, 1975) is transferred from NNW-trending faults to ENE-trending faults of the Excelsior-Coledale domain. Geographically, the western boundary of the Mina Deflection lies along the western margin of Mono Basin. This is kinematically implied by the distributed tensional and shear stress in the NNW- and ENE- trending faults of the region. Transfer of strain from the NNW-trending, right-lateral oblique slip faults to the ENE-trending, primarily left-lateral faults is poorly understood. The nature of this transfer is complicated by the presence of the young volcanics of Mono Lake right at the stepover bend.

Detailed study of the sub-km scale geometry and kinematics of the NNW to ENE stepover bend of the Mina Deflection within Mono Lake in the Holocene, and its relation to nearby recent magmatic fluid flow within the Mono Lake volcanics motivated the present research. By studying the slip rates and ages of most recent events (MRE) in this region, I look at the strain transfer between faulting and volcanic events. Through this study, I propose a model for the regional tectonics that is a product of the structural and magmatic influences.