POSTER SESSION

## *Tectonic and subsidence controls on carbonate platform evolution across a broken foreland: Late Paleozoic sedimentation in the Permian Basin, West Texas and SE New Mexico*

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The Permian Basin of west Texas and southeastern New Mexico is located in the foreland of the late Paleozoic Marathon-Ouachita orogenic belt. The Permian Basin can be characterized as a broken foreland with several prominent, fault-bounded, basement-involved uplifts including the Central Basin Platform, Ozona Arch, Diablo Platform, and Eastern Shelf, which partition the region into a series of sub-basins with complex bathymetric profiles. Flexurally-driven subsidence resulting from Marathon-Ouachita orogenic loading can only explain subsidence in the Val Verde Basin and southernmost parts of the Delaware Basin. The Ozona Arch, however, is likely to be a broken peripheral bulge. Faults bounding the Ozona Arch (e.g., Big Lake Fault) modify the expected flexural profiles from the orogenic load.

During earliest stages of intraforeland deformation, various structural elements (e.g., faulted anticlines, evolving peripheral bulge) deformed older Paleozoic carbonate units. The deformation created potential structural-stratigraphic traps in deeper parts of the Midland and Delaware basins. After Pennsylvanian-Wolfcampian deformation and uplift was complete, the fault-bounded basement uplifts became substrates for carbonate-platform sedimentation. Crustal shortening along the margins of the Central Basin Platform caused flexure in the adjacent Midland and Delaware basins. Where structural relief was significant along the edges of the Central Basin Platform, on the order of several kilometers, Permian platform margins were unable to prograde into adjacent basinal areas. Nearly two kilometers of carbonate, evaporite, and sandstone facies loaded the Central Basin Platform during Permian time and may have caused additional flexure in the Midland and Delaware basins, which in turn, affected the depositional gradients that influenced dispersal of siliciclastic sediment in deep-water environments.