Watney, W. L., and Miller, R. D., 2007, Characterization and geologic significance of evaporite karst in Kansas: American Association of Petroleum Geologists, Midcontinent Section Meeting, Wichita, Kansas.

Many areas of central and western Kansas are underlain by active and dormant evaporite karst associated with three major beds of halite (>30 m thick, >6,000 km^2) including the Lower Leonardian Hutchinson and Cimarron salt beds and the Lower Guadalupian-age salt beds within the Flower-pot Shale. Retreating margins and collapsing surfaces of these salt beds are responsible for deformation of overlying strata upwards of 750 m thick in northwest Kansas, often extending to the surface. Shallow deformation has resulted in marked variations in structure and related properties including acoustic velocity. Surface and subsurface mapping, seismic imaging, measurement of surface motion, and mapping of ground-water conditions of the more heavily studied active evaporite karst associated with the Hutchinson Salt Member in central Kansas provide a possible model for other evaporite karst areas including western Kansas.

Rates and patterns of retreat along a dissolution front are regionally predictable over geologic time as evaporite karst formed in response to dynamic hydrologic conditions generated by structural deformation, erosion, and changes in geohydrology. Characteristics of evaporite karst include 1) near-surface (unconformity) dissolution that is regional in scale such as along the Hutchinson salt subcrop in central Kansas (~5,000 km^2); 2) deeper subsurface dissolution expressed by isolated karsting along focused ground-water conduits such as fractures and faults; and 3) dissolution fronts that are irregular, but regionally consistent representing up to 10s km retreat, often leaving isolated salt islands. Permian halite beds thus provide a sensitive record of episodic and dynamic post-depositional changes, including late tectonic and structural activity, and can factor significantly into understanding the distribution and properties of overlying and even underlying strata when basement structure is involved.