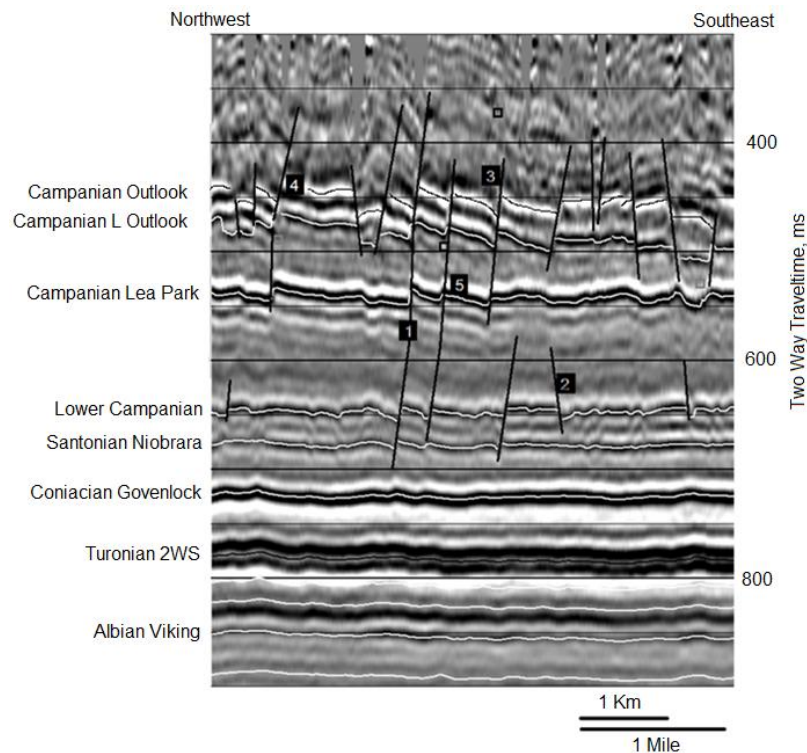


The implications of a Cretaceous polygonal fault system in Saskatchewan

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Polygonal fault systems (PFS) have been interpreted worldwide using 3-D seismic data imaging sedimentary strata. The initially simple listric normal faults grow vertically and can intersect laterally, forming regional-scale PFS in fine-grained sedimentary muds and chinks soon after deposition. The faulting can be independent of external stresses. This talk presents a PFS interpretation for siliceous muds and chinks deposited in the Late Cretaceous Western Interior Seaway of North America in Saskatchewan.

The Great Plains PFS has been observed everywhere in Saskatchewan that Upper Cretaceous shales are present. The faulted strata have been observed as a PFS at depths ranging from ~800 m subsurface to outcrop. Seismic dataset interpretations corroborate with borehole data interpretations. The larger observed faults are mesoscale in size, with throws up to 80 m and mean strike lengths of ~1 Km. In the subsurface, a PFS model can help map fracture geometries for hazard assessment and hydrocarbon or water production.



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