Silurian Shelf Sequences, Wabash Platform, Mid-Continent North America: Records of Global Climate Change, J. Fred Read and Alison Spengler, Virginia Tech, Department of Geosciences, Blacksburg, VA 24061, jread@vt.edu, spengler@vt.edu

Global climate and amount of polar ice has an impact on the stacking patterns of carbonate parasequences and sequences during deposition. Platforms that developed under greenhouse conditions should show evidence of small high frequency sea level changes of low amplitude, if shallow, or non-cyclic subtidal successions where water depths are below the influence of the sea level fluctuations. In contrast, with increasing amounts of ice, waxing and waning of moderate sized ice sheets is likely to cause significant sea level changes that should be reflected in the sedimentary pile. Such glacio-eustasy can significantly affect the compartmentalization of potential reservoirs of the accumulating sedimentary succession.

The Late Ordovician and Early Silurian were characterized by significant glacial pulses, which apparently waned into the later Silurian. This research is focused on documenting detailed sequence and parasequence stacking patterns on the mid-continent Silurian Wabash Platform to evaluate the effects of glacio-eustacy on the accumulating sedimentary succession. The platform succession away from the margin is only 100 meters thick, consists of five depositional sequences, which appear to be largely conformable, and remained subtidal throughout. At the margin where thick pinnacle reef capped bank developed, it is up to 200 meters thick. It will also compare the successions to those in the Appalachian Basin and the Great Basin, western U.S. The field data will be used with computer modeling to evaluate which phases of the Silurian are compatible with times of greenhouse ice-free world versus moderate ice on Gondwana. This study will also evaluate controls on the very low accumulation rates that typified the Silurian Wabash Platform, especially with relation to sediment starvation due to distance from the oceanic carbonate reservoir.