

Sequence Stratigraphic Correlation of the Middle Cambrian Wheeler Formation: A Geochemical Approach

By

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The Middle Cambrian Wheeler Formation of western Utah is interpreted as having been deposited in carbonate platform, slope, and basin environments of the House Range embayment, presumably during a single 3rd order cycle. In the Drum Mountains, carbonate slope and shallow platform deposits dominate the Wheeler Formation (295 m thick). At Marjum Pass, in the central House Range (40 km to the southwest), the Wheeler Formation (190 m thick) is dominated by basinal shale deposits. The Wheeler Formation is within the *Bolaspidella* trilobite zone, but preserves only one biozone marker; the first appearance of *Ptychagnostus atavus* replacing *Ptychagnostus gibbus*. Lack of other biozone or chronostratigraphic markers, or distinctive stratal patterns in the basinal facies makes correlation across this platform-to-basin transect difficult.

¹³C_{carbonate} isotope values range from -1.7‰ to 0.2‰ (PDB) at Marjum Pass and -1.1‰ to 1.4‰ (PDB) in the Drum Mountains; in both localities the isotopic values show small-scale variability up-section. TOC values at both sections decrease up-section and define a distinct peak, which was used along with lithologic features, to define the maximum flooding zone. The variability in the geochemical data is used in conjunction with sedimentologic data to create a sequence stratigraphic framework and understand local effects on carbon isotope stratigraphy across the platform-to-basin transect. This sequence stratigraphic framework enhances our understanding of the carbonate basins and allows us to better characterize the migration pathways from source to reservoir rock.