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Presentation Title:
Chronostratigraphic Correlation of the Burnt Bluff Group Across the Michigan Basin, USA

Abstract (250 words, maximum):
The Burnt Bluff Group (Llandovery) is bounded above by the Schoolcraft and below by the Cabot Head Shale. The BBG in northwest Michigan is composed of three formations, the Lime Island, Byron, and Hendricks, which reflect carbonate deposition on a shallow marine shelf. These units are correlated to a unit in southern Michigan called the “undifferentiated BBG (UD-BBG),” which reflects deposition in a deep basin. Here, conodonts, stable carbon isotopes, and $^{87}\text{Sr}/^{86}\text{Sr}$ were used to constrain the ages of the BBG to establish a chronostratigraphic correlation from shelf to basin. In the shelf position, a positive, $+4\%$ VPDB, carbon isotope excursion (CIE) was identified. Conodonts constrain the age of this CIE to the global Late Aeronian. In the slope position, which lies between the shelf and basin, three positive CIEs ($2.2-2.5\%, 5\%, +3\%$) were identified. Conodont age dates and $^{87}\text{Sr}/^{86}\text{Sr}$ data constrain these to the global Early Aeronian, Late Aeronian, and Valgu, respectfully. In the basin-center position, two positive CIEs ($+2-2.2\%, +3\%$) were identified. Based on $^{87}\text{Sr}/^{86}\text{Sr}$, these were recognized as the global Early Aeronian, and the Late Aeronian, respectfully. Correlating the CIEs shows that the existing lithostratigraphic model is inaccurate, and that the BBG was deposited at different times and locations. Specifically, the Lime Island, Byron, and the lower part of the Hendricks are coeval with the upper half of the UD-BBG and the lower half of the Schoolcraft in the basin-center. The lower half of the UD-BBG, in contrast, is time equivalent to the Cabot Head Shale.