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The Late Middle Ordovician (Chatfieldian) Guttenberg Carbon Isotope Excursion (GICE): A Unique Tool Used For Correlation From Kentucky To New York State

A relatively short-lasting positive carbon isotope excursion occurs in late Middle Ordovician (Chatfieldian) carbonates. This excursion, now known as the GICE, was first reported in the Guttenberg Member of the Decorah Formation of Iowa and has been recorded subsequently from sections in Kentucky, Pennsylvania, Illinois, Missouri, Oklahoma, Tennessee, Virginia, Sweden, and Estonia. The excursion provides a powerful tool for detailed long distance correlation of strata in the lower Trenton Group with equivalent strata in other regions, especially in cases were absence of diagnostic fossils and/or lack of K-bentonites has hindered correlation. The GICE's stratigraphic position provides a mechanism to resolve confusing stratigraphic relationships and nomenclature in classical "Trenton" localities (New York, Ontario). In addition, the identification and correlation of the GICE provides a medium to examine the excursion's relationship with K-bentonite marker beds, lithofacies changes, biostratigraphic zonation, and sequence boundaries. Clearly, it has great potential for use in the exploration for hydrocarbons in "Trenton" rocks in eastern North America.