CHARACTERIZING THE SEDIMENTOLOGIC AND BIOSTRATIGRAPHIC EXPRESSION OF TWO MIDDLE DEVONIAN BIOEVENTS IN THE MARCELLUS SUBGROUP

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Abstract

The Marcellus subgroup was deposited in the Middle Devonian Appalachian Basin. Strata of the Middle Devonian record numerous periods of abrupt faunal turnover known as bioevents. Within the time of Marcellus deposition, it has been shown that two basin-wide bioevents took place. These bioevents, the Bakoven and the Stony Hollow, were marked by a dramatic change in pelagic faunal abundance and diversity. This collaborative study investigates the dynamics of these bioevents by characterizing changes in dacryoconarid populations and placing them within a microfacies context. The type, abundance, and stratigraphic position of these extinct planktonic mollusks will be documented within depositional-event scale laminations throughout a Marcellus section complete through the East Berne member. Dacryoconarids are widespread in the study area, and examining change on the millimeter scale gives a high-resolution look at how these bioevents evolved. The analysis also will examine the sedimentologic and biostratigraphic significance of different species of dacryoconarids across the basin and possibly beyond. Work at the millimeter-scale seeks characteristic patterns in dacryoconarid distribution relative to identified facies groups. Both sedimentary and faunal facies will be compared to ongoing high-resolution geochemical analyses (Mason and Jordan, in progress) in order to better understand potential drivers of bioevents, which influence modern rock properties such as brittleness and organic carbon content.

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