

High-resolution chemostratigraphy of the Pennsylvanian Bloom Member of the Snaky Canyon Formation near the open Panthalassan Ocean

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This study will provide the first well-constrained high-resolution chemostratigraphy covering the majority of the Pennsylvanian near the Panthalassan ocean of western North America. It will also provide the first graphical representation of isotope trends across the continental US by gathering and comparing previously determined isotope profiles of similar age.

Previous studies indicate that the carbon isotope curves of the Panthalassan Ocean and the Palaeotethys split during the Chesterian and appear to remain separated by 1-2% throughout the Pennsylvanian. Most samples used to characterize the Panthalassan Ocean are from central North America, within a broad epeiric sea. This study will provide a greater understanding of the extent of the split by producing high-resolution chemostratigraphy from a location nearer the open Panthalassan Ocean. The carbon and oxygen stable isotope stratigraphy will be determined for the Pennsylvanian Bloom Member of the Snaky Canyon Formation located in the Beaverhead Mountains near the Idaho/Montana border. Lime mudstone samples, and brachiopods when possible, collected from the study site will be biostratigraphically constrained by an ongoing high-resolution conodont study of the section.

Connectivity of the study location to the open ocean will be evaluated prior to using it as a proxy for the Panthalassan Ocean paleoseawater chemistry. Evidence for lack of connectivity would be a correlation between this study location and previous studies on the US Midcontinent. Previously unrecognized events and shifts in isotope values could be used to identify any changes in connectivity during the Pennsylvanian.