

Revisiting late Ordovician limestone mottlestones from western Laurentia: origin and significance

Yadira Ibarra, Ph.D.

Assistant Professor

Earth and Climate Sciences

San Francisco State University

Carbonate-bearing successions from early Paleozoic marine ramp settings are important archives of millennial-scale geobiologic changes, secular changes in seawater chemistry, sea level, and post-depositional basin-scale tectonic changes. This talk explores the origin of enigmatic mottled limestones from the Bighorn Dolomite of western Laurentia. In the Teton Mountains, the Steamboat Point Member contains unusual light and dark cm-scale vertical structures that exhibit a 'mottled' texture and are often attributed to bioturbation. Here I explore the textural characteristics of the mottled fabrics of the Bighorn Dolomite using core observations from Sheridan, Wyoming, northeast of the Bighorn Mountains. Observations suggest that much of the Bighorn Dolomite lacks clear evidence for a preponderance of bioturbation and instead exhibits constructional microbial features deposited in a low energy subtidal environment. These results have implications for understanding the paleoecology, functional morphology, and taxonomic affinity of biosediments immediately before the End-Ordovician glaciation and for interpreting similar mesostructures during other times in Earth history.