

Microfossils disclose geologic history of eastern California

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The Bird Spring Shelf in southeastern California and basins to the west reveal a complex history of late Paleozoic sedimentation, sea-level changes, and deformation along the western North American continental margin. A new book published by the Geological Society of America captures insights into the tectonics and paleogeography of the region.

The Pennsylvanian-Early Permian Bird Spring Carbonate Shelf, Southeastern California: Fusulinid Biostratigraphy, Paleogeographic Evolution, and Tectonic Implications focuses on evidence from ancient seas across a considerable expanse of geologic time.

"Detailed correlations between fusulinid-bearing rocks of the Bird Spring Shelf and deep-water deposits to the northwest reveal the complex history of the area," said author Calvin Stevens of San Jose State University in California. "They confirm the late Paleozoic as a time of major tectonic instability on the continental margin."

Fusulinids, single-celled marine organisms with multiple chambers composed of calcite, typically resemble grains of wheat. They inhabited the world's seas 315 to 250 million years ago and disappeared during the end-Permian mass extinction. Today they are important guide fossils in understanding Pennsylvanian and Permian rocks and systems.

Stevens and co-author Paul Stone, U.S. Geological Survey, Menlo Park, recognized 69 fusulinid species which subsequently formed the basis of their correlations. They utilized recent data from the same area on

conodonts, another extinct marine creature, to place their work in the context of standard Permian timescales.

According to Stevens a number of the fusulinid species were described as new while others allow comparison with those from other regions. The resulting reconstructions provide a more complete picture of the geology of western North America during the late Paleozoic.

Source: Geological Society of America

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