

Smackover Microbial Mound Trend, Mississippi Interior Salt Basin, Alabama

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A new stratigraphic model for development of some Smackover bioherms is proposed to explain recent discoveries in the eastern MISB. A paleohigh extending from northern Mobile County to northeastern Washington County was the eastern depositional margin of the MISB during Smackover time. Microbial bioherms in upper Smackover late highstand deposits developed on this paleohigh because of favorable environmental conditions such as high light levels and moderate water energy. The biohermal interval is separated from overlying Buckner evaporites only by a thin peritidal succession. These bioherms are younger than early highstand biohermal reservoirs of the southeastern Manila and northwestern Conecuh embayments.

The bioherms are biotrital mounds tens of meters thick, not reported previously from the Smackover because they are difficult to recognize in the subsurface. The mounds consist of microbial microherms embedded in a detrital matrix of intraclastic peloid pack-wackestone. This "raisin bread" architecture resembles that of well studied biotrital mounds that are exposed in outcrop. In biotrital mounds described from other units the "raisins" have different origins; for example, rugose coral colonies in a Chesterian biotrital mound from north Alabama. However, the microherms in Smackover biotrital mounds appear to have performed a baffling function like that inferred for other kinds of biologically constructed elements in other mounds.

The microherms range in thickness from a few cm to about 1 m and were constructed by a variety of calcimicrobes and noncalcified microbes. Similar microherms have been described previously from Uriah Field in the eastern "Basement Bump" trend in the Manila and Conecuh embayments and probably represent a similar biotrital mound. Known bioherms in the eastern MISB ridge trend contain porous zones a few feet thick, and porosity in the biotrital mound in Uriah Field locally exceeds 15 percent.

