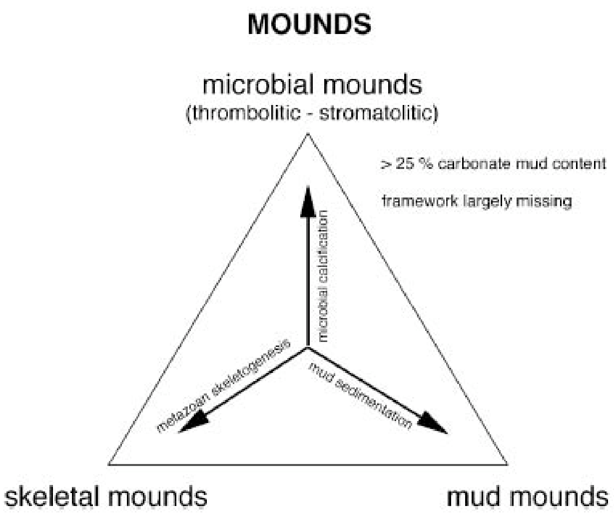


Fig. 1. Process related compositional classification of mound types used in this paper.

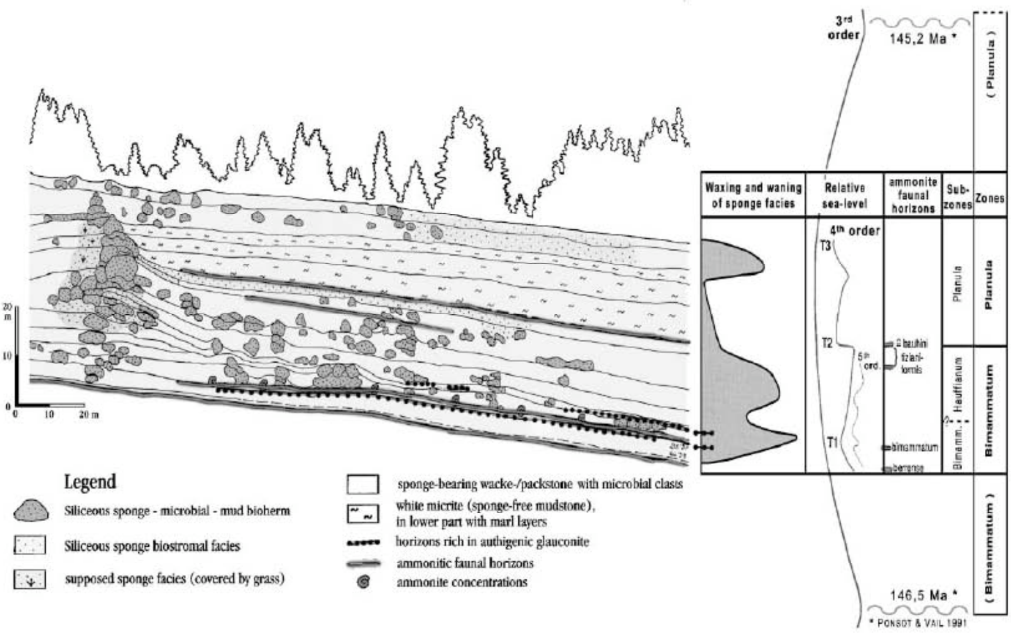


Fig. 7. The main part of the Klingenhalde sponge mound complex, SW Germany, reaching from the Upper Oxfordian Bimammatum Zone to the Lower Kimmeridgian Planula Zone. Bimamm. = Bimammatum, ord. = order, T = transgression. Modified from Leinfelder (in press).

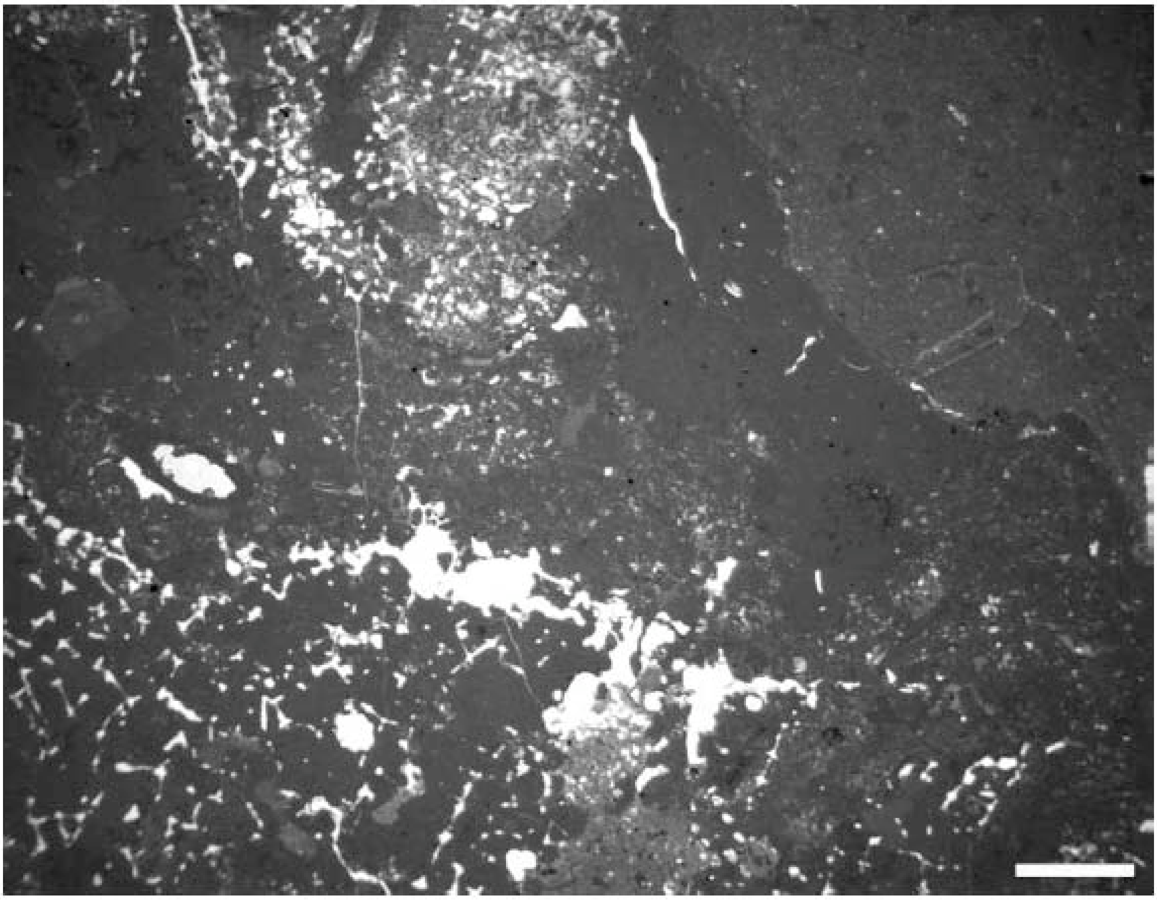


Fig. 8. Siliceous sponges overgrown by dense to peloidal microbial crusts (arrow); Gosheim, Swabian Alb, Germany, Upper Oxfordian; scale bar, 2 mm (thin section O5).

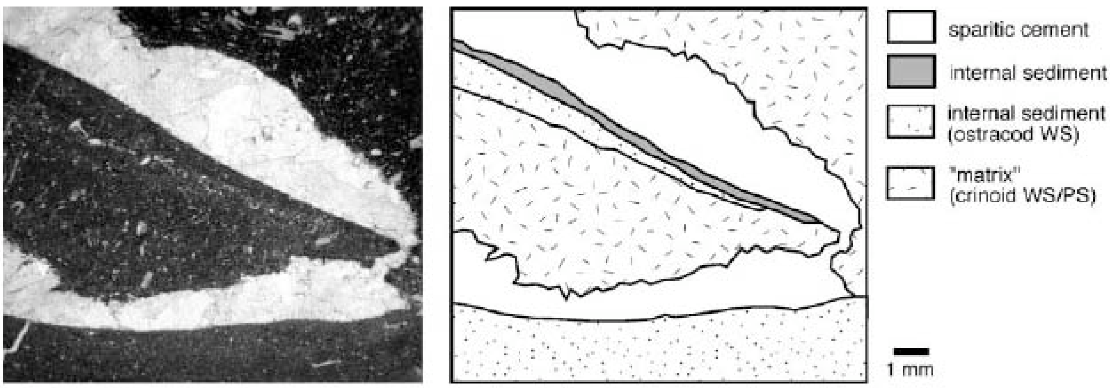


Fig. 18. Connection between two stromatactis cavities with internal sediment, mound facies, Anticosti Island, Canada (Lower Silurian, East Point Member, Jupiter Formation) (thin section ANT 14/2.1). WS= wackestone, PS = packstone. A reconstruction of this mound is shown in Fig. 21.

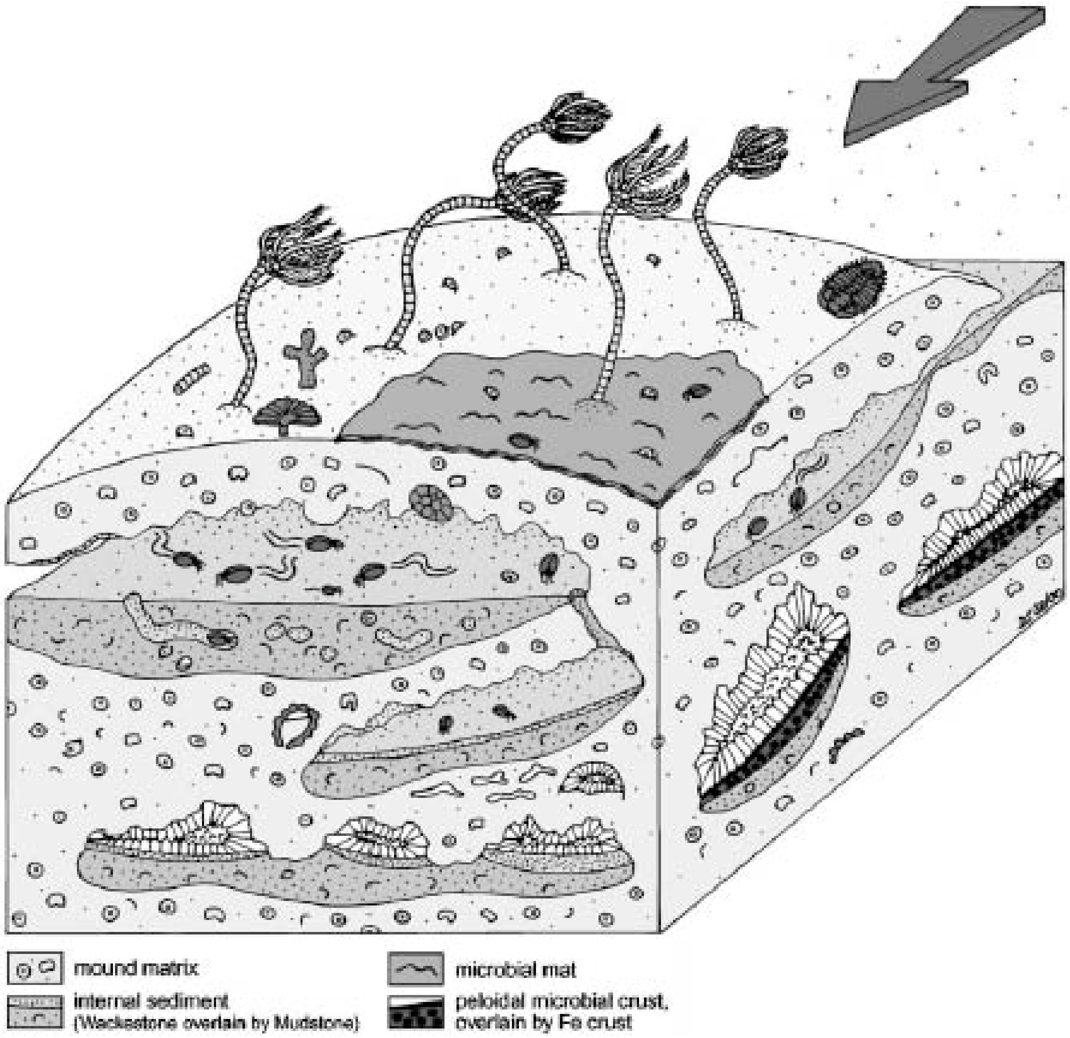


Fig. 21. Reconstruction of a stromatactis-rich mud-mound from the Lower Silurian of Anticosti Island, Canada (Jupiter Formation, East Point Member) (detail; figure not exactly to scale). The mound surface was inhabited by a reef association dominated by rheophilic crinoids. Some bryozoans, brachiopods and trilobites were also present. Sedimentation rates oscillated and calcifying microbial mats developed during sediment-starved episodes. This resulted in stabilisation and enhanced calcification of the topmost mound layer. Water currents, symbolised by an arrow, were able to winnow some unlithified sediment beneath the mound surface. Subsequently, cavities filled up with micritic internal sediment, which was mainly imported from outside the mound. A cryptic ostracode association commonly thrived in such partially filled cavities, and bioturbated the internal sediment. Within some deeper stromatactis cavities, isopachous cement crusts developed during early diagenesis. See text for further explanation.

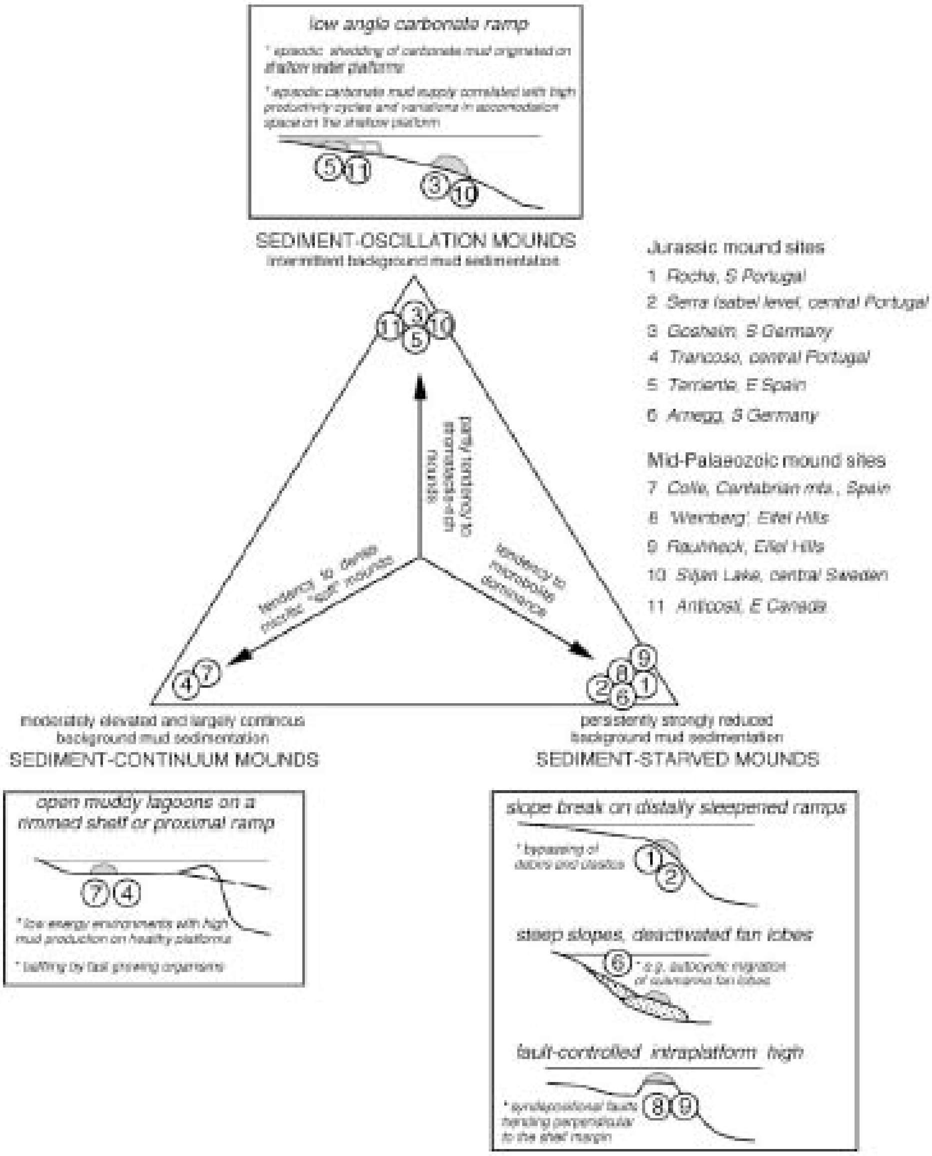


Fig. 29. Background sedimentation model of mound formation in the Jurassic and Mid-Palaeozoic. The development of microbolites, stromatactis cavity systems and 'soft' mounds appears to have been intimately controlled by the intensity and dynamics of allochthonous mud
sedimentation involved in mound formation. Mud sedimentation is largely linked to shelf configuration and the productivity of existing shallowwater
carbonate platforms, with export events probably being related to increased productivity episodes and/or accommodation problems (e.g., during late highstand).

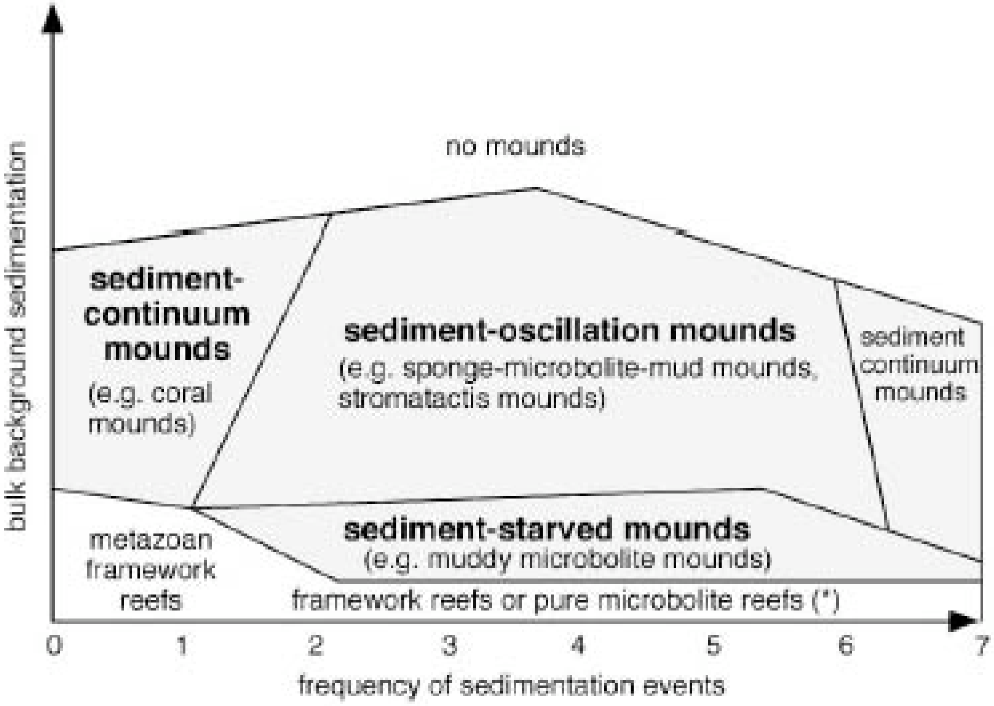
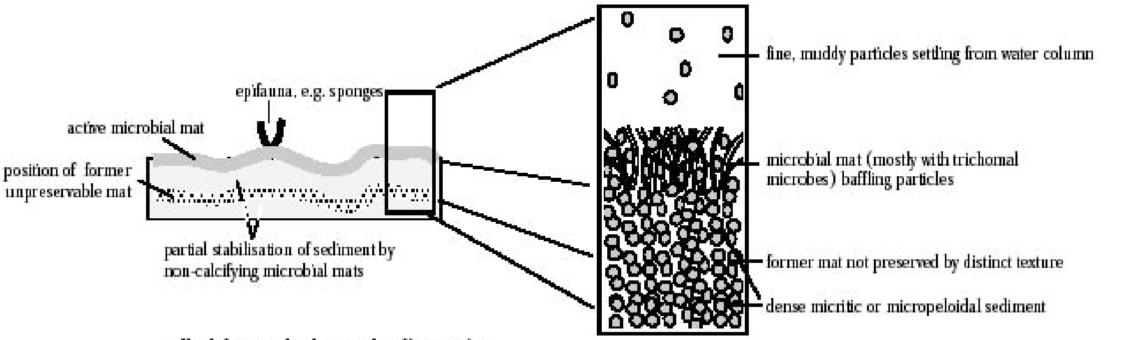


Fig. 30. Conceptual model of the interplay of muddy background bulk sedimentation rate and frequency of sedimentation episodes. Metazoan
framework reefs or pure microbolite reefs (which developed in settings hostile to metazoans), grew under conditions of near-zero sedimentation.
During continuous, slightly elevated sedimentation, coral mounds may have substituted for framework reefs, if fast growing baffling organisms
were present. Generally elevated, but oscillating sedimentation resulted in development of large sponge–microbolite mud-mounds or stromatactis mounds. Elevated sedimentation rates would not have permitted mound formation. The rate of bulk sedimentation that regulated episodes of mound growth was probably controlled by the frequency of sedimentary oscillations. 0– 1: continuous sedimentation; 1 – 6: different
frequencies of episodic sedimentation; 6 –7: near-continuous sedimentation owing to high-frequency episodic sedimentation.

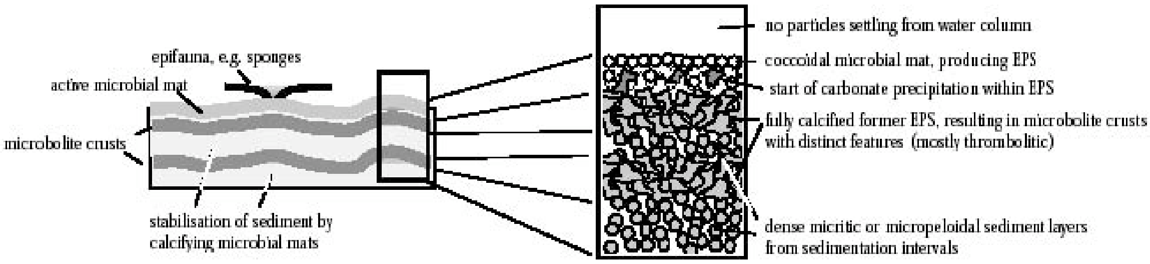
From: Schmid, D.U., Leinfelder; R.R. & Nose, M.(2001) Growth dynamics and ecology of Upper Jurassic mounds, with comparisons to Mid-Palaeozoic mounds.-Sedimentary Geology, **145**, 343– 376.



<u>allochthonous background sedimentation</u>

microbial mat baffles sediment particles

-> no clear textural difference between former mat and mud



<u>no allochthonous background sedimentation</u>

microbial mat precipitates carbonate within exopolymeric substances (EPS)

--> clear textural difference between former mat and mud