Diagenesis in relation to bathymetry in the Silurian of northern New Brunswick

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Using a bathymetric model based on biofacies and depositional characteristics of the sediments in a platform sequence consisting of two transgressive-regressive cycles, and known basinal and slope sediments of the same age, an attempt has been made to relate diagenetic facies to bathymetry or sea-level changes.

Very early diagenetic fabrics include micrite nodule-forming cements and fibrous Fe-rich calcite cements in generally deeper water sediments, and scalenohedral cements and syntaxial cements in shallower water sediments. Slightly later burial diagenesis includes Fe-rich scalenohedral calcite cements, pyrite and various modes of silicification.

Later in diagenesis and follow-

ing the development of load fractures occurred in a stage of Fe-rich fracture filling cement, neomorphic spar and poikilotopic cement and dolomites as cement, and replacement material. The dolomite probably formed in the subsurface during times of regression when meteoric waters mixed with marine waters, and appears to be dependent on fractures or other types of permeability channels. Pressure solution postdates most other diagenetic fabrics.