genesis was dominated by suboxic or sulphate reduction processes. Type A grains result from suboxic reduction of Fe to give Fe-silicates and siderite, favoured by low organic carbon availability and/or by brackish water. Where reworked into high-productivity outer shelf areas, they alter to type C coated grains with an outer cortex of Mg carbonate, covering replacive pyrite, Fe-calcite, and ankerite. Where buried by rapidly deposited organic-rich sediments, they alter to type B coated grains with Fe-calcite, pyrite, and in some cases kaolinite. Facies that are directly supplied by riverine sediments have a lower Fe:Ti ratio than do fully marine facies 1, 2, and 3 as a result of input of detrital ilmenite and its alteration products. Suboxic diagenesis is common in low sedimentation rate transgressive sediments with low carbon content, and in delta-front turbidites and river-mouth sandstones, generally with little interbedded mudstone and hence low carbon content. Where large changes in sedimentation rate occurred at transgressive surfaces, the underlying progradational sediments have a higher total Fe content to a depth of as much as 10 m. The suboxic diagenesis forms Fe-silicates that are precursors of chlorite rims on framework grains. The distribution of suboxic diagenesis is thus a predictor of the distribution of high porosity preserved by chlorite rims.

Controls on regional variability in sea-floor diagenesis in Upper Jurassic-Lower Cretaceous pro-deltaic sandstone and shales, Scotian Basin, eastern Canada

A.C. Okwese[1], G, Pe-Piper[1], and D.J.W. Piper[2]
1. Department of Geology, Saint Mary's University, Halifax, Nova Scotia B3H 3C3, Canada ¶ 2. Geological Survey of Canada (Atlantic), Bedford Institute of Oceanography, P.O. Box 1006, Dartmouth, Nova Scotia B2Y 4A2, Canada

Diagenesis in the uppermost Jurassic to Lower Cretaceous sandstones and shales of the Scotian Basin is an important control on reservoir quality. These rocks are deltaic, up to 3 km thick, with progradational parasequences with high sedimentation rates capped by transgressive units with much lower sedimentation rates. Mineral phases in the sea-floor diagenetic system are commonly preserved where there was abrupt change in sedimentation rates, and also in coated grains found in transgressive units. This study assesses the role of sea-floor diagenesis in the overall diagenetic system by studying the sedimentology, mineralogy, and geochemistry of the transgressive unit and underlying sediments from conventional cores in the Peskowesk A-99 and Thebaud C-74 wells.

Coated grains preserve a record of whether sea-floor dia-

Atlantic Geology, 2011, Volume 47, Number 1