

PALEOENVIRONMENTAL RECONSTRUCTION OF THE OGDENSBURG DOLOSTONE
(BEEKMANTOWN GROUP: LOWER ORDOVICIAN); OTTAWA-ST. LAWRENCE LOWLANDS
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The Ogdensburg Dolostone of the Ottawa-St. Lawrence Lowlands records the evolution of a major carbonate shelf lagoon fringed by a variety of muddy and sandy marginal marine environments. The western outcrop belt exhibits the following environments (lithofacies): proximal lagoon (gastropod-bearing dolomitic lime mudstones, bioturbated dolomitic packstones and wackestones); "high-energy" shoreline (coarse dolomitic grainstones, SH-type stromatolites); barrier shoal (cross-laminated dolomitic grainstones and quartz sandstones); intertidal flat (ribbon-laminated dolomitic siltstones); algal flat (dolomitic lime mudstones with "sheet-crack" stromatolites and LLH-type stromatolites); sabkha (cherty dolostones with collapse breccias and possible pedogenic features). Intraclast-bearing quartz sandstones within supratidal and intertidal facies document erosion of indurated carbonate muds during subaerial exposure. Abundant quartz sand in the western outcrop belt was likely introduced by migration of aeolian dunes from areas landward of the marginal marine setting.

The central outcrops are dominated by subtidal shelf lagoon facies. These include coarse dolomitic bioclastic grainstones, ripple laminated dolomitic siltstones, bioturbated dolomitic mudstones and packstones, plus occasional thin shales with horizontal trails.

A number of features point to deposition under abnormally high salinities (and/or sabkha overprint), including extremely low faunal diversity, calcite-replaced evaporite nodules (formerly gypsum/anhydrite) and the presence of subsurface evaporites (gypsum) in the central area. An arid climate and restriction of open marine circulation are clearly indicated.