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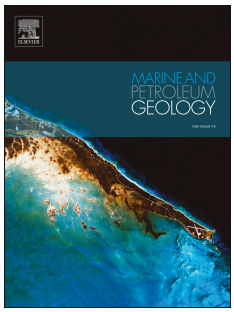

Reflux dolomitization – A Holocene example beneath a coastal salina, West Caicos Island, Turks and Caicos Islands

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REFLUX DOLOMITIZATION – A HOLOCENE EXAMPLE BENEATH A COASTAL SALINA, WEST CAICOS ISLAND, TURKS AND CAICOS ISLANDS

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ABSTRACT

Holocene reflux dolomitization occurred beneath the Company Point evaporitic coastal salina on West Caicos Island, less than 1 kilometer in from the edge of Caicos Platform, in the southeastern Bahamas. Poorly ordered, calcian-rich protodolomites **replaced** coralgal grainstones shed into the salina as storm-washover deposits, and also cemented them. Finer-grained carbonate sands were replaced by fine-crystalline dolomites, but coarser-grained skeletal fragments, including *Halimeda* sp., dissolved out to create late Holocene, precompactional secondary moldic porosity. Precipitation of overlying evaporitic deposits, principally gypsum, generated magnesium-rich brines. Below these evaporites, the downward increase in the degree of replacement dolomitization, toward the impermeable calcrete that caps Pleistocene grainstones at the base of the Holocene sequence, strongly implies reflux dolomitization.

Company Point dolomitization less than one kilometer in from the western edge of Caicos Platform demonstrated that this process is not limited to platform- or ramp-interior settings well removed from the open ocean. A semi-arid climate combined with depositional ridge topography and periodic storm surge and groundwater recharge, allowed this coastal salina to initiate and evolve. As these beach-ridge and evaporitic deposits continue to prograde, as they are doing on the eastern side of West Caicos Island, then one can expect associated evaporitic deposits to have the potential not only to serve as an updip sealing facies, but to generate Mg-rich fluids to create precompactional porous dolostones with sheet-like reservoir quality.