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**C.S. Martens: SULFUR AND CARBON CYCLING IN ORGANIC-RICH  
MARINE SEDIMENTS**

Nearshore, continental shelf, and slope sediments are important sites of microbially-mediated carbon and sulfur cycling. Marine geochemists have investigated the rates and mechanisms of cycling processes in these environments by chemical distribution studies, *in situ* rate measurements, and steady-state kinetic modeling. Pore water chemical distributions, sulfate reduction rates, and sediment-water chemical fluxes were used to describe cycling on a ten year time scale in a small, rapidly depositing coastal basin, Cape Lookout Bight, and at general sites on the upper continental slope off North Carolina, U.S.A. In combination with  $^{210}\text{Pb}$  sediment accumulation rates, these data were used to establish quantitative carbon and sulfur budgets as well as the relative importance of sulfate reduction and methanogenesis as the last steps in the degradation of organic matter.

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