

## **LATE PLEISTOCENE EVOLUTION OF THE OCEAN'S CARBONATE SYSTEM: A SERENDIPITOUS RESULT FROM ODP LEG 177**

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The inverse relationship between atmospheric carbon dioxide and deep-sea carbonate ion concentration has led paleoceanographers to search the geologic record, preserved in deep-sea sediments, for ways to re-construct changes in the carbonate chemistry of the deep ocean. The sedimentary record from ODP Site 1089, in the deep Cape Basin of the South Atlantic, provides a view of the temporal evolution of the carbonate system with a fidelity that is unmatched by other records. The record is especially notable because of its high sedimentation rates (15 cm/kyr), which ameliorates many of the complications that limit other records (blurring by chemical erosion, bioturbation, etc.). The carbonate signal is characteristic of Indo-Pacific cores with high bulk sediment carbonate content (improved preservation) during glacial stages and low carbonate (increased dissolution) during interglacial stages. The lecture will address several questions raised by these somewhat unexpected results, including the implications for changes in the ocean's carbonate system, deep-water circulation, and atmospheric pCO<sub>2</sub>. Dr. Hodell has sailed on ODP Legs 114 (sedimentologist), 162 (inorganic geochemist), and 177 (co-chief scientist). He is also active in ODP's science advisory structure having served on the Operations Committee (OPCOM) and currently serves on the Environment Science Steering and Evaluation Panel (ESSEP).