



## **Carbonate Nodules in Bahamian Periplatform Sediments – Composition, Distribution and Formation**

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Layers of sand-sized carbonate nodules have been observed in periplatform sediments of the Great Bahama Bank. On the western side of the Bahamas (ODP Site 1006) nodules occur during glacial periods from marine isotope stage (MIS) 44 until 22 and in MIS 10. In contrast, the eastern margin (ODP Site 633) is characterised by a constant abundance of nodules before MIS 23, while afterwards they are mainly restricted to glacial periods. These nodules are mainly composed of low-Mg calcite. Thin sections show a micritic matrix with interspersed planktonic foraminifera. Oxygen isotope analyses of the micritic matrix suggest an in situ formation in equilibrium with bottom water. Their occurrence is generally linked to periods of low aragonite values. Thus the formation of the nodules may be caused by aragonite dissolution and cementation during early diagenesis. Dissolution could be triggered by the supply of organic material during periods of higher productivity and/or lower input of fine material from the platform top/margin during glacial stages. The latter effect together with a higher bottom current intensity may cause winnowing which leads to a higher pore space in the surface sediment enhancing the formation of cements. These environmental conditions could have been changed in relation to the transition of the 41 ky to 100 ky climate cycles (“Mid-Pleistocene Revolution”) at MIS 23 (approx. 0.9 Ma), causing the distinctive cut in the temporal distribution of nodular layers.