



Radiocarbon and Th-230 data reveal temporal changes in sediment focusing at ODP site 984

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Sediment drifts accumulate at high rates and are a result of focusing of laterally supplied particles. In a recent study using molecular radiocarbon analyses of alkenones it was shown that organic matter entrained in the laterally supplied material can be significantly pre-aged and can derive from a distant location (Ohkouchi et al., 2002). Lateral advection of these allochthonous particles results in significant age offsets between calcareous planktonic microfossils and organic biomarkers in the drift sediments. The magnitude of age offsets was found to depend on the amount of laterally supplied material. Its relative contribution can be estimated using inventories of Thorium-230. We present radiocarbon ages of planktonic foraminifera, bulk organic carbon, and molecular-level radiocarbon ages of alkenones from ODP site 984 and a box core taken from Bjoern Drift in the NE Atlantic, as well as data from box cores retrieved from the neighbouring Gardar Drift. In the Holocene section of ODP 984, the radiocarbon ages of alkenones and planktonic foraminifera agreed remarkably well while bulk organic carbon was ca. 500 years older. In the glacial core section, bulk organic carbon age was more variable, and age differences to corresponding foraminifera were as large as 6000 years. In the box cores, age differences between bulk organic carbon and planktonic foraminifera were larger at sites with thicker Holocene sediment layers. The data will be compared with Th-230 based focusing factors. Our results imply that 1) laterally supplied material contains pre-aged organic matter, primarily of non-marine origin, and 2) focusing was stronger and more variable during the glacial.

Ohkouchi, N., et al. (2002), Spatial and temporal offsets between proxy records in a sediment drift, *Science*, 298, 1224-1227.