



Radiolaria as indicators of late Pleistocene surface water stratification in the Bering Sea

1 J. Hays

Lamont Doherty Earth Observatory of Columbia University, USA
jimhays@ldeo.columbia.edu

Accumulation rates of shallow- vs deep-living radiolarians can be used to identify glacial high latitude cold stratified surface waters similar to those of the Sea of Okhotsk today. In the Okhotsk sea production of shallow-living species is suppressed by cold near surface waters and deep-living species enhanced. In northwest Pacific cores there is a concomitant increase in the accumulation rate of shallow-living and decrease of deep-living species between late Pleistocene and Holocene. In the Bering Sea, on the other hand, although there are fluctuations of deep-living species accumulation rates in both late Pleistocene and Holocene time, on average the deep-living species accumulation rates are similar between the two. Shallow living species accumulation rates increase by an order of magnitude between late Pleistocene and Holocene. These results indicate that the late Pleistocene environment of the Bering Sea shallow living species productivity was greatly reduced compared with the Holocene. This reduction was so great that it allowed a deep-living species, *Cycladophora davisiana* which constitutes less than 5% of the Holocene thanatecenosis to increase to nearly 50% in the late Pleistocene. The favored explanation for these abundance changes is the establishment of very cold stratified surface waters in the late Pleistocene Bering Sea similar to the Sea of Okhotsk today. During late Pleistocene time there is good correlation between deep- and shallow-living accumulation rate changes while the correlation between such changes in the Holocene is less good. This suggests a tighter connection between shallow and deep productivity in the Pleistocene than in the Holocene.