



Pliocene-Pleistocene Benthic Foraminiferal assemblages in the Southern Bering Sea, (IODP Expedition 323).

M.A. Kaminski (1), S. Kender (2), A. Ciurej (3), and R. Balc (4)

(1) Earth Sciences Department, King Fahd University of Petroleum & Minerals, PO Box 701, Dhahran, 21361, Saudi Arabia,
(2) British Geological Survey, Keyworth, Nottingham, NG12 5GG, United Kingdom , (3) Institute of Geological Sciences,
Polish Academy of Sciences, ul. Senacka 1, 31-002 Krakow, Poland, (4) Faculty of Environmental Science, Babes-Bolyai
University, str. Fantanele 30, 400294, Cluj-Napoca, Romania

A primary objective of drilling at in the Bering Sea was to obtain high-resolution records of Pliocene–Pleistocene productivity and paleoceanography. Previous DSDP coring (Site 188) and subsequent piston coring in the region documented high sedimentation rates and the presence of appropriate microfossils for paleoceanographic studies. Drilling at Site U1341 —located at a water depth of 2177 m recovered nearly 600 m of diatomaceous sediment, and provides a record of past intermediate water conditions in the Bering Sea. The site is located just below the modern OMZ, which causes the formation of laminated sediments. Drilling at Site 1344A recovered a >700m high-resolution record of upper Pliocene to Pleistocene sediments, containing over 40 species of benthic foraminifera. Fluctuations in the intensity or depth of the OMZ should be captured by the benthic foraminiferal records at these sites.

We present records of the benthic foraminiferal assemblages from 143 samples collected at approx. 3 m resolution in IODP Hole 1341B, and from 93 samples collected at 3 m resolution from Hole 1344A. Pliocene assemblages from the base of Hole 1341B to ~320 m consist entirely of agglutinated foraminifera dominated by the infaunal genera Eggerella, Karreriella, and Martinottiella. The ecological information gained from this assemblage supports other proxy information indicating high levels of organic productivity in the Bering Sea. Occasional horizons with calcareous benthic foraminifera dominated by buliminids are present, possibly owing to fluctuations in the CCD. Calcareous benthic foraminifers (mostly Bulimina, Globobulimina, Uvigerina, Melonis, nodosariids) show improved preservation in the upper part Hole 1341B starting at ~320 m (ca. 2.3 ma). This level coincides with abundant sea ice diatoms and radiolarians living in cold and oxygen-rich intermediate water masses. The fauna still indicates dysaerobic conditions, but productivity may have been reduced by seasonal sea ice coverage and an enhanced stratification of the water masses. The preservation and diversity improves again at ~150 m (ca. 1.1 ma), close to the “mid-Pleistocene transition”.

Benthic foraminifera assemblages from Hole 1344A display low diversity and abundance from the base of the hole until 300m (ca. 0.8 Ma), and consist mainly of Elphidium batialis, as well as Melonis, Elphidium, Globobulimina, and Cibicidoides. Above 320 m, abundance improves markedly, and the assemblage includes Uvigerina, Nonioninella, and Valvulineria. Fluctuations in the abundance of infauna are likely related to changes in productivity and deep ventilation.